Adusumilli Gopalakrishnaiah &Sugarcane Growers

Siddhartha Degree College of Arts & Science

Vuyyuru – 521165, Krishna District, Andhra Pradesh

(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)

Accredited by NAAC with "A" Grade

2022-23

1.3.2

VALUE ADDED/ CERTIFICATE PROGRAMS

Brochure and Syllabus along with Course completion certificate

2022-23

1.3.2

LIST OF Value Added/ Certificate program

2022-23

S.No.	Title of the Program	Course Code
1.	Analysis of Time Series	STAT-ATS-01
2.	Soft Skills Development for Physics Students	PHYV5C
3.	TALLY PRIME	COM-TP-06
4.	Ornamental Fish Breeding	VACZOO-06
5.	Cloud Computing	CCVAC13
6.	Deep Learning	DLVAC01
7.	Mock Parliament	POL-MP-01
8.	Arithmetic Ability	MAT VAC-01
9.	History of Revolution	HIS HR-01
10.	Statistical Computing	STCO-001
11.	Vermicomposting	ZOOVAC 07
12.	Object Oriented System Development using UML, JAVA and Patterns	20CS4M1
13.	Analytical chemistry -MOOCS	22CH4T1

Principal
Adusumilli Gopalakrishnaiah & Sugarcane Gr
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

Siddhartha Degree College of Arts & Science * Adusumilli Gopalakrishnaiah & Sugarcane Growers * Vuyyuru - 521 165 Krishna District

Principal
Adusumilli Gopalakrishnaiah & Sugarcane Gr
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science
Vuyyuru – 521165, Krishna District, Andhra Pradesh
(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)
Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution
Phone No: 08676-233267 Email ID: agsgsiddhartha@gmail.com website: http://agsgsc.edu.in

Department of Statistics

Value Added Course

2022-23

Course Code: STAT-ATS-01

Duration :30 Days

Analysis of Time Series

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)

An Autonomous College in the Jurisdiction of Krishna University

Accredited by NAAC with "A" Grade **ISO 9001:2015 Certified Institution**

DEPARTMENT OF STATISTICS

Value Added Course / Certificate Course
Title: Analysis of Time series

Name of the Lecturer	:	N. Siva Naga Raju
Class	:	I MSCs
Duration of the Course	:	30 Days
VAC Code	:	STAT-ATS -01

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course

Title: Analysis of Time series

Objectives : Time series analysis can be useful to see how a given asset, security, or economic variable changes over time. It also can be used to examine how the changes associated with the chosen data point compare to shifts in other variables over the same time period.

Methodology : Teacher- Centered method

Duration : 30 Days

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course

Student Enrolment Sheet

Class : IMSCs

S. No	Roll No.	Name of the Student	Signature
1	2155301	K. Dharani	K. Dharani
2	2155302	G. Divya	G. Divya
3	2155303	M. Sri Lakshmi	M. Sri lakshmi
4	2155304	A. Sai Sowmya	A. Sai Sowmya
5	2155305	B. Susanth	B. Susanth
6	2155306	B. Manoj Phanindra	B. Manoj Phanindra
7	2155307	J. Keerthi Priya	Keerthi Priya J
8	2155308	K. Alekhya	K. Alekhya
9	2155310	N. Anusha	N. Anusha
10	2155311	A. Chakradhar	A. Chakradhar
11	2155312	MD. Khadeera Begum	MD Khadeera Begum
12	2155313	B. Pawan Kumar	B. Pawan kumar
13	2155314	J. Jhansi Lakshmi	J. Jhansi lakshmi
14	2155315	K. Tulasi	K. Tulasi
15	2155316	P. Hima sri	P. Hima Sri

N. Siva Naga Raju.

N. V.

S. No	Roll No.	Name of the Student	Signature
16	2155317	K. Naga Sravani	K. Naga Sravani
17	2155319	M. Karuna Sri	M. Karuna Sri
18	2155320	P. Phani Supraja	P. Phani Supraja
19	2155321	K. Hema Sri	K. Hema Sri
20	2155322	R. Durga Bhavani	R. Durga Bhavani
21	2155323	D. Naga Gireesha	D. Naga Gireesha
22	2155324	N. Naga Mounika	N. Naga Mounika
23	2155325	G. Dedeepya	G. Dedeepya
24	2155326	E. Joshimani	E. Joshimani
25	2155327	G. Yuva Kiran	G. Yuva Kiran
26	2155328	V. Sri Lakshmi	V. Sri Lakshmi
27	2155329	M. Chaitanya	M. Chaitanya
28	2155330	R. Bobby	R. Bobby
29	2155331	P. Praneeth Kumar	P. Praneeth Kumar
30	2155332	MD. Abrar Ahamad	MD. Abrar Ahamad
31	2155333	G. Harika	G. Harika.
32	2155334	V. Deepthi	V. Deepthi

N. Sivanaga Raju.

N. V.

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course

Title: Analysis of Time series

Date: 01-09-2022 to 30-09-2022

Date	Content	Module No.
01-09-2022	Introduction, Components of time series- Trend, Periodic changes, Irregular component; Analysis of Time series- Mathematical models for Time series, Uses of Time sries.	I
09-09-2022	Measurement of Trend- Graphic method, Method of semi-averages, Method of Curve Fitting by Principle of Least squares, Growth cures and their fitting, Moving Average method, Approximation to Moving Averages.	II
16-09-2022	Measurement of Seasonal Variations- Method of Simple Averages, Ratio to Trend method, Ratio to Moving Averages method, Link Relatives method, Deseasonalisation of data.	III
23-09-2022	Measurement of Cyclic variations	IV

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course

Title: Analysis of Time series

Model Question Paper

Max.Time:2 Hours | **Analysis of Time series** | Max.:50 marks
Course code: STAT-ATS-01 | Min.Pass:18 marks
Roll.no:

Section-A

Answer any **Three** of the following 3x10=30marks

1. Define Time series. Explain the components of Time series.
2. Explain the additive and multiplicative models of a Time series.
3. Explain the method of curve fitting by using principle of least squares.
4. Explain the detail procedure of link relatives method.
5. Write a note on measurement of cyclic variations.

Section-B

Answer any **FOUR** of the following 4x5=20marks

6. Write the uses of Time series.
7. Explain the procedure of moving Average method.
8. Explain Logistic curve and write its properties.
9. What do you understand by the seasonal variations in a time series.
10. Define Deseasonalisation of data.
11. What are business cycles.

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course

Title: Analysis of Time series

Scheme of valuation

1. Definition- 2M
   Components of time series- 8M
2. Additive model- 5M
   Multiplicative model- 5M
3. curve fitting- 10M
4. Link relatives method- 10M
5. measurement of cyclic variations- 10M

6. Uses of Time series- 5M
7. procedure of moving Average method- 5M
8. Logistic curve- 3M
   Properties- 2M
9. seasonal variations- 5M
10. Definition- 5M
11. business cycles- 5M

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Statistics

Value Added Course / Certificate Course

Title: Analysis of Time series

Marks List

Class: IMSCs

S. No	Roll No.	Name of the Student	Marks
1	2155301	K. Dharani	28
2	2155302	G. Divya	45
3	2155303	M. Sri Lakshmi	30
4	2155304	A. Sai Sowmya	46
5	2155305	B. Susanth	27
6	2155306	B. Manoj Phanindra	44
7	2155307	J. Keerthi Priya	42
8	2155308	K. Alekhya	45
9	2155310	N. Anusha	48
10	2155311	A. Chakradhar	29
11	2155312	MD. Khadeera Begum	43
12	2155313	B. Pawan Kumar	31
13	2155314	J. Jhansi Lakshmi	35
14	2155315	K. Tulasi	25
15	2155316	P. Hima sri	43

S. No	Roll No.	Name of the Student	Marks
16	2155317	K. Naga Sravani	**41**
17	2155319	M. Karuna Sri	**26**
18	2155320	P. Phani Supraja	**34**
19	2155321	K. Hema Sri	**46**
20	2155322	R. Durga Bhavani	**47**
21	2155323	D. Naga Gireesha	**45**
22	2155324	N. Naga Mounika	**44**
23	2155325	G. Dedeepya	**38**
24	2155326	E. Joshimani	**29**
25	2155327	G. Yuva Kiran	**40**
26	2155328	V. Sri Lakshmi	**37**
27	2155329	M. Chaitanya	**25**
28	2155330	R. Bobby	**40**
29	2155331	P. Praneeth Kumar	**48**
30	2155332	MD. Abrar Ahamad	**47**
31	2155333	G. Harika	**47**
32	2155334	V. Deepthi	**40**

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Statistics

Value Added Course / Certificate Course

Title: Analysis of Time series

Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

N. Sivanagaraju.

N.V. Srinivasa Rao

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Class / Section: IMSCs Year: 2021-22 Department of: Statistics Paper: I Lecturer: N. Siva Naga Raju

Sl.No	Roll No	Student Name	Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	2155301	K. Dharani	BC-A	P	P	A	P	P	A	P	P	P	P	P	A	P	P	P	12
2	2155302	G. Divya	BC-A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
3	2155303	M. Sri Lakshmi	BC-A	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
4	2155304	A. Sai Sowmya	BC-B	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
5	2155305	B. Susanth	BC-B	A	P	P	P	P	P	P	A	P	P	P	P	P	P	A	12
6	2155306	B. Manoj Phanindra	BC-B	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
7	2155307	J. Keerthi Priya	BC-B	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	14
8	2155308	K. Alekya	BC-D	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	14
9	2155310	N. Anusha	BC-D	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
10	2155311	A. Chakradhar	OC	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
11	2155312	MD. Khadeera Begam	BC-E	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	14
12	2155313	B. Pawan Kumar	SC	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	14
13	2155314	J.Jhansi Lakshmi	OC	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
14	2155315	K. Tulasi	OC	A	P	P	A	P	P	A	P	P	P	P	P	P	P	P	12
15	2155316	P. Hima sri	BC-D	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14

N. SivaNagaRaju

N.V.

Sl.No	Roll No	Student Name	Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
16	2155317	K. Naga Sravani	BC-D	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	14
17	2155319	M. karuna sri	SC	P	A	P	P	P	P	A	P	P	A	P	P	P	P	A	11
18	2155320	P. Phani Supraja	OC	P	P	P	P	P	P	A	P	P	P	P	P	P	P	A	13
19	2155321	K. Hema Sri	OC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
20	2155322	R. Durga Bhavani	BC-D	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	13
21	2155323	D. Naga Gireesha	BC-D	P	P	P	P	P	P	A	P	P	P	P	P	P	P	A	13
22	2155324	N. Naga Mounika	BC-D	P	A	P	P	P	P	P	P	P	A	P	P	P	P	P	13
23	2155325	G. Dedeepya	BC-D	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
24	2155326	E. Joshimani	SC	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	13
25	2155327	G. Yuva kiran	OC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
26	2155328	V. Sri Lakshmi	BC-D	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	13
27	2155329	M. Chaitanya	SC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
28	2155330	R. Bobby	SC	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	14
29	2155321	P. Praneeth kumar	SC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
30	2155332	MD. Abrar Ahamad	BC-E	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	14
31	2155333	G. Harika	BC-D	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	14
32	2155334	V. Deepthi	BC-A	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	13

N. SiNaNagaRaju.

N.V.

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Class / Section: IMSCs Year: 2021-22 Department of: Statistics Paper: I Lecturer: N. Siva Naga Raju

Sl.No	Roll No	Student Name	Category	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
1	2155301	K. Dharani	BC-A	P	P	A	P	P	P	P	P	P	A	P	P	A	P	P	12
2	2155302	G. Divya	BC-A	P	A	P	P	A	P	P	P	P	P	P	P	A	P	P	12
3	2155303	M. Sri Lakshmi	BC-A	P	A	P	P	P	P	P	P	P	P	A	P	P	P	P	13
4	2155304	A. Sai Sowmya	BC-B	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
5	2155305	B. Susanth	BC-B	P	P	P	P	P	P	P	A	P	P	P	P	P	P	A	13
6	2155306	B. Manoj Phanindra	BC-B	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	14
7	2155307	J. Keerthi Priya	BC-B	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	14
8	2155308	K. Alekya	BC-D	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
9	2155310	N. Anusha	BC-D	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
10	2155311	A. Chakradhar	OC	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
11	2155312	MD. Khadeera Begam	BC-E	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	14
12	2155313	B. Pawan Kumar	SC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
13	2155314	J.Jhansi Lakshmi	OC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
14	2155315	K. Tulasi	OC	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
15	2155316	P. Hima sri	BC-D	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15

N. SivaNagaRaju.

N. V.

Sl.No	Roll No	Student Name	Category	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
16	2155317	K. Naga Sravani	BC-D	A	P	P	A	P	P	P	P	A	P	P	P	P	P	P	12
17	2155319	M. karuna sri	SC	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	13
18	2155320	P. Phani Supraja	OC	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	14
19	2155321	K. Hema Sri	OC	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
20	2155322	R. Durga Bhavani	BC-D	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	14
21	2155323	D. Naga Gireesha	BC-D	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
22	2155324	N. Naga Mounika	BC-D	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	14
23	2155325	G. Dedeepya	BC-D	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
24	2155326	E. Joshimani	SC	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	14
25	2155327	G. Yuva kiran	OC	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	14
26	2155328	V. Sri Lakshmi	BC-D	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
27	2155329	M. Chaitanya	SC	P	P	A	P	P	A	P	P	P	A	P	P	A	P	P	11
28	2155330	R. Bobby	SC	P	P	P	P	A	P	A	P	P	P	P	P	A	P	P	12
29	2155321	P. Praneeth kumar	SC	P	A	P	P	A	P	P	P	P	P	P	P	P	P	P	13
30	2155332	MD. Abrar Ahamad	BC-E	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
31	2155333	G. Harika	BC-D	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	14
32	2155334	V. Deepthi	BC-A	P	P	P	P	P	A	P	A	P	P	P	P	P	P	P	13

N. V.

N. SivaNagaRaju.

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department of Statistics

VALUE ADDED COURSE: Analysis of Time series

CERTIFICATE

This is to Certify that . P. Praneeth Son/Daughter of Shri/Smt P. Rubenu

has Successfully completed value added course in Analysis of Time Series
Conducted by the Department of Statistics from 01-09-2022 to 30-09-2022 We wish him her bright future

N. SivaNagaRaju.
Co-ordinator

N. SivaNagaRaju.
Head of Department

Principal
PRINCIPAL
AG & SG Siddhartha Degree College of
Arts&Science (Autonomous),Vuyyuru.

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE, (AUTONOMOUS) VUYYURU A.P

(Accredited at "A" level by NAAC, Bengaluru)

Department of Statistics

VALUE ADDED COURSE: Analysis of Time series

CERTIFICATE

This is to Certify that . N · Anusha Son/Daughter of Shri/Smt N · Swamy

has Successfully completed value added course in Analysis of Time Series
Conducted by the Department of Statistics from 01-09-2022 to 30-09-2022 We wish him her bright future

N. SivaNagaRaju.
Co-ordinator

N. SivaNagaRaju.
Head of Department

Principal
PRINCIPAL
AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

AdusumilliGopalakrishnaiah& Sugarcane Growers Siddharatha Degree College of Arts and Science

Autonomous College

NAAC 'A' Grade College

Vuyyuru, Krishna (Dt).,Andhra Pradesh-521165

VALUE ADDED COURSE

TITLE: ***SOFT SKILLS DEVELOPMENT FOR PHYSICS STUDENTS***

VAC CODE: PHYV5C

On 5th SEP 2022 TO 6th OCT 2022

Duration of the Course: 30 Days

Organized By

Department of PHYSICS

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade

2022-2023

DEPARTMENT OF PHYSICS

Value Added Course/ Certificate Course

Title : Soft Skills Development For Physics Students

Name of the Lecturer	:	**J. Hareesh Chandra**
Class	:	III MPC
Duration of the Course	:	Thirty Days
VAC Code	:	PHYV5C

Objectives:

soft skills on emotional intelligence, anger management, human excellence, intellectual property right, science and spiritually etc.

Methodology :

Teacher - centered Method

Duration: 30 Days

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course

Title: soft skills development for physics students

Date: 5/09/2022 TO 6/10/2022

Date	Content	Module No
5/9/2022 TO 11/9/2022	**emotional intelligence, anger management**	I
12/9/2022 TO 19/9/2022	**Human excellence, intellectual property right**	II
20/9/2022 TO 28/9/2022	**science and spiritually**	III
29/9/2022 TO 6/10/2022	**All round success through a balanced life**	IV

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course 2022-23

Student Enrolment Sheet

Class: II BSC, MPC

S. No	Roll No.	Name of the Student	Signature
1	2031203	G.Sivani	G.Sivani
2	2031205	K.Sandhya	K.Sandhya
3	2031207	B.Kavitha	B.Kavitha
4	2031210	L.Hima Bindhu	L.Hima Bindhu.
5	2031212	C.Munni	C.Munni
6	2031216	C.Manoj	C.Manoj
7	2031217	P.Ganesh	P.Ganesh
8	2031220	D.V.S.Vamsi	D.V.S.Vamsi
9	2031222	A.Naga Sai	A.Naga Sai
10	2031224	T.Vinod Kumar	T.Vinod Kumar
11	2031227	P.Smily	P.Smily
12	2031228	S.Ibrahim	S.Ibrahim
13	2031229	M.Sai Teja	M.Sai Teja
14	2031215	B.Poojitha	B.Poojitha
15	2031208	P.Mounika	P.Mounika

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A. G. & S. G. S. DEGREE COLLEGE
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A. G. & S. G. S. DEGREE COLLEGE
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VUYYURU
Krishna (Dt.,)
(A. P.)

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Physics

Value Added Course / Certificate Course

Title: soft skills development for physics students

Marks List

Class: II BSC, MPC

S. No	Roll No.	Name of the Student	Marks
1	2031203	G.Sivani	09
2	2031205	K.Sandhya	09
3	2031207	B.Kavitha	09
4	2031210	L.Hima Bindhu	08
5	2031212	C.Munni	09
6	2031216	C.Manoj	09
7	2031217	P.Ganesh	10
8	2031220	D.V.S.Vamsi	09
9	2031222	A.Naga Sai	10
10	2031224	T.Vinod Kumar	09
11	2031227	P.Smily	10
12	2031228	S.Ibrahim	08
13	2031229	M.Sai Teja	09
14	2031215	B.Poojitha	09
15	2031208	P.Mounika	09

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Sl.No	Roll No	Student Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	2031203	G.Sivani	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	14
2	2031205	K.Sandhya	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	14
3	2031207	B.Kavitha	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	14
4	2031210	L.Hima Bindhu	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
5	2031212	C.Munni	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
6	2031216	C.Manoj	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
7	2031217	P.Ganesh	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
8	2031220	D.V.S.Vamsi	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
9	2031222	A.Naga Sai	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
10	2031224	T.Vinod Kumar	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
11	2031227	P.Smily	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
12	2031228	S.Ibrahim	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
13	2031229	M.Sai Teja	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	14
14	2031215	B.Poojitha	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	14
15	2031208	P.Mounika	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14

Class / Section: II B.Sc., MPC Year : 2nd Department : PHYSICS
Paper: Lecturer:

Signature of the Lecturer

Signature of the HOD

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THE DEPT. OF PHYSICS A.G.&S.G.S. VUYYURU Krishna

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Prade
Value Added Course / Certificate Course - Attendance Register

Sl.No	Roll No	Student Name	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
1	2031203	G.Sivani	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	14
2	2031205	K.Sandhya	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
3	2031207	B.Kavitha	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	14
4	2031210	L.Hima Bindhu	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
5	2031212	C.Munni	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
6	2031216	C.Manoj	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
7	2031217	P.Ganesh	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
8	2031220	D.V.S.Vamsi	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
9	2031222	A.Naga Sai	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
10	2031224	T.Vinod Kumar	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	14
11	2031227	P.Smily	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	14
12	2031228	S.Ibrahim	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
13	2031229	M.Sai Teja	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
14	2031215	B.Poojitha	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
15	2031208	P.Mounika	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	14

Class / Section: II B.Sc., MPC Year : IInd Department : physics
Paper: Lecturer:

Signature of the Lecturer

Signature of the HOD
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DEPARTMENT OF PHYSICS
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Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Physics

Value Added Course / Certificate Course

Title: soft skills development for physics students

Feed Back Form

Name of the Student: K. Sandhya

Class and Roll Number: 203205

21. Is the programme interested to you (Yes/No)

22. Have you attended all the session (Yes/No)

23. Is the content of the program is adequate (Yes/No)

24. Have the teacher covered the entire syllabus? (Yes/No)

25. Is the number of hours adequate? (Yes/No)

6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No)

11. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No)

8. Do you have any suggestions on the program? (Yes/No)

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Physics

2022-2023

Value Added Course / Certificate Course

Title: soft skills development for physics students

Feed Back Form

Name of the Student: G. Sivani

Class and Roll Number: 2031203

21. Is the programme interested to you (Yes/No) ✓

22. Have you attended all the session (Yes/No) ✓

23. Is the content of the program is adequate (Yes/No) ✓

24. Have the teacher covered the entire syllabus? (Yes/No) ✓

25. Is the number of hours adequate? ✓ (Yes/No)

6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No) ✓

11. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No) ✓

8. Do you have any suggestions on the program? (Yes/No) ✓

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course

Title: soft skills development for physics students

Test Exercise:

1. Learning is more effective if
2. Life skills are helpful in developing the _____ and ____behaviour of people
3. How many life skills are there
4. Exchange of ideas between two or more persons is
5. _____ Is the first enemy of communication
6. Communication is a part of _____ skills
7. Emotional intelligence characterised by
8. Emotional intelligence is different from other intelligences in that
9. _____ Is the best predictor of academic performance
10. Intellectual property right (IPR) protects the use of information and ideas that are of _____

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Value Added Course / Certificate Course

Title: soft skills development for physics students

Key:

1. content is related to real life experiences
2. adaptable and positive
3. 10
4. Communication
5. Noise
6. Soft
7. Better interpersonal relation ship
8. The focus is on emotional reasoning, ability and knowledge
9. IQ
10. Commercial value

5) SOFT SKILLS DEVELOPMENT FOR PHYSICS STUDENTS

Module No -1

Soft skills are personality traits and behaviours. Unlike technical or 'hard' skills, soft skills are not about the knowledge but the behaviourswhich displayed by ones in different situations. Soft skills Soft skills include any skill that can be classified as a personality trait or habit. Interpersonal skills and communication skills are more specific categories of soft skills that many employers look for in job candidates. There are many soft skills that could list on resume or cover letter.

Some of the most sought after soft skills include:

Effective communication skills

- Teamwork
- Dependability
- Adaptability
- Conflict resolution
- Flexibility
- Leadership
- Problem-solving
- Research
- Creativity
- Work ethic
- Integrity
- Broad types of soft skills,

which can read more about below, include:

Communication

- Problem-solving
- Creativity
- Adaptability

- Work ethic

- Importance of soft skills Soft skills play an important role in resume writing, interviewing and finding success in communicating with people at work and in other areas of the life.

For example, as we look for jobs, find that many employers list specific soft skills on their job posts in the ‘required’ or ‘desired’ sections. A job posting for a Human Resources associate may list ‘attention to detail’ as a desired trait, while a job for a Marketing Specialist could list ‘leadership’ and ‘great communication skills’.Soft skills are often transferable across careers and industries Soft skills list and example Soft skills are often innate personality traits, already possess several marketable soft skills that will help to get and be successful in a job.

Though many are formed with personality, soft skills can also be learned and developed with practice and experience. Here are few examples of key soft skills and how those skills can enhance ones performance during and after the job search process. Communication Effective communication skills will be helpful through the interview process and in career. The ability to communicate involves knowing how to speak with others in different situations or settings.

For example, when working with a team on a project, you may need to communicate when you believe that an idea or process is ineffective. Finding a way to tactfully and skillfully disagree with others on the job without creating conflict is an important skill that employers value.

Module No -2

Related communication skills:

Active listening

- Confidence

- Conflict resolution

- Organisation

- Problem-solving Employers highly value people who can resolve issues quickly and effectively. That may involve calling on industry knowledge to fix an issue immediately, as it occurs, or taking time to research and consult with colleagues to find a scalable, long-term solution.

Related problem-solving skills:

Creativity

- Research
- Risk management
- Teamwork
- Creativity

Creativity is a broad ability incorporating many different skill sets including other soft skills and technical skills. Employees with creativity can find new ways to perform tasks, improve processes or even develop new and exciting avenues for the business to explore. Creativity can be used in any role at any level.

Related creativity skills:

Curiosity

- Learning from others
- Open-mindedness
- Taking calculated risks

• Adaptability How easily do you adapt to changes? If you're working in a technology-driven field or start-up, adaptability is especially important. Changes in processes, tools or clients you work with can happen quickly.

Employees who are capable of adapting to new situations and ways of working are valuable in many jobs and industries.

Related adaptability skills:

Consistency

- Organisation
- Optimism
- Flexibility

• Work ethic Work ethic is the ability to follow through on tasks and duties in a timely, quality manner.

Module No -3

A strong work ethic will help to develop a positive relationship with the employer and colleagues even when developing technical skills in a new job. Many employers would rather

work with someone who has a strong work ethic and is eager to learn than a skilled worker who seems unmotivated.

Related work ethic skills:

Attention to detail

- Integrity
- Persistence
- Time management
- How to improve soft skills?

Many employers value strong soft skills over technical skills because they are often personality traits developed over a lifetime and can be difficult to teach. That being said, anyone can improve their soft skills with experience and practice. For example, anemployer is seeking someone skilled in conflict resolution. While you may be naturally skilled at effective communication, it may help to practice working through conflicts with others.

There are several ways you can help improve your soft skills.

1. Pick a soft skill you want to improve and practice it consistently. You can improve any soft skill if you make it a practice. Most soft skills are a matter of routine. For example, you can practice dependability, both on the job and at home, by improving punctuality (showing up to work or events on time or early) and starting on projects at work earlier so you can complete them ahead of schedule.

2. Observe and mimic the positive soft skills you see in others. There are likely professionals you know or work with who have strengths in various soft skills. You may be able to develop integral soft skills by observing the practices of others and incorporating them into your own daily routine. You may find, for example, that effective communicators often write down notes when others are talking during meetings. This helps them organise their thoughts so they are prepared to ask and answer important questions. This is also an active listening practice that may be good to utilise as part of your own work.

3. Set milestone goals to improve soft skills. Set specific, measurable goals by carefully reading your performance reviews at work or asking trusted friends and colleagues for constructive criticism. This can help you to identify key areas of improvement for goal setting and areas of strength to highlight on your resume and in interviews. You can prioritise which soft skills to work on based on those that you need to get a certain job or move up in a career you already have.

4. Find resources to help you learn. You can find several resources to help you learn tactics for improving the soft skills you want to focus on like books, podcasts or online classes. While some require payment, many are free of cost and can be accessed at any time. You might try out few different types of resources to see which are best for your learning style.

Module No -4

VALUES

Values are principles, standards or qualities that an individual or group of people hold in high regard. These values guide the way we live our lives and the decisions we make. A value may be defined as something that we hold dear, those things/qualities which we consider to be of worth.

A 'value' is commonly formed by a particular belief that is related to the worth of an idea or type of behaviour. Some people may see great value in saving the world's rainforests. However a person who relies on the logging of a forest for their job may not place the same value on the forest as a person who wants to save it. Values can influence many of the judgments we make as well as have an impact on the support we give clients. It is important that we do not influence client's decisions based on our values.

We should always work from the basis of supporting the client's values. Where do values come from? Our values come from a variety of sources.

Some of these include:

Family

- peers (social influences)
- the workplace (work ethics, job roles)
- educational institutions such as schools or TAFE
- significant life events (death, divorce, losing jobs, major accident and trauma, major
- health issues, significant financial losses and so on) religion
- music
- media
- technology
- culture
- major historical events (world wars, economic depressions, etc).
- Dominant values Dominant values are those that are widely shared amongst a group, community or culture.

They are passed on through sources such as the media, institutions, religious organisations or family, but remember what is considered dominant in one culture or society will vary to the next.

Using the sources listed above, some of your values could be: family—caring for each other, family comes first

- peers—importance of friendship, importance of doing things that peers approve of

- workplace—doing your job properly; approving/disapproving of 'foreign orders' (doing• home-related activities in work time or using work resources for home related activities) educational institutions—the valuing or otherwise of learning; value of self in relation to

- an ability to learn (this often depends on personal experience of schooling, whether positive or negative) significant life events—death of loved ones and the impact on what we value as being

- important; marriage and the importance and role of marriage and children; separation and divorce and the value change that may be associated with this (valuing of self or otherwise) religion—beliefs about 'right and wrong' and beliefs in gods

- media—the impact of TV, movies, radio, the Internet and advertising on what is

- important in our lives, what is valued and not valued music—music often reflects what is occurring in society, people's response to things such

- as love and relationships which may then influence the development of our values technology—the importance of technology or otherwise; the importance of computers• and developing computer skills culture—a cultural value such as the importance of individuality as opposed to

- conforming to groups major historical events—not wasting anything, saving for times of draught, valuing

- human life, patriotic values. It is important that you develop an awareness of what you value, as these values will be important in informing your relationships with clients, co–workers and employers. .

Exploring your values We are all influenced in varying degrees by the values of our family, culture, religion, education and social group. Knowing your own values can help you work effectively with clients, resolve conflicts and support the organisation's philosophy of care appropriately.

Wherever our values come from they make us the unique person we are today! Pre-existing beliefs Belief Beliefs come from real experiences but often we forget that the original experience is not the same as what is happening in life now. Our values and beliefs affect the quality of our work and all our relationships because what you believe is what you experience.

We tend to think that our beliefs are based on reality, but it is our beliefs that govern our experiences. The beliefs that we hold are an important part of our identity. They may be

religious, cultural or moral. Beliefs are precious because they reflect who we are and how we live our lives.

As a care worker in the community services industry, the pre-existing beliefs you may have could be related to stereotypes that have developed for you around issues like sexuality, alcohol and other drugs, ageing and disabilities, independence, health, the rights of people, your idea of health and what it's like to be older and/or disabled.

These stereotypes could affect the way you interact and work with clients. This is because you have assumptions about what your clients can and can't do for themselves, the way they should think about issues and what is best for them. If you make assumptions as a worker then you are denying clients their rights, respect and dignity. As a worker this would be regarded as a breach in your duty of care towards clients.

Awareness of personal attitudes It is good practice to think about your attitudes and beliefs: it helps you to understand yourself better. It is beneficial to reflect on your life, identify some of the significant events that have shaped you, consider what qualities you admire in yourself and others and be mindful of what values and are important to you. Attitude The word 'attitude' can refer to a lasting group of feelings, beliefs and behaviour tendencies directed towards specific people, groups, ideas or objects.

An attitude is a belief about something. It usually describes what we think is the 'proper' way of doing something. The attitudes that we feel very strongly about are usually called values. Other attitudes are not so important and are more like opinions.

Sometimes our own attitudes can make us blind to other people's values, opinions and needs. Attitudes will always have a positive and negative elementand when you hold an attitude you will have a tendency to behave in a certain way toward that person or object. .

What we believe are important qualities, or what qualities we admire in ourselves and others, generally reflect our life experiences and the values which we established in our early years through the influence of family, teachers, friends, religion, our culture, our education

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(Accredited at "A" level by NAAC, Bengaluru)

Department of Physics

VALUE ADDED COURSE: *SOFT SKILLS DEVELOPMENT FOR PHYSICS STUDENTS*

CERTIFICATE

This is to Certify that G.Sivani of II B.Sc MPC

has Successfully completed value added course in ***SOFT SKILLS DEVELOPMENT FOR PHYSICS STUDENTS***

Conducted by the Department of Physics from 5-09-2022 to 06-10-2022 . We wish him/her bright future

Co-ordinator

Head of Department

Principal

Principal
Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department of Physics

VALUE ADDED COURSE: ***SOFT SKILLS DEVELOPMENT FOR PHYSICS STUDENTS***

CERTIFICATE

This is to Certify that K.Sandhya of II B.Sc MPC .

has Successfully completed value added course in ***SOFT SKILLS DEVELOPMENT FOR PHYSICS STUDENTS***

Conducted by the Department of Physics from 5-09-2022 to 06-10-2022 . We wish him/her bright future

Co-ordinator

Head of Department

Principal
Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

Adusumilli Gopalakrishnaiah& Sugarcane Growers
Siddharatha Degree College of Arts and Science
Autonomous College
NAAC 'A' Grade College
Vuyyuru, Krishna (Dt).,Andhra Pradesh-521165

VALUE ADDED COURSE

TITLE: TALLY PRIME

VAC CODE: COM-TP-06

On 1th NOV,2022 TO 5th DEC 2022

2022-2023
Duration of the Course: 30Hrs

Organized By

Department of Commerce

TallyPrime

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade **ISO 9001:2015 Certified Institution**

DEPARTMENT OF COMMERCE

2022-2023

Value Added Course
Title: TALLY Prime

Name of the Lecturer	:	Y. SWARNA LATHA
Class	:	II B.COM
Duration of the Course	:	30 HOURS
VAC Code	:	COM-TP-06

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: TALLY Prime

Objectives :

Accurate financial record-keeping: Providing businesses with accurate financial record-keeping is Tally's main goal. It enables organisations to produce financial statements including balance sheets, profit and loss statements, and cash flow statements as well as keep track of financial activities.

2.Effective inventory management: Businesses may maintain inventory levels, keep an eye on stock movement, and produce inventory reports using Tally. This aids companies in effectively managing their inventories and prevents stockouts or overstocking.

3.Effective payroll management is made possible by Tally's automated employee salary, tax, and other deduction calculations. Additionally, it assists firms in managing personnel information and creating payslips

4.Simplified tax compliance: Tally's tax management tools make it simple for businesses to adhere to tax laws. It assists companies in generating tax reports like the GSTR-1 and GSTR-3B and calculating taxes like GST, VAT, and TDS.

5.Business analysis and decision-making: Tally offers organisations real-time reporting and data analysis capabilities that let them base their choices on precise financial facts. It offers a variety of features, including cash flow statements, budgeting tools, and financial ratios, to assist firms in evaluating their financial performance and making future plans.

Methodology :Teacher-Cantered method

Duration : 30 Hours

A.G. & S.G. Siddhartha Degree College of Arts & Science

. Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: TALLY Prime

Date: From 01-11-2022 to 05-12-2022

Date	Content	Module No.
01-11-2022	**Fundamentals of TALLY Prime:** Features - Start TALLY ERP-9, Create and Alter a Company - Creating Single Group/Multiple Groups, Display, Deleting Groups - Ledger: Creating Single Ledger / Multiple Ledgers.	I
15-11-2022	**Create Accounting Masters in TALLY Prime** - Chart of Accounts - Creating Single and Multiple charts, Displaying and Altering charts – Walkthrough for creating Chart of Accounts	II
25-11-2022	**Creating Inventory Master**: Creating Stock Groups, Displaying, Deleting, Altering - Displaying and Deleting Unit Measures - Creating, Altering, Displaying, Deleting Stock items - Generating Reports.	III

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: TALLY Prime

Test Exercise:

1. Ledger Creation Sums
2. Voucher Entry Sums
3. Adjustment Sums
4. Inventory Sums
5. Accounts with Inventory Sums
6. GST Sums
7. Bank Reconciliation Sums

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course
Title: TALLY Prime

Key:

- **Financial Management.**
- **Tax and Compliance.**
- **Budgeting.**
- **Inventory Management.**
- **Sales and Purchase Management.**
- **Point of Sale (POS)**
- **Payroll Management.**

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DEPARTMENT OF COMMERCE

Value Added Course
Title: TALLY Prime

Feed Back Form

Is the program me interested to you	(Yes/No)
Have you attended all the session	(Yes/No)
Is the content of the program is adequate	(Yes/No)
Have the teacher covered the entire syllabus?	(Yes/No)
Is the number of hours adequate?	(Yes/No)
Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)

Do you have any suggestions on the program? (Yes/No)

M. Vaun

Signature of Student

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

DEPARTMENT OF COMMERCE

Value Added Course
Title: TALLY Prime

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Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
Do you have any suggestions on the program?	(Yes/No)

M. Aarun Kumari

Signature of Student

VUYYURU - 521

22-23

Class : B.Com(E-Com) Course Code : COMTP 06

Title of the Paper : Tally prime

Roll No	Name of the Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
	Date	7/11	2	3	4	5	7	8	9	10	11	12	14	15	16	17	18	19	21	22	23	24	25	26	28	29	30/11	1/12	2/12	3/12	5/12									Days		Per			Marks	
22-201	K. Balaji	P	A	A	P	P	P	A	P	P	P	P	A	A	P	A	P	P	P	A	P	P	P	P	P	A	P	P	A	P	P									21/30		75%			36	
202	P. Bharath kumar	P	P	P	P	A	P	P	P	A	A	P	P	P	P	A	A	P	P	P	P	A	P	P	P	P	A	A	P	P	P									23/30		78%			39	
03	T. Pallavi	A	P	P	P	P	A	P	P	P	P	A	P	A	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P									24/30		80%			40	
04	N. Tripura	P	A	P	P	A	P	P	P	P	P	P	P	A	P	A	P	A	P	P	P	A	P	P	P	P	A	P	P	P	P									23/30		78%			37	
05	Y. Tanuja	A	P	P	P	P	P	P	A	A	P	P	P	P	A	A	P	P	P	A	P	P	P	A	P	P	P	P	A	P	P									22/30		79%			37	
06	G. Harish	A	A	P	P	P	A	P	P	P	P	P	P	A	P	P	A	P	P	P	P	A	P	P	P	A	P	P	A	A	A									20/30		75%			36	
07	N. Akhil Babu	P	P	P	A	P	P	P	A	P	P	P	A	P	P	A	P	A	P	P	P	A	P	P	P	P	A	A	A	A	A									19/30		75%			36	
08	S. Anil Babu	P	A	P	P	P	A	P	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P	P	P	A	P	A	P	P									24/30		80%			40	
09	A. Dhana Lakshmi	P	P	A	P	P	P	A	P	P	P	A	P	A	P	P	P	P	A	P	P	P	A	P	P	P	A	P	A	P	P									23/30		78%			39	
10	B. Bhuvanesh	A	A	P	A	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P	A	P	P	P	P	A	A	P	P	P									23/30		80%			40	
12	K. Divya Sree	P	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P	P									23/30		80%			40	
13	S. Venkata Sri lekha	P	A	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P	P	P	P	P									23/30		80%			40	
14	D. Sherly	A	A	P	P	P	P	A	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	A	P	A	P	P	P	P	P									21/30		80%			40	
15	Ab. Amanulla	P	P	P	A	P	P	A	P	P	P	A	P	P	P	A	A	A	P	P	A	P	P	P	P	P	A	A	A	P	P									23/30		80%			40	
16	K. Shankar Raman	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P	A	P	P	P	A	P	P	A	P	P	A	P	A	P									24/30		80%			40	
17	D. Sindhu	P	A	P	P	A	P	P	P	A	P	P	P	P	A	A	P	P	P	A	P	P	P	P	P	A	P	P	P	A	A									23/30		80%			40	
18	T. poojitha	A	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	P									21/30		80%			40	
19	Ch. Bhavya Lakshmi Tirupatamma	A	P	A	P	P	P	P	P	A	P	P	P	P	A	P	A	A	A	P	P	P	P	P	P	A	A	P	P	P	P									21/30		80%			40	
20	D. Jaswanth Kumar	P	P	P	P	A	P	P	P	P	P	P	A	P	P	A	A	P	P	A	P	P	P	A	P	P	A	A	A	A	A									20/30		80%			40	
21	T. Bharath Kumar	A	P	P	P	A	P	P	A	P	P	P	P	A	A	P	P	P	P	P	A	P	P	P	A	P	A	A	A	A	A									23/30		80%			40	
22	T. Smily	A	A	P	P	P	A	P	P	P	A	P	P	P	P	A	A	P	P	A	P	P	P	A	P	P	P	A	A	A	A									24/30		80%			40	
23	V. Divya	P	P	P	P	A	P	P	P	P	P	A	P	P	A	P	A	P	A	P	P	P	P	P	A	P	P	P	P	P	P									21/30		80%			40	
24	K. Madhu Latha	P	P	A	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P	A	P	P	A	A									21/30		80%			40	
25	V. Tejaswi	P	P	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P	P	P	A	A	A	A									23/30		80%			40	
26	K. Kusuma jyothi	A	P	A	P	P	A	P	P	P	P	A	P	P	A	P	A	P	P	P	P	P	P	P	A	P	A	P	P	P	P									25/30		83%			42	
27	Md. Khimudhun	P	A	A	P	P	P	A	P	P	A	A	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P									25/30		85%			42	
28	Md. Ameena bee	P	P	P	P	P	P	P	P	A	P	P	P	P	P	A	P	A	A	P	P	A	P	P	P	A	P	P	P	P	P									25/30		85%			42	
29	M. Kumar Babu	A	P	P	A	P	P	P	P	P	P	A	P	A	P	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P									25/30		85%			42	
																	X			K. suma Latha																										

N. [signature]
Head of the Department
Department of Commerce
A.G & S.G.S. Degree College
VUYYURU - 521 165

[signature]
PRINCIPAL
AG & SG Siddhartha Degree College of Arts & Science (Autonomous), Vuyyuru

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department Commerce

VALUE ADDED COURSE: TALLY PRIME

CERTIFICATE

This is to Certify that ....N. Tripura.....**of** ...B.Com.(E-commerce)..... **has successfully completed Value Added Course in TALLY PRIME organised by the Department of Commerce during the Year 2022-2023 and passed the Examination in grade**...'A'.....

K. Sudha Satha
Co-ordinator

Head of Department

Principal
Principal
Adusumilli Gopalakrishnaiah & Sugarcane Gr
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department Commerce

VALUE ADDED COURSE: TALLY PRIME

CERTIFICATE

This is to Certify that ...M..Kumar...Babu.....of ...I..B.com.(E-commerce) has successfully completed Value Added Course in TALLY PRIME organised by the Department of Commerce during the Year 2022-2023 and passed the Examination in grade....B.....

K. Swaharatha
Co-ordinator

Head of Department

Principal
Principal
Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science
Vuyyuru – 521165, Krishna District, Andhra Pradesh
(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)
Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution
Phone No: 08676-233267 Email ID: agsgsiddhartha@gmail.com website: http://agsgsc.edu.in

DEPARTMENT OF ZOOLOGY

VALUE ADDED COURSE

2022-2023


Striped barbs


Rosy barb


Redline Torpedo barb


Rasboras


Danios


Lionhead goldfish

DURATION:-30 DAYS

1-11-22 to 5-12-22

COURSE CODE:-VACZOO-06

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)

An Autonomous College in the Jurisdiction of Krishna University

Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution

2022-2023

DEPARTMENT OF ZOOLOGY

Value Added Course

Title: ORNAMENTAL FISH BREEDING

Name of the Lecturer	:	D.A.Kiranmayee
Class	:	I.B.Sc Aquaculture
Duration of the Course	:	30 Days (**01.11.2022 to 05.12.2022)**
VAC Code	:	VACZOO-06

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh (Autonomous)

Value Added Course

Title: ORNAMENTAL FISH BREEDING

Objectives :

1. To impart hands on training on breeding technology
2. To impart hands on training on setting up of aquaria and maintenance
3. To generate expert-oriented employment in rural and urban households through ornamental fish production.
4. To impart hands on training on culture, feeding and breeding of commercially important ornamental fishes
5. To mass-produce a large number of varieties of ornamental fish species to create a large supply of ornamental fish and increase the overall exports.
6. To promote employment and entrepreneurship in the ornamental fish sector by graduates in fisheries, aquaculture and biological sciences.

Methodology : Teacher Centered Method

Duration : **01.11.2022 to 05.12.2022**

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Student Enrolment Sheet

Class : I SEM- I B.Sc Aquaculture

S. No	Roll No.	Name of the Student	Signature
1	22-901	J.CHANDANA SEERSHIKA	J.chandana.
2	22-902	B.BHANU PRAKASH	B.Bhanu Prakash
3	22-903	B.VAMSI	B.vamsi
4	22-904	SHAIK FARZANA	Sk.Farzana.
5	22-905	MD.SHARMILA BEGUM	MD.Sharmila
6	22-906	SHAIK SADIYA SULTANA	Sk.Sadiya Sultana
7	22-907	KODALI SWETHA	k. Swetha
8	22-908	ABDUL.SABEERUNNISA	Ab.Sabeerunnisa
9	22-909	S.VUHA	S. Vuha.
10	22-910	CH.LAKSHMI PRIYANKA	Ch.Lakshmipriya
11	22-911	SHAIK SHAKEERUNNISA	Sk.Shakeerunnisa
12	22-912	A.SAWGANDHIKA	A.Sowgandhika
13	22-913	S.VASAVI SATYA SRI	S.Vasavisatyasri
14	22-915	B.VIVEKANANDA	B.Vivekananda
15	22-916	PEDAPUDI SRUTHI	P. Sruthi
16	22-918	Y.DIVYA JYOTHI	Y.Divya Jyothi
17	22-919	G.SUSHMA	G. Sushma
18	22-921	S.DIVYA SAI	S.Divyasai
19	22-922	P.SRUTHI	P. Sruthi.
20	22-923	M.LAKSHMI NAVEENA	M.Lakshmi naveena

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: ORNAMENTAL FISH BREEDING

Date :- 01.11.2022 to 05.12.2022

Date	Content	Module No.
01.11.22 to 07.11.22	**Introduction to Aquaculture and Ornamental Fishes Trading** Basics of aquaculture definition and scope. History of aquaculture: Present global and national scenario. World trade of ornamental fish and export potential. Different varieties of exotic and indigenous fishes. Ornamental fisheries- new dimensions in aquaculture entrepreneurship	I
08.11.22 to 14.11.22	**Introduction to Ornamental fishes** Introduction to aquarium and aquarium accessories. Basic knowledge on profile of ornamental fishes in world **Fish Breeding and rearing in Live Bearers** Breeding of ornamental fish with reference to live bearer species. Breeding of Guppies, Mollies, Sword tail fish and Platy fish Introduction hatchery management system for live bearers Nursery management of live bearers • Rearing of live bearers	II
15.11.22 to 22.11.22	**Fish Breeding and rearing in Egg layers** Ornamental fish farming-Management Aspects Ornamental Fish-diseases and their management Live Food culture for tropical ornamental fish Feeding for breeding and maintenance of ornamental fish	III
23.11.22 to 05.12.22	**Engineering Aspect and construction of aquarium** Design and construction of public fresh Construction, settings and maintenance of aquarium Construction of ornamental fish unit Engineering aspect in Ornamental Fish Farming	IV

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: ORNAMENTAL FISH BREEDING

Test Exercise: **5x10=50**

1. Explain about World trade of ornamental fish
2. Different varieties of exotic and indigenous fishes
3. Breeding of ornamental fish with reference to live bearer species.
4. Live Food culture for tropical ornamental fish
5. Construction, settings and maintenance of aquarium

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: ORNAMENTAL FISH BREEDING

Key:

1. Ornamental fish culture also known as aquariculture, is the culture of attractive, colorful fishes of peaceful nature in confined aquatic systems. Ornamental fishes are also called as "living jewels".

The international market for ornamental fishes is valued at about US $ 5.9 billion. The world export of ornamental fish in 2006 was 282.6 million US $ and imports valued at 308.9 million US $. Around 200 million ornamental fishes are sold every year of which 80% are freshwater and 20% are marine. In freshwater 90% are captive bred and in marine 99% are wild caught. More than 120 countries are involved in ornamental fish trade and there are about 1800 species of ornamental fishes available in the market of which 1000 are fresh water. Guppy is the dominating species followed by Neon tetra. India is still in a marginal position just contributing 1% of total ornamental fish trade. An estimate carried out by Marine Products Exports Development Authority of India shows that there are one million ornamental fish hobbyists in India. The internal trade is estimated to be about 3.26 million US $ and the export trade is about 0.38 million US $ in India. The annual growth rate of ornamental fish trade is 14%. A rich diversity of species and favourable climate, cheap labour make India suitable for ornamental fish culture. Tamilnadu, Kerala and West Bengal are the major states involved in ornamental fish farming. Two categories of ornamental fishes are being marketed from India - exotic and native. The exotic varieties have been marketed domestically and dominating with 99%. Already 288 exotic varieties have been recorded in Indian market. More than 200 species of these freshwater fish are bred in different part of India. Mostly native ornamental fishes are exported. North eastern states, West Bengal, Kerala and Tamilnadu are blessed with highly potential indigenous ornamental fishes. Around 85% of native fishes are from North eastern states. 90% of native ornamental species are collected and reared to meet export demand. Presently about 100 native fish species have been earmarked as aquarium fish. Kolkata, Mumbai and Chennai are major exporting centres. About 90% of India exports go from Kolkata followed by 8% from Mumbai and 2% from Chennai. Around 4000 peoples involved in this trade including breeding, live food collection, trading and exporting. There are 20 registered exporters.

2. The terms "exotic" and "indigenous" are used to describe fish species in relation to a particular geographical area. Here's the difference between exotic and indigenous fish:

Exotic Fish:Exotic fish are species that are not native to a specific geographic region but have been introduced to that area by human activity.They are typically introduced intentionally or accidentally, often for purposes such as aquaculture, sport fishing, or ornamental purposes.Exotic fish may come from different parts of the world and may have different ecological requirements than the native species in the area.Depending on their interactions with the local ecosystem, exotic fish can sometimes have significant impacts on the environment, including competition with native species, predation, habitat alteration, and introduction of diseases.

Indigenous Fish:Indigenous fish, also known as native or endemic fish, are species that naturally occur and are native to a specific geographic region.These fish have evolved and adapted to the local ecosystem over time and are an integral part of the natural biodiversity in that area.Indigenous fish species have established

ecological relationships with other native species, depend on local habitats, and play important roles in the functioning of the ecosystem.They are often well-adapted to the local environmental conditions, such as water temperature, pH levels, and food availability.

It's important to note that the distinction between exotic and indigenous fish can vary depending on the specific geographic region in question. A fish species that is considered exotic in one area may be native in another. Therefore, it's crucial to consider the specific context and geographical reference when using these terms.

3. In live bearing fish, the eggs are situated in the egg duct where they are fertilized. Upon hatching, the fry are not immediately delivered, but they remain in the safety of the mother's body until they reach a stage of development equivalent to the young of egg layers that have absorbed the yolk sac and become free swimming. The ideal temperature must be 27^{o}C.

As the male matures, the anal fin becomes more pointed and straightened into a rigid tube like projection, which is called gonopodium. The gonopodium is carried normally close to the body and pointing rearwards. However, it is a mobile organ and can be angled in almost any direction. The males court the females with their fins erect and they chase the female untill the opportunity presents itself for a lightening thrust of the gonopodium. The female is fertilized by the nearest touch of the gonopodium on her vent, and one fertilization will last for several broods. Unlike the male, the female has normal analfin. Females can have upto eight broods from one fertilization therefore it is unnecessary to remate after the first brood. The period of gestation is being constant for every species.

Females about to give birth are said to be ripe. This condition can be determined by the appearance of the dark, crescent shaped area in the female body close to the vent known as the gravid spot, which is accompanied by a general fattening of the belly when viewed from above. The eggs develop and actually hatch out inside the mother and leave her body as fully developed fish. The number of young in a brood is largely dependent upon the size of the female. Irrespective of the number in the brood the fry are approximately all the same size at birth. Livebearers are notorious cannibals; they will devour their youngones as soon as they are born. This can be prevented by having an abundance of cover for the youngones in the form of bunched fine leaved plants, or to use a breeding trap, which restricts the female to a small part of the aquarium, but allows the fry to escape into the wider reacher of the breeding tank.

The preparation for the breeding tank is simple. It need not be too large for most species, and should be filled to a depth of about 8" (20cm) with matured water and the temperature is raised to about 25^{o}C. The tank should be well stocked with fine leaved plants. Once the female has given birth to the full brood she can be removed. Instead of plants, nylon knitting wools can also be used. Handling livebearers when they are near the time to delivery can cause premature birth. Premature babies have not completely absorbed their yolk sac, which can be seen attached to their bellies. Livebearers normally kept in a community aquarium tank will breed indiscriminately, and will often crossbreed between similar species. If the aquarist is interested in obtaining a particular colour strain or any other feature for that matter it is imperative that the sexes are housed separately.

4. A number of live foods can be used to add colour and to condition the fish for breeding. Feeding a restricted range of live foods, and exclusion of all other kinds of foods, is unlikely to provide a balanced diet, and may even lead to nutritional or other internal disorders for the fish. As many live foods originate from ponds, streams or rivers, they may bring with them aquarium pests, such as hydra, snails, or disease causing organisms. The risk of introducing disease organisms can be reduced by collecting live foods from fish free water, but the

possibility of introducing aquarium pests still remains. It may be safer to use live foods disinfected before use.

Earthworms are an excellent, live food for all kinds of fish, including goldfish. Anyone, who has access to a garden or patch of waste ground should be able to collect enough for their fish. After collection, the earthworms must be kept for a few days in a sealed container. This should have small air holes. During this time the worms will clean themselves of solid and wastes and will then be more palatable for the fish. The worms can be given as whole or chopped, depending on their size and the size of the fish.

Sludge worms, such as *Tubifex* and other tubificid worms, are a live food familiar to most tropical fish *hobbyists*. These slim, centimeter-long, maroon worms are often used to tempt fish such as Discus to feed, and are given as a live food to adult breeding fish. Tubifex worms are not easy to culture successfully and so are most often obtained from an aquatic shop. Unfortunately, in nature these worms live in polluted stretches of rivers and streams, and it is from these unsavoury sources that most Tubifex are collected for aquarium use. Therefore, tubifex should be used sparingly in the aquarium only as an occasional food rather than as a staple diet. Before use, the worms should be rinsed gently in cold running tap water for several hours. Once cleaned, *Tubifex* worms live for some time in a shallow dish of cold water.

Water fleas are tiny planktonic crustaceans, such as Daphnia and Cyclops. Like tubifex, they are a popular live food among tropical aquarists. This is suitable for larger fish fry or to condition adult fish for spawning. However, like *Tubifex*, using water fleas as a live food may result in the introduction of unwanted pests or disease causing organisms. Unfortunately, *Daphnia* and related forms are less easily disinfected than Tubifex, ideally therefore they should be obtained from a safe fish-free pond.

Bloodworms are the aquatic larval stage of a two-winged fly. Difficult to culture, they are best obtained from aquatic shops and are particularly useful in the winter months, when other live foods may be scarce.

In egg laying fish species, nutrients trapped in the egg sac would be normally sufficient to the hatchlings. Afterwards, the tender hatchlings are fed with green water consisting of microscopicalgal species of *Protococcus*, *Tetrosphaerium*, *Chalmydomonas*, *Chlorella*, *Volvox, Eudorina, Pandorina,* etc. Certain filamentous algal species of *Spirogyra* are known to serve as an ideal food source for the fry and juvenile fishes. The above green water is a viable food source especially during the first two weeks of growth.

Aquarium fish, depending on their feeding habits and preference may be fed with live foods. Such as mosquito larvae, fruit flies, bloodworms, tubifecids, *Cyclops*, daphnids, rotifers, brine shrimps earthworms white worm and microworm or with moist pellets, dry pellets, flakes and chopped bits of fish, shrimp, beef, oyster, crab and liver, spleen, lung, heart and brain of cattle.

5. Following a maintenance schedule will prevent your aquarium from becoming overly dirty or hazardous to your fish's health. This schedule should consist of daily, weekly, and monthly tasks.

Daily aquarium maintenance

You can keep your tank's water clean by performing these simple tasks every day:

Ensure all pumps, filters, and lights are working properly.

Observe fish for negative side effects. If any side effects are evident, test the water immediately. If the water is fine but the fish remain ill, check the filters and pumps for any malfunctions.
Remove excess food from the tank
Top off the tank with treated water
Check the water's temperature. Most freshwater tanks should remain between 75° and 80° Fahrenheit. However, some fish require different temperature ranges. Ensure that the temperature of your tank is suitable for all of your marine life.

Weekly/semi-weekly aquarium maintenance

Every one or two weeks, you should clean your fish tank and replace no more than 25% of your tank's water.

How to clean a fish tank

Cleaning your tank every one to two weeks will prevent any buildup of hazardous chemicals, grime, or other contaminants. While cleaning, you can keep the fish in the tank if you cautiously work around them.

What equipment do I need to clean a fish tank?

While you do not need an abundance of specialized equipment for a simple home aquarium, these tools will make maintenance simpler, quicker, and more effective:
Gravel vacuum
Algae scrubber
Filter brush
Acrylic-safe cleaner
Scissors (if your tank contains plant life)
Aquarium fertilizer (if your tank contains plant life)

Steps to deep cleaning a fish tank

Wash your hands and entire forearm.
Unplug all filters and lights. Close any open valves if you have a sump pump.
Remove 15 to 25% of your tank's water. Do not remove more than this amount of water, as it will interrupt the biological filtration inside your tank.
Remove non-living decor and gently rinse and scrub with hot water.
Monthly aquarium maintenance
Each month, you need to test the quality of water in your aquarium. This task ensures that the pH, ammonia, nitrite, nitrate, and phosphate levels in your tank are appropriate for your fish and plants.
How to test aquarium water
Aquarium water can be tested using an aquarium water test kit. For most freshwater aquariums, the most important contaminants to test for are ammonia, nitrite, nitrate, phosphate, and water hardness. The pH level of your water will also need to be checked. Some kits, such as this 6-in-1 test kit, can test all of these elements with a single strip. Other kits specialize in testing one contaminant and provide more accurate readings than testing strips. If you choose testing strips, ensure that they are submerged in water for the correct length of time, and allow them to sit for a short while after submersion for accurate results. If your aquarium water test shows concerning pH levels or high levels of a contaminant, you will need to perform some corrective maintenance.

Value Added Course
Student List.

18

S.No	Rege. No	Category	Name of the Student	Marks 50	certificate issued & signature
1) 21-901	21-901	BC-D	V. BHANU PRAKASH	45	V. Bhanu Prakash
2	902	BC-D	A VIJAYALAKSHMI	48	A. Vijayalakshmi
3	905	BC-D	K. HEMANTH	47	K. Hemanth
4	908	BC-E	M. SUFIYA	48	Md. Sufiya.
5	910	SC	CH. PUSHPARAJU	46	Ch. Pushpa Raju
6	911	OC	V.J.S. VARDHAN	46	VJ.C.S. Vardhan
7	912		A. NAGESWARI	40	
8	913	OC	N. GREESHMITHA	46	N. Greeshmitha.
9	914	OC	P. ANJALI	45	P. Anjali
10	915	SC	K. MOUNIKA	47	K. Mounika
11	917	SC	K. AKHILA	48	K. Akhila
12	919	BC-E	S. SAMEENA THASILEEM	48	Sk sameena Tasleem.
13	920	SC	M. DURGA RANI	47	M. Durga Rani
14	924	BC-D	K. VENKATA GOPI	45	K. V. Gopi
15	925	SC	K. SWAPNA	48	K. Swapna
16	926	SC	K. VARUN	46	K. Varun.
17	927	SC	K. BHARGAVI	47	K. Bhargavi
18	928	SC	N. SAI TEJA	48	N. Saiteja
19	929	SC	S. NANDINI	49	S. Nandini
20	930	BC-C	Y. ABHIGAILU	49	Y. Abhigailu
21	917	SC	K.		

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INTERNAL AUDIT
IQAC
AG & SGS Degree College
VUYYURU - 521 165

Department of Zoology - 2022-2023

Value Added Course

Student List

S.No	Rege. No	Category	Name of the Student	Marks	Certificate issued & Signature
1	22-901		J. Chandana Seershika	48	J. Chandana Seershika
2	22-902	SC	B. Bhanu Prakash	45	B. Bhanu Prakash
3	22-903		B. Vamsi	47	B. Vamsi
4	22-904		Shaik Farzana	49	Shaik Farzana
5	22-905		Md. Sharmila Begum	49	Md. Sharmila Begum
6	22-906		Sk. Sadiya Sultana	49	Sk. Sadiya Sultana
7	22-907		K. Swetha	46	K. Swetha
8	22-908		Ab. Sabeerunnisa	49	Ab. Sabeerunnisa
9	22-909		S. Vuha	47	S. Vuha
10	22-910	SC	Ch. Lakshmipriyanka	45	Ch. Lakshmipriyanka
11	22-911		Sk. Shakeerunnisa	49	Sk. Shakeerunnisa
12	22-912		A. Sowgandhika	42	A. Sowgandhika
13	22-913		S. Vasavi Satya Sri	48	S. V. S. Sri
14	22-915		B. Vivekananda	41	B. Vivekananda
15	22-916		P. Sruthi	48	P. Sruthi
16	22-918		Y. Divya Jyothi	47	Y. Divya Jyothi
17	22-919		G. Sushma	40	G. Sushma
18	22-921		S. Divya Sai	44	S. Divya Sai
19	22-922		P. Sruthi	49	P. Sruthi
20	22-923		M. Lakshmi Naveena	42	M. Lakshmi Naveena

Head, Department of Zoology
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VUYYURU - 521 165

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of ZOOLOGY

Value Added Course

Title: ORNAMENTAL FISH BREEDING

Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

I^st BSc Aqua

22A2907 (22-907)

K. Swetha

PRINCIPAL
AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of ZOOLOGY
Value Added Course

Title: ORNAMENTAL FISH BREEDING

Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

I st BSc Aqua

a2242901 (22-901)

J. chandana Seershika.

Head, Department of Zoology
A.G. & S.G. Siddhartha Degree College
(Autonomous)
VUYYURU - 521 165

PRINCIPAL
AG & SG Siddhartha Degree College of
Arts&Science (Autonomous).Vuyyuru

Name Of The Office: A.G.&S.G.S. Degree College

Department of Zoology

Attendance

S. No.	NAME	Designation	1	2	3	4	5	6	7	8	9	10
1.	J. Chandana Seershika	22-901	P	P	P	P	P	P	P	P	P	P
2.	B. Bhanu Prakash	22-902	P	P	P	P	P	A	P	P	P	P
3.	B. Vamsi	22-903	P	P	A	P	P	P	P	P	P	P
4.	Sk. Farzana	22-904	P	P	P	P	P	P	P	A	P	P
5.	MD. Sharmila Begum	22-905	P	P	P	P	P	A	P	P	P	P
6.	Sk. Sadiya Sultana	22-906	P	P	P	P	P	P	P	A	P	P
7.	K. Swetha	22-907	P	P	P	P	P	P	A	P	P	P
8.	AB. Sabeerunnisa	22-908	P	P	P	A	P	P	P	P	P	P
9.	S. Uuha	22-909	P	P	P	P	P	P	P	P	P	A
10.	Ch. Lakshmi Priyanka	22-910	P	P	P	P	P	P	A	P	P	P
11.	Sk. Shakeerunnisa	22-911	P	P	P	P	P	P	P	A	P	P
12.	A. Sowgandhika	22-912	P	P	A	P	P	P	P	P	P	P
13.	S. Vasavi Satya Sri	22-913	P	P	P	P	P	P	A	P	P	P
14.	B. Vivekananda	22-915	P	P	A	P	P	P	P	P	P	P
15.	P. Sruthi	22-916	P	P	P	P	P	P	P	A	P	P
16.	Y. Divya Jyothi	22-918	P	P	P	P	P	P	A	P	P	P
17.	G. Sushma	22-919	P	P	P	A	P	P	P	P	P	P
18.	S. Divya Sai	22-921	P	P	P	P	P	P	P	A	P	P
19.	P. Sruthi	22-922	P	P	P	P	P	A	P	P	P	P
20.	M. Lakshmi Naveena	22-923	P	P	P	A	P	P	P	P	P	P

Register Ornamental fish Breeding

Month November to December

Year 2022-23.

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Remarks
P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P		
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P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	
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P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P		
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P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
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a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a		

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department of Zoology

VALUE ADDED COURSE: **Ornamental Fish Breeding**

CERTIFICATE

This is to Certify that . B. Bhanu Prakash. Of I. B.Sc Aqua has Successfully completed value added course in Ornamental fish Breeding Conducted by the Department of Zoology from 01-11-2022 to 05-12-2022 We wish him her bright future

Co-ordinator

Head of Department

Principal
PRINCIPAL
AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

ADUSUMILLI GOPALAKRISHNAIAH & SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
Vuyyuru-521 165, Krishna District, Andhra Pradesh
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade

VAD COURSE :: CLOUD COMPUTING

VAC CODE:CCVAC13
CLASS:III B.SC(MCCS)
DURATION :30 DAYS

DEPARTEMENT OF COMPUTER SCIENCE

Contact

www.agsgsc.edu.in
agsgsiddhartha@gmail.com
08676-233267

Address:

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Vuyyuru-521165

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE

Value Added Course
Title: CLOUD COMPUTING

Name of the Lecturer	:	A. NAGA SRINIVASA RAO
Class	:	III B.SC (MCCS)
Duration of the Course	:	30 HOURS
VAC Code	:	CCVAC13

Title: CLOUD COMPUTING

Objectives :

1. Data Recovery: Cloud computing enables easy and reliable backup and restoration of data stored in the cloud.
2. Low-Cost Services: Cloud computing reduces the need for investing in expensive hardware and software, and offers pay-as-you-go pricing models.
3. Security: Cloud computing provides encryption, authentication, and access control mechanisms to protect data and applications from unauthorized access or cyberattacks.
4. Mobility: Cloud computing allows users to access data and applications from anywhere and any device, enhancing productivity and collaboration.

Methodology : Teacher - Centered method

Duration : 30 Hours

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Student Enrolment Sheet

Class : III B.SC (MCCS)

S. No	Roll No.	Name of the Student	Signature
1	20.701	Vemula Kavya Naga Sri	V. kavya naga sri
2	20.702	Dronadula Hemanjali	D. Hemanjali
3	20.703	Dekka Kavitha	D. Kavitha
4	20.704	Jujjuvarapu Venkateswara Rao	J. Venkateswara Rao
5	20.705	Mirza Hasan Abbas	M. Hasan Abbas.
6	20.706	Marepalli Venkata Naga Sai Pavan Kumar	M. V. N. Sai pavan kumar
7	20.707	Aluri Bhavya Sri	A. Bhavya Sri
8	20.708	Samayamanthula Sandeep	S. Sandeep
9	20.709	Kalapala Dinesh	K. Dinesh
10	20.710	Jogi Gowthami	J. Gowthami
11	20.711	Jonnalagadda Kusuma	J. Kusuma
12	20.712	Perlapudi Pranadeep	P. Pranadeep
13	20.713	Devabathina Satyadev	D. satyadev
14	20.714	Somayajula S.M.K.Chaitanya	S. M. K. Chaitanya
15	20.715	Vukoti Naga Veera Sai	V. Naga Veera Sai
16	20.716	Surisetti Navya	S. Navya
17	20.717	Todeti Ajay Babu	T. Ajay Babu.
18	20.718	Yelivelu Venkata Jaya Ram	y. venkata jaya ram.

19	20.719	Pagolu Sri Lekha	P. Srilekha.
20	20.720	Darapu Vanitha	D. Vanitha
21	20.721	Kaitepalli Teja Sri	K. Teja Sri
22	20.722	Potluri Sravan Kumar	P. Sravan kumar
23	20.723	Tummala Akanksha	T. Akanksha
24	20.724	Tadepalli Anusha	T. Anusha
25	20.725	Chalapati Venkata Naga Lakshmi	Ch. Venkata Naga Lakshmi
26	20.726	Potturi Krishna Bhuvaneswari	P. Krishna Bhuvaneswari
27	20.727	Nunna Pedda Bala Siva Nagamani	N.P.B.S. Nagamani
28	20.728	Kagithala Durga Prasad	K. Durga Prasad.
29	20.729	Sangala Bhavana	S. Bhavana
30	20.730	Thota Lavanya	T. Lavanya
31	20.731	Gurrala Naga Sirisha	G. Naga Sirisha
32	20.732	Kunchala Bhargavi	K. Bhargavi
33	20.734	Nagarakanti Vujwala	N. Vujwala.
34	20.735	Rajulapati Bhavana	R. Bhavana
35	20.736	Derangula Durga Anjaneyulu	D. Durga Anjaneyulu
36	20.737	Kamodula Tulasi Ram	K. Tulasi Ram
37	20.738	Runku Sateesh	R. Sateesh
38	20.739	Konatham Siva Naga Pavani	K. Siva Naga Pavani
39	20.740	Peram Jyothiramai	P. Jyothiramai
40	20.741	Gopalajoshula Prasanna Sai	G. Prasanna sai
41	20.742	Ande Madhu Babu	A. Madhu Babu

42	20.743	Sheik Ayesha	Sk. Ayesha
43	20.744	Mohammad Shaida Mansuri	M.d Shaida Mansuri
44	20.746	Mareedu Tejaswi	M. Tejaswi
45	20.747	Nalukurti Vinodh Babu	N. Vinodh Babu
46	20.748	Bandaru Abhilash	B. Abhilash
47	20.749	Ede Pavan Kumar	E. pavan kumar
48	20.750	Kolluri Manoj Kumar	K. Manoj Kumar

A. Naga Srinivasa Rao.

Signature of Lecturer

Signature of HOD

Head of the Department of Computers
AG & SG Siddhartha Degree Coll.
VUYYURU - 521 165

Signature of Principal

PRINCIPAL
AG & SG Siddhartha Degree College of
Arts & Science (Autonomous), Vuyyuru

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: CLOUD COMPUTING

Date From 01/11/2022 to 09/02/2023

Content
Module I: INTRODUCTION TO VIRTUALIZATION Virtual Machines and Virtualization Middleware – Data Center Virtualization for Cloud Computing
Module II: Implementation Levels of Virtualization – Virtualization Structures/Tools and Mechanisms – Virtualization of CPU – Memory – I/O Devices
Module III: INTRODUCTION TO CLOUD COMPUTING System Models for Distributed and Cloud Computing – Software
Module IV: Clouds – Cloud Computing and Service Models – Public – Private – Hybrid Clouds

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course
Title: cloud computing
Module I:

Virtualization is a technique to divide the computer resources logically. It's achieved by abstracting away the underlying complexity of resource segregation. Although an old technology, it's still a popular technique and highly relevant in this era of cloud computing.

In this tutorial, we'll discuss various aspects of virtualization such as the concept, its types, and its workings.

What Is Virtualization?

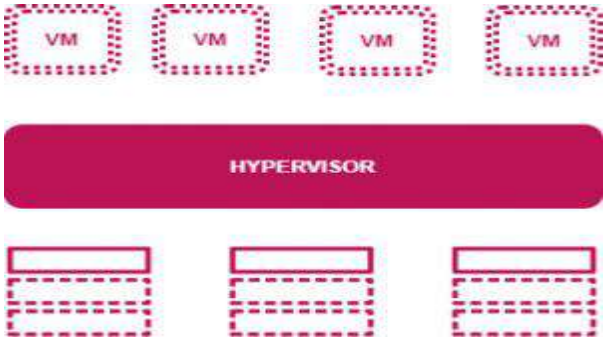
Virtualization helps us to create software-based or virtual versions of a computer resource. These computer resources can include computing devices, storage, networks, servers, or even applications.

It allows organizations to **partition a single physical computer or server into several virtual machines (VM)**. Each VM can then interact independently and run different operating systems or applications while sharing the resources of a single computer.

How Does Virtualization Work?

Hypervisor software facilitates virtualization. A hypervisor sits on top of an operating system but we can also have hypervisors that are installed directly onto the hardware. **Hypervisors take physical resources and divide them up so that virtual environments can use them**.

When a user or program issues an instruction to the VM that requires additional resources from the physical environment, the hypervisor relays the request to the physical system and caches the changes.



A virtual machine created by a hypervisor functions as a single data file, and we can move it from one computer to another, open it there, and it works the same as on any other machine. Thus, **it provides a lot of flexibility and portability**.

Types of Hypervisors

Hypervisors are available in two categories: Type 1 and Type 2.

4.1. Type 1 Hypervisors (Bare Metal)

A Type 1 hypervisor is installed directly on top of the physical machine. Type 1 hypervisors are also known as bare-metal hypervisors due to the nature of their installation type.

These categories of hypervisors are more popular and secure than the Type 2 hypervisors.

Type 1 hypervisors have a lower amount of latency and are the most used in the market. Some examples of these hypervisors are VMware ESXi, Microsoft Hyper-V, or open-source Kernel-based VMs (KVMs**).**

4.2. Type 2 Hypervisors (Hosted)

On the other hand, **for Type 2 hypervisors, there is a layer of host OS that sits between the physical server and the hypervisor**. For this reason, we call these hypervisors "hosted hypervisors".

They are less common and mostly used for end-user virtualization.

They are known to have more latency compared to Type 1 due to their hosted nature. **Type 2 hypervisors include Oracle VirtualBox or VMware Workstation**.

5. Types of Virtualization

Virtualization is classified into several categories based on the resource we virtualize.

5.1. Data Virtualization

With data virtualization, the virtualization software **sits in front of multiple data sources and allows them to be treated as a single data source**. This facilitates delivering the required data in a specific format.

5.2. Desktop Virtualization

Desktop virtualization lets us deploy simulated desktop environments to many physical machines at once. Unlike traditional desktop environments that are physically installed, configured, and updated on each machine, desktop virtualization allows admins to perform mass configurations, updates, and security checks on all virtual desktops.

5.3. Server Virtualization

Servers are computers designed to process a high volume of specific tasks so that other computers such as laptops and desktops can do a variety of different jobs. Virtualizing a server lets it do more of those particular functions and involves partitioning it so that the components can serve multiple purposes.

5.4. OS Virtualization

Operating system virtualization happens at the OS kernel, and it's a useful way to run multiple operating systems side-by-side. It reduces hardware costs, increases security, and limits software maintenance (update/patching) costs.

5.5. Network Functions Virtualization

Network functions virtualization separates the network functions such as IP configuration, file sharing, and directory services. Virtualizing networks helps to reduce the number of physical components such as switches, routers, servers, cables, and hubs.

6. Benefits of Virtualization

6.1. Cost Savings

The ability to run multiple virtual machines in one piece of physical infrastructure drastically reduces the footprint and the associated cost. Moreover, as this consolidation is done at the core, we don't need to maintain as many servers. We also have a reduction in electricity consumption and the overall maintenance cost.

6.2. Agility and Speed

Spinning up a virtual machine is a straightforward and quick approach. It's a lot simpler than provisioning entirely new infrastructure.

For instance, if we need a development/test region for a team, it's much faster to provision a new VM for the system administrators. Besides, with an automated process in place, this task is swift and similar to other routine tasks.

Definition of Data Center Virtualization

Data center virtualization is a strategy wherein you transform your data center into a highly nimble, available, scalable, secure, and efficient IT infrastructure by applying virtualization heavily to all key resource components of the data center, i.e., compute, storage, and networking.

You can think of it as an extension of the more familiar concept of server virtualization. In server virtualization, a hypervisor abstracts and pools the underlying physical resources, i.e., CPU, memory, storage device(s), and network, from the software running on top of it. In data center virtualization, not only are servers virtualized, so are storage and network infrastructures.

Then what you get are vast resource pools of compute, storage, and network, which you can reallocate dynamically and automatically for your virtual machines, virtual networks, and virtual datastores.

Another key aspect of data center virtualization is the presence of a unified management framework for administering the components of the virtualized data center, regardless of whether they are located on-premises or in a public cloud. So, essentially, data center virtualization brings about a hybrid cloud.

The end result is a data center where administrators can quickly reconfigure and provision IT resources on demand. A lot of this reconfiguring and provisioning can be done programmatically and in a fully automated way, something that couldn't be accomplished easily (if ever) with a traditional, rigid data center.

Benefits of Virtualization

Virtualization has many benefits, including the ability to increase speed and flexibility; reduce costs, infrastructure, and real estate requirements; increase hosting bandwidth; and minimize downtime.

Increase Speed and Flexibility

One of the biggest benefits of data center virtualization is the amount of free time it unlocks for IT staff. In a highly virtualized data center, it's much easier for IT administrators to reallocate resources to applications that need them the most at any given time.

So, for example, if you're an IT administrator, and a department manager comes to you and says they need to test a newly acquired application that requires much higher CPU, memory, storage, or network bandwidth, you can simply reallocate whatever resources you have available—even resources used by a currently idle application. You couldn't do that as quickly in a non-virtualized environment.

Reduce Capital Costs

Because virtualization enables you to pool resources and share them among applications/users, you can maximize whatever resources you have fully and avoid unutilized capacity. Server consolidation, for example, allows you to run multiple virtual servers on one physical server and have those virtual servers share the same underlying resources on that physical server. With this capability, you no longer have to purchase as many physical servers, storage devices, and network components as you would with a traditional data center.

Reduce Infrastructure and Real Estate Requirements

As you reduce your overall physical infrastructure, you also reduce your physical space requirements. You can reduce these even more if your virtual data center makes heavy use of public cloud resources. Another offshoot of this benefit is the reduction of power consumption and carbon footprint, which is critical for organizations that favor environmentally friendly strategies.

Increase Hosting Bandwidth

When you virtualize servers and consolidate them into fewer physical servers, you also eliminate the amount of network traffic that would have gone to and from those discarded physical servers. This frees up your hosting bandwidth and improves your overall network performance.

Reduce or Eliminate Downtime

Virtual machines are much easier to duplicate and clone than physical servers. They're also easier to migrate. You can even transfer them over the network. Hence, it's much easier to create high availability clusters as well as offsite business continuity or disaster recovery environments. It's also faster to spin up a VM to replace one that has just failed.

Challenges of Virtualization

While virtualization has a lot of benefits, it's not devoid of issues. Some of the challenges experienced by organizations that adopt virtualization, especially at the start of their virtualization adoption journey, include excessive diversity, lack of proper resource distribution, and VM sprawl.

Too Much Diversity

Because they eliminate a lot of time-consuming tasks (e.g., server provisioning and deployment), highly virtualized environments breed innovation. While that's certainly a good thing, it can also encourage IT staff to try new software. That, too, is a good thing. But when

you have a data center dotted with an assortment of operating systems (e.g., Windows and Linux), hypervisors (e.g., Hyper-V, ESXi, and KVM), network equipment, and so on, it could lead to inefficiencies and additional overhead costs.

Improper Resource Distribution

The ease of reallocating resources is susceptible to improper resource distribution that favors business units that consume resources more aggressively than others. For example, if left unchecked, business units that embark on big data projects or develop and test their own software could end up consuming more CPU and storage resources than those that just go about regular business operations.

VM Sprawl

Unlike physical servers that, depending on the number, may take days or weeks to provision and deploy, virtual machines require only minutes or hours for the same tasks. In fact, you could provision and deploy hundreds or thousands of VMs automatically in minutes or a few hours.

If IT administrators are nonchalant in spinning up VMs, they could cause what is known as VM sprawl. The consequence of VM sprawl is that you end up with too many virtual machines that consume resources much faster than you should, which holds them up even if you no longer need them. It also results in degraded performance, additional costs, and more attack surfaces to defend.

Data Center Virtualization Management

There are ways to avoid the pitfalls mentioned above. Some of the ways that you can better manage your virtual data center include adopting standardization, addressing sprawl, implementing proper administration tools, and verifying sufficient network storage.

Adopt Standardization

Diversity can be good for your organization, but not when applied to the components of your data center. Too much diversity can only make things unnecessarily complicated when you troubleshoot issues, track licenses, integrate systems, and so on. Standardize your IT infrastructure by dealing with as few vendors as possible.

Address Sprawl

VM sprawl can be minimized by establishing policies for VM creation, monitoring and auditing VMs, identifying idle as well as over- and under-allocated VMs, deleting unused VMs, and reconfiguring VMs so that they consume only resources that they need.

Implement Proper Administration and Management Tools

While major virtualization vendors such as Microsoft and VMware already have administrative tools that come with their products out of the box, there are smaller vendors that enable you to further enhance the capabilities of the products these major vendors provide. They also add a bunch of other features that take those products to the next level.

One example is Parallels® Remote Application Server (RAS), which builds on the Remote Desktop Services (RDS) capabilities of Windows Server to provide a more powerful, flexible way of delivering virtual desktops and applications. More about Parallels RAS below.

Module II:

What are the three ways that virtualization is implemented?

There are three ways to build virtual servers: full virtualization, para-virtualization, and OS-level virtualization.
They all experience a few common traits. The physical server is named the host, and the virtual servers are called guests.
Therefore, virtual servers act like physical machines. The specific system uses a distinctive approach to allocate physical server resources to virtual server requirements.

Full virtualization

- Full virtualization uses a specific software called a hypervisor. The hypervisor interacts straight with the physical server's CPU and disk space and serves as a virtual server's operating systems program.
- Hence, the hypervisor keeps each virtual server wholly independent and unaware of the separate virtual servers working on the physical machine.
- The hypervisor observes the physical server's resources. As virtual servers run applications, the hypervisor sends resources from the physical machine to the relevant virtual server.

Para-virtualization

- The para-virtualization program is a little different. Unlike the full virtualization technique, the guest servers in a para-virtualization system are aware of one another.
- Therefore, a para-virtualization hypervisor doesn't require as much processing power to control the guest operating systems.
- Each OS is already conscious of the demands the other operating systems are setting on the physical server. The entire system works collectively as a cohesive unit.

OS-level virtualization

- An OS-level virtualization program doesn't use a hypervisor at all. Instead, the virtualization ability is part of the host OS, which fulfills all the functions of a fully virtualized hypervisor.
- The most unusual limitation of this approach is that all the guest servers must work on the same OS. Hence, each virtual server remains free from all the others, but you can't mix-match operating systems between them.
- As all the guest operating systems must be the same, this is called a homogeneous environment.

Let us now explain different levels of virtualization in cloud computing.

Different Levels of Virtualization Implementation

It is not easy to set up virtualization. Your computer works on an operating system that gets

configured on some specific hardware.

Thus, it is not feasible or straightforward to run a different operating system using the

corresponding hardware.

To do this, one will need a hypervisor. Hence, the role of the hypervisor is to bridge between the hardware and the virtual operating system, which enables smooth functioning.

Meanwhile, talking of the Implementation levels of virtualization in cloud computing, five levels are commonly used. Let us now look firmly at each of these levels of virtualization implementation in cloud computing.

Instruction Set Architecture Level (ISA)

At the ISA level, virtualization can work via emulating a given ISA by the ISA of the host machine. For instance, MIPS binary code can operate on an x86-based host machine with the help of ISA emulation.

Thus, this strategy makes it possible to run a large volume of legacy binary code written for several processors on any provided different hardware host machine.

The first emulation method is through code interpretation. Therefore, an interpreter program defines the source instructions to target instructions one by one.

Activity happenings within the Instruction Set Architecture Level (ISA):

Instruction set

- The hardware on the physical server in cloud computing has its own instruction set that it will process.
- Hence, these instructions act as an interface between hardware and software. Therefore, by the instruction set, hardware immediately assigns its services to its upper layers.

VIRTUALIZATION STRUCTURES/TOOLS AND MECHANISMS

In general, there are three typical classes of VM architecture. Figure 3.1 showed the architectures of a machine before and after virtualization. Before virtualization, the operating system manages the hardware. After virtualization, a virtualization layer is inserted between the hardware and the operating system. In such a case, the virtualization layer is responsible for converting portions of the real hardware into virtual hardware. Therefore, different operating systems such as Linux and Windows can run on the same physical machine, simultaneously. Depending on the position of the virtualization layer, there are several classes of VM architectures, namely the hypervisor architecture, para-virtualization, and host-based virtualization. The hypervisor is also known as the VMM (Virtual Machine Monitor). They both perform the same virtualization operations.

1. Hypervisor and Xen Architecture

The hypervisor supports hardware-level virtualization (see Figure 3.1(b)) on bare metal devices like CPU, memory, disk and network interfaces. The hypervisor software sits directly between the physi-cal hardware and its OS. This virtualization layer is referred to as either the VMM or the hypervisor. The hypervisor provides hypercalls for the guest OSes and applications. Depending on the functional-ity, a hypervisor can assume a micro-kernel architecture like the Microsoft Hyper-V. Or it can assume a monolithic hypervisor architecture like the VMware ESX for server virtualization.

A micro-kernel hypervisor includes only the basic and unchanging functions (such as physical memory management and processor scheduling). The device drivers and other changeable components are outside the hypervisor. A monolithic hypervisor implements all the aforementioned functions, including those of the device drivers. Therefore, the size of the hypervisor code of a micro-kernel

hyper-visor is smaller than that of a monolithic hypervisor. Essentially, a hypervisor must be able to convert physical devices into virtual resources dedicated for the deployed VM to use.

1.1 The Xen Architecture

Xen is an open source hypervisor program developed by Cambridge University. Xen is a micro-kernel hypervisor, which separates the policy from the mechanism. The Xen hypervisor implements all the mechanisms, leaving the policy to be handled by Domain 0, as shown in Figure 3.5. Xen does not include any device drivers natively [7]. It just provides a mechanism by which a guest OS can have direct access to the physical devices. As a result, the size of the Xen hypervisor is kept rather small. Xen provides a virtual environment located between the hardware and the OS. A number of vendors are in the process of developing commercial Xen hypervisors, among them are Citrix XenServer [62] and Oracle VM [42].

The core components of a Xen system are the hypervisor, kernel, and applications. The organi-zation of the three components is important. Like other virtualization systems, many guest OSes can run on top of the hypervisor. However, not all guest OSes are created equal, and one in

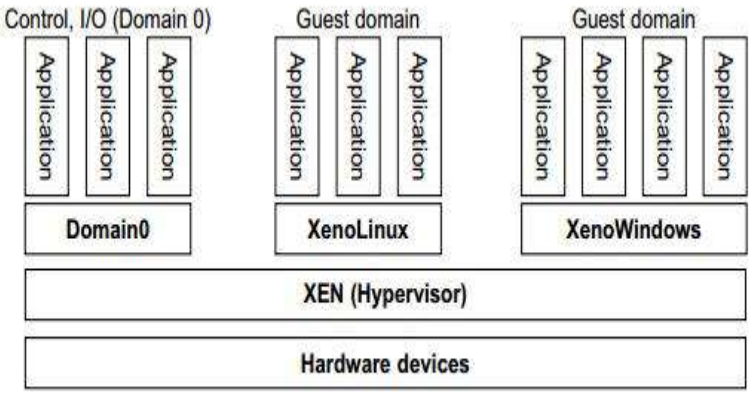


FIGURE 3.5

The Xen architecture's special domain 0 for control and I/O, and several guest domains for user applications.

particular controls the others. The guest OS, which has control ability, is called Domain 0, and the others are called Domain U. Domain 0 is a privileged guest OS of Xen. It is first loaded when Xen boots without any file system drivers being available. Domain 0 is designed to access hardware directly and manage devices. Therefore, one of the responsibilities of Domain 0 is to allocate and map hardware resources for the guest domains (the Domain U domains).

For example, Xen is based on Linux and its security level is C2. Its management VM is named Domain 0, which has the privilege to manage other VMs implemented on the same host. If Domain 0 is compromised, the hacker can control the entire system. So, in the VM system, security policies are needed to improve the security of Domain 0. Domain 0, behaving as a VMM, allows users to create, copy, save, read, modify, share, migrate, and roll back VMs as easily as manipulating a file, which flexibly provides tremendous benefits for users. Unfortunately, it also brings a series of security problems during the software life cycle and data lifetime.

Traditionally, a machine's lifetime can be envisioned as a straight line where the current state of the machine is a point that progresses monotonically as the software executes. During this time, con-figuration changes are made, software is installed, and patches are applied. In such an environment, the VM state is akin to a tree: At any point, execution can go into N different branches where multiple instances of a VM can exist at any point in this tree at any given time. VMs are allowed to roll back to previous states in their execution (e.g., to fix configuration errors) or rerun from the same point many times (e.g., as a means of distributing dynamic content or circulating a "live" system image).

2. Binary Translation with Full Virtualization

Depending on implementation technologies, hardware virtualization can be classified into two cate-gories: full virtualization and host-based virtualization. Full virtualization does not need to modify the host OS. It relies on binary translation to trap and to virtualize the execution of certain sensitive, nonvirtualizable instructions. The guest OSes and their applications consist of noncritical and critical instructions. In a host-based system, both a host OS and a guest OS are used. A virtuali-zation software

layer is built between the host OS and guest OS. These two classes of VM architec-ture are introduced next.

2.1 Full Virtualization

With full virtualization, noncritical instructions run on the hardware directly while critical instructions are discovered and replaced with traps into the VMM to be emulated by software. Both the hypervisor and VMM approaches are considered full virtualization. Why are only critical instructions trapped into the VMM? This is because binary translation can incur a large performance overhead. Noncritical instructions do not control hardware or threaten the security of the system, but critical instructions do. Therefore, running noncritical instructions on hardware not only can promote efficiency, but also can ensure system security.

2.2 Binary Translation of Guest OS Requests Using a VMM

This approach was implemented by VMware and many other software companies. As shown in Figure 3.6, VMware puts the VMM at Ring 0 and the guest OS at Ring 1. The VMM scans the instruction stream and identifies the privileged, control- and behavior-sensitive instructions. When these instructions are identified, they are trapped into the VMM, which emulates the behavior of these instructions. The method used in this emulation is called binary translation. Therefore, full vir-tualization combines binary translation and direct execution. The guest OS is completely decoupled from the underlying hardware. Consequently, the guest OS is unaware that it is being virtualized.

The performance of full virtualization may not be ideal, because it involves binary translation which is rather time-consuming. In particular, the full virtualization of I/O-intensive applications is a really a big challenge. Binary translation employs a code cache to store translated hot instructions to improve performance, but it increases the cost of memory usage. At the time of this writing, the performance of full virtualization on the x86 architecture is typically 80 percent to 97 percent that of the host machine.

2.3 Host-Based Virtualization

An alternative VM architecture is to install a virtualization layer on top of the host OS. This host OS is still responsible for managing the hardware. The guest OSes are installed and run on top of the virtualization layer. Dedicated applications may run on the VMs. Certainly, some other applications

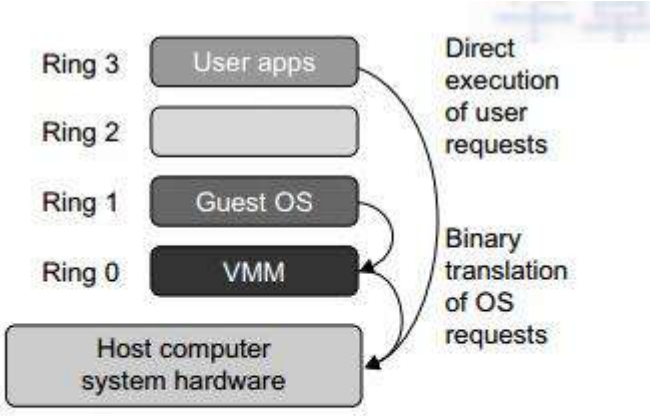


FIGURE 3.6

Indirect execution of complex instructions via binary translation of guest OS requests using the VMM plus direct execution of simple instructions on the same host.

can also run with the host OS directly. This host-based architecture has some distinct advantages, as enumerated next. First, the user can install this VM architecture without modifying the host OS. The virtualizing software can rely on the host OS to provide device drivers and other low-level services. This will simplify the VM design and ease its deployment.

Second, the host-based approach appeals to many host machine configurations. Compared to the hypervisor/VMM architecture, the performance of the host-based architecture may also be low. When an application requests hardware access, it involves four layers of mapping which downgrades performance significantly. When the ISA of a guest OS is different from the ISA of the underlying

hardware, binary translation must be adopted. Although the host-based architecture has flexibility, the performance is too low to be useful in practice.

3. Para-Virtualization with Compiler Support

Para-virtualization needs to modify the guest operating systems. A para-virtualized VM provides special APIs requiring substantial OS modifications in user applications. Performance degradation is a critical issue of a virtualized system. No one wants to use a VM if it is much slower than using a physical machine. The virtualization layer can be inserted at different positions in a machine soft-ware stack. However, para-virtualization attempts to reduce the virtualization overhead, and thus improve performance by modifying only the guest OS kernel.

Figure 3.7 illustrates the concept of a paravirtualized VM architecture. The guest operating systems are para-virtualized. They are assisted by an intelligent compiler to replace the nonvirtualizable OS instructions by hypercalls as illustrated in Figure 3.8. The traditional x86 processor offers four instruction execution rings: Rings 0, 1, 2, and 3. The lower the ring number, the higher the privilege of instruction being executed. The OS is responsible for managing the hardware and the privileged instructions to execute at Ring 0, while user-level applications run at Ring 3. The best example of para-virtualization is the KVM to be described below.

3.1 Para-Virtualization Architecture

When the x86 processor is virtualized, a virtualization layer is inserted between the hardware and the OS. According to the x86 ring definition, the virtualization layer should also be installed at Ring 0. Different instructions at Ring 0 may cause some problems. In Figure 3.8, we show that para-virtualization replaces nonvirtualizable instructions with hypercalls that communicate directly with the hypervisor or VMM. However, when the guest OS kernel is modified for virtualization, it can no longer run on the hardware directly.

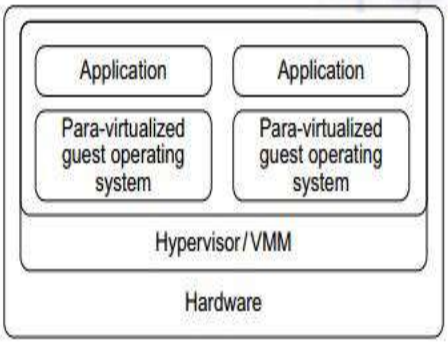


FIGURE 3.7

Para-virtualized VM architecture, which involves modifying the guest OS kernel to replace nonvirtualizable instructions with hypercalls for the hypervisor or the VMM to carry out the virtualization process (See Figure 3.8 for more details.)

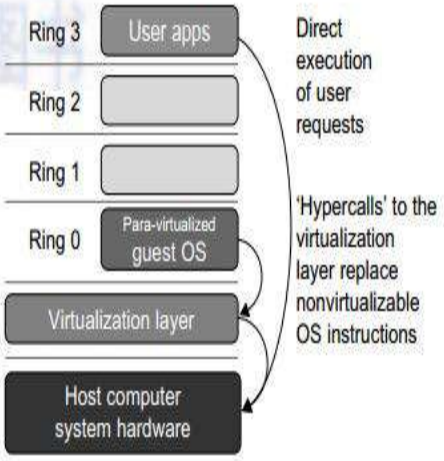


FIGURE 3.8

The use of a para-virtualized guest OS assisted by an intelligent compiler to replace nonvirtualizable OS instructions by hypercalls.

(*Courtesy of VMWare [71]*)

Although para-virtualization reduces the overhead, it has incurred other problems. First, its compatibility and portability may be in doubt, because it must support the unmodified OS as well. Second, the cost of maintaining para-virtualized OSes is high, because they may require deep OS kernel modifications. Finally, the performance advantage of para-virtualization varies greatly due to workload variations. Compared with full virtualization, para-virtualization is relatively easy and more practical. The main problem in full virtualization is its low performance in binary translation. To speed up binary translation is difficult. Therefore, many virtualization products employ the para-virtualization architecture. The popular Xen, KVM, and VMware ESX are good examples.

3.2 KVM (Kernel-Based VM)

This is a Linux para-virtualization system—a part of the Linux version 2.6.20 kernel. Memory management and scheduling activities are carried out by the existing Linux kernel. The KVM does the rest, which makes it simpler than the hypervisor that controls the entire machine. KVM is a hardware-assisted para-virtualization tool, which improves performance and supports unmodified guest OSes such as Windows, Linux, Solaris, and other UNIX variants.

3.3 Para-Virtualization with Compiler Suppor

Unlike the full virtualization architecture which intercepts and emulates privileged and sensitive instructions at runtime, para-virtualization handles these instructions at compile time. The guest OS kernel is modified to replace the privileged and sensitive instructions with hypercalls to the hypervi-sor or VMM. Xen assumes such a para-virtualization architecture.

The guest OS running in a guest domain may run at Ring 1 instead of at Ring 0. This implies that the guest OS may not be able to execute some privileged and sensitive instructions. The privileged instructions are implemented by hypercalls to the hypervisor. After replacing the instructions with hypercalls, the modified guest OS emulates the behavior of the original guest OS. On an UNIX system, a system call involves an interrupt or service routine. The hypercalls apply a dedicated service routine in Xen.

*****VIRTUALIZATION OF CPU, MEMORY, AND I/O DEVICES

To support virtualization, processors such as the x86 employ a special running mode and instructions, known as hardware-assisted virtualization. In this way, the VMM and guest OS run in different modes and all sensitive instructions of the guest OS and its applications are trapped in the VMM. To save processor states, mode switching is completed by hardware. For the x86 architecture, Intel and AMD have proprietary technologies for hardware-assisted virtualization.

1. Hardware Support for Virtualization

Modern operating systems and processors permit multiple processes to run simultaneously. If there is no protection mechanism in a processor, all instructions from different processes will access the hardware directly and cause a system crash. Therefore, all processors have at least two modes, user mode and supervisor mode, to ensure controlled access of critical hardware. Instructions running in supervisor mode are called privileged instructions. Other instructions are unprivileged instructions. In a virtualized environment, it is more difficult to make OSes and applications run correctly because there are more layers in the machine stack. Example 3.4 discusses Intel's hardware support approach.

At the time of this writing, many hardware virtualization products were available. The VMware Workstation is a VM software suite for x86 and x86-64 computers. This software suite allows users to set up multiple x86 and x86-64 virtual computers and to use one or more of these VMs simultaneously with the host operating system. The VMware Workstation assumes the host-based virtualization. Xen is a hypervisor for use in IA-32, x86-64, Itanium, and PowerPC 970 hosts. Actually, Xen modifies Linux as the lowest and most privileged layer, or a hypervisor.

One or more guest OS can run on top of the hypervisor. KVM (Kernel-based Virtual Machine) is a Linux kernel virtualization infrastructure. KVM can support hardware-assisted virtualization and paravirtualization by using the Intel VT-x or AMD-v and VirtIO framework, respectively. The VirtIO framework includes a paravirtual Ethernet card, a disk I/O controller, a balloon device for adjusting guest memory usage, and a VGA graphics interface using VMware drivers.

Example 3.4 Hardware Support for Virtualization in the Intel x86 Processor

Since software-based virtualization techniques are complicated and incur performance overhead, Intel provides a hardware-assist technique to make virtualization easy and improve performance. Figure 3.10 provides an overview of Intel's full virtualization techniques. For processor virtualization, Intel offers the VT-x or VT-i technique. VT-x adds a privileged mode (VMX Root Mode) and some instructions to processors. This

enhancement traps all sensitive instructions in the VMM automatically. For memory virtualization, Intel offers the EPT, which translates the virtual address to the machine's physical addresses to improve performance. For I/O virtualization, Intel implements VT-d and VT-c to support this.

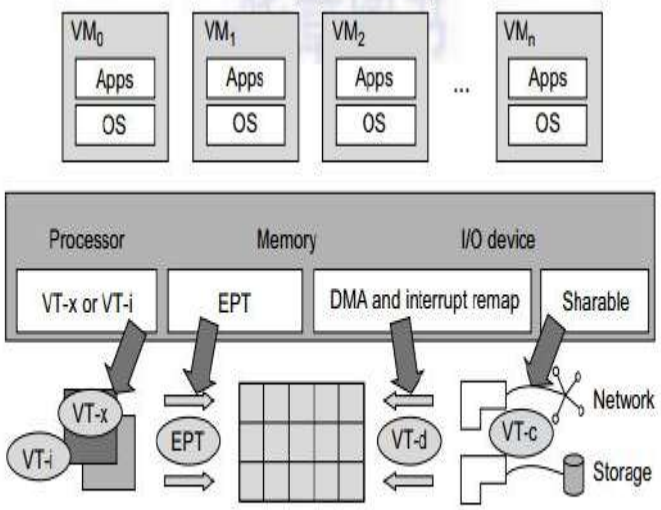


FIGURE 3.10

Intel hardware support for virtualization of processor, memory, and I/O devices.

2. CPU Virtualization

A VM is a duplicate of an existing computer system in which a majority of the VM instructions are executed on the host processor in native mode. Thus, unprivileged instructions of VMs run directly on the host machine for higher efficiency. Other critical instructions should be handled carefully for correctness and stability. The critical instructions are divided into three categories: privileged instructions, control-sensitive instructions, and behavior-sensitive instructions. Privileged instructions execute in a privileged mode and will be trapped if executed outside this mode. Control-sensitive instructions attempt to change the configuration of resources used. Behavior-sensitive instructions have different behaviors depending on the configuration of resources, including the load and store operations over the virtual memory.

A CPU architecture is virtualizable if it supports the ability to run the VM's privileged and unprivileged instructions in the CPU's user mode while the VMM runs in supervisor mode. When the privileged instructions including control- and behavior-sensitive instructions of a VM are exe-cuted, they are trapped in the VMM. In this case, the VMM acts as a unified mediator for hardware access from different VMs to guarantee the correctness and stability of the whole system. However, not all CPU architectures are virtualizable. RISC CPU architectures can be naturally virtualized because all control- and behavior-sensitive instructions are privileged instructions. On the contrary, x86 CPU architectures are not primarily designed to support virtualization. This is because about 10 sensitive instructions, such as SGDT and SMSW, are not privileged instructions. When these instruc-tions execute in virtualization, they cannot be trapped in the VMM.

On a native UNIX-like system, a system call triggers the 80h interrupt and passes control to the OS kernel. The interrupt handler in the kernel is then invoked to process the system call. On a para-virtualization system such as Xen, a system call in the guest OS first triggers the 80h interrupt nor-mally. Almost at the same time, the 82h interrupt in the hypervisor is triggered. Incidentally, control is passed on to the hypervisor as well. When the hypervisor completes its task for the guest OS system call, it passes control back to the guest OS kernel. Certainly, the guest OS kernel may also invoke the hypercall while it's running. Although paravirtualization of a CPU lets unmodified applications run in the VM, it causes a small performance penalty.

2.1 Hardware-Assisted CPU Virtualization

This technique attempts to simplify virtualization because full or paravirtualization is complicated. Intel and AMD add an additional mode called privilege mode level (some people call it Ring-1) to x86 processors. Therefore, operating systems can still run at Ring 0 and the hypervisor can run at Ring -1. All the privileged and sensitive instructions are trapped in the hypervisor automatically. This technique removes the difficulty of implementing binary translation of full virtualization. It also lets the operating system run in VMs without modification.

Example 3.5 Intel Hardware-Assisted CPU Virtualization

Although x86 processors are not virtualizable primarily, great effort is taken to virtualize themThey are used widely in comparing RISC processors that the bulk of x86-based legacy systems cannot discard easily. Virtuali-zation of x86 processors is detailed in the following sections. Intel's VT-x technology is an example of hardware-assisted virtualization, as shown in Figure

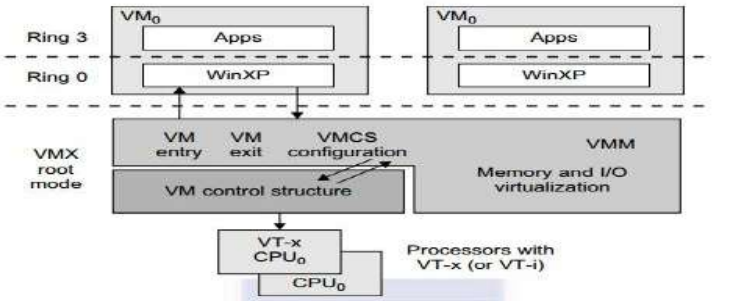


FIGURE 3.11
Intel hardware-assisted CPU virtualization.

CPU state for VMs, a set of additional instructions is added. At the time of this writing, Xen, VMware, and the Microsoft Virtual PC all implement their hypervisors by using the VT-x technology.

Generally, hardware-assisted virtualization should have high efficiency. However, since the transition from the hypervisor to the guest OS incurs high overhead switches between processor modes, it sometimes cannot outperform binary translation. Hence, virtualization systems such as VMware now use a hybrid approach, in which a few tasks are offloaded to the hardware but the rest is still done in software. In addition, para-virtualization and hardware-assisted virtualization can be combined to improve the performance further.

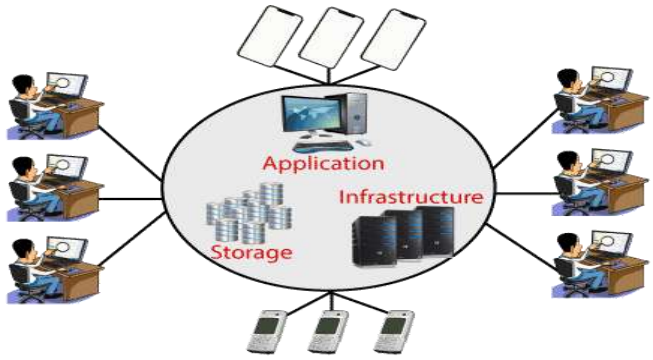
Memory Virtualization

Virtual memory virtualization is similar to the virtual memory support provided by modern operat-ing systems. In a traditional execution environment, the operating system maintains mappings of virtual memory to machine memory using page tables, which is a one-stage mapping from virtual memory to machine memory. All modern x86 CPUs include a memory management unit (MMU) and a translation lookaside buffer (TLB)

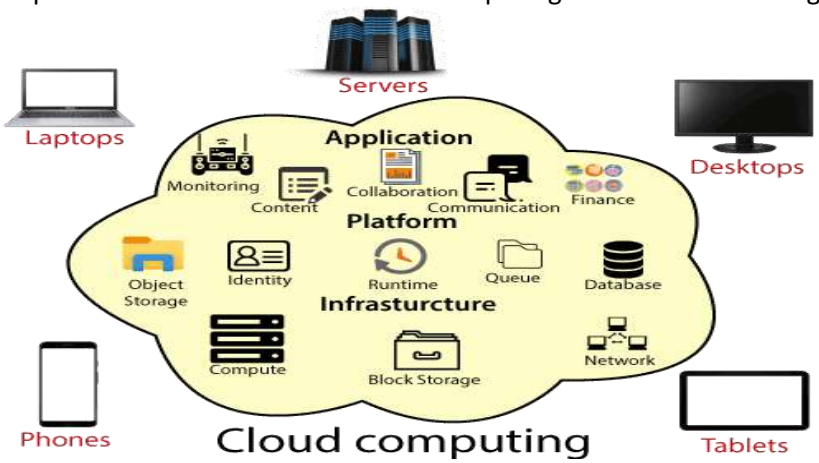
Module III

Introduction to Cloud Computing

Cloud Computing is the delivery of computing services such as servers, storage, databases, networking, software, analytics, intelligence, and more, over the Cloud (Internet).



Cloud Computing provides an alternative to the on-premises datacentre. With an on-premises datacentre, we have to manage everything, such as purchasing and installing hardware, virtualization, installing the operating system, and any other required applications, setting up the network, configuring the firewall, and setting up storage for data. After doing all the set-up, we become responsible for maintaining it through its entire lifecycle.
But if we choose Cloud Computing, a cloud vendor is responsible for the hardware purchase and maintenance. They also provide a wide variety of software and platform as a service. We can take any required services on rent. The cloud computing services will be charged based on usage.

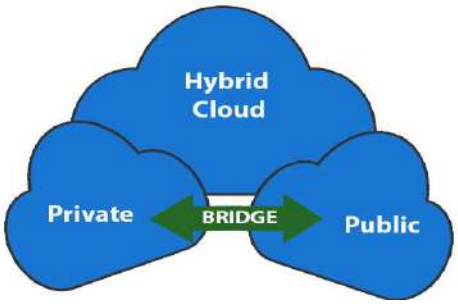


The cloud environment provides an easily accessible online portal that makes handy for the user to manage the compute, storage, network, and application resources. Some cloud service providers are in the following figure

Advantages of cloud computing

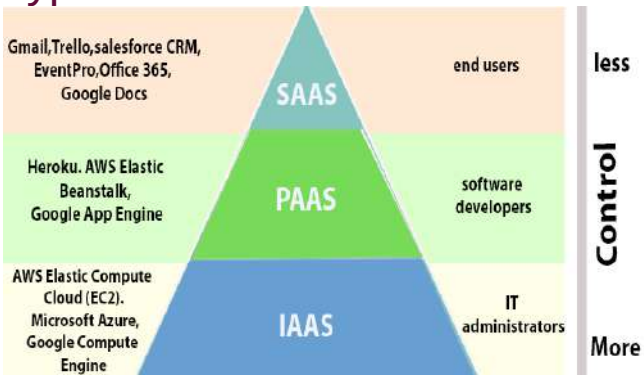
- **Cost:** It reduces the huge capital costs of buying hardware and software.
- **Speed:** Resources can be accessed in minutes, typically within a few clicks.
- **Scalability:** We can increase or decrease the requirement of resources according to the business requirements.
- **Productivity:** While using cloud computing, we put less operational effort. We do not need to apply patching, as well as no need to maintain hardware and software. So, in this way, the IT team can be more productive and focus on achieving business goals.
- **Reliability:** Backup and recovery of data are less expensive and very fast for business continuity.
- **Security:** Many cloud vendors offer a broad set of policies, technologies, and controls that strengthen our data security.

Types of Cloud Computing

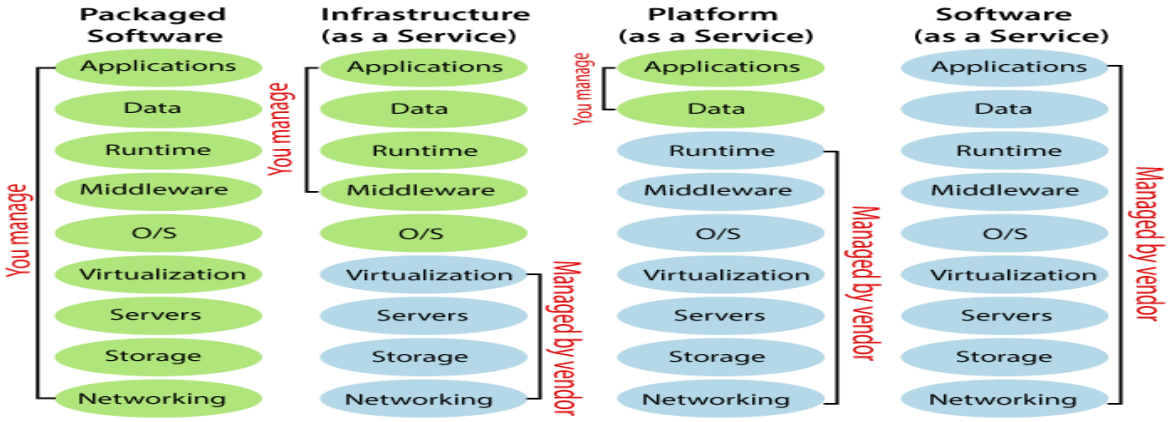


- **Public Cloud:** The cloud resources that are owned and operated by a third-party cloud service provider are termed as public clouds. It delivers computing resources such as servers, software, and storage over the internet
- **Private Cloud:** The cloud computing resources that are exclusively used inside a single business or organization are termed as a private cloud. A private cloud may physically be located on the company's on-site datacentre or hosted by a third-party service provider.
- **Hybrid Cloud:** It is the combination of public and private clouds, which is bounded together by technology that allows data applications to be shared between them. Hybrid cloud provides flexibility and more deployment options to the business.

Types of Cloud Services



1. **Infrastructure as a Service (IaaS):** In IaaS, we can rent IT infrastructures like servers and virtual machines (VMs), storage, networks, operating systems from a cloud service vendor. We can create VM running Windows or Linux and install anything we want on it. Using IaaS, we don't need to care about the hardware or virtualization software, but other than that, we do have to manage everything else. Using IaaS, we get maximum flexibility, but still, we need to put more effort into maintenance.
2. **Platform as a Service (PaaS):** This service provides an on-demand environment for developing, testing, delivering, and managing software applications. The developer is responsible for the application, and the PaaS vendor provides the ability to deploy and run it. Using PaaS, the flexibility gets reduce, but the management of the environment is taken care of by the cloud vendors.
3. **Software as a Service (SaaS):** It provides a centrally hosted and managed software services to the end-users. It delivers software over the internet, on-demand, and typically on a subscription basis. E.g., Microsoft One Drive, Dropbox, WordPress, Office 365, and Amazon Kindle. SaaS is used to minimize the operational cost to the maximum extent.



********Difference between Cloud Computing and Distributed Computing**

1. Cloud Computing :
Cloud computing refers to providing on demand IT resources/services like server, storage, database, networking, analytics, software etc. over internet. It is a computing technique that delivers hosted services over the internet to its users/customers. Cloud computing provides services such as hardware, software, networking resources through internet. Some characteristics Public Cloud

- Private Cloud
- Community Cloud
- Hybrid Cloud

2. Distributed Computing :
Distributed computing refers to solve a problem over distributed autonomous computers and they communicate between them over a network. It is a computing technique which allows to multiple computers to communicate and work to solve a single problem. Distributed computing helps to achieve computational tasks more faster than using a single computer as it takes a lot of time. Some characteristics of distributed computing are distributing a single task among computers to progress

the work at same time, Remote Procedure calls and Remote Method Invocation for distributed computations.
It is classified into 3 different types such as

- Distributed Computing Systems
- Distributed Information Systems
- Distributed Pervasive Systems

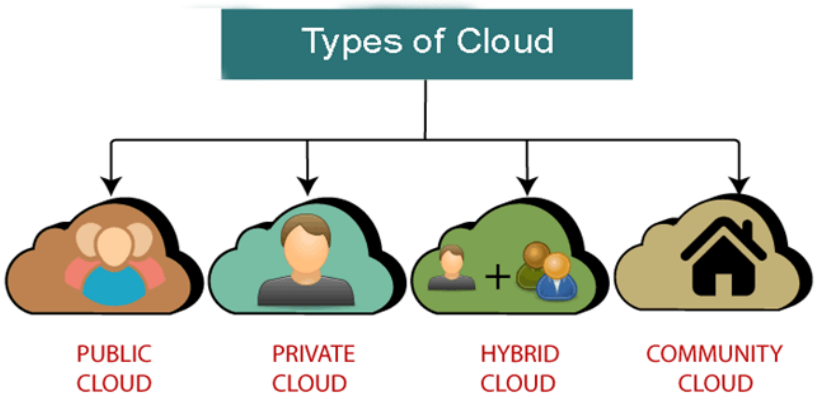
Difference between Cloud Computing and Distributed Computing :

S.No.	CLOUD COMPUTING	DISTRIBUTED COMPUTING
01.	Cloud computing refers to providing on demand IT resources/services like server, storage, database, networking, analytics, software etc. over internet.	Distributed computing refers to solve a problem over distributed autonomous computers and they communicate between them over a network.
02.	In simple cloud computing can be said as a computing technique that delivers hosted services over the internet to its users/customers.	In simple distributed computing can be said as a computing technique which allows to multiple computers to communicate and work to solve a single problem.
03.	It is classified into 4 different types such as Public Cloud, Private Cloud, Community Cloud and Hybrid Cloud.	It is classified into 3 different types such as Distributed Computing Systems, Distributed Information Systems and Distributed Pervasive Systems.
04.	There are many benefits of cloud computing like cost effective, elasticity and reliable, economies of Scale, access to the global market etc.	There are many benefits of distributed computing like flexibility, reliability, improved performance etc.
05.	Cloud computing provides services such as hardware, software, networking resources through internet.	Distributed computing helps to achieve computational tasks more faster than using a single computer as it takes a lot of time.
06.	The goal of cloud computing is to provide on demand computing services over internet on pay per use model.	The goal of distributed computing is to distribute a single task among multiple computers and to solve it quickly by maintaining coordination between them.

MODULE-IV

Types of Cloud

There are the following 4 types of cloud that you can deploy according to the organization's needs-



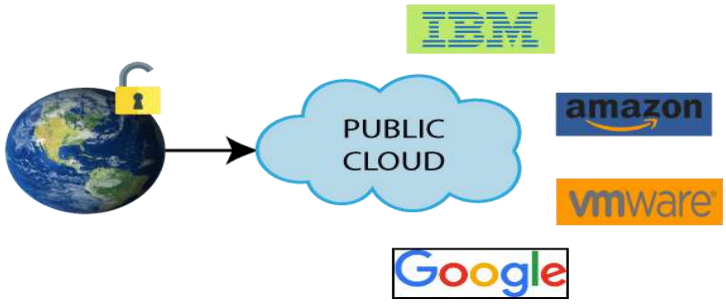
- Public Cloud
- Private Cloud
- Hybrid Cloud
- Community Cloud

Public Cloud

Public cloud is **open to all** to store and access information via the Internet using the pay-per-usage method.

In public cloud, computing resources are managed and operated by the Cloud Service Provider (CSP).

Example: Amazon elastic compute cloud (EC2), IBM SmartCloud Enterprise, Microsoft, Google App Engine, Windows Azure Services Platform.



Advantages of Public Cloud

There are the following advantages of Public Cloud -

- Public cloud is owned at a lower cost than the private and hybrid cloud.

- Public cloud is maintained by the cloud service provider, so do not need to worry about the maintenance.
- Public cloud is easier to integrate. Hence it offers a better flexibility approach to consumers.
- Public cloud is location independent because its services are delivered through the internet.
- Public cloud is highly scalable as per the requirement of computing resources.
- It is accessible by the general public, so there is no limit to the number of users.

Disadvantages of Public Cloud

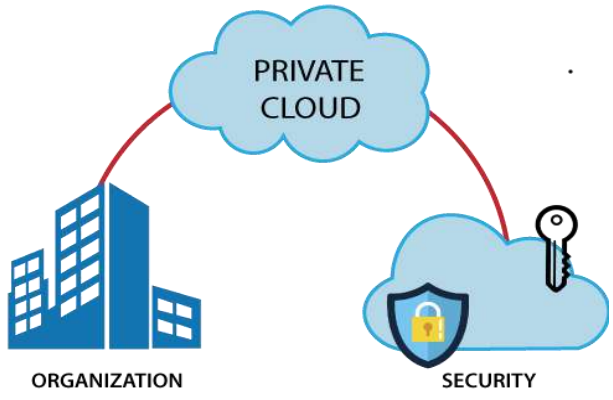
- Public Cloud is less secure because resources are shared publicly.
- Performance depends upon the high-speed internet network link to the cloud provider.
- The Client has no control of data.

Private Cloud

Private cloud is also known as an **internal cloud** or **corporate cloud**. It is used by organizations to build and manage their own data centers internally or by the third party. It can be deployed using Opensource tools such as Openstack and Eucalyptus.

Based on the location and management, National Institute of Standards and Technology (NIST) divide private cloud into the following two parts-

- On-premise private cloud
- Outsourced private cloud



Advantages of Private Cloud

There are the following advantages of the Private Cloud -

- Private cloud provides a high level of security and privacy to the users.
- Private cloud offers better performance with improved speed and space capacity.
- It allows the IT team to quickly allocate and deliver on-demand IT resources.

- The organization has full control over the cloud because it is managed by the organization itself. So, there is no need for the organization to depends on anybody.
- It is suitable for organizations that require a separate cloud for their personal use and data security is the first priority.

Disadvantages of Private Cloud

- Skilled people are required to manage and operate cloud services.
- Private cloud is accessible within the organization, so the area of operations is limited.
- Private cloud is not suitable for organizations that have a high user base, and organizations that do not have the prebuilt infrastructure, sufficient manpower to maintain and manage the cloud.

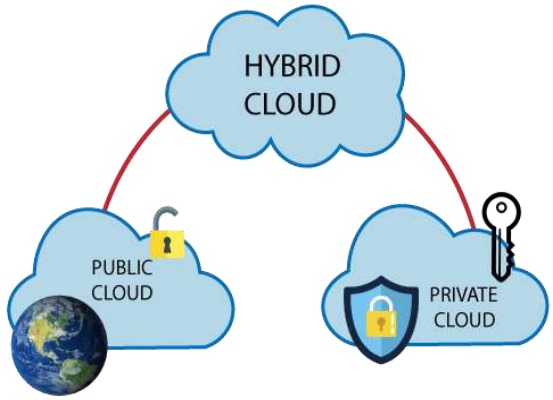
Hybrid Cloud

Hybrid Cloud is a combination of the public cloud and the private cloud. we can say:

Hybrid Cloud* = *Public Cloud* + *Private Cloud

Hybrid cloud is partially secure because the services which are running on the public cloud can be accessed by anyone, while the services which are running on a private cloud can be accessed only by the organization's users.

Example: Google Application Suite (Gmail, Google Apps, and Google Drive), Office 365 (MS Office on the Web and One Drive), Amazon Web Services.



Advantages of Hybrid Cloud

There are the following advantages of Hybrid Cloud -

- Hybrid cloud is suitable for organizations that require more security than the public cloud.
- Hybrid cloud helps you to deliver new products and services more quickly.
- Hybrid cloud provides an excellent way to reduce the risk.
- Hybrid cloud offers flexible resources because of the public cloud and secure resources because of the private cloud.

Disadvantages of Hybrid Cloud

- In Hybrid Cloud, security feature is not as good as the private cloud.
- Managing a hybrid cloud is complex because it is difficult to manage more than one type of deployment model.
- In the hybrid cloud, the reliability of the services depends on cloud service providers.

Community Cloud

Community cloud allows systems and services to be accessible by a group of several organizations to share the information between the organization and a specific community. It is owned, managed, and operated by one or more organizations in the community, a third party, or a combination of them.

Example: Health Care community cloud

Advantages of Community Cloud

There are the following advantages of Community Cloud -

- Community cloud is cost-effective because the whole cloud is being shared by several organizations or communities.
- Community cloud is suitable for organizations that want to have a collaborative cloud with more security features than the public cloud.
- It provides better security than the public cloud.
- It provdes collaborative and distributive environment.
- Community cloud allows us to share cloud resources, infrastructure, and other capabilities among various organizations.

Disadvantages of Community Cloud

- Community cloud is not a good choice for every organization.
- Security features are not as good as the private cloud.
- It is not suitable if there is no collaboration.

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Value Added Course
Title: CLOUD COMPUTING

Test Exercise:

1.Which of the following type of virtualization is also characteristic of cloud computing?

a) Storage
b) Application
c) CPU
d) All of the mentioned

2. The technology used to distribute service requests to resources is referred to as _____

a) load performing
b) load scheduling
c) load balancing
d) all of the mentioned

3. What type of computing technology refers to services and applications that typically run on a distributed network through virtualized resources?

a. Distributed Computing
b. Cloud Computing
c. Soft Computing
d. Parallel Computing

4) Which one of the following options can be considered as the Cloud?

a. Hadoop
b. Intranet
c. Web Applications
d. All of the mentioned

5) Which one of the following refers to the non-functional requirements like disaster recovery, security, reliability, etc.

a. Service Development
b. Quality of service
c. Plan Development
d. Technical Service

6) Which of the model involves the special types of services that users can access on a Cloud Computing platform?

a. Service
b. Planning
c. Deployment
d. Application

7) In how many parts we can broadly divide the architecture of the Cloud?

a. 4
b. 3
c. 2

d. 5

8) The Foce.com and windows Azure are examples of which of the following?

a. IaaS
b. PaaS
c. SaaS
d. Both A and B

9) Which one of the following a technology works behind the cloud computing platform?

a. Virtualization
b. SOA
c. Grid Computing
d. All of the above

10) Which one of the following is also known as a Hypervisor?

a. VMA
b. VMM
c. VMS
d. VMR

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Key:

1. All of the mentioned
2. load balancing
3. Cloud Computing
4. Hadoop
5. Quality of service
6. Service
7. 2
8. PaaS
9. All of the above
10. VMM

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Department of COMPUTER SCIENCE

Value Added Course
Title:CLOUD COMPUTING

Marks List

Class: III B.SC (MCCS)

S. No	Roll No.	Name of the Student	Marks
1	20.701	Vemula Kavya Naga Sri	9
2	20.702	Dronadula Hemanjali	10
3	20.703	Dekka Kavitha	10
4	20.704	Jujjuvarapu Venkateswara Rao	8
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18	20.718	Yelivelu Venkata Jaya Ram	9
19	20.719	Pagolu Sri Lekha	9
20	20.720	Darapu Vanitha	8
21	20.721	Kaitepalli Teja Sri	7
22	20.722	Potluri Sravan Kumar	10
23	20.723	Tummala Akanksha	10
24	20.724	Tadepalli Anusha	9
25	20.725	Chalapati Venkata Naga Lakshmi	9
26	20.726	Potturi Krishna Bhuvaneswari	10
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29	20.729	Sangala Bhavana	9
30	20.730	Thota Lavanya	10
31	20.731	Gurrala Naga Sirisha	10
32	20.732	Kunchala Bhargavi	9
33	20.734	Nagarakanti Vujwala	10
34	20.735	Rajulapati Bhavana	9
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38	20.739	Konatham Siva Naga Pavani	9

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47	20.749	Ede Pavan Kumar	8
48	20.750	Kolluri Manoj Kumar	7

A. Naga Srinivasa Rao

Signature of Lecturer

Signature of HOD

Signature of Principal

PRINCIPAL
AG & SG Siddhartha Degree College of
Arts&Science (Autonomous), Vuyyuru

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of COMPUTER SCIENCE

Value Added Course
Title: CLOUD COMPUTING

Feed Back Form

1. Is the programme interested to you (Yes/No)
2. Have you attended all the session (Yes/No)
3. Is the content of the program is adequate (Yes/No)
4. Have the teacher covered the entire syllabus? (Yes/No)
5. Is the number of hours adequate? (Yes/No)
6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No)
7. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No)
8. Do you have any suggestions on the program? (Yes/No)

R. Sateesh
20.738

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Department of COMPUTER SCIENCE

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K. Manoj kumar
20.750.

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Value Added Course / Certificate Course - Attendance Register

Class / Section: III B.Sc (MCCS) Year : 2022-23 Department of: Computer Science Paper: Cloud Computing Lecturer: A. Naga Srinivasa Rao

Sl. No	Roll No	Student Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	20.701	Vemula Kavya Naga Sri	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	
2	20.702	Dronadula Hemanjali	P	P	P	P	P	P	P	P	P	P	P	A	A	P	P	
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A. Naga Srinivasa Rao.

Signature of Lecturer

Signature of HOD

[illegible] of the Department of Computers

[illegible] Siddhartha Degree College

VUYYURU - 521 165

Signature of Principal

PRINCIPAL

AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

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16	20.716	Surisetti Navya	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	
17	20.717	Todeti Ajay Babu	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	
18	20.718	Yelivelu Venkata Jaya Ram	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	
19	20.719	Pagolu Sri Lekha	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	
20	20.720	Darapu Vanitha	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	
21	20.721	Kaitepalli Teja Sri	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	
22	20.722	Potluri Sravan Kumar	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	
23	20.723	Tummala Akanksha	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	
24	20.724	Tadepalli Anusha	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	
25	20.725	Chalapati Venkata Naga Lakshmi	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
26	20.726	Potturi Krishna Bhuvaneswari	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	
27	20.727	Nunna Pedda Bala Siva Nagamani	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	
28	20.728	Kagithala Durga Prasad	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	
29	20.729	Sangala Bhavana	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	
30	20.730	Thota Lavanya	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	
31	20.731	Gurrala Naga Sirisha	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
32	20.732	Kunchala Bhargavi	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	
33	20.734	Nagarakanti Vujwala	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	
34	20.735	Rajulapati Bhavana	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	
35	20.736	Derangula Durga Anjaneyulu	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	
36	20.737	Kamodula Tulasi Ram	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	

37	20.738	Runku Sateesh	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
38	20.739	Konatham Siva Naga Pavani	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P						
39	20.740	Peram Jyothiramai	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P						
40	20.741	Gopalajoshula Prasanna Sai	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P						
41	20.742	Ande Madhu Babu	P	A	P	P	P	P	P	P	P	P	P	P	A	P	P						
42	20.743	Sheik Ayesha	P	P	P	P	P	P	P	P	P	A	P	P	P	P	A						
43	20.744	Mohammad Shaida Mansuri	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P						
44	20.746	Mareedu Tejaswi	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A						
45	20.747	Nalukurti Vinodh Babu	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P						
46	20.748	Bandaru Abhilash	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
47	20.749	Ede Pavan Kumar	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P						
48	20.750	Kolluri Manoj Kumar	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P						

A. Naga Srinivasa Rao.
Signature of Lecturer

Signature of HOD
of the Department of Computer...
AG & SG Siddhartha Degree College
VUYYURU - 521 165

Signature of Principal
PRINCIPAL
AG & SG Siddhartha Degree College of
Arts&Science (Autonomous),Vuyyuru

ADUSUMILLI GOPALAKRISHNAIAH & SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
Vuyyuru-521 165, Krishna District, Andhra Pradesh
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade

DEPARTMENT OF COMPUTER SCIENCE

VALUE ADDED COURSE:CLOUD COMPUTING

VAC CODE:CCVAC13

CERTIFICATE

This is to Certify that M. Tejaswi Son/Daughter of shri/Smt M.V.Venkateswara Rao. has Successfully completed value added course in CLOUD COMPUTING Conducted by the Department of COMPUTER SCIENCE from 01-11-2022 to 09-02-2023 We wish him /her bright future

Co-ordinator
A. Naga Srinivasa Rao.

Head of Department

Principal
PRINCIPAL
AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

ADUSUMILLI GOPALAKRISHNAIAH & SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
Vuyyuru-521 165, Krishna District, Andhra Pradesh
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DEPARTMENT OF COMPUTER SCIENCE

VALUE ADDED COURSE:CLOUD COMPUTING

VAC CODE:CCVAC13

CERTIFICATE

This is to Certify that K. Denesh Son /Daughter of shri/Smt K. Benaraji has Successfully completed value added course in CLOUD COMPUTING Conducted by the Department of COMPUTER SCIENCE from 01-11-2022 to 09-02-2023 We wish him /her bright future

Co-ordinator	Head of Department	Principal
A. Naga Srinivasa Rao.		PRINCIPAL AG & SG Siddhartha Degree College - Arts&Science (Autonomous),Vuyyuru

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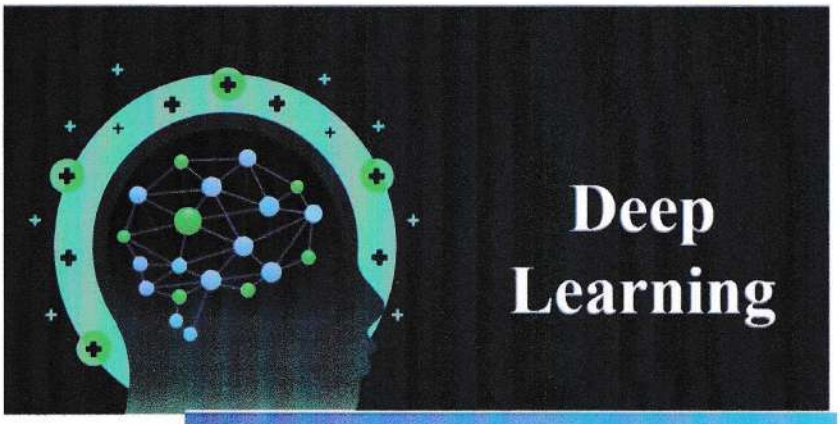
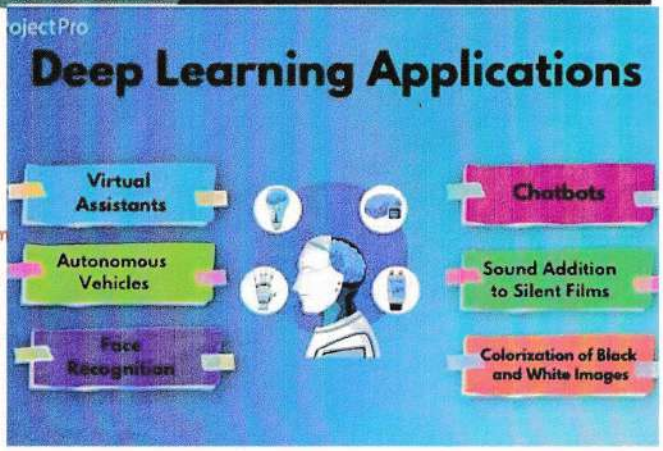
DEPARTEMENT OF COMPUTER SCIENCE

VAD COURSE :DEEP LEARNING
VAD CODE: DLVAC01
DURATION :30 DAYS



Deep learning is a machine learning technique that teaches computers to do what comes naturally to humans: learn by example. Deep learning is a key technology behind driverless cars, enabling them to recognize a stop sign, or to distinguish a pedestrian from a lamppost.



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A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE

Value Added Course

Title**: Deep Learning**

Name of the Lecturer	:	Teja Sri. Oleti
Class	:	II MSCS
Duration of the Course	:	30 HOURS
VAC Code	:	DLVAC01

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: Deep Learning

Objectives: 1) Deep learning eliminates some of data
Pre-processing that is typically involved
With machine learning.
2) Discuss the terminology used
3) These algorithms can be ingest and process
Unstructured data like text and images

Methodology: Teacher - Cantered method

Duration: 30 Hours

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: Deep Learning

Date : From to

Date	Content	Module No.
15-03-2023	**Deep learning environment** over view of deep learning , deep learning environment setup locally – installing tensor flow , installing keras , run tensor flow program on aws cloud platform	I
29-03-2023	**Introduction to neural network** What is neural network , how neural networks work , gradient descent , perceptron , multilayer perceptron , back propagation	II
5-04-2023	**Tensor flow basics** Placeholders in tensor flow-defining placeholders , feeding placeholders with data , variables , constants , computation graph	III
19-04-2023	**Activation functions** What are the activation functions , sigmoid functions , hyperbolic tangent function , Relu- rectified linear units , softmax function	IV

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course
Student Enrolment Sheet

Class: II Bs.c(MSCS)

S. No	Roll No.	Name of the Student	Signature
1	2155301	Krishnavarapu Dharanisri	K. Dharanisri
2	2155302	Ghantasala Divya	G. Divya
3	2155303	Mopidevi Sri Lakshmi	M Sri lakshmi
4	2155304	Singavarapu Sai Sowmya	S. Sai sowmya
5	2155305	Arikatla Susanth	A. susanth
6	2155306	Bathina Manoj Phanindra	B. Manoj phanindra
7	2155307	Jampana Keerthi Priya	J. Keerthi Priya
8	2155308	Konatham Alekhya	K. Alekhya
9	2155309	Kondaraju Ajith Kumar	K. A. kumar
10	2155310	Nakka Anusha	N. Anusha
11	2155311	Akula Chakradhar	A. chakradhar
12	2155312	Mohammad Khadeera begum	M. K. begum
13	2155313	Bandela Pavan Kumar	B. Pavan kumar
14	2155314	Jonna Jhansi Lakshmi	Jonna Jhansi lakshmi
15	2155315	Kunapareddy Tulasi	K. Tulasi

S. No	Roll No.	Name of the Student	Signature
16	2155316	Peddiboyina Himasri	P. Himasri
17	2155317	Katta Naga Sravani	K. naga sravani
18	2155318	Valluri Shainy	valluri shainy
19	2155319	Manikonda Karuna Sri	M. Karuna Sri
20	2155320	Padmanabhuni Phani Supraja	P. Phani Supraja
21	2155321	Kunapareddy Hema sri	Kunapareddy Hemasri
22	2155322	Reddy Durga Bhavani	R. durgabhavani
23	2155323	Dokku Naga Gireesha	D. Naga Gireesha
24	2155324	Nerusu Naga Mounika	N. naga mounika
25	2155325	Goriparthi Dedeepya	G. Dedeepya.
26	2155326	Edupuganti Joshimani	E. Joshimani
27	2155327	Gangisetty Yuva Kiran	G. yuva kiran
28	2155328	Veerla Sri Lakshmi	V. Sri Lakshmi
29	2155329	Mamidi Chaitanya	M. Chaitanya
30	2155330	Rachuri Bobby	R. bobby
31	2155331	Peteti Praneeth Kumar	P. Praneeth Kumar
32	2155332	Mohammad Abrar Ahamad	MD. Abrar Ahamad
33	2155333	Goriparthi Harika	G. Harika
34	2155334	Vinnakota Deepthi	V. Deepthi

Signature of Lecturer

Signature of HOD

Principal

Signature of Principal

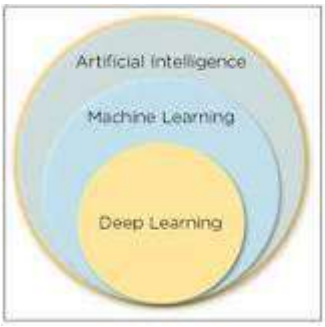
DEEP LEARNING

Deep learning environment:

Over view of deep learning:

What is the overview of deep learning?

Deep learning is a subfield of machine learning that deals with algorithms inspired by the structure and function of the brain. Deep learning is a subset of machine learning, which is a part of artificial intelligence (AI). Artificial intelligence is the ability of a machine to imitate intelligent human behaviour.



Why is deep learning important?

Artificial intelligence (AI) attempts to train computers to think and learn as humans do. Deep learning technology drives many AI applications used in everyday products, such as the following:

- Digital assistants
- Voice-activated television remotes
- Fraud detection
- Automatic facial recognition

It is also a critical component of emerging technologies such as self-driving cars, virtual reality, and more.

Deep learning models are computer files that data scientists have trained to perform tasks using an algorithm or a predefined set of steps. Businesses use deep learning models to analyze data and make predictions in various applications.

What are the uses of deep learning?

Deep learning has several use cases in automotive, aerospace, manufacturing, electronics, medical research, and other fields. These are some examples of deep learning:

- Self-driving cars use deep learning models to automatically detect road signs and pedestrians.
- Defence systems use deep learning to automatically flag areas of interest in satellite images.
- Medical image analysis uses deep learning to automatically detect cancer cells for medical diagnosis.
- Factories use deep learning applications to automatically detect when people or objects are within an unsafe distance of machines.

You can group these various use cases of deep learning into four broad categories—computer vision, speech recognition, natural language processing (NLP), and recommendation engines.

Computer vision

Computer vision is the computer's ability to extract information and insights from images and videos. Computers can use deep learning techniques to comprehend images in the same way that humans do. Computer vision has several applications, such as the following:

- Content moderation to automatically remove unsafe or inappropriate content from image and video archives
- Facial recognition to identify faces and recognize attributes like open eyes, glasses, and facial hair
- Image classification to identify brand logos, clothing, safety gear, and other image details

Speech recognition

Deep learning models can analyze human speech despite varying speech patterns, pitch, tone, language, and accent. Virtual assistants such as Amazon Alexa and automatic transcription software use speech recognition to do the following tasks:

- Assist call center agents and automatically classify calls.
- Convert clinical conversations into documentation in real time.
- Accurately subtitle videos and meeting recordings for a wider content reach.

Natural language processing

Computers use deep learning algorithms to gather insights and meaning from text data and documents. This ability to process natural, human-created text has several use cases, including in these functions:

- Automated virtual agents and chatbots
- Automatic summarization of documents or news articles
- Business intelligence analysis of long-form documents, such as emails and forms
- Indexing of key phrases that indicate sentiment, such as positive and negative comments on social media

Recommendation engines

Applications can use deep learning methods to track user activity and develop personalized recommendations. They can analyze the behavior of various users and help them discover new products or services. For example, many media and entertainment companies, such as Netflix, Fox, and Peacock, use deep learning to give personalized video recommendations.

Deep learning environment setup locally – installing tensorflow

HOWTO: Install Tensorflow locally:

This documentation describes how to install tensorflow package locally in your $HOME space.

Load python module

module load python/3.6-conda5.2

Clone python installation to local directory

Three alternative create commands are listed. These cover the most common cases:

conda create -n local --clone="$PYTHON_HOME"

This will clone the entire python installation to ~/envs/local directory. The process will take several minutes.

conda create -n local

This will create a local python installation without any packages. If you need a small number of packages, you may choose this option.

conda create -n local python={version} anaconda
If you like to install a specific version of python, you can specify it with "python" option. For example, you can use "python=3.6" for version 3.6.
To verify that a clone has been created, use the command
conda info -e
For additional conda command documentation see https://conda.io/docs/commands.html

Activate clone environment
For the bash shell:
source activate local
On newer versions of Anaconda on the Owens cluster you may also need to perform the removal of the following packages before trying to install your specific packages:
conda remove conda-build
conda remove conda-env

Install package
Install the latest version of tensorflow that is gpu compatible.
pip install tensorflow-gpu
If there are errors on this step you will need to resolve them before continuing.

Test python package
Now we will test tensorflow package by loading it in python and checking its location to ensure we are using the correct version.
python -c "import tensorflow;print (tensorflow.__file__)"
Output:
$HOME/.conda/envs/local/lib/python2.7/site-packages/tensorflow/__init__.py
Remember, you will need to load the proper version of python before you go to use your newly installed package. Packages are only installed to one version of python.

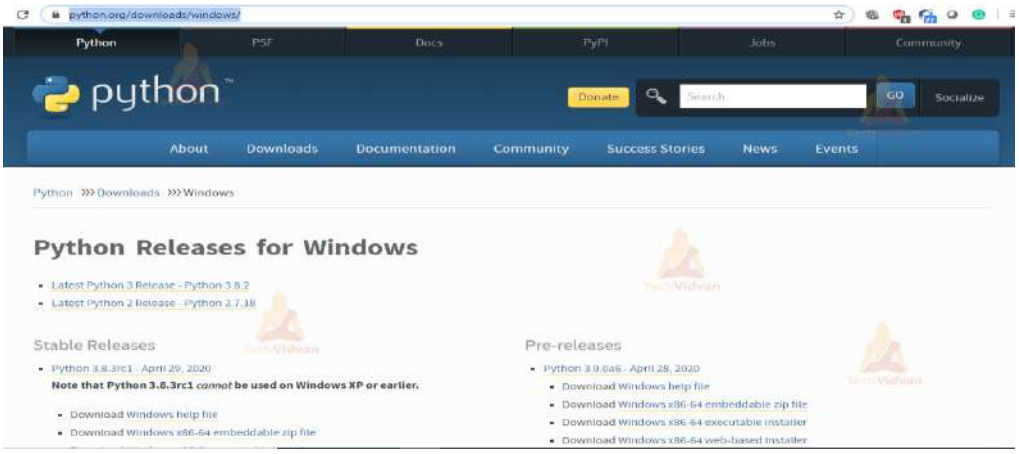
Install your own python modules
If the method using conda above is not working or if you prefer, you can consider installing python modules from the source. Please read HOWTO: install your own python modules.
Keras Installation and Environment Setup:
Keras is one of the most popular Python libraries. It is having high demand these days as it is straight-forward and simple. It is a high-level API that does not perform low-level computations. Keras runs on the TensorFlow and Theano.
It is handy for Deep Learning and focuses on the idea of Models. Keras is an open-source Python library. It is very easy and effortless to download. It is easily and freely available. You can download Keras with no efforts.

Let us learn Keras installation in easy steps.

Keras Installation and Environment setup

Step 1: Install Python

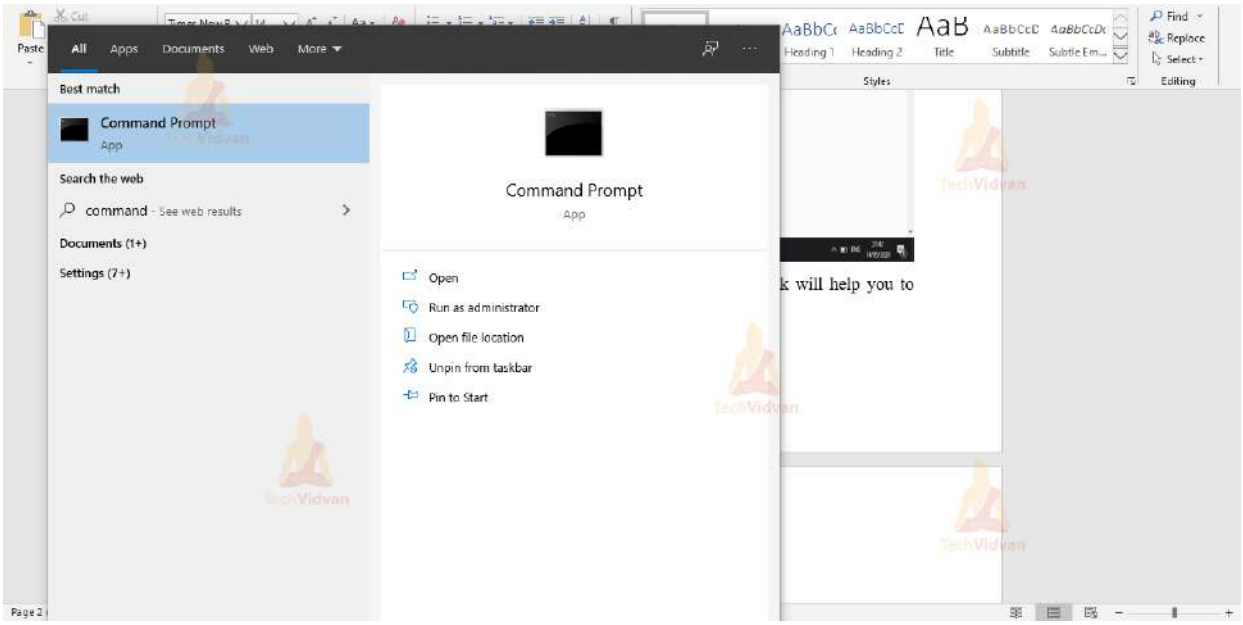
It is the primary task to install Python in your system. Python is an open-source language. It is easily available. Download Python now.



Click on Latest Python 3 Release – Python 3.8.2. This link will help you to download the latest version of Python.

Step 2: Now, Open the Command Prompt

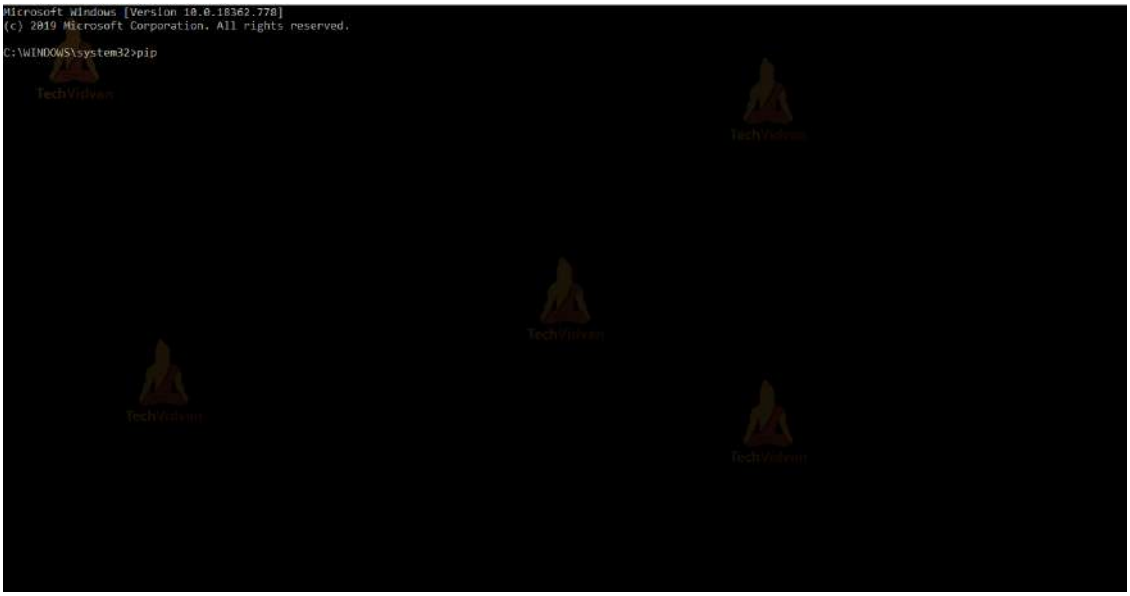
In this step, open the command prompt. Run the command prompt as an administrator.



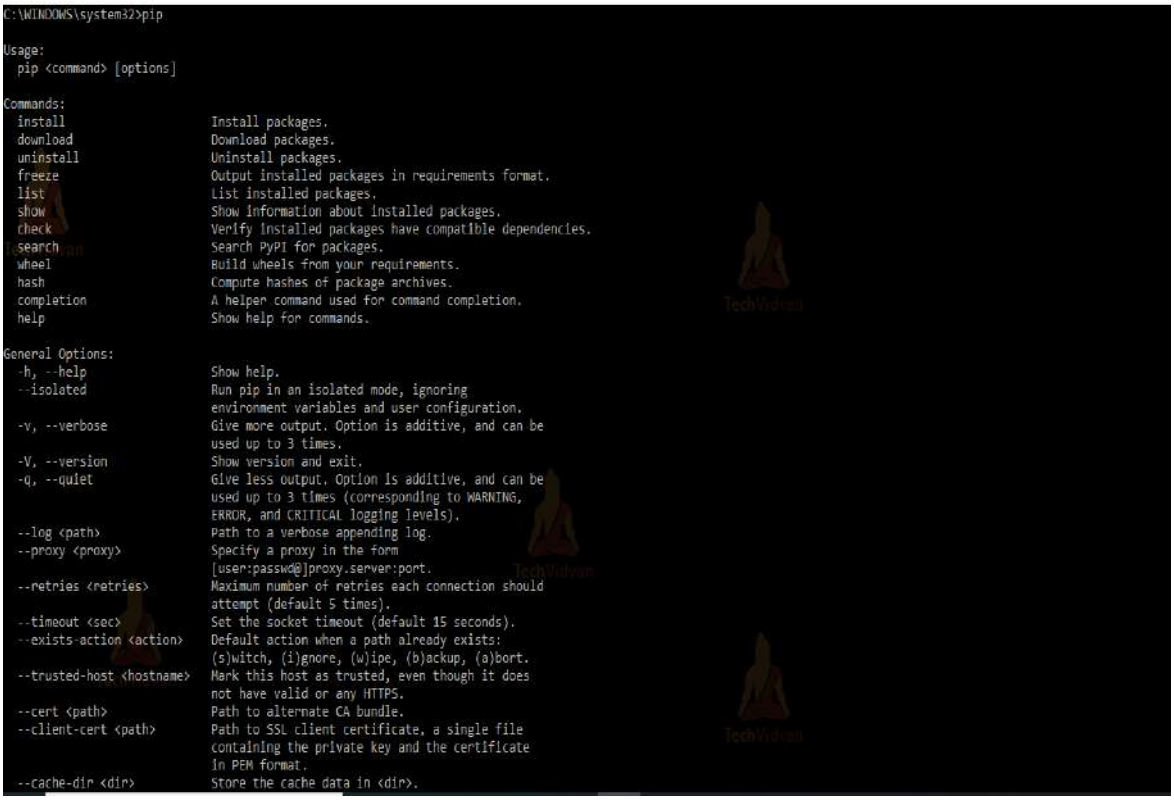
Running the command prompt as an administrator will enable you to make changes in your system. It will ask you permission to make changes to your system. So, give it permission by pressing the 'Yes' button.

Step 3: Now, type 'pip' in Command Prompt

Type 'pip' as a command in the command prompt. It will help you to check whether Python is installed or not.

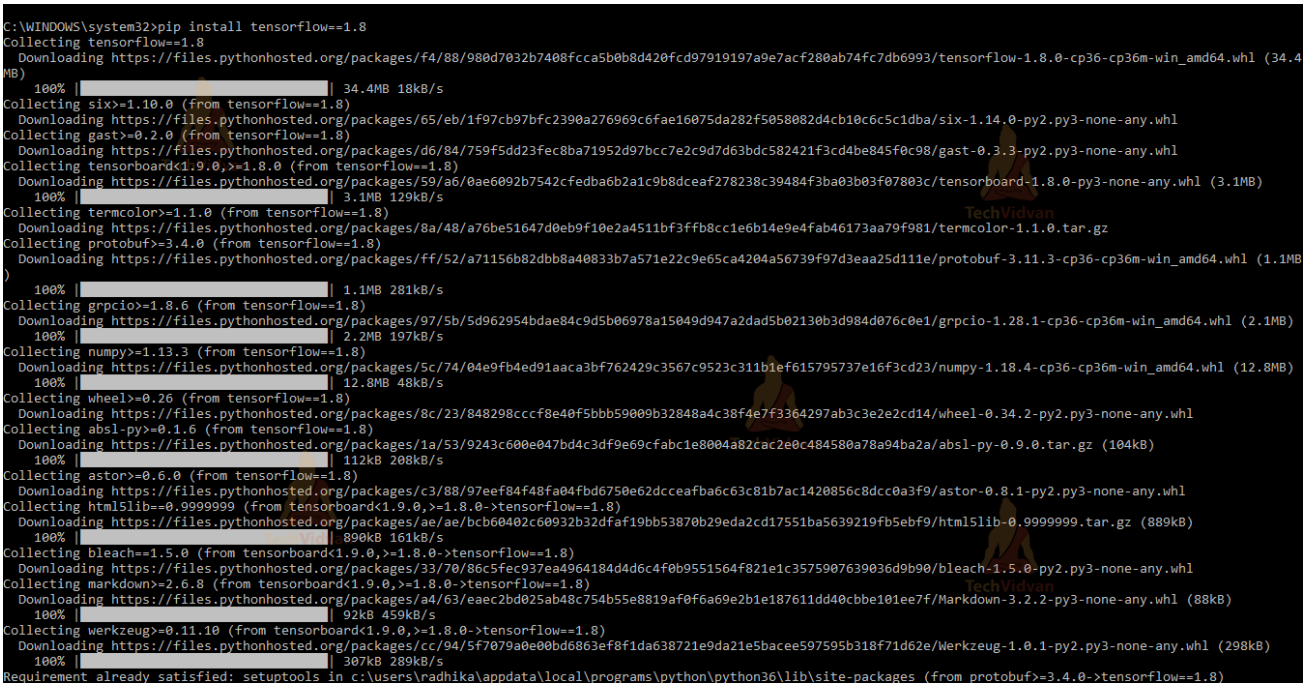


After typing ‘pip’ in the command prompt, you will see many functions executing. Wait, till the functions execute.



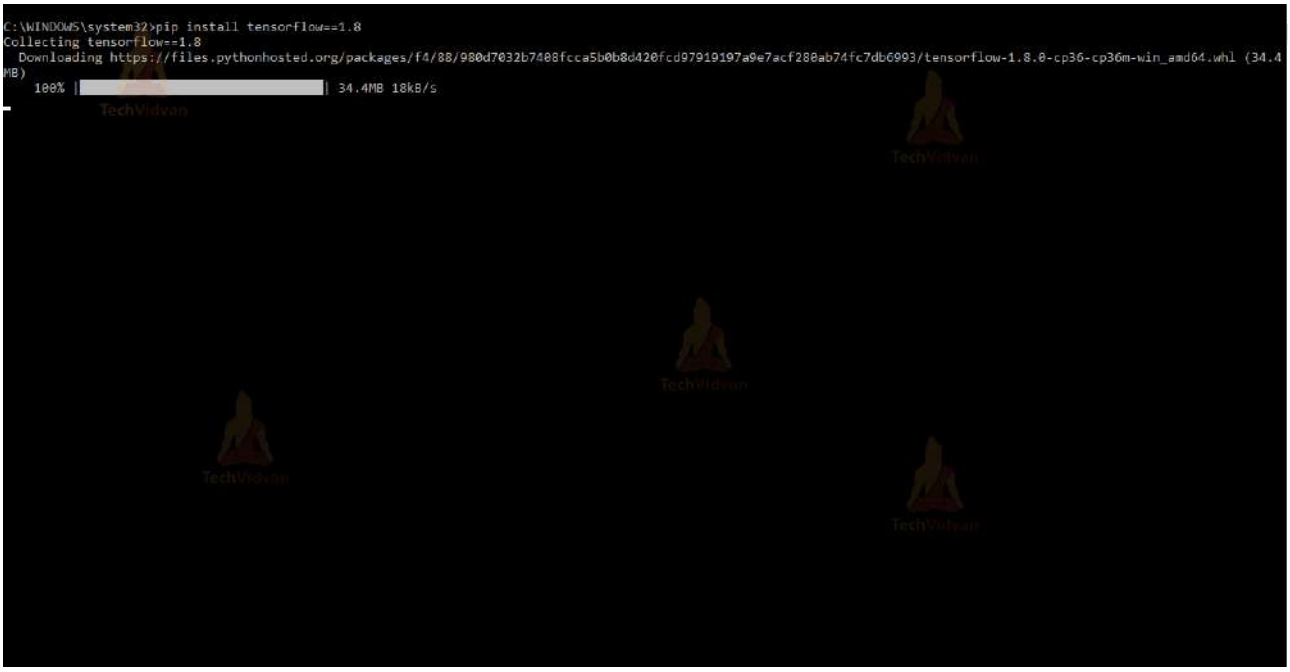
Step 4: Write ‘pip install tensorflow==1.8’ in Command Prompt
Being the fact that Keras runs on the top of Keras. You need to install TensorFlow first.

After typing this command, you will see many functions executing. Tensorboard, termcolor, numpy, wheel, etc are the functions that will be executed. You can many commands and functions executing in the image below.



Step 5: Write ‘pip install keras’ on Command Prompt

Now, it’s time to finally install Keras. After writing ‘pip install keras’, you will see prompt collecting many files.



You will see that it is automatically ignoring the functions are that not much necessary. It is very easy to install Keras. It will automatically install all the secondary files it needs.

After writing this command, wait for it to execute completely. Once it is done, you have successfully installed Keras. Now, you can easily work with the Keras code. Write the Keras commands easily and safely. Enjoy working with Keras.

Conclusion

This is how Keras installation is done. Keras is an open-source Python library. It is easy to install Keras. As Keras runs on the top of TensorFlow, Theano. You have to install any of these libraries first.

Here, you can see TensorFlow. After installing TensorFlow, you can install Keras. It is not a burden to install Keras. It is not too time-consuming. You can easily and quickly install it.

Run tensor flow program on aws cloud plateform:

Getting Started with TensorFlow on AWS

PAGE CONTENT

Amazon SageMakerAWS Deep Learning AMIAWS Deep Learning ContainersAmazon EC2 inf1 instances/ AWS InferentiaAmazon Elastic Inference

Amazon SageMaker

The easiest way to get started with TensorFlow on AWS is using Amazon SageMaker, a fully managed service that provides every developer and data scientist with the ability to build, train, and deploy TensorFlow models quickly. SageMaker assists with each step of the machine learning process to make it easier to develop high quality models. Data scientists can also use SageMaker with TensorBoard to save development time by visualizing the model architecture to identify and remediate convergence issues, such as validation loss not converging or vanishing gradients. To get started with TensorFlow and TensorBoard on SageMaker, use the following resources:

- Use TensorFlow with SageMaker documentation
- SageMaker with TensorBoard documentation
- PyTorch in the SageMaker Python SDK
- SageMaker TensorFlow container
- SageMaker TensorFlow serving container
- TensorFlow in SageMaker Workshop

- Extending containers

AWS Deep Learning AMI

AWS Deep Learning AMIs are machine images pre-installed with TensorFlow, allowing you to quickly experiment with new algorithms or learn new skills and techniques. To get started, see the TensorFlow on AWS Deep Learning AMIs tutorials below.

- TensorFlow
- TensorFlow 2
- TensorFlow with Horovod
- TensorFlow 2 with Horovod

AWS Deep Learning Containers

AWS Deep Learning Containers are Docker images pre-installed with TensorFlow to make it easy to deploy custom machine learning environments quickly by letting you skip the complicated process of building and optimizing your environments from scratch. To get started with TensorFlow on AWS DL Containers, use the following resources:

- TensorFlow on Amazon EC2: Training | Inference
- TensorFlow on Amazon ECS: Training | Inference
- TensorFlow on Amazon EKS: Training | Distributed Training | CPU Inference | GPU Inference

Amazon EC2 Inf1 instances/ AWS Inferentia

Amazon EC2 Inf1 instances are built from the ground up to support machine learning inference applications. Inf1 instances feature up to 16 AWS Inferentia chips, high-performance machine learning inference chips designed and built by AWS. Inf1 instances deliver up to 3x higher throughput and up to 40% lower cost per inference than Amazon EC2 G4 instances, which were already the lowest cost instance for machine learning inference available in the cloud. Using Inf1 instances, you can run large scale machine learning inference with TensorFlow models at the lowest cost in the cloud. To get started, see our tutorial on running TensorFlow models on Inf1.

Amazon Elastic Inference

Amazon Elastic Inference allows you to attach low-cost GPU-powered acceleration to Amazon EC2 and SageMaker instances or Amazon ECS tasks, to reduce the cost of running inference with PyTorch models by up to 75%. To get started with TensorFlow on Elastic Inference, see the following resources.

UNIT-II

Introduction to neural network

What is neural network:

A neural network is a method in artificial intelligence that teaches computers to process data in a way that is inspired by the human brain. It is a type of machine learning process, called deep learning, that uses interconnected nodes or neurons in a layered structure that resembles the human brain. It creates an adaptive system that computers use to learn from their mistakes and improve continuously. Thus, artificial neural networks attempt to solve complicated problems, like summarizing documents or recognizing faces, with greater accuracy.

Why are neural networks important?

Neural networks can help computers make intelligent decisions with limited human assistance. This is because they can learn and model the relationships between input and output data that are nonlinear and complex. For instance, they can do the following tasks.

Make generalizations and inferences

Neural networks can comprehend unstructured data and make general observations without explicit training. For instance, they can recognize that two different input sentences have a similar meaning:

- Can you tell me how to make the payment?
- How do I transfer money?

A neural network would know that both sentences mean the same thing. Or it would be able to broadly recognize that Baxter Road is a place, but Baxter Smith is a person's name.

How neural networks work:

What is a neural network?

Simply said, a neural network is a set of algorithms designed to recognize patterns or relationships in a given dataset. These deep neural networks are basically computing systems designed to mimic how the human brain analyzes and processes information.

A neural network consists of neurons interconnected like a web and these neurons are mathematical functions or models that do the computations required for classification according to a given set of rules. Through this tutorial, let's discuss how these artificial neural networks work and their real-world usage.

How does a neural network learn?

Before moving on to learn how exactly the neural network works, you need to know what forms a neural network. A normal neural network consists of multiple layers called the input layer, output layer, and hidden layers. In each layer every node (neuron) is connected to all nodes (neurons) in the next layer with parameters called 'weights'. .

Neural networks consist of nodes called perceptrons that do necessary calculations and detect features of neural networks. These perceptrons try to reduce the final cost error by adjusting the weights parameters. Moreover, a perceptron can be considered as a neural network with a single layer.

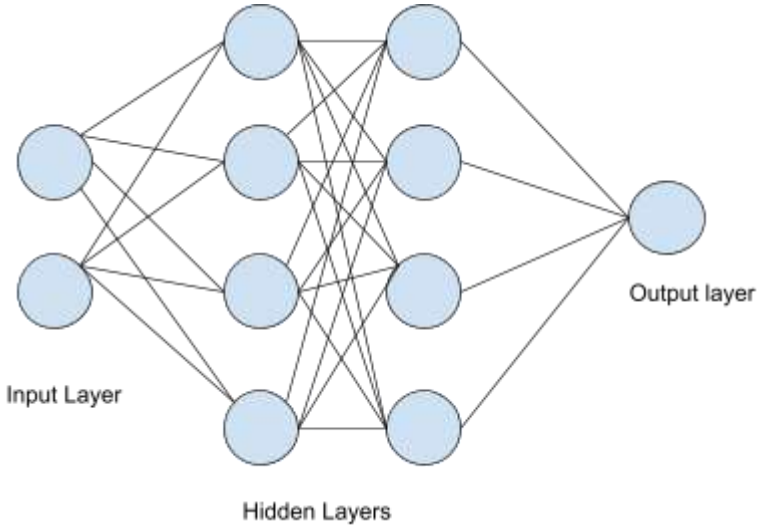
On the other hand, multilayer perceptrons are called deep neural networks. The perceptrons are activated when there is satisfiable input. Go through this wiki article if you need to learn more about perceptrons.

Now let's move on to discuss the exact steps of a working neural network.

1. Initially, the dataset should be fed into the input layer which will then flow to the hidden layer.
2. The connections which exist between the two layers randomly assign weights to the input.
3. A bias is added to each input. Bias is a constant which is used in the model to fit best for the given data.
4. The weighted sum of all the inputs will be sent to a function that is used to decide the active status of a neuron by calculating the weighted sum and adding the bias. This function is called the activation function.
5. The nodes that are required to fire for feature extraction are decided based on the output value of the activation function.
6. The final output of the network is then compared to the required labeled data of our dataset to calculate the final cost error. The cost error is actually telling us how 'bad' our network is. Hence we want the error to be as smallest as we can.
7. The weights are adjusted through back propagation, which reduces the error. This back propagation process can be considered as the central mechanism that neural networks learn. It basically fine-tunes the weights of the deep neural network in order to reduce the cost value.

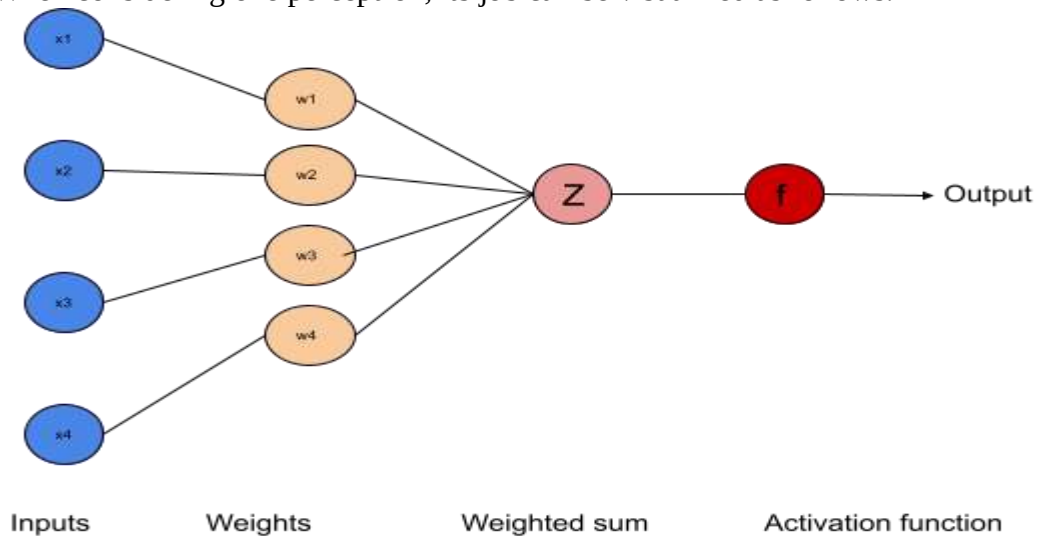
In simple terms, what we do when training a neural network is usually calculating the loss (error value) of the model and checking if it is reduced or not. If the error is higher than the expected value, we have to update the model parameters, such as weights and bias values. We can use the model once the loss is lower than the expected error margin.

Neural network visualization



Neural networks can be described easily using the above diagram. The light blue circles represent the perceptrons we discussed earlier, and the lines represent connections between artificial neurons.

When considering one perceptron, its job can be visualized as follows.



When you input the data with random weights to the model, it generates the weighted sum of them. According to that value, the activation function decides the activation status of the neuron. The output of this perceptron may act as an input for the next neuron layer.

Gradient descent :

Gradient descent is an optimization algorithm which is commonly-used to train machine learning models and neural networks. Training data helps these models learn over time, and the cost function within gradient descent specifically acts as a barometer, gauging its accuracy with each iteration of parameter updates. Until the function is close to or equal to zero, the model will continue to adjust its parameters to yield the smallest possible error. Once machine learning models are optimized for accuracy, they can be powerful tools for artificial intelligence (AI) and computer science applications.

Perceptron:

A perceptron is the smallest element of a neural network. Perceptron is a single-layer neural network linear or a Machine Learning algorithm used for supervised learning of various binary classifiers. It works as an artificial neuron to perform computations by learning elements and processing them for detecting the business intelligence and capabilities of the input data. A perceptron network is a group of simple logical statements that come together to create an array of complex logical statements, known as the neural network.

UNIT-3

Tensor flow basics:

Placeholders are Tensor-like objects. They are a contract between you and TensorFlow that says when you run your computation graph in a session, you will supply or *feed* data into that placeholder so that your graph can run successfully.

They are Tensor-like objects as they behave like Tensors, meaning you can pass them around in places where you would put a Tensor.

By using placeholders, we can supply external inputs into our graph that might change each time we run our graph. The natural use for them is as a way to supply data and labels into our model as the data and labels we supply will generally be different each time we want to run our graph.

When creating a placeholder, we must supply the datatype that will be fed.

We will use two placeholders to supply data and labels into our graph. We also supply the shape that any data fed into these placeholders must take. We use None to indicate the size of that particular dimension can take any value. This way we are able to feed in batches of data that are varying sizes. Following we'll see how to define placeholders in TensorFlow for our problem.

```
x = tf.placeholder(tf.float32, shape=[None, 4], name="data_in")

y = tf.placeholder(tf.int32, shape=[None, 3], name="target_labels")
```

Copy

Now, we have created placeholders in our graph, so we can construct our linear model on the graph as well. We call our function that we defined previously, and supply as input our data placeholder, x. Remember, placeholders act like Tensors so they can be passed around like them as well. In the following code we call our linear_model function with our placeholder as the input argument.

```
model_out = linear_model(x)
```

Copy

When we call our function, everything inside it executes and all the ops and variables are added to our TensorFlow graph. We only need to do this once; if we were to try calling our function again, we would get an error saying that we have tried to add variables to the graph but they already exist.

Placeholders are the simplest and quickest way of supplying external data into our graph, so it's good to know about them. Later on, we will see better ways of supplying data using the dataset API, but for now placeholders are a good place to start.

Variables:

A TensorFlow **variable** is the recommended way to represent shared, persistent state your program manipulates. This guide covers how to create, update, and manage instances of tf.Variable in TensorFlow.

Variables are created and tracked via the tf.Variable class. A tf.Variable represents a tensor whose value can be changed by running ops on it. Specific ops allow you to read and modify the values of this tensor. Higher level libraries like tf.keras use tf.Variable to store model parameters.

Constants:

A TensorFlow **variable** is the recommended way to represent shared, persistent state your program manipulates. This guide covers how to create, update, and manage instances of tf.Variable in TensorFlow.

Variables are created and tracked via the tf.Variable class. A tf.Variable represents a tensor whose value can be changed by running ops on it. Specific ops allow you to read and modify

the values of this tensor. Higher level libraries like tf.keras use tf.Variable to store model parameters.

UNIT-4

Activation functions:

What are the activation function:

The activation functions are at the very core of Deep Learning. They determine the output of a model, its accuracy, and computational efficiency. In some cases, activation functions have a major effect on the model's ability to converge and the convergence speed.

In this article, you'll learn the following most popular activation functions in Deep Learning and how to use them with Keras and TensorFlow 2.

1. Sigmoid (Logistic)
2. Hyperbolic Tangent (Tanh)
3. Rectified Linear Unit (ReLU)
4. Leaky ReLU
5. Parametric Leaky ReLU (PReLU)
6. Exponential Linear Units (ELU)
7. Scaled Exponential Linear Unit (SELU)

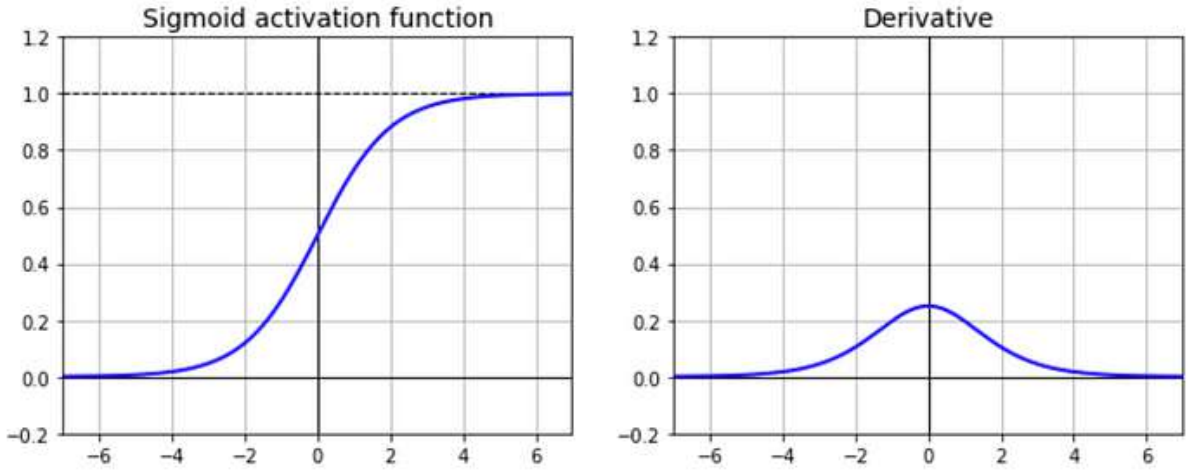
1. Sigmoid (Logistic)

The **Sigmoid function** (also known as the **Logistic function**) is one of the most widely used activation function. The function is defined as:

$$\sigma(x) = \frac{1}{1 + e^{-x}}$$

Sigmoid activation function (Image by author)

The plot of the function and its derivative.



the plot of Sigmoid function and its derivative (Image by author)

As we can see in the plot above,

- The function is a common **S-shaped** curve.
- The output of the function is cantered at **0.5** with a range from **0** to **1**.
- The function is **differentiable**. That means we can find the slope of the sigmoid curve at any two points.
- The function is **monotonic** but the function's derivative is not.

The **Sigmoid** function was introduced to Artificial Neural Networks (ANN) in the 1990s to replace the **Step** function [2]. It was a key change to ANN architecture because

the **Step** function doesn't have any gradient to work with Gradient Descent, while the **Sigmoid** function has a well-defined nonzero derivative everywhere, allowing Gradient Descent to make some progress at every step during training.

Problems with Sigmoid activation function

The main problems with the Sigmoid function are:

1. **Vanishing gradient**: looking at the function plot, you can see that when inputs become small or large, the function saturates at 0 or 1, with a derivative extremely close to 0. Thus it has almost no gradient to propagate back through the network, so there is almost nothing left for lower layers [2].
2. **Computationally expensive:** the function has an exponential operation.
3. **The output is not zero centered**:

How to use it with Keras and TensorFlow 2

To use the Sigmoid activation function with Keras and TensorFlow 2, we can simply pass 'sigmoid' to the argument activation :

from tensorflow.keras.layers import DenseDense(10, **activation='sigmoid'**)

To apply the function for some constant inputs:

import tensorflow as tf

from tensorflow.keras.activations import **sigmoid**z = tf.constant([-20, -1, 0, 1.2], dtype=tf.float32)

output = **sigmoid(z)**

output.numpy()

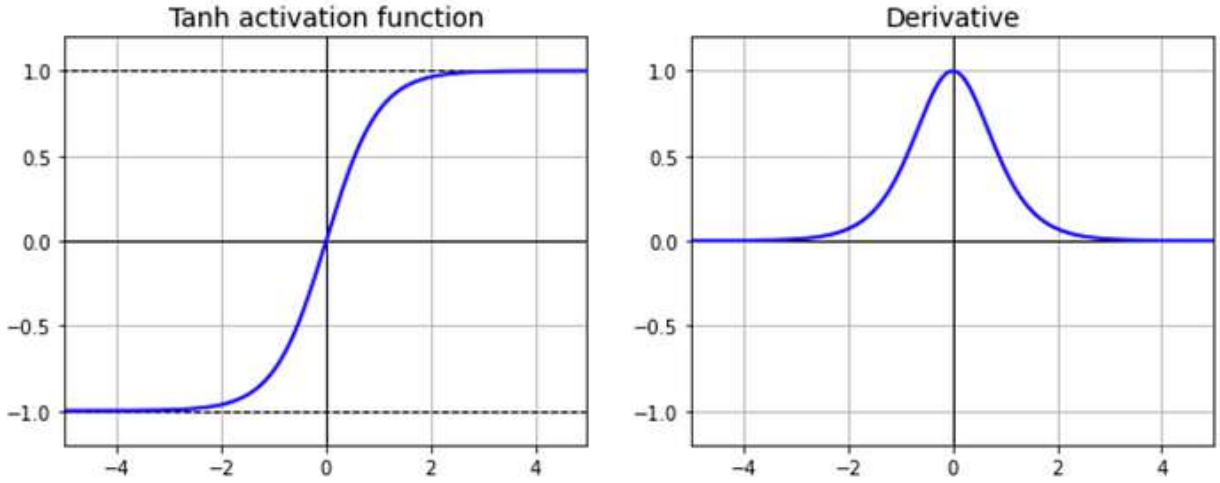
2. Hyperbolic Tangent (Tanh)

Another very popular and widely used activation function is the **Hyperbolic Tangent**, also known as **Tanh**. It is defined as:

$$\tanh(x) = \frac{e^{x} - e^{-x}}{e^{x} + e^{-x}}$$

tanh function (image by author)

The plot of the function and its derivative:



The plot of tanh and its derivative (image by author)

We can see that the function is very similar to the Sigmoid function.

- The function is a common **S-shaped** curve as well.
- The difference is that the output of **Tanh** is **zero centered** with a range from **-1** to **1** (instead of 0 to 1 in the case of the Sigmoid function)

- The same as the Sigmoid, this function is **differentiable**
- The same as the Sigmoid, the function is **monotonic**, but the function's derivative is not.

Tanh has characteristics similar to **Sigmoid** that can work with Gradient Descent. One important point to mention is that **Tanh** tends to make each layer's output more or less centered around 0 and this often helps speed up convergence [2].

Problems with Tanh activation function

Since **Tanh** has characteristics similar to **Sigmoid**, it also faces the following two problems:

1. **Vanishing gradient**: looking at the function plot, you can see that when inputs become small or large, the function saturates at -1 or 1, with a derivative extremely close to 0. Thus it has almost no gradient to propagate back through the network, so there is almost nothing left for lower layers.
2. **Computationally expensive:** the function has an exponential operation.

How to use Tanh with Keras and TensorFlow 2

To use the Tanh, we can simply pass 'tanh' to the argument activation:

```
from tensorflow.keras.layers import DenseDense(10, activation='tanh')
```

To apply the function for some constant inputs:

```
import tensorflow as tf
from tensorflow.keras.activations import tanhz = tf.constant([-20, -1, 0, 1.2], dtype=tf.float32)
output = tanh(z)
output.numpy()
```

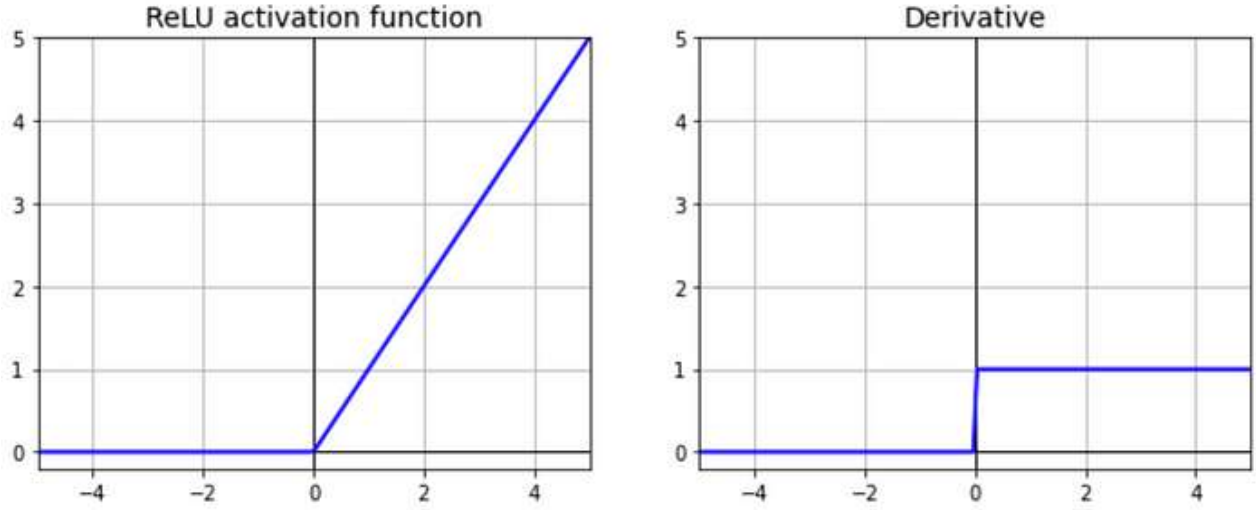
3. Rectified Linear Unit (ReLU)

The **Rectified Linear Unit (ReLU)** is the most commonly used activation function in deep learning. The function returns 0 if the input is negative, but for any positive input, it returns that value back. The function is defined as:

$$\begin{cases} 0 & \text{if } x \leq 0 \\ x & \text{if } x > 0 \end{cases}$$

ReLU function (image by author)

The plot of the function and its derivative:



The plot of ReLU and its derivative

As we can see that:

- Graphically, the ReLU function is composed of two linear pieces to account for non-linearities. A function is non-linear if the slope isn't constant. So, the ReLU function is

non-linear around 0, but the slope is always either 0 (for negative inputs) or 1 (for positive inputs).

- The ReLU function is **continuous**, but it is **not differentiable** because its derivative is 0 for any negative input.
- The output of ReLU does not have a maximum value (It is **not saturated**) and this helps Gradient Descent
- The function is very fast to compute (Compare to Sigmoid and Tanh)

It's surprising that such a simple function works very well in deep neural networks.

Problem with ReLU

ReLU works great in most applications, but it is not perfect. It suffers from a problem known as the **dying ReLU**.

Dying ReLU

During training, some neurons effectively die, meaning they stop outputting anything other than 0. In some cases, you may find that half of your network's neurons are dead, especially if you used a large learning rate. A neuron dies when its weights get tweaked in such a way that the weighted sum of its inputs are negative for all instances in the training set. When this happens, it just keeps outputting 0s, and gradient descent does not affect it anymore since the gradient of the ReLU function is 0 when its input is negative.

How to use it with Keras and TensorFlow 2

To use ReLU with Keras and TensorFlow 2, just set activation='relu'

```
from tensorflow.keras.layers import DenseDense(10, activation='relu')
```

To apply the function for some constant inputs:

```
import tensorflow as tf
from tensorflow.keras.activations import reluz = tf.constant([-20, -1, 0, 1.2], dtype=tf.float32)
output = relu(z)
output.numpy()
```

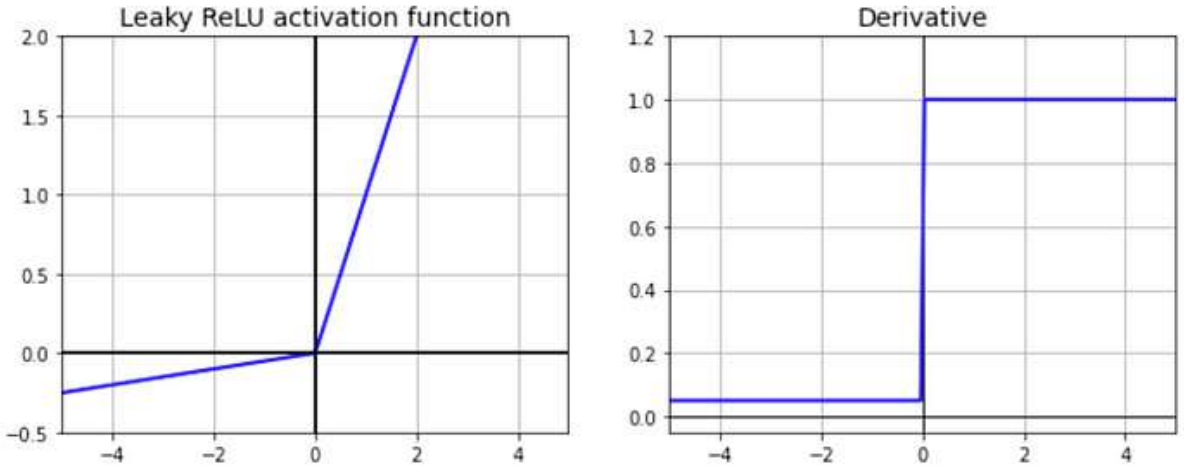
4. Leaky ReLU

Leaky ReLU is an improvement over the ReLU activation function. It has all properties of ReLU, plus it will never have **dying ReLU** problem. Leaky ReLU is defined as:

$f(x) = \max(\alpha x, x)$

The hyperparameter α defines how much the function leaks.

It is the slope of the function for x < 0 and is typically set to 0.01. The small slope ensures that Leaky ReLU never dies.



How to use Leaky ReLU with Keras and TensorFlow 2

To use the **Leaky ReLU** activation function, you must create a LeakyReLU instance like below:

from tensorflow.keras.**layers** import **LeakyReLU, Denseleaky_relu = LeakyReLU(alpha=0.01)**
Dense(10, **activation=leaky_relu**)

5. *Parametric leaky ReLU (PReLU)*

Parametric leaky ReLU (**PReLU**) is a variation of Leaky ReLU, where α is authorized to be learned during training (instead of being a hyperparameter, it becomes a parameter that can be modified by back propagation like any other parameters). This was reported to strongly outperform ReLU on large image datasets, but on smaller datasets it runs the risk of over fitting the training set [2].

How to use PReLU with Keras and TensorFlow 2

To use Parametric leaky ReLU, you must create a PReLU instance like below:
from tensorflow.keras.**layers** import **PReLU, Densepara_relu = PReLU()**
Dense(10, **activation=para_relu**)

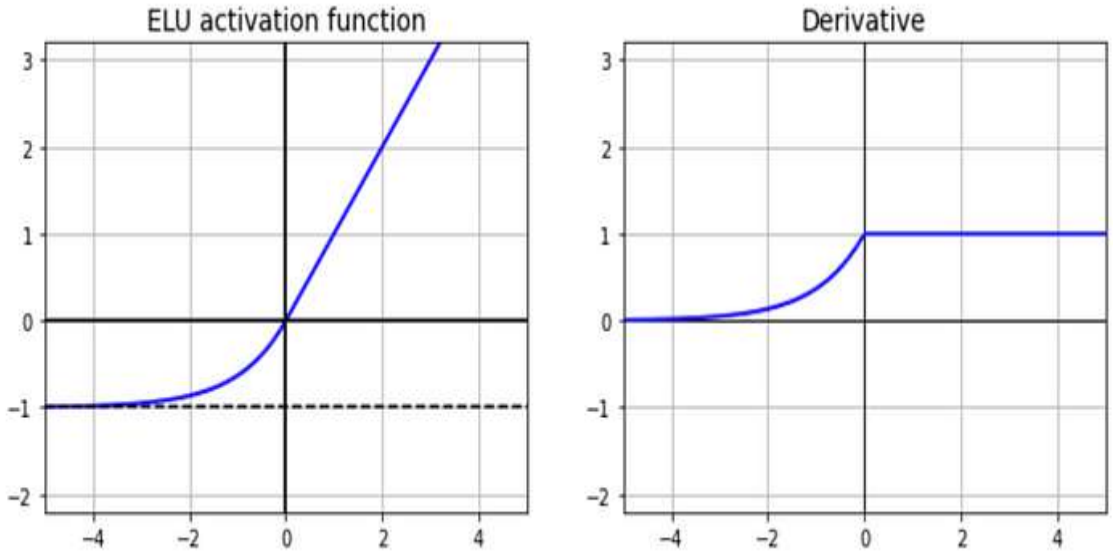
6. Exponential Linear Unit (ELU)

Exponential Linear Unit (**ELU**) is a variation of **ReLU** with a better output for z < 0. The function is defined as:

$$\begin{cases} \alpha\left(e^{x}-1\right) & \text{if } x \leq 0 \\ x & \text{if } x > 0 \end{cases}$$

ELU function

The hyperparameter α controls the value to which an **ELU** saturates for negative net inputs.
The plot of the function and its derivative:



The plot of ELU and its derivative (image by author)

We can see in the plot above,

- **ELU** modified the slope of the negative part of the function.
- Unlike the **Leaky ReLU** and **PReLU** functions, instead of a straight line, **ELU** uses a log curve for the negative values.

According to the authors, ELU outperformed all the ReLU variants in their experiments [3].

Problem with ELU

According to [2, 3], the main drawback of the ELU activation is that it is slower to compute than the ReLU and its variants (due to the use of the exponential function), but during training

this is compensated by the faster convergence rate. However, at test time, an ELU network will be slower than a ReLU network.

How to use it with Keras and TensorFlow 2

Implementing ELU in TensorFlow 2 is trivial, just specify the activation function when building each layer:

Dense(10, **activation='elu'**)

To apply the function for some constant inputs:

import tensorflow as tf

from tensorflow.keras.activations import **elu**z = tf.constant([-20, -1, 0, 1.2], dtype=tf.float32)

output = **elu(z, alpha=1)**

output.numpy()

7. Scaled Exponential Linear Unit (SELU)

Exponential Linear Unit (**SELU**) activation function is another variation of **ReLU** proposed by Günter Klambauer et al. [4] in 2017. The authors showed that if you build a neural network composed exclusively of a stack of dense layers, and if all hidden layers use the **SELU** activation function, then the network will self-normalize (the output of each layer will tend to preserve mean 0 and standard deviation 1 during training, which resolves the vanishing/exploding gradients problem). This activation function often outperforms other activation functions very significantly.

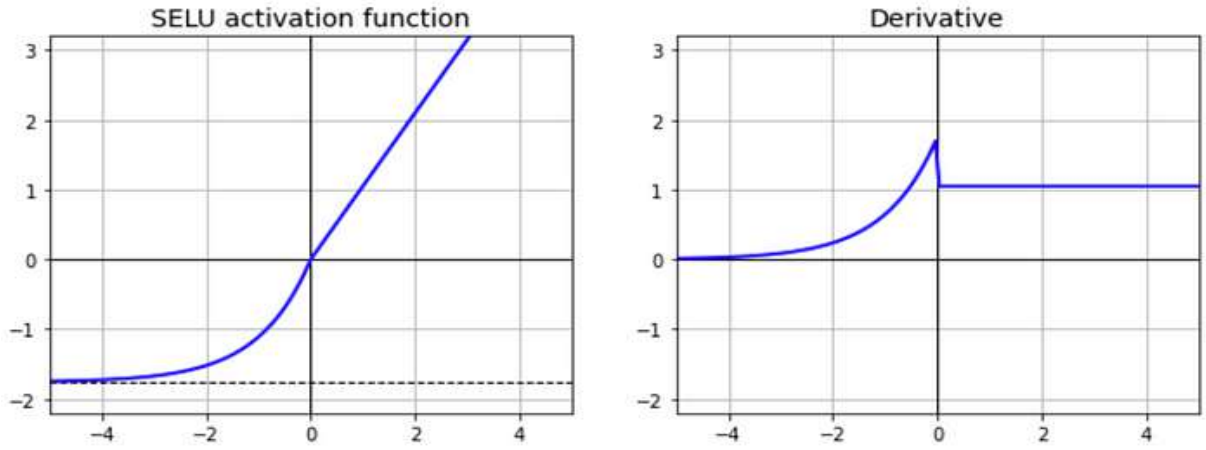
SELU is defined as:

f(x) = scale * x , z > 0

= scale * α * (exp(x) - 1) , z <= 0

where α and scale are pre-defined constants (α=1.67326324 and scale=1.05070098).

The plot of SELU and its derivative:



sigmoid functions:

TensorFlow is open-source Python library designed by Google to develop Machine Learning models and deep learning neural networks.

sigmoid() is used to find element wise sigmoid of x.

Syntax: *tensorflow.math.sigmoid(x, name)*

Parameters:

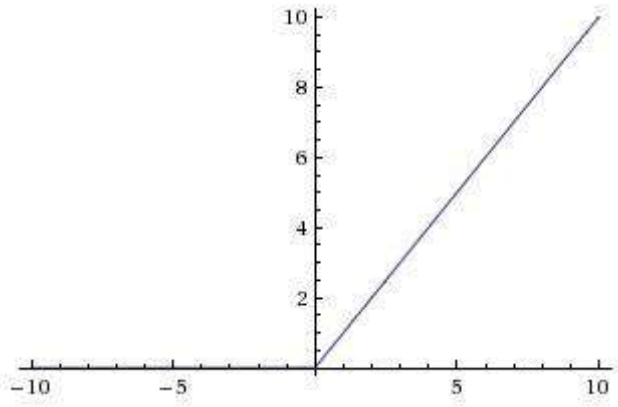
- ***x:*** *It's a tensor. Allowed dtypes are float16, float32, float64, complex64, or complex128.*
- ***name(optional):*** *It defines the name for the operation.*

Return: *It return a tensor of same dtype as x.*

Example 1:
Python3

```
# importing the library
import tensorflow as tf

# Initializing the input tensor
a = tf.constant([.2, .5, .7, 1, 2, 5, 10], dtype = tf.float64)

# Printing the input tensor
print('a: ', a)

# Calculating result
res = tf.math.sigmoid(x = a)

# Printing the result
print('Result: ', res)
```

Output:
a: tf.Tensor([0.2 0.5 0.7 1. 2. 5. 10.], shape=(7,), dtype=float64)
Result: tf.Tensor(
[0.549834 0.62245933 0.66818777 0.73105858 0.88079708 0.99330715
0.9999546], shape=(7,), dtype=float64)
Relu- rectified linear units:
Introduction
The Rectified Linear Unit is the most commonly used activation function in deep learning models. The function returns 0 if it receives any negative input, but for any positive value x$\square$ it returns that value back. So it can be written as f(x)=max(0,x)$\square$($\square$)=$\square\square\square$(0,$\square$).
Graphically it looks like this



It's surprising that such a simple function (and one composed of two linear pieces) can allow your model to account for non-linearities and interactions so well. But the ReLU function works great in most applications, and it is very widely used as a result.

Why It Works

Introducing Interactions and Non-linearities

Activation functions serve two primary purposes: 1) Help a model account for **interaction effects**. What is an interactive effect? It is when one variable A affects a prediction differently depending on the value of B. For example, if my model wanted to know whether a certain body weight indicated an increased risk of diabetes, it would have to know an individual's height. Some bodyweights indicate elevated risks for short people, while indicating good health for tall people. So, the **effect of**

body weight on diabetes risk depends on height, and we would say that **weight and height have an interaction effect**.

2) Help a model account for **non-linear effects.** This just means that if I graph a variable on the horizontal axis, and my predictions on the vertical axis, it isn't a straight line. Or said another way, the effect of increasing the predictor by one is different at different values of that predictor.

How ReLU captures Interactions and Non-Linearities

Interactions: Imagine a single node in a neural network model. For simplicity, assume it has two inputs, called A and B. The weights from A and B into our node are 2 and 3 respectively. So the node output is f(2A+3B)(2+3). We'll use the ReLU function for our f. So, if 2A+3B2+3 is positive, the output value of our node is also 2A+3B2+3. If 2A+3B2+3 is negative, the output value of our node is 0.

For concreteness, consider a case where A=1 and B=1. The output is 2A+3B2+3, and if A increases, then the output increases too. On the other hand, if B=-100 then the output is 0, and if A increases moderately, the output remains 0. So A might increase our output, or it might not. It just depends what the value of B is.

This is a simple case where the node captured an interaction. As you add more nodes and more layers, the potential complexity of interactions only increases. But you should now see how the activation function helped capture an interaction.

Non-linearities: A function is non-linear if the slope isn't constant. So, the ReLU function is non-linear around 0, but the slope is always either 0 (for negative values) or 1 (for positive values). That's a very limited type of non-linearity.

But two facts about deep learning models allow us to create many different types of non-linearities from how we combine ReLU nodes.

First, most models include a **bias** term for each node. The bias term is just a constant number that is determined during model training. For simplicity, consider a node with a single input called A, and a bias. If the bias term takes a value of 7, then the node output is f(7+A). In this case, if A is less than -7, the output is 0 and the slope is 0. If A is greater than -7, then the node's output is 7+A, and the slope is 1.

So the bias term allows us to move where the slope changes. So far, it still appears we can have only two different slopes.

However, real models have many nodes. Each node (even within a single layer) can have a different value for it's bias, so each node can change slope at different values for our input.

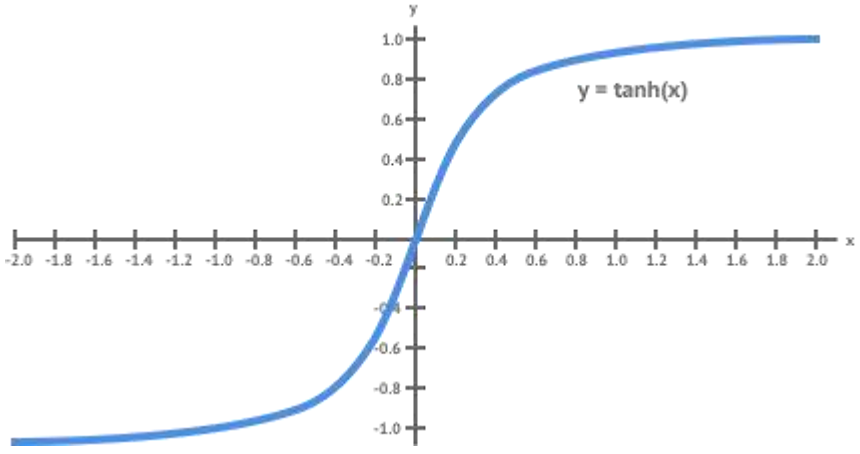
When we add the resulting functions back up, we get a combined function that changes slopes in many places.

These models have the flexibility to produce non-linear functions and account for interactions well (if that will giv better predictions). As we add more nodes in each layer (or more convolutions if we are using a convolutional model) the model gets even greater ability to represent these interactions and non-linearities.

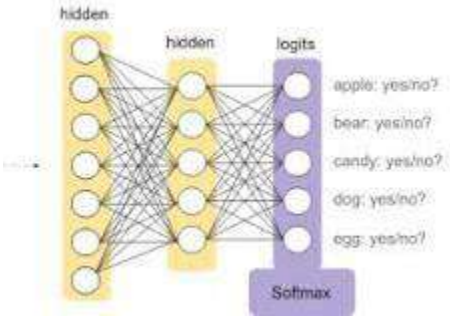
Facilitating Gradient Descent

This section is more technical than those above it. If you find it difficult, remember that you can have a lot of success using deep learning even without this technical background.

Historically, deep learning models started off with s-shaped curves (like the tanh function below)



The tanh would seem to have a couple advantages. Even though it gets close to flat, it isn't completely flat anywhere. So it's output always reflects changes in it's input, which we might expect to be a good thing. Secondly, it is non-linear (or curved everywhere). Accounting for non-linearities is one of the activation function's main purposes. So, we expect a non-linear function to work well.
However researchers had great difficulty building models with many layers when using the tanh function. It is relatively flat except for a very narrow range (that range being about -2 to 2). The derivative of the function is very small unless the input is in this narrow range, and this flat derivative makes it difficult to improve the weights through gradient descent. This problem gets worse as the model has more layers. This was called the **vanishing gradient problem**.
The ReLU function has a derivative of 0 over half it's range (the negative numbers). For positive inputs, the derivative is 1.
When training on a reasonable sized batch, there will usually be some data points giving positive values to any given node. So the average derivative is rarely close to 0, which allows gradient descent to keep progressing.
Alternatives
There are many similar alternatives which also work well. The Leaky ReLU is one of the most well known. It is the same as ReLU for positive numbers. But instead of being 0 for all negative values, it has a constant slope (less than 1.).
That slope is a parameter the user sets when building the model, and it is frequently called α. For example, if the user sets α=0.3=0.3, the activation function is f(x) = max(0.3*x, x). This has the theoretical advantage that, by being influenced by x at all values, it may be make more complete use of the information contained in x.
Their are other alternatives, but both practitioners and researchers have generally found insufficient benefit to justify using anything other than ReLU.
softmax function:
What is the softmax function in tenser flow?



That is, Softmax assigns decimal probabilities to each class in a multi-class problem. Those decimal probabilities must add up to 1.0. This additional constraint helps training converge more quickly than it otherwise would. Softmax is implemented through a neural network layer just before the output layer.

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Value Added Course
Title: Deep Learning

Test Exercise:

1. **When deep learning start?**
2. **Who is father of deep learning?**
3. **How many layers deep learning algorithms are constructed?**
4. **What is the subset of machine learning?**
5. **The deep learning first layer is called the __?**
6. **RNNs stands for ?**
7. **Which are the common use of RNNs?**
8. **CNN is mostly used when there is an?**
9. **Which neural network has only one hidden layer between the input and output?**
10. **Limitations of deep learning?**

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Value Added Course

Title: Deep Learning

Key:

1. **1943**
2. **FRANK ROSENBLATT**
3. **3**
4. **Deep learning**
5. **Inner layer**
6. **Recurrent neural networks**
7. **Provide a caption for images**
8. **Unstructured data**
9. **Shallow neural network**
10. **Data labelling , obtain huge training datasets**

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Computer Science

Value Added Course

Title: Deep Learning

Marks List

Class: IIBsc(MSCS)

S. No	Roll No.	Name of the Student	Marks
1	2155301	Krishnavarapu Dharanisri	09
2	2155302	Ghantasala Divya	08
3	2155303	Mopidevi Sri Lakshmi	09
4	2155304	Singavarapu Sai Sowmya	10
5	2155305	Arikatla Susanth	07
6	2155306	Bathina Manoj Phanindra	09
7	2155307	Jampana Keerthi Priya	08
8	2155308	Konatham Alekhya	09
9	2155309	Kondaraju Ajith Kumar	10
10	2155310	Nakka Anusha	09
11	2155311	Akula Chakradhar	08
12	2155312	Mohammad Khadeera begum	09
13	2155313	Bandela Pavan Kumar	08
14	2155314	Jonna Jhansi Lakshmi	08
15	2155315	Kunapareddy Tulasi	08

16	2155316	Peddiboyina Himasri	08
17	2155317	Katta Naga Sravani	08
18	2155318	Valluri Shainy	08
19	2155319	Manikonda Karuna Sri	08
20	2155320	Padmanabhuni Phani Supraja	08
21	2155321	Kunapareddy Hema sri	09
22	2155322	Reddy Durga Bhavani	08
23	2155323	Dokka Naga Gireesha	08
24	2155324	Nerusu Naga Mounika	09
25	2155325	Goriparthi Dedeepya	08
26	2155326	Edupuganti Joshimani	08
27	2155327	Gangisetty Yuva Kiran	08
28	2155328	Veerla Sri Lakshmi	08
29	2155329	Mamidi Chaitanya	07
30	2155330	Rachuri Bobby	07
31	2155331	Peteti Praneeth Kumar	10
32	2155332	Mohammad Abrar Ahamad	09
33	2155333	Goriparthi Harika	08
34	2155334	Vinnakota Deepthi	08

Signature of Lecturer

Signature of HOD

PRINCIPAL
Signature of Principal
AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Computer Science

Value Added Course

Title: Deep Learning

Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Class / Section: II BSC (MSCS) **Year:** II **Department of:** Computer science **Paper:** Deep learning **Lecturer:** Teja Sri. Oleti

Sl. No	Roll No	Student Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	2155301	Krishnavarapu Dharanisri	P	P	P	P	P	P	A	P	P	P	P	P	A	P	P	
2	2155302	Ghantasala Divya	P	P	P	P	P	P	P	P	P	A	P	P	P	A	P	
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9	2155309	Kondaraju Ajith Kumar	P	P	P	P	P	P	P	P	P	P	A	P	A	P	P	
10	2155310	Nakka Anusha	P	P	P	P	P	P	P	P	A	P	P	A	P	P	A	
11	2155311	Akula Chakradhar	P	P	P	P	A	P	A	P	P	P	A	P	P	A	P	
12	2155312	Mohammad Khadeera begum	P	P	P	P	P	P	A	P	A	P	P	P	A	P	P	
13	2155313	Bandela Pavan Kumar	P	A	P	P	A	P	P	P	P	P	A	P	P	A	P	
14	2155314	Jonna Jhansi Lakshmi	P	P	P	P	P	A	P	P	A	P	P	P	P	A	P	
15	2155315	Kunapareddy Tulasi	P	P	P	P	A	P	P	P	P	A	P	P	A	P	P	
16	2155316	Peddiboyina Himasri	P	P	P	P	P	P	P	P	A	P	P	P	A	P	P	

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Value Added Course / Certificate Course - Attendance Register

Class / Section: B.Sc (MSCS) Year: III Department of: Computer Science Paper: Deep learning Lecturer: Teja Sri. oleti

Sl. No	Roll No	Student Name	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
1	2155317	Katta Naga Sravani	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	
2	2155318	Valluri Shainy	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P	
3	2155319	Manikonda Karuna Sri	P	P	P	P	P	P	P	P	A	P	P	P	A	P	P	
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5	2155321	Kunapareddy Hema sri	P	P	P	P	A	P	P	P	P	A	P	P	A	P	A	
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15	2155331	Peteti Praneeth Kumar	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	
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18	2155334	Vinnakota Deepthi	P	P	P	P	P	A	P	P	P	P	P	P	A	A	P	

Signature of Lecturer

Signature of HOD

Signature of Principal
AG & SG Siddhartha Degree College of Arts & Science (Autonomous), Vuyyuru

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Vuyyuru-521165, Krishna District, Andhra Pradesh

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A.G. & S.G. Siddhartha Degree College of Arts & Science

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Signature of Lecturer

Signature of HOD

Signature of Principal

PRINCIPAL
AG & SG Siddhartha Degree College of Arts & Science (Autonomous), Vuyyuru

ADUSUMILLI GOPALAKRISHNAIAH & SUGARCANE GROWERS

SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE

Vuyyuru-521 165, Krishna District, Andhra Pradesh

An Autonomous College in the Jurisdiction of Krishna University

Accredited by NAAC with "A" Grade

DEPARTMENT OF COMPUTER SCIENCE

VALUE ADDED COURSE:DEEP LEARNING

VAC CODE:DLVAC01

CERTIFICATE

This is to Certify that **Ms.K.Hema Sri** Son /Daughter of shri/Smt **K.Srinivasa Rao** has Successfully completed value added course in **Deep Learning** Conducted by the Department of COMPUTER SCIENCE from **15-03-2023 to 25-04-2023** We wish him /her bright future.

Co-ordinator

Head of Department

Principal

PRINCIPAL
AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

ADUSUMILLI GOPALAKRISHNAIAH & SUGARCANE GROWERS

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DEPARTMENT OF COMPUTER SCIENCE

VALUE ADDED COURSE:DEEP LEARNING

VAC CODE:DLVAC01

CERTIFICATE

This is to Certify that **Mr.P.Praneeth Kumar** Son /Daughter of shri/Smt **P.Rubenu** has Successfully completed value added course in **Deep Learning** Conducted by the Department of COMPUTER SCIENCE from **15-03-2023 to 25-04-2023** We wish him /her bright future.

Co-ordinator

Head of Department

Principal

PRINCIPAL

AG & SG Siddhartha Degree College of Arts&Science (Autonomous),Vuyyuru

AdusumilliGopalakrishnaiah& Sugarcane Growers
Siddharatha Degree College of Arts and Science

Autonomous College

NAAC 'A' Grade College

Vuyyuru, Krishna (Dt)., Andhra Pradesh-521165

VALUE ADDED COURSE

TITLE: MOCKPARLIMENT

VAC CODE: POL-MP-01

On 20th March, 2023 TO 29th April 2023

Duration of the Course: 30Hrs

Organized By

Department of Political Science

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution

DEPARTMENT OF POLITICAL SCIENCE

2022 -2023

Value Added Course
Title: MOCK PARLIMENT

Name of the Lecturer	:	CH.SANDHYA RANI
Class	:	II B.A
Duration of the Course	:	30 DAYS
VAC Code	:	POL-MP-01

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: MOCK PARLIMENT

Objectives :

1. **Understanding the legislative process: Mock Parliament provides participants with a practical understanding of how a legislative body functions. It allows them to learn about the different stages of lawmaking, such as proposing bills, debating them, and voting on their passage.**
2. **Developing debating and public speaking skills: Mock Parliament offers an opportunity for participants to enhance their debating and public speaking abilities. They can practice articulating their viewpoints, constructing persuasive arguments, and responding to counterarguments.**
3. **Promoting critical thinking: By engaging in Mock Parliament, participants are encouraged to think critically about various issues. They must analyze different perspectives, evaluate evidence, and develop logical reasoning to support their positions.**
4. **Fostering teamwork and collaboration: Mock Parliament involves teamwork and collaboration among participants. They work together to form political parties or factions, strategize their positions, and negotiate with other members to gain support for their proposals. This promotes collaboration, consensus-building, and understanding of diverse viewpoints.**

Methodology : Teacher - Centered method

Duration : 30 Hours

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Student Enrolment Sheet

Class : I B.A

S. No	Roll No.	Name of the Student	Signature
1	2111001	V. Ashok kumar	V.Ashok kumar
2	2111002	K. Ajay kumar	K.Ajay Kumar
3	2111004	I. Raja Babu	I. Rajababu
4	2111008	Reddy Raju	R.Raju
5	2111010	V. Chandra teja	V.Chandra Teja
6	2111016	P. Pujitha	P.pujitha
7	2111017	P.S.V. Sukanya	P.S.V.Sukanya
8	2111018	S. Naga Lakshmi	S.NagaLakshmi
9	2111019	T. Neelima	T.Neelima.
10	2111022	S. kavya	S.kavya
11	2111023	M. Prasanthi	M.Prasanthi
12	2111024	B. Prashanthi	B.Prashanthi
13	2111026	D. Durga Devi	D.DurgaDevi
14	2111027	K. Halleluya	K.Halleluya.
15	2111038	G. Naga Abhinay	G.NagaAbhinay

Ch. Sandhya Rani

Head, Department of Political Science
A.G. & S.G. Siddhartha Degree College
(Autonomous), VUYYURU- 521 165

PRINCIPAL
AG & SG Siddhartha Degree College of
Arts&Science (Autonomous),Vuyyuru

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: MOCK PARLIMENT

Date From 20/03/2023 to 29/04/2023

Date	Content	Module No.
20.03.23 to 25.03.23	Role Assignment: Participants are assigned roles as members of the parliament or legislative body. These roles can include Prime Minister, Speaker of the House, Leader of the Opposition, Cabinet Ministers, Members of Parliament (MPs), and representatives from different political parties.	I
26.03.23 to 03.04.23	Legislative Agenda: A legislative agenda is developed, which includes a list of proposed bills or motions that will be debated and voted upon during the simulation. These bills can cover a wide range of topics such as education, healthcare, environment, economy, social issues, or any other relevant areas of interes	II
04.04.23 to 15.04.23	Bill Proposals: Participants are given the opportunity to propose bills or motions. These proposals should be well-researched and contain clear objectives, justifications, and potential impacts. Participants can work individually or in groups to draft and present their bills.	III
16.04.23 to 29.04.23	Voting and Decision-Making: Following the debates, participants engage in voting on the proposed bills. Voting can be done electronically or through a show of hands. The results determine the fate of the bills, whether they pass or fail. This helps participants understand the importance of majority support and the democratic decision-making process.	IV

UNIT-I

Rol e of Agenda

In this lesson, we learned the purpose and methods of setting agendas. Additionally, we learned the importance of setting an agenda, technology and agenda setting, and the effects of agenda-setting on audiences. Answer the following questions to test your mastery of this subject.

Section 1: Definition of Agenda Setting

What is the definition of and purpose of an agenda?

What is the definition of agenda setting?

What are the two basic assumptions to be considered during agenda setting?

Does agenda setting reflect or create reality? Can the agenda setting be used to modify the current reality?

Section 2: Technology

What are common communication mediums used for agenda setting?

What are some of the major impacts the internet and social media has had on agenda setting?

Section 3: The Effect on Audiences

One of the objectives of agenda setting is to improve or modify audience opinions regarding the topic of the agenda. How can a message modify the beliefs and values of an audience? How can a message enhance audience sensitivity to an issue?

What are obtrusive issues? Will the agenda setting on obtrusive issues impact a larger audience than other issues?

What will be some challenges in agenda setting on obtrusive issues in comparison to special interests?

What is the central claim of agenda setting theory?

The central claim of agenda setting theory is an individual or organization using mass media to influence the importance of objectives or goals on their agenda. The agenda can contain political, economic, or social goals that are partial to a person or organization.

What is framing in agenda setting?

Framing involves two parts to get the agenda setting message across. The media wants to influence how people think about something and how they should react to a given situation or event.

What are some criticisms of the agenda setting theory?

Agenda setting theory is heavily criticized for not showing all the details in an event or about a particular issue. Agenda setting is also criticized for causing more divisiveness rather than unity on issues.

UNIT-II

The legislative power of the states and the centre are defined in the Constitution and these powers are divided into three lists. The subjects that are not mentioned in any of the three lists are known as residuary subjects. Subject to the provisions in the Constitution elsewhere, the power to legislate on residuary subjects, rests with Parliament or state legislative assembly as the case may be per Article 245. Deemed amendments to the Constitution which could be passed under legislative powers of Parliament, are no more valid after the addition of Article 368 (1) by 24th Amendment.

A bill is the draft of a legislative proposal. It has to pass through various stages before it becomes an act of Parliament.[8][9] There are three stages through which a bill has to pass in one house of Parliament. The procedure is similar for the legislative assemblies of states.

Unit-III

BILL PROPOSALS

First reading

The legislative process begins with the introduction of a bill in either house of Parliament, i.e. the Lok Sabha or the Rajya Sabha. A bill can be introduced either by a minister or by a private member. In the former case it is known as a government bill and in the latter case it is known as a private member's bill. It is necessary for a member-in-charge of the bill to ask for the leave of the house to introduce the bill. If leave is granted by the house, the bill is introduced. This stage is known as the first reading of the bill. If the motion for leave to introduce a bill is opposed, the speaker may, in his discretion, allow a brief explanatory statement to be made by the member who opposes the motion and the member-in-charge who moved the motion. Where a motion for leave to introduce a bill is opposed on the ground that the bill initiates legislation outside the legislative competence of the house, the speaker may permit a full discussion thereon. Thereafter, the question is put to the vote of the house. However, the motion for leave to introduce a finance bill or an appropriation bill is forthwith put to the vote of the house.[10] Money/appropriation bills and financial bills can be introduced only in the Lok Sabha per Articles 109, 110 and 117. The Speaker of Lok Sabha decides whether a bill is a money bill or not. The vice-president of India, who is ex-officio Chairman of the Rajya Sabha, decides whether a bill is a money bill or not when the bill is introduced in the Rajya Sabha.[11]

Publication in the official gazette

After a bill has been introduced, it is published in The Gazette of India. Even before introduction, a bill might, be published in the Gazette on the permission of

the speaker. In such cases, leave to introduce the bill the house is not asked for and the bill is straight away introduced.

Reference of bill to the standing committee

After a bill has been introduced, the presiding officer of the concerned house (speaker of the Lok Sabha or the chairman of the Rajya Sabha or anyone acting on their behalf) can refer the bill to the concerned standing committee for examination and to prepare a report thereon. If a bill is referred to a standing committee, the committee shall consider the general principles and clauses of the bill referred to them and make a report thereon. The committee can also seek expert opinion or the public opinion of those interested in the measure. After the bill has thus been considered, the committee submits its report to the house. The report of the committee, being of persuasive value, shall be treated as considered advice.

Second reading

The second reading consists of consideration of the bill which occurs in two stages.

First stage

The first stage consists of general discussion on the bill as a whole when the principle underlying the bill is discussed. At this stage it is open to the house to refer the bill to a select committee of the house or a joint committee of the two houses or to circulate it for the purpose of eliciting opinion thereon or to straight away take it into consideration.

If a bill is referred to a select or joint committee, the committee considers the bill clause-by-clause just as the house does. Amendments can be moved to the various clauses by members of the committee. The committee can also take evidence of associations, public bodies or experts who are interested in the measure. After the bill has thus been considered, the committee submits its report to the house which considers the bill again as reported by the committee. If a bill is circulated for the purpose of eliciting public opinion thereon, such

opinions are obtained through the governments of the states and union territories. Opinions so received are laid on the table of the house and the next motion in regard to the bill must be for its reference to a select/joint committee. It is not ordinarily permissible at this stage to move the motion for consideration of the bill.

Second stage

The second stage of the second reading consists of clause-by-clause consideration of the bill as introduced or as reported by select or joint committee. Discussion takes place on each clause of the bill and amendments to clauses can be moved at this stage. Amendments to a clause have been moved but not withdrawn are put to the vote of the house before the relevant clause is disposed of by the house. The amendments become part of the bill if they are accepted by a majority of members present and voting. After the clauses, the schedules if any, clause 1, the enacting formula and the long title of the bill have been adopted by the house, the second reading is deemed to be over.

Third and the last reading

Thereafter, the member-in-charge can move that the bill be passed. This stage is known as the third reading of the bill. At this stage the debate is confined to arguments either in support or rejection of the bill without referring to the details thereof further than that are absolutely necessary. Only formal, verbal or consequential amendments are allowed to be moved at this stage. In passing an ordinary bill, a simple majority of members present and voting is necessary. But in the case of a bill to amend the Constitution, a majority of the total membership of the house and a majority of not less than two-thirds of the members present and voting is required in each house of Parliament.[10] If the number of votes in favour and against the bill are tied, then the presiding officer of the concerned house can cast his/her vote, referred to as a casting vote right.

UNIT -IV

Voting Decission

If at any time during a meeting of a house there is no quorum, which is a minimum of one-tenth of the total strength of a house, it is the duty of the chairman or speaker, or person acting as such, either to adjourn the house or to suspend the meeting until the quorum is met. The bills taken up under legislative power of Parliament are treated as passed provided majority of members present at that time approved the bill either by voting or voice voteIt is also right of a member to demand voting instead of voice vote.In case of passing a constitutional amendment bill, two-thirds of the total members present and voted in favour of the bill with more than half of the total membership of a house present and voting in all, is required according to Article 368 of the Constitution.

Joint session of both houses

Main article: Joint session

In case of a deadlock between the two houses or in a case where more than six months lapse in the other house, the President may summon, though is not bound to, a joint session of the two houses which is presided over by the Speaker of the Lok Sabha and the deadlock is resolved by simple majority. To date, only three bills - the Dowry Prohibition Act (1961), the Banking Service Commission Repeal Bill (1978) and the Prevention of Terrorist Activities Act (2002) have been passed at joint sessions.

President's approval

When a bill has been passed by both houses following the described process, it is sent to the President for his approval per Article 111. The President can assent or withhold his assent to a bill or he can return a bill, other than a money bill which is recommended by the President himself to the houses. However Article 255 says that prior recommendation of the President or the Governor of a state wherever stipulated is not compulsory for an act of Parliament or of the legislature of a

state but the final consent of the President or Governor is mandatory. If the President is of the view that a particular bill passed under the legislative powers of Parliament violates the Constitution, he can return the bill with his recommendations to pass the bill under the constituent powers of Parliament following the Article 368 procedure. The President shall not withhold constitutional amendment bill duly passed by Parliament per Article 368. If the President gives his assent, the bill is published in The Gazette of India[15] and becomes an act from the date of his assent. If he withholds his assent, the bill is dropped, which is known as absolute veto. The President can exercise absolute veto on aid and advice of the Council of Ministers per Article 111 and Article 74.[16] The President may also effectively withhold his assent as per his own discretion, which is known as pocket veto. The pocket veto has only been exercised once by President Zail Singh in 1986, over the Postal Act which allowed the government to open postal letters without warrant by amending the Indian Post Office Act, 1898. If the President returns it for reconsideration, the Parliament must discuss once again, but if it is passed again and returned to the President, he must give his assent to it. If Parliament is not happy with the President for not assenting a bill passed by it under its legislative powers, the bill can be modified as a constitutional amendment bill and passed under its constituent powers for compelling the president to give assent. In case a constitutional amendment act is violating the basic structure of the Constitution, the constitutional bench of the Supreme Court would quash the act. When Parliament is of the view that the actions of the President are violating the Constitution, impeachment proceedings against the president could be taken up to remove him under Article 61 where at least two-thirds of the total membership of each house of Parliament should vote in favour of the impeachment when charges against the president are found valid in an investigation.

In case of a bill passed by the legislative assembly of a state, the consent of that state's governor has to be obtained. Some times the governor may refer the bill to the president anticipating clash between other central laws or constitution and decision of the president is final per Articles 200 and 201.

All decisions of the Union Cabinet are to be assented by the President for issuing gazette order. In case the Cabinet decisions are not in the purview of the established law, the President shall not give assent to the Cabinet decisions. He may indicate that the Union Cabinet has to pass the necessary legislation by the Parliament to clear the Cabinet decision. A minister is not supposed to take any decision without being considered by the Union Council of Ministers per Article 78(c).

The purpose of framing the Indian Constitution is to serve with honesty, efficiency and impartiality for the betterment of its citizens by the people who are heading or representing the independent institutions created by the Constitution such as judiciary, legislature, executive, etc. When one or more institutions are failing in their duty, the remaining shall normally take the lead in correcting the situation by using checks and balances as per the provisions available in the Constitution.

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: MOCK PARLIMENT

Test Exercise:

- **Opening Address by the Prime Minister**
- **Opposition Leader's Response**
- **Bill Proposal - Education Reform**
- **Cabinet Minister's Defense of the Bill**

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: MOCK PARLIMENT

Key:

1. **Speaker of the House: The presiding officer of the legislative body who maintains order, enforces rules, and ensures fair debate.**
2. **Prime Minister: The head of government and leader of the ruling party or coalition.**
3. **Leader of the Opposition: The leader of the largest opposition party who presents alternative policies and critiques the government's actions.**
4. **Cabinet Ministers: Government officials responsible for specific areas, such as finance, education, health, or defense.**
5. **Members of Parliament (MPs): Elected representatives who debate and vote on legislation.**
6. **Political Parties: Organized groups of MPs who share similar ideologies and policy goals.**

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of POLTICAL SCIENCE

Value Added Course

Title: MOCK PARLIMENT

Marks List

Class: I BA

S. No	Roll No.	Name of the Student	Marks
1	2111001	V. Ashok kumar	9
2	2111002	K. Ajay kumar	8
3	2111003	I. Raja Babu	7
4	2111008	Reddy Raju	8
5	2111010	V. Chandra Teja	7
6	2011016	P. Pujitha	8
7	2111017	P.S.V. Sukanya	9
8	2111018	S. Naga Lakshmi	9
9	2011019	T. Neelima	8
10	2111022	S. Kavya	8
11	2111023	M. Prasanthi	8
12	2111024	B. Prashanthi	9
13	2111026	D. Durga Devi	8
14	2111027	K. Halleluya	8
15	2111038	G. Naga Abhinay	9

Ch. Sandhya Rani
Head, Department of Political Science
A.G. & S.G. Siddhartha Degree College
(Autonomous), VUYYURU - 521 165

Signature & Seal

PRINCIPAL
AG & SG Siddhartha Degree College o
Arts&Science (Autonomous), Vuyyur

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of POLITICAL SCIENCE

Value Added Course
Title: MOCK PARLIMENT

Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

1. II BA - 2111018 - S. Nagalakshmi - S. Nagalakshmi
2. II BA - 2111019 - T. Neelima - T. Neelima
3. II BA - 2111024 - B. Prashanthi - B. Prashanthi
4. II BA - 2111038 - G. Naga Abhinay - G. Abhinay

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Class / Section: II BA Year : 2023 Department of: Political Science Paper: Value added Course Lecturer: Ch. Sandhya Rani

Sl. No	Roll No	Student Name	Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	2111001	V. Ashok kumar		P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	13
2	2111002	K. Ajay kumar		P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	13
3	2111004	I. Raja Babu		P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	13
4	2111008	Reddy Raju		P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	13
5	2111010	V. chandra Teja		P	P	P	A	P	P	P	P	P	P	P	P	A	P	P	13
6	2111016	P. pujitha		P	P	P	P	P	P	A	P	P	P	P	P	P	A	P	13
7	2111017	P.S.V. Sukanya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
8	2111018	S. Naga lakshmi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
9	2111019	T. Neelima		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
10	2111022	S. Kavya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
11	2111023	M. Prasanthi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
12	2111024	B. Prashanthi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
13	2111026	D. Durga Devi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
14	2111027	K. Halleluya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
15	2111038	G. Naga Abhinay		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Class / Section: II BA Year : 2023 Department of: Political Science Paper: Value added Course Lecturer: Ch. Sandhya Rani

Sl. No	Roll No	Student Name	Category	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
1	2111001	V. Ashok kumar		P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	13
2	2111002	K. Ajay Kumar		P	A	P	P	P	P	P	A	P	P	P	P	P	P	P	13
3	2111004	J. Raja Babu		P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	13
4	2111008	Reddy Raju		P	P	P	A	P	P	P	P	A	P	P	P	P	P	P	13
5	2111010	V. Chandra teja		P	P	P	P	P	P	A	P	P	P	P	P	A	P	P	13
6	2111016	P. Prajitha		P	P	A	P	P	P	P	P	P	P	P	A	P	P	P	13
7	2111017	P.S.V. Srikanya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
8	2111018	S. Naga Lakshmi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
9	2111019	J. Neelima		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
10	2111022	S. Kavya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
11	2111023	M. Prasanthi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
12	2111024	B. Prashanthi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
13	2111026	D. Durga Devi		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
14	2111027	K. Halleluya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
15	2111038	G. Naga Abhinay		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15

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ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department of Political Science

VALUE ADDED COURSE: *MOCK PARLIMENT*

CERTIFICATE

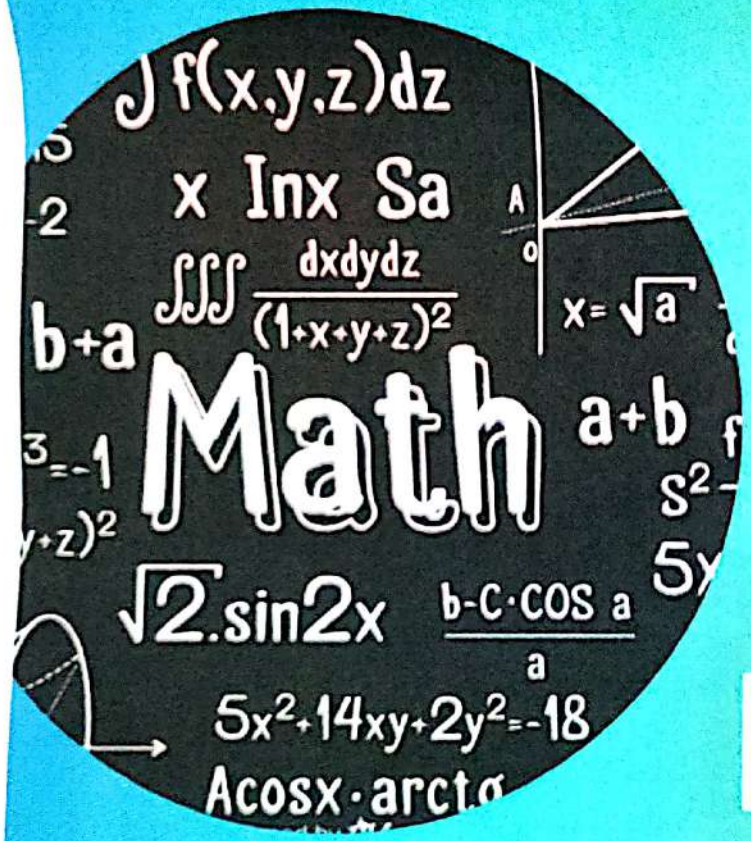
This is to Certify that . S. Naga lakshmi **Son/Daughter of Shri/Smt** S. venkata Ramana

has Successfully completed value added course in MOCK PARLIMENT
Conducted by the Department of Political Science from 20-03-2023 to 29-04-2023 We wish him her bright future

Ch. Sandhya Rani
Co-ordinator

Ch. Sandhya Rani
Head of Department
Head, Department of Political Science
A.G. & S G. Siddhartha Degree College
(Autonomous), VUYYURU - 521 165

Principal
PRINCIPAL
AG & SG Siddhartha Degree College of
Arts&Science (Autonomous),Vuyyuru



Contact Us

Door No.2.391, College Road , Near
Kota complex ,Vuyyuru -521165

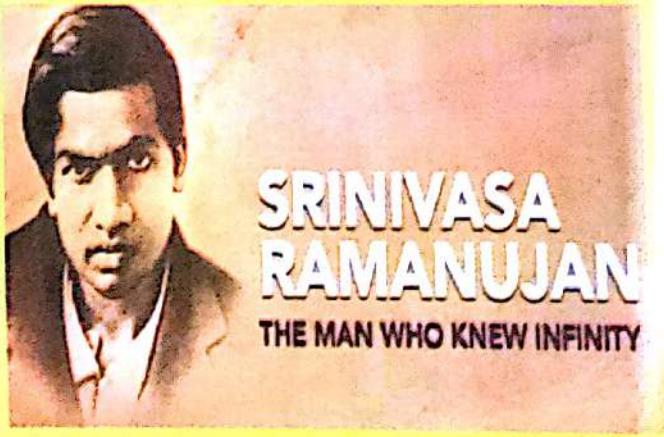
agsgsiddhartha@gmail.com
www.agsgsc.edu.in

ARITHMETIC ABILITY

Course : Arithmetic Ability
Code : MAT-VAC-01
Class : I.MPCS
Duration: 30 Days

A.G&S.G.S DEGREE COLLEGE, VUYYURU

DEPARTMENT OF MATHEMATICS



Value Added Course
on

ARITHMETIC ABILITY

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution

DEPARTMENT OF MATHESMATICS

2022-2023

Value Added Course
Title: ARTHEMATIC ABELITY

Name of the Lecturer	:	Mohammad Noor
Class	:	I.MPCS
Duration of the Course	:	30 HOURS
VAC Code	:	MAT-AB-01

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: ARTHEMATIC ABELITY

Objectives :

1. **Mastery of Addition and Subtraction: One objective is to develop proficiency in adding and subtracting numbers accurately and efficiently. This includes mastering mental math strategies, regrouping, and carrying over digits.**
2. **Fluency in Multiplication and Division: Another objective is to become fluent in multiplication and division operations. This involves memorizing multiplication tables, understanding the concept of division, and being able to solve problems involving multiplication and division with ease.**
3. **Problem-Solving Skills: Developing problem-solving skills is an important objective in arithmetic. It includes the ability to analyze word problems, identify the correct operation to use, and apply appropriate strategies to solve them.**

Methodology : Teacher - Centered method

Duration : 30 Hours

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title:ARTHEMATIC ABELITY

Date: From : 01.09.2022 to 30.09.2022

Date	Content	Module No.
	Addition: Understanding the addition operation, including adding single-digit and multi-digit numbers, carrying over digits, and adding decimals or fractions.	I
	Subtraction: Understanding the subtraction operation, including subtracting single-digit and multi-digit numbers, borrowing or regrouping digits, and subtracting decimals or fractions.	II
	Multiplication: Understanding the multiplication operation, including multiplying single-digit and multi-digit numbers, using multiplication tables, and applying different strategies like the standard algorithm or lattice method.	III
	Division: Understanding the division operation, including dividing single-digit and multi-digit numbers, using division tables, interpreting remainders, and applying strategies such as long division or short division.	IV

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Student Enrolment Sheet

Roll.No	Student Name	F/M
22.601	K. Pujitha	F
602	V. Samyuktha	F
603	B. Jayanthi	F
604	J. Preethi	F
605	Sayed Haseena	F
606	S. Madhukar	M
607	D. Bindu Bhargavi	F
608	M. Manoj Kumar	M
609	A. Kavya Sri	F
610	E. Pujitha	F
611	A. Sameera	F
612	R. Charitha Sri	F
613	K. Durga Bhavani	F
614	P. Raghavendra	M
615.	K. Durga.	F

Lecturer

H.O.D

Principal

AG & SG Siddhartha Degree College of Arts & Sci (Autonomous) VUYYURU-521 165

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: ARTHEMATIC ABELITY

Test Exercise:

1. Difference between the square of two numbers is 45. If the sum of both the numbers is 9, what will be the difference between the two numbers ?

   1) 6 2) 3 3) 2 4) 4 5) 5

Direction(42-47): Study the table and answer the given question.

The given table is regarding people who were surveyed in four cities - A, B, C and D who either like pizza or do not like pizza.

City	Number of people who like pizza	Number of people who do not like pizza
A	300	120
B	350	50
C	400	250
D	420	80

2. **How many boys in city C liked pizza?**
   1) 220 2) 200 3) 180 4) 140 5) 260
3. **What is the respective ratio between the total number of people who do not like Pizza in city A and city B together and number of people who do not like pizza in City D?**
   1) 15 : 8 2) 9 : 18 3) 17 : 8 4) 14 : 5 5) 16 : 9
4. **Number of people who like pizza in city E is 20% less than the number of people Who like pizza in city B. It total number of people who were surveyed in city E was 350, how many people in city E do not like pizza?**
   1) 80 2) 70 3) 110 4) 90 5) 120

5. What is the difference between the number of people who like pizza in city A and Number of people who do not like pizza in city C ?
   1) 50 2) 60 3) 70 4) 80 5) 40
6. Number of people who do not like pizza in city A is what percent more than the Number of people who do not like pizza in city D ?
   1) 25 2) 50 3) 75 4) $33\frac{1}{3}$ 5) $66\frac{2}{3}$
7. What is the average number of people who like pizza in cities B, C and D ?
   1) 280 2) 140 3) 390 4) 310 5) 440

Direction(48-53):What will come in place of question mark (?) In the given number Series ?

8. 2 3 8 27 112 ?
   1) 620 2) 339 3) 565 4) 625 5) 600
9. 65 66 64 67 63 ? 62
   1) 65 2) 70 3) 64 4) 72 5) 68
10. 6 6 9 18 45 ?
   1) 120 2) 90 3) 135 4) 115 5) 125
11. 880 440 220 ? 55 27.5
   1) 80 2) 100 3) 110 4) 200 5) 120
12. 10 14 23 39 ? 100
   1) 58 2) 76 3) 64 4) 48 5) 72

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course
Title:ARTHEMATIC ABELITY

Key:

1.5	2.1	3.3	4.2	5.1	6.2	7.3	8.3	9.5	10.3	11.3	12.3

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of MATHEMATICS
Value Added Course
Title: ARTHEMATIC ABELITY

Marks List

Class: I MPCs

S. No	Roll No.	Name of the Student	Marks
1.	22.601	K. Pujitha	22
2.	602	V. Samyuktha	20
3.	603	B. Jahnavi	22
4.	604	J. Preethi	20
5.	615	Sayed Haseena	20
6.	606	S. Madhuchari	18
7.	607	D. Bindu Bhargavi	22
8.	608	M. Manoj Kumar	22
9.	609	A. Kavya Sai	20
10.	610	E. Pujitha	18
11.	611	A. Sameera	25
12.	612	R. charitha Sai	20
13.	613	K. Durga Bhavani	20
14.	614	P. Raghavendra	20
15.	615	K. Durga	22

Lecturer

N.V.
H.O.D

Principal
AG & SG Siddhartha Degree College
of Arts & S... (Autonomous)
VUYYURU-521 165

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Class / Section: I B.Sc MPCs Year : 2022-23 Department of: Maths Paper: MAT-VAC-01 Lecturer: Mohammad Noor

Sl. No	Roll No	Student Name	Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	22-601	K. Pujitha		P	P	P	P	P	P	A	P	A	P	P	P	P	P	A	12
2	602	V. Samyuktha		P	P	A	P	P	P	P	P	P	A	P	P	A	A	P	11
3	603	B. Jayasritha		P	P	P	P	P	P	P	P	P	A	P	P	P	A	P	13
4	604	J. Aruthi		P	P	P	P	A	A	A	P	P	P	P	P	P	P	P	12
5	605	Sayed Haseena		P	P	P	P	P	P	P	P	P	A	A	A	P	P	P	12
6	606	S. Madhukar		P	A	P	A	P	P	A	P	P	A	P	A	P	P	P	10
7	607	D. Bindu Bhargavi		P	P	A	A	P	P	P	P	P	A	P	P	P	A	P	11
8	608	M. Manojkumar		P	P	P	P	P	P	P	A	P	P	P	P	P	P	A	13
9	609	A. Kavya Sri		P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
10	610	E. Pujitha		P	A	P	P	P	A	A	P	P	P	P	P	P	P	P	12
11	611	A. Sameena		P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	13
12	612	R. Charitha Sri		P	P	A	A	P	A	P	P	P	P	A	P	P	P	A	10
13	613	K. Durga Bhavani		P	P	P	P	P	A	P	P	P	P	P	A	A	P	P	12
14	614	P. Rajhavendra		A	P	P	P	P	A	P	P	P	A	P	A	P	P	P	11
15	615	K. Durga		A	P	A	P	P	P	P	P	P	P	A	P	P	P	P	12

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department oF MATHEMATICS

Value Added Course
Title: ARTHEMATIC ABELITY

Feed Back Form

1. Is the programme interested to you (Yes/No)
2. Have you attended all the session (Yes/No)
3. Is the content of the program is adequate (Yes/No)
4. Have the teacher covered the entire syllabus? (Yes/No)
5. Is the number of hours adequate? (Yes/No)
6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No)
7. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No)
8. Do you have any suggestions on the program? (Yes/No)

A. Sameera
22.611

Signature of Lecturer

Principal
AG & SG Siddhartha Degree College
of Arts & Science (Autonomous)
VUYYURU-521 165

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department oF MATHEMATICS

Value Added Course
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8. Do you have any suggestions on the program? (Yes/No)

K. Pujitha
22.601

Signature of Lecturer

Principal
AG & SG Siddhartha Degree Colle
of Arts & Science (Autonom
VUYYURU-521 165

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course / Certificate Course - Attendance Register

Class / Section: I B.Sc (MPCs) Year : 2022-23 Department of: Maths Paper: MAT-VAC-01 Lecturer: Mohammad Noor

Sl. No	Roll No	Student Name	Category	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
1	22.601	K. Pujitha		P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	25
2	602	V. Samyuktha		P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	24
3	603	B. Jayasthi		P	A	P	A	P	P	P	P	P	A	P	P	P	P	P	25
4	604	J. Preethi		A	P	P	A	P	P	P	P	P	P	P	P	P	P	P	25
5	605	Sayed Hasena		A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	26
6	606	S. Madhukar		P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	24
7	607	D. Bindu Bhargavi		P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	25
8	608	M. Manojkumar		P	P	P	A	A	P	P	P	P	P	A	P	P	P	P	26
9	609	A. Kavya Sai		A	P	P	P	A	P	P	P	P	P	P	P	P	P	P	27
10	610	E. Pujitha		A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	24
11	611	A. Saneena		P	P	P	P	P	A	A	P	P	A	P	P	P	A	P	24
12	612	R. Charitha Sri		P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	22
13	613	K. Durga Bhavani		P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	24
14	614	P. Raghavendra		P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	25
15	615	K. Durga		P	P	P	P	P	P	P	P	A	A	P	P	P	P	P	25

Lecturer

N.V. H.O.D

Principal
AG & SG Siddhartha Degree College of Arts & Science (Autonomous)
VUYYURU-521 165

K. Pujitha
22.601

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: ARTHEMATIC ABELITY

22/25

Test Exercise:

1. Difference between the square of two numbers is 45. If the sum of both the numbers is 9, what will be the difference between the two numbers ?

   1) 6 2) 3 3) 2 4) 4 5) 5

Direction(42-47): Study the table and answer the given question.

The given table is regarding people who were surveyed in four cities - A, B, C and D who either like pizza or do not like pizza.

City	Number of people who like pizza	Number of people who do not like pizza
A	300	120
B	350	50
C	400	250
D	420	80

2. **How many boys in city C liked pizza?**
   1) 220 2) 200 3) 180 4) 140 5) 260
3. **What is the respective ratio between the total number of people who do not like Pizza in city A and city B together and number of people who do not like pizza in City D?**
   1) 15 : 8 2) 9 : 18 3) 17 : 8 4) 14 : 5 5) 16 : 9
4. **Number of people who like pizza in city E is 20% less than the number of people Who like pizza in city B. It total number of people who were surveyed in city E was 350, how many people in city E do not like pizza?**
   1) 80 2) 70 3) 110 4) 90 5) 120

5. What is the difference between the number of people who like pizza in city A and Number of people who do not like pizza in city C ?
   1) 50 2) 60 3) 70 4) 80 5) 40
6. Number of people who do not like pizza in city A is what percent more than the Number of people who do not like pizza in city D ?
   1) 25 2) 50 3) 75 4) $33\frac{1}{3}$ 5) $66\frac{2}{3}$
7. What is the average number of people who like pizza in cities B, C and D ?
   1) 280 2) 140 3) 390 4) 310 5) 440

Direction(48-53):What will come in place of question mark (?) In the given number Series ?

8. 2 3 8 27 112 ?
   1) 620 2) 339 3) 565 4) 625 5) 600
9. 65 66 64 67 63 ? 62
   1) 65 2) 70 3) 64 4) 72 5) 68
10. 6 6 9 18 45 ?
    1) 120 2) 90 3) 135 4) 115 5) 125
11. 880 440 220 ? 55 27.5
    1) 80 2) 100 3) 110 4) 200 5) 120
12. 10 14 23 39 ? 100
    1) 58 2) 76 3) 64 4) 48 5) 72

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

A. Sameera

22.611

25/25

Value Added Course

Title: ARTHEMATIC ABELITY

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    1) 58 2) 76 3) 64 4) 48 5) 72

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE, (AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department of Mathematics

VALUE ADDED COURSE: Arithmetic Ability

CERTIFICATE

This is to Certify that .....K. Rujitha.....**of** ...I.B.Sc.M.P.C(s)..... **has successfully completed Value Added Course in Arithmetic Ability organised by the Department of Mathematics during the Year 2022-2023 and passed the Examination in grade**....A.....

Co-ordinator

N.V.
Head of Department

Principal
AG & SG Siddhartha Degree C...
of Arts & Science (Autonom...
VUYYURU-521 165

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE, (AUTONOMOUS) VUYYURU A.P

(Accredited at "A" level by NAAC, Bengaluru)

Department of Mathematics

VALUE ADDED COURSE: Arithmetic Ability

CERTIFICATE

This is to Certify that .....A. Sameera.....of ..I. B.Sc (M.P.Cs)..... has successfully completed Value Added Course in Arithmetic Ability organised by the Department of Mathematics during the Year 2022-2023 and passed the Examination in grade...A.....

Co-ordinator *Head of Department* *Principal*

AG & SG Siddhartha Degree Colle
of Arts & Science (Autonomous)
VUYYURU-521 165

AdusumilliGopalakrishnaiah& Sugarcane Growers
Siddharatha Degree College of Arts and Science
Autonomous College :: Aided College of Govt. of AP
NAAC 'A' Grade College
Vuyyuru, Krishna (Dt).,Andhra Pradesh-521165

VALUE ADDED COURSE

TITLE: History of Revolutions

VAC CODE: HIS-HR-01

On 05-12-2022 to 30-01-2023

2022-23
Duration of the Course: 30DAYS

Organized By

Department of HISTORY

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution

DEPARTMENT OF HISTORY

2022-2023

Value Added Course

Title: History of Revolutions

Name of the Lecturer	:	T.Narasimha Rao
Class	:	I B.A.
Duration of the Course	:	30 HOURS
VAC Code	:	HIS-HR-01

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Student Enrolment Sheet

Class :I B.A

S. No	Roll No.	Name of the Student	Signature
1	2211001	Vankala Durga Prasad	V. Durga Prasad
2	2211002	Kodali Sree Lokesh	K. Sree Lokesh
3	2211003	Nalluri Ravali	N. Ravali
4	2211004	Bandela Sampath	B Sampath
5	2211005	Landa Leela Manojkumar	L. Leela Manojk Kumar
6	2211006	Bandi Sivaleela	B. Sivaleela
7	2211007	Pandeti Naga Malleswari	P. Nagamalleswari
8	2211008	Vadapalli Harshavardhan	V. Harshavardhan
9	2211009	Maddu Akhil	M. Akhil
10	2211010	Gummadi Sukanya	G. Sukanya
11	2211011	Ampolu Bhargavi	A. Bhargavi
12	2211012	Gontupalli Chanakya Venkata Sai Ram	G. C. V. Sai
13	2211013	Mididodla Sireesha	M. Sirisha
14	2211014	Nerusu Gayatri	N. Gayatri
15	2211015	Veerla Thirupathamma	V. Thirupathamma

T. Narasimha Rao
Head, Department of History
A.G. & S.G. Siddhartha Degree College
Vuyyuru-521165

Principal
Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: History of Revolutions

Objectives:

1. **Comprehend the Causes of Revolutions**: To understand why revolutions occur, students should be able to identify the social, economic, political, and cultural factors that lead to revolutionary movements.
2. **Analyze Revolutionary Ideologies**: Students should be able to analyze the ideologies and belief systems that often underpin revolutions. This includes understanding the role of political philosophies, such as liberalism, nationalism, socialism, and more.
3. **Examine Key Revolutionary Figures and Movements**: Study important revolutionary figures and movements in depth, including their motivations, strategies, and contributions to the revolution.
4. **Trace the Chronology of Revolutions**: Students should be able to construct a timeline of significant events during a revolution, identifying key turning points and their impact on the outcome.
5. **Evaluate the Role of Social Movements and Mass Mobilization**: Understand the role of social movements, grassroots organizations, and mass mobilization in revolutionary processes. This includes the study of protests, uprisings, and the involvement of various societal groups.

Methodology :Teacher-Centeredmethod

Duration : 30 Hours

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: History of Revolutions

Date:5-12-2022 to 30-1-2023

Date	Content	Module No.
5-12-22 to 10-12-22	**Module 1: Introduction to Revolutions** • Defining Revolutions • Theoretical Approaches to Revolutions • The Role of Revolutions in Shaping History • Notable Historiographical Debates	I
12-12-22 to 23-12-22	**Module 2: The Pre-Modern World** • Pre-modern revolutions, e.g., the English Civil War, Glorious Revolution, and the American Revolution • Causes and consequences of these revolutions • Key figures and ideologies	II
26-12-22 to 13-1-23	**Module 3: The Age of Revolutions (Late 18th to Early 19th Century)** • The American Revolution • The French Revolution and its impact • Revolutions in Latin America • Analysis of Enlightenment ideas and their role	III
17-1-23 to 30-1-23	**Module 4: Revolutions of the 19th Century** • The European Revolutions of 1848 • The role of nationalism • Socialism and revolutionary movements • Analysis of industrialization's impact on revolutions	IV

Unit-I

In the fields of history and political science, a revolution is a radical change in the established order, usually the established government and social institutions. Typically, revolutions take the form of organized movements aimed at effecting change—economic change, technological change, political change, or social change. The people who start revolutions have determined the institutions currently in place in society have failed or no longer serve their intended purpose. Because the objective of revolutions is to upturn established order, the characteristics that define them reflect the circumstances of their birth.

Revolutions are born when the social climate in a country changes and the political system does not react in kind. People become discouraged by existing conditions, which alters their values and beliefs. Over the course of history, philosophers have held different views as to whether revolution is a natural occurrence in a changing society, or whether it indicates social decay. The Greek philosopher Aristotle linked revolution to a number of causes and conditions, but largely to the desire for equality and honor. Plato linked revolution to social decay. He believed that revolutions occur when institutions, such as the Church or the State, fail to instill in society a system of values and a code of ethics that prevent upheaval.

Throughout the Middle Ages, Europeans generally did what they could to prevent revolution and preserve the established order. The Church maintained the authority in medieval times, and it aimed to preserve stability in society at all costs. Sometime during the Renaissance, however, the concept of revolution began to change. People began to believe change was necessary for society to progress.

Between 1450 and 1750, philosophical and political ideas were changing rapidly throughout the world. The Renaissance, the Scientific Revolution, and the Protestant Reformation all took place during this time period, and people expanded their worldviews as they gained knowledge of new concepts and accepted new ideas. At this time in Europe, most countries had absolute monarchies, and people began to question the power of absolute governments. As their discontent grew, their questions turned to protests. A wave of revolutions took place in the 1700s, an era commonly known as the Age Enlightenment—revolutions in France, in Latin America, and in the

American colonies. In all these countries, the revolutions not only changed the political systems and replaced them with new ones, but they altered public belief and brought about sweeping changes in society as a whole.

The Pre-Modern World

Throughout history, human communities have become increasingly intertwined. Travelers, businessmen, priests, and pilgrims have traveled long distances for a variety of purposes since ancient times:

- For gaining knowledge
- To look out for more opportunities
- For religious and spiritual fulfillment
- To escape from ill-treatment

These individuals transported products, money values, talents, ideas, innovations, and even infections and sickness with them. In the early 3000 BC, bustling maritime commerce linked the Indus Valley civilization to modern-day West Asia. Cowries (the Hindi crowd or sea shells) were used as a form of currency all the way from the Maldives to China and East Africa for more than millennia. The long-term spread of disease-carrying germs may be traced as far back as the seventh century.

Pre-Modern World and Silk Road

In the pre-Modern era there are three things that will help us to understand the making of a global world is:

1. *Silk Route*
2. *Food Travels*
3. *Diseases and Trade*

Silk Routes Link the World

Silk route is defined as the route taken by traders to carry silk cargoes from china to the west. The Silk Routes are an excellent illustration of pre-modern trade across different areas of the world. The name silk road also refers to the prominence of westbound Chinese silk shipments over this route.

Important features of Silk Routes are,

- There are several more silk routes have been identified by the historian over land and by sea, knitting together vast regions of Asia which linked Asia with Europe and northern Africa, they are known to be existed since before the Christian era and thrived almost till the fifteenth century.
- Even Buddhist preachers, Christian missionaries, and Muslim preachers traveled along these routes. These routes proved to be a great source of trade and cultural links between distant parts of the world.
- This route connected Asia to the Mediterranean, passing through China, India, Persia, Arabia, Greece, and Italy. Due to a large amount of silk trading from the second century B.C. until the 14th century, A.D. was called as a **silk route**. This silk

route not only provide a link for importing and exporting goods but also became important for the export of art, literature, and philosophies between countries.

- Through these routes, they trade textiles and spices from India and Southeast in return for precious metals Gold, and silver which flowed from Europe to Asia.

Food Travels

- Food offers many examples of long-distance cultural exchange, Many traders and travelers introduce new crops to the market they travel to. In distant parts of the world, even ready foodstuffs might share common origins
    - For Example, spaghetti, and noodles. Noodles traveled west from china to become spaghetti or Arab traders took pasta to Sicily an island in Italy in the fifth century.
- Some of the trade foods like potatoes, soya, groundnuts, maize, tomatoes, sweet potatoes, etc these foods were unknown to our ancestors in India, five centuries ago. After Christopher Columbus found the enormous region that would later become the Americas, these cuisines were brought to Europe and Asia.
- After the introduction of potatoes in Europe, the poorer have begun to start eating better and live longer. Even the poorest peasants of Ireland depended upon potatoes. In the mid-1840s around 1 million people of Ireland have been starved to death when the Irish famine struck and many had migrated in search of work. This is also clear that the introduction of the new crop can lead to making a difference between death and life.

Conquest, Disease, and Trade

- In the sixteenth century, the pre-modern world shrank greatly after the European sailors found a sea route to Asia and also successfully crossed the western ocean to America. For centuries Indian ocean was the central trade point but after entry of Europeans helped to expand this trade towards Europe.
- After this discovery, America’s vast lands and abundant crops and minerals began to transform trade and lives everywhere.
- Silver the precious metal found in Peru and Mexico has enhanced Europe’s wealth and financed its trade with Asia. Many expeditions have started in search of **EL DORADO, the fabled city of gold in South America.**
- In the mid-sixteenth century, The Spanish and Portuguese were the first Europeans to conquer America. European conquest was done not because of their gun power. In fact, their superpower or super weapon was not a conventional military weapon at all. This conquest was possible through the deadly disease smallpox that they carried on their persons because of the low immunity of America’s original inhabitants. It wiped out the whole community and proved to be a deadly killer even before reaching the European troops.
- Until the nineteenth century, there was food and hunger were common in Europe, and deadly diseases spread all over the city, therefore Europeans fled to America, and slaves captured in Africa were growing cotton and sugar for the European market.

- Until the 18th century, India and China were the richest countries and the main centers of world trade, but Indian colonization and China restricted overseas contacts as a result of these.

Unit-III

The age of revolution

During the decades of economic and social transformation, western Europe also experienced massive political change. The central event throughout much of the Continent was the French Revolution (1789–99) and its aftermath. This was followed by a concerted effort at political reaction and a renewed series of revolutions from 1820 through 1848.

Connections between political change and socioeconomic upheaval were real but complex. Economic grievances associated with early industrialization fed into later revolutions, particularly the outbursts in 1848, but the newest social classes were not prime bearers of the revolutionary message. Revolutions also resulted from new political ideas directed against the institutions and social arrangements of the preindustrial order. Their results facilitated further economic change, but this was not necessarily their intent. Political unrest must be seen as a discrete factor shaping a new Europe along with fundamental economic forces.

The French Revolution

Revolution exploded in France in the summer of 1789, after many decades of ideological ferment, political decline, and social unrest. Ideologically, thinkers of the Enlightenment urged that governments should promote the greatest good of all people, not the narrow interests of a particular elite. They were hostile to the political power of the Roman Catholic church as well as to the tax exemptions and landed power of the aristocracy. Their remedies were diverse, ranging from outright democracy to a more efficient monarchy, but they joined in insisting on greater religious and cultural freedom, some kind of parliamentary institution, and greater equality under the law. Enlightenment writings were widely disseminated, reaching many urban groups in France and elsewhere. The monarchy was in bad shape even aside from new attacks. Its finances were severely pressed, particularly after the wars of the mid-18th century and French involvement against Britain during the American Revolution. Efforts to reform the tax structure foundered against the opposition of the aristocracy. Finally, various groups in France were pressed by economic and social change. Aristocrats wanted new political rights against royal power. Middle-class people sought a political voice to match their commercial importance and a government more friendly to their interests. The peasant majority, pressed by population growth, sought access to the lands of the aristocracy and the church, an end to remaining manorial dues and services, and relief from taxation.

storming of the Bastille

These various discontents came to a head when King Louis XVI called the Estates-General in 1789 to consider new taxes. This body had not met since 1614, and its calling released all the pressures building during recent decades, exacerbated by economic hardships resulting from bad

harvests in 1787–88. Reform leaders, joined by some aristocrats and clergy, insisted that the Third Estate, representing elements of the urban middle class, be granted double the membership of the church and aristocratic estates and that the entire body of Estates-General vote as a unit—they insisted, in other words, on a new kind of parliament. The king yielded, and the new National Assembly began to plan a constitution. Riots in the summer of 1789 included a symbolic attack on the Bastille, a royal prison, and a series of risings in the countryside that forced repeal of the remnants of manorialism and a proclamation of equality under the laws. A Declaration of the Rights of Man and the Citizen trumpeted religious freedom and liberty of press and assembly, while reaffirming property rights. Church lands were seized, however, creating a rift between revolutionary and Roman Catholic sentiment. Guilds were outlawed (in 1791), as the revolution promoted middle-class beliefs in individual initiative and freedom for technological change. A 1791 constitution retained the monarchy but created a strong parliament, elected by about half of France's adult males—those with property.

This liberal phase of the French Revolution was followed, between 1792 and 1794, by a more radical period. Economic conditions deteriorated, prompting new urban riots. Roman Catholic and other groups rose in opposition to the revolution, resulting in forceful suppression and a corresponding growing insistence on loyalty to revolutionary principles. Monarchs in neighbouring countries—notably Britain, Austria, and Prussia—challenged the revolution and threatened invasion, which added foreign war to the unstable mix by 1792. Radical leaders, under the banners of the Jacobin party, took over the government, proclaiming a republic and executing the king and many other leaders of the old regime. Governmental centralization increased; the decimal system was introduced. Mass military conscription was organized for the first time in European history, with the argument that, now that the government belonged to the people, the people must serve it loyally. A new constitution proclaimed universal manhood suffrage, and reforms in education and other areas were widely discussed. The radical phase of the revolution brought increasing military success to revolutionary troops in effectively reorganized armies, which conquered parts of the Low Countries and Germany and carried revolutionary laws in their wake. The revolution was beginning to become a European phenomenon.

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The Napoleonic era

greatest extent of Napoleon I's empire, 1812

Napoleon ruled for 15 years, closing out the quarter-century so dominated by the French Revolution. His own ambitions were to establish a solid dynasty within France and to create a French-dominated empire in Europe. To this end he moved steadily to consolidate his personal power, proclaiming himself emperor and sketching a new aristocracy. He was almost constantly at war, with Britain his most dogged opponent but Prussia and Austria also joining successive coalitions. Until 1812, his campaigns were usually successful. Although he frequently made errors in strategy—especially in the concentration of troops and the deployment of artillery—he was a master tactician, repeatedly snatching victory from initial defeat in the major battles. Napoleonic France directly annexed territories in the Low Countries and western Germany, applying revolutionary legislation in full. Satellite kingdoms were set up in other parts of Germany and Italy, in Spain, and in Poland. Only after 1810 did Napoleon clearly overreach

himself. His empire stirred enmity widely, and in conquered Spain an important guerrilla movement harassed his forces. Russia, briefly allied, turned hostile, and an 1812 invasion attempt failed miserably in the cold Russian winter. A new alliance formed among the other great powers in 1813. France fell to the invading forces of this coalition in 1814, and Napoleon was exiled. He returned dramatically, only to be defeated at Waterloo in 1815; his reign had finally ended.

Napoleon's regime produced three major accomplishments, aside from its many military episodes. First, it confirmed many revolutionary changes within France itself. Napoleon was a dictator, maintaining only a sham parliament and rigorously policing press and assembly. Though some key liberal principles were in fact ignored, equality under the law was for the most part enhanced through Napoleon's sweeping new law codes; hereditary privileges among adult males became a thing of the past. A strongly centralized government recruited bureaucrats according to their abilities. New educational institutions, under state control, provided access to bureaucratic and specialized technical training. Religious freedom survived, despite some conciliations of Roman Catholic opinion. Freedom of internal trade and encouragements to technical innovation allied the state with commercial growth. Sales of church land were confirmed, and rural France emerged as a nation of strongly independent peasant proprietors.

Napoleon's conquests cemented the spread of French revolutionary legislation to much of western Europe. The powers of the Roman Catholic church, guilds, and manorial aristocracy came under the gun. The old regime was dead in Belgium, western Germany, and northern Italy.

Finally, wider conquests permanently altered the European map. Napoleon's kingdoms consolidated scattered territories in Germany and Italy, and the welter of divided states was never restored. These developments, but also resentment at Napoleonic rule, sparked growing nationalism in these regions and also in Spain and Poland. Prussia and Russia, less touched by new ideologies, nevertheless introduced important political reforms as a means of strengthening the state to resist the Napoleonic war machine. Prussia expanded its school system and modified serfdom; it also began to recruit larger armies. Britain was less affected, protected by its powerful navy and an expanding industrial economy that ultimately helped wear Napoleon down; but, even in Britain, French revolutionary example spurred a new wave of democratic agitation.

In 1814–15 the victorious powers convened at the Congress of Vienna to try to put Europe back together, though there was no thought of literally restoring the world that had existed before 1789. Regional German and Italian states were confirmed as a buffer to any future French expansion. Prussia gained new territories in western Germany. Russia took over most of Poland (previously divided, in the late 18th century, until Napoleon's brief incursion). Britain acquired some former French, Spanish, and Dutch colonies (including South Africa). The Bourbon dynasty was restored to the French throne in the person of Louis XVIII, but revolutionary laws were not repealed, and a parliament, though based on very narrow suffrage, proclaimed a constitutional monarchy. The Treaty of Vienna disappointed nationalists, who had hoped for a new Germany and Italy, and it certainly daunted democrats and liberals. However, it was not reactionary, nor was it punitive as far as France was concerned. Overall, the treaty strove to

reestablish a balance of power in Europe and to emphasize a conservative political order tempered by concessions to new realities. The former was remarkably successful, preserving the peace for more than half a century, the latter effort less so.

The conservative reaction

Conservatism did dominate the European political agenda through the mid-1820s. Major governments, even in Britain, used police agents to ferret out agitators. The prestige of the Roman Catholic church soared in France and elsewhere. Europe's conservative leader was Prince von Metternich, chief minister of the Habsburg monarchy. Metternich realized the fragility of Habsburg rule, not only wedded to church and monarchy but also, as a polyglot combination of German, Hungarian, and Slavic peoples, vulnerable to any nationalist sentiment. He sedulously avoided significant change in his own lands and encouraged the international status quo as well. He sponsored congresses at several points through the early 1820s to discuss intervention against political unrest. He was particularly eager to promote conservatism in the German states and in Italy, where Austrian administration of northern provinces gave his regime a new stake.

Nevertheless, in 1820 revolutionary agitation broke out in fringe areas. Risings in several Italian states were put down. A rebellion in Spain was also suppressed, though only after several years, foreshadowing more than a century of recurrent political instability; the revolution also confirmed Spain's loss of most of its American colonies, which had first risen during the Napoleonic occupation. A Greek revolution against Ottoman control fared better, for Greek nationalists appealed to European sympathy for a Christian nation struggling against Muslim dominance. With French, British, and Russian backing, Greece finally won its independence in 1829.

Liberal agitation began to revive in Britain, France, and the Low Countries by the mid-1820s. Liberals wanted stronger parliaments and wider protection of individual rights. They also sought a vote for the propertied classes. They wanted commercial legislation that would favour business growth, which in Britain meant attacking Corn Law tariffs that protected landlord interests and kept food prices (and so wages) artificially high. Belgian liberals also had a nationalist grievance, for the Treaty of Vienna had placed their country under Dutch rule.

Liberal concerns fueled a new round of revolution in 1830, sparked by a new uprising in Paris. The French monarchy had tightened regulation of the press and of university professors, producing classic liberal issues. Artisans, eager for more political rights, also rose widely against economic hardship and the principles of the new commercial economy. This combination chased the Bourbon king, producing a new and slightly more liberal monarchy, an expanded middle-class voting system, and some transient protections for freedom of the press; the new regime also cut back the influence of the church. Revolution spread to some German and Italian states and also to Belgium, where after several years an independent nation with a liberal monarchy was proclaimed. Britain was spared outright revolution, but massive agitation forced a Reform Bill in 1832 that effectively enfranchised all middle-class males and set the framework for additional liberal legislation, including repeal of the Corn Laws and municipal government reform, during the next decade.

Europe was now divided between a liberal west and a conservative centre and east. Russia, indeed, seemed largely exempt from the political currents swirling in the rest of the continent, partly because of the absence of significant social and economic change. A revolt by some liberal-minded army officers in 1825 (the Decembrist revolt) was put down with ease, and a new tsar, Nicholas I, installed a more rigorous system of political police and censorship. Nationalist revolt in Poland, a part of the 1830 movement, was suppressed with great force. Russian diplomatic interests continued to follow largely traditional lines, with recurrent warfare with the Ottoman Empire in an effort to gain territory to the south. Only after 1850 did the Russian regime seriously rethink its adamantly conservative stance.

This pattern could not prevail elsewhere in Europe. Scandinavian governments moved toward increasing liberalism by expanding the power of parliaments, a development that was completed in the late 1840s; the Dutch monarchy did the same. Elsewhere, the next major step resulted once again from a series of revolutions in 1848, which proved to be western Europe's final revolutionary round.

The Revolutions of 1848

After adopting reforms in the 1830s and the early 1840s, Louis-Philippe of France rejected further change and thereby spurred new liberal agitation. Artisan concerns also had quickened, against their loss of status and shifts in work conditions following from rapid economic change; a major recession in 1846–47 added to popular unrest. Some socialist ideas spread among artisan leaders, who urged a regime in which workers could control their own small firms and labour in harmony and equality. A major propaganda campaign for wider suffrage and political reform brought police action in February 1848, which in turn prompted a classic street rising that chased the monarchy (never to return) and briefly established a republican regime based on universal manhood suffrage.

Revolt quickly spread to Austria, Prussia, Hungary, Bohemia, and various parts of Italy. These risings included most of the ingredients present in France, but also serious peasant grievances against manorial obligations and a strong nationalist current that sought national unification in Italy and Germany and Hungarian independence or Slavic autonomy in the Habsburg lands. New regimes were set up in many areas, while a national assembly convened in Frankfurt to discuss German unity.

The major rebellions were put down in 1849. Austrian revolutionaries were divided over nationalist issues, with German liberals opposed to minority nationalisms; this helped the Habsburg regime maintain control of its army and move against rebels in Bohemia, Italy, and Hungary (in the last case, aided by Russian troops). Parisian revolutionaries divided between those who sought only political change and artisans who wanted job protection and other gains from the state. In a bloody clash in June 1848, the artisans were put down and the republican regime moved steadily toward the right, ultimately electing a nephew of Napoleon I as president; he, in turn (true to family form), soon established a new empire, claiming the title Napoleon III. The Prussian monarch turned down a chance to head a liberal united Germany and instead used his army to chase the revolutionary governments, aided by divisions between liberals and working-class radicals (including the socialist Karl Marx, who had set up a newspaper in Cologne).

Despite the defeat of the revolutions, however, important changes resulted from the 1848 rising. Manorialism was permanently abolished throughout Germany and the Habsburg lands, giving peasants new rights. Democracy ruled in France, even under the new empire and despite considerable manipulation; universal manhood suffrage had been permanently installed. Prussia, again in conservative hands, nevertheless established a parliament, based on a limited vote, as a gesture to liberal opinion. The Habsburg monarchy installed a rationalized bureaucratic structure to replace localized landlord rule. A new generation of conservatives came to the fore—Metternich had been exiled by revolution—who were eager to compromise with and utilize new political forces rather than oppose them down the line. Finally, some new political currents had been sketched. Socialism, though wounded by the failure of the revolutions, was on Europe's political agenda, and some feminist agitation had surfaced in France and Germany. The stage was set for rapid political evolution after 1850, in a process that made literal revolution increasingly difficult.

The years between 1815 and 1850 had not seen major diplomatic activity on the part of most European powers, Russia excepted. Exhaustion after the Napoleonic Wars combined with a desire to use diplomacy as a weapon of internal politics. Britain continued to expand its colonial hold, most notably introducing more direct control over its empire in India. France and Britain, though still wary of each other, joined in resisting Russian gains in the Middle East. France also began to acquire new colonial holdings, notably by invading Algeria in 1829. Seeds were being planted for more rapid colonial expansion after mid-century, but the period remained, on the surface, rather quiet, in marked contrast to the ferment of revolution and reaction during the same decades.

The legacy of the French Revolution

To make the story of 19th-century culture start in the year of the French Revolution is at once convenient and accurate, even though nothing in history "starts" at a precise moment. For although the revolution itself had its beginnings in ideas and conditions preceding that date, it is clear that the events of 1789 brought together and crystallized a multitude of hopes, fears, and desires into something visible, potent, and irreversible. To say that in 1789 reform becomes revolt is to record a positive change, a genuine starting point. One who lived through the change, the duke de La Rochefoucauld-Liancourt, was even sharper in his vision when (as the story goes) he answered Louis XVI, who had asked whether the tumult outside was a revolt: "No, sire, it is a revolution." In cultural history as in political, significance is properly said to reside in events; that is, in the acts of certain men or the appearance of certain works that not only embody the feelings of the hour but also prevent other acts or works from having importance or effect. To list some examples: the year 1790 saw the appearance of Goethe's *Faust, a Fragment,* of Burke's *Reflections on the Revolution in France,* of Blake's *Marriage of Heaven and Hell,* and of Kant's *Critique of Judgment.* In these works are found the Romanticist view of human destiny, of the state, of moral energy, and of aesthetics. The remainder of the decade goes on to show that it belongs to a new age; it gave the world Goya's "Caprichos" and the portrait of the Duchess de Alba, Beethoven's *Piano Sonata in C Minor* (*Pathétique*), Hölderlin's *Hyperion,* the beginning of August Wilhelm von Schlegel and Ludwig Tieck's translation of Shakespeare into German, Schelling's *Nature Philosophy,* Herder's *Letters on the Progress of*

Mankind, Wordsworth and Coleridge's *Lyrical Ballads*, Schiller's *Wallenstein*, and Schleiermacher's *On Religion: Speeches to Its Cultured Despisers.* These are so many evidences of a new direction in thought and culture.

To say, then, that the cultural history of the later modern age—1789 to the present—begins with the French Revolution is to discuss that revolution's ideas rather than the details of its onward march during its first 10 years. These ideas are the recognition of individual rights, the sovereignty of the people, and the universal applicability of this pair of propositions. In politics the powerful combination of all three brings about a permanent state of affairs: "the revolution" as defined here has not yet stopped. It continues to move the minds of men, in the West and beyond. The revolution is "dynamic" because it does not simply change rulers or codes of law but also arouses a demand and a hope in every individual and every people. When the daily paper tells of another new nation born by breaking away, violently or not, from some other group, the revolutionary doctrine of the sovereignty of the people may be observed still at work after two centuries.

Cultural nationalism

The counterpart of this political idea in the 19th century is cultural nationalism. The phrase denotes the belief that each nation in Europe had from its earliest formation developed a culture of its own, with features as unique as its language, even though its language and culture might have near relatives over the frontier. Europe was thus seen as a bouquet of diverse flowers harmoniously bunched, rather than as a uniform upper-class civilization stretching from Paris to St. Petersburg, from London to Rome, and from Berlin to Lisbon—wherever "polite society" could be found, a society acknowledging the same artistic ideals, speaking French, and taking its lead from the French court and culture. In still other words, the revolutionary idea of the people as the source of power ended the idea of a cosmopolitan Europe.

The "uniform" conception presupposed a class or elite transcending boundaries; the "diverse" implied a number of distinct nations made up of citizens attached to their native soil and having an inborn and exclusive understanding of all that had been produced on it. In each nation it is the people as a whole, not just the educated class, that is deemed the creator and repository of culture; and that culture is not a conscious product fashioned by the court artists of the moment: it is the slow growth of centuries. This view of Europe explains one of the great intellectual forces of the postrevolutionary era—the passion for history. An emotion that may be called cultural populism replaced the devotion to a single horizontal, Europe-wide, and "sophisticated" civilization. These vertical national cultures were "popular" not only in their scope but also in their simplicity.

This new outlook, though propagated by the revolution, began as one of those subdued feelings mentioned earlier, as undercurrents beneath Enlightenment doctrine. In England and Germany especially, a taste developed for folk literature—the border ballads, the legends and love songs of the people, their dialects and superstitions. Educated gentlemen collected and published these materials; poets and storytellers imitated them. Horace Walpole in *The Castle of Otranto*, Macpherson in *Ossian*, Chatterton in his forgeries of early verse, and Goethe in his lyrics exploited this new vein of picturesque sentiment. A scholar such as Herder or a poet-dramatist such as Schiller drew lessons of moral, psychological, and philosophical import from

the wisdom found in the subculture of *das Volk.* The folk or people was not as yet very clearly defined, but the revolution would shortly take care of this omission.

In France, where the revolution occurred, the situation was somewhat different. There were no collectors of border ballads or exploiters of Gothic superstitions. France by 1789 had been for more than a century the cultural dictator of Europe, and it is clear that in England and Germany the search for native sources of art was stimulated by the desire to break the tyranny of the French language and literature. The rediscovery of Shakespeare, for example, was in part a move in the liberation from French classical tragedy and its rigid limitations of subject matter and form.

Simplicity and truth

Yet cultural nationalism was also the expression of a genuine desire for truth. This in turn implied the release of feelings that the confidence of the Enlightenment in the power of reason had tended to suppress. Two 18th-century figures tapped this fount of emotion, Samuel Richardson and Jean-Jacques Rousseau. The novels of Richardson, in which innocent girls are portrayed as withstanding the artful seductions of titled gentlemen, might be said to foreshadow in symbolic form the struggle between high cosmopolitan culture and the new popular simplicity. These novels were best-sellers in France, and Rousseau's *Nouvelle Héloïse* followed in their wake, as did the bourgeois dramas of Diderot, Beaumarchais's satirical comedies about the plebeian Figaro, and the peasant narratives of Restif de la Bretonne, to mention only the most striking exemplars of the new simplicity.

At the very centre of sophistication the simple life became a fad, the French court (including Marie-Antoinette) dressing up and playing at the rustic existence of milkmaids and shepherds. However silly the symptoms, the underlying passion was real. It was the periodic urge of complex civilizations to strip off the social mask and recover the happiness imagined as still dwelling among the humble. What was held up to admiration was honesty and sincerity, the strong and pure feelings of people unspoiled by court and city life. Literature therefore came to express an acute sensitivity to scenes of undeserved misfortune, of heroic self-sacrifice, of virtue unexpectedly rewarded—a sensitivity marked by tearfulness, actual or "literary."

This surge of self-consciousness about sophisticated culture has often been confused with an idealization of primitive man and attributed to Rousseau. But contrary to common opinion, the so-called back-to-nature movement does not at all echo the noble-savage doctrine of the 17th century. Rousseau's attack on "civilization," which evoked such a powerful response in the latent feelings of his contemporaries, goes with a characterization of the savage as stupid, coarse, and amoral. In Rousseau and his abettors, what is preached is the simple life. What nature and the natural really are remains to be found by trial and error—the fit methods and forms of religion, marriage, child rearing, hygiene, and daily work.

Populism

It is easy to see in these beliefs and sentiments (which often passed into sentimentality) additional materials for the populism that the revolution fostered. Revolution, to begin with, is also an urge to simplify. The revolutionary style was necessarily populist—Marat's newspaper was called *L'Ami du peuple* ("The Friend of the People"). The visible signs that a revolution had occurred included the wearing of natural hair instead of wigs and of common workmen's trousers instead of silk breeches, as well as the use of the title of *citoyen* instead of *Monsieur* or

any other term of rank. Now, equality coupled with sincerity and simplicity logically leads to fraternity, just as honest feeling coupled with devotion to the people leads to puritanism: a good and true citizen behaves like a moral man. He is, under the revolutionary principles, a responsible unit in the nation, a conscious particle of the will of the sovereign people, and as such his most compelling obligation is love of country—patriotism.

With this last word the circle of ideas making up the cultural ambient of the French Revolution might seem to be complete. However, in the effort to trace back and interweave the strands of feeling and opinion that make up populism, one must not overlook the first political axiom of revolutionary thought, which is the recognition of individual rights. Their source and extent is a subject for political theory. The recognition of the individual goes with the assertion that his freedom rests on natural law, a potent idea, as we know who have witnessed the vast extension of rights far beyond their first, political meaning. Here the concern is with their cultural role, which can be simply stated: individual rights generate individual*ism* and magnify it. That *-ism* denotes both an attitude and a doctrine, which together amount to a passionate belief: every human being is an object of primary interest to himself and in himself; he is an end in himself, not a means to the welfare of class or state or to other group purposes. Further, the truly valuable part of each individual is his uniqueness, which he is entitled to develop to the utmost, free of oppression from the government or from his neighbours. That is why the state guarantees the citizen rights as against itself and other citizens. Again, this power accrues to him for himself because he is inherently important—not because he is son or father, peasant or overlord, member of a clan or a guild.

These ideas shift the emphasis of several thousand years of social beliefs and let loose innumerable consequences. Individualism lowers the value of tradition and puts a premium on originality; it leads to the now familiar "cult of the new"—in art, manners, technology, and social and political organization. True, the individual soul had long been held unique and precious by Christian theology, but Christian society had not extended the doctrine to every man's mundane comings and goings. Nor were his practical rights and powers attached to him as a man but, rather, to his status. Now the human being as such was being officially considered self-contained and self-propelling; it was a new regime and its name was liberty.

Nature of the changes

The contents and implications of these powerful words—liberty, equality, and fraternity, individualism and populism, simplicity and naturalness—enable us to delineate the cultural situation of Europe at the dawn of the era under review. Yet these continuing ideas necessarily modified each other and in different times and countries were subject to still other influences.

For example, the active phase of the revolution in France—say, 1789 to 1804—was influenced by the classical education of most of its public men. They had been brought up on Roman history and the tales of Plutarch's republican heroes, so that when catapulted into a republic of their own making, the symbols and myths of Rome were often their most natural means of expression. The eloquence of the successive national assemblies is full of Roman allusions. Later, when General Bonaparte let it be seen that he meant to rule France, he was denounced in the Chamber as a Caesar; when he succeeded, he took care to make himself

consul (a title of the ancient Roman Republic), flanked by two other consuls of lesser rank. The title was meant to show that no Caesar was in prospect.

In the fine arts this Roman symbolism facilitated a thorough change of taste and technique. The former "grand style" of painting had been derived from royal and aristocratic elegance, and its allusions to the ancient Classical past were gentle and distant, architectural and mythological. Now, under the leadership of the painter David, the great dramatic scenes of ancient history were portrayed in sharp, uncompromising outlines that struck the beholder as the utmost realism of the day.

Jacques-Louis David: Oath of the Horatii

In David's *Death of Socrates* and *Oath of the Horatii* civic and military courage are the respective subjects; in his pencil sketches of the victims of the Terror as they were led to execution, reportorial realism dominates; and, in his designs for the setting of huge popular festivals, David, in collaboration with the musicians Méhul and Grétry, provided the first examples of an art in scale with the new populism: the courtly taste for intimate elegance and subtle manners gave way to the more striking, less polished large-scale feelings of a proud nation.

It must be added, however, that except for a few canvases and a few tunes (including the "Marseillaise") the quality of French Revolutionary art was not on a par with its aspirations. Literature in particular showed the limitations under which revolutionary artists must work: political doctrine takes precedence over truth, and the broad effects required to move the masses encourage banality. There is no French poetry in this period except the odes of Chénier, whom the revolution promptly guillotined, as it did France's greatest scientist, Lavoisier. The French stage was flourishing but not with plays that can still be read. The revolutionary playwrights only increased the dose of sentiment and melodrama that had characterized plays at the close of the old regime. The aim was to hold up priests and kings to execration and to portray examples of superhuman courage and virtue. Modern operagoers who know the plot of Beethoven's *Fidelio* can judge from that sample what the French theatre of the revolutionary years thrived on. Others can imagine for themselves Molière's *Misanthrope* rewritten so as to make Alceste a pure patriot and hero, undermined by the intrigues of the vile courtier Philinte.

It may seem odd that once the revolution was under way there should be such persistent indignation and protest against courtiers, priests, and kings and such fulsome homage paid to virtue and patriotism. What accounts for it is the difficulty of transforming culture overnight. People have to be persuaded out of old habits—and must keep on persuading themselves. Even politically, the revolution proceeded by phases and experienced regressions. Manners and customs themselves did not change uniformly, as one can see from portraits of Robespierre at the height of his power wearing a short wig and knee breeches, republican and Rousseauist though he was.

- After the **Congress of Vienna,** liberal and nationalist ideas spread easily in the new European context. Uprisings were common, especially where there were also socioeconomic problems.
- The nineteenth century was the century of **industrialization, modernization, demographic explosion, new means of transportation and communication as well as of great transformations in other spheres.**
- It was the century of grandiose changes that the world had never seen before: **growing literacy, rapid urbanization, changes in political institutions, the rise of national identity, the rise of culture, fantastic discoveries in science, and a powerful change of lifestyles**. Such tremendous transformations naturally led to drastic social changes.

Revolutions of 1820´s

- The **first in the series** of these revolutions took place in 1820 in **Spain**. In 1812 a liberal constitution had been agreed (The Cádiz Constitution), but after the **Congress of Vienna**, **King Ferdinand VII** ignored the Constitution. In 1820 there was a military uprising led by General Riego to restore the liberal ideas, and Ferdinand was obliged to accept the constitution. In 1823 the **Congress of Verona** sent French soldiers – '100,000 Sons of Saint Louis', to restore Ferdinand's authority, and defeat the rebels.
- Nevertheless, these liberal ideas spread quickly to **Portugal**, **Two Sicilies**, **Sardinia**, and to some **German states**, but in all these places the revolts were crushed by the army.
- In 1821, A **Greek revolution against Ottoman control fared better**, for Greek nationalists appealed to European sympathy **for a Christian nation struggling against Muslim dominance.** With French, British, and Russian backing, Greece finally won its independence in 1829. and **by 1832 Greece was recognised as a sovereign nation.**
- **Liberal agitation** began to revive in **Britain, France, and the Low Countries** by the **mid-1820s**. Liberals wanted **stronger parliaments** and wider protection of individual rights. They also sought a vote for the propertied classes. They wanted **commercial legislation** that would favour business growth, which in Britain meant attacking **Corn Law tariffs** that protected landlord interests and **kept food prices (and so wages) artificially high.**

Belgian liberals also had a nationalist grievance, for the **Treaty of Vienna** had placed their country under **Dutch rule.**

Revolutions of 1830´s

- **Liberal concerns fueled a new round of revolution in 1830, sparked by a new uprising in Paris.** Called the **'July Revolution',** it deposed the ultraconservative Bourbon King Charles X and replaced him with a more liberal oriented king, **LouisPhillippe I**. Charles, who favoured absolutism, had tried to return to the Ancient Régime but the upper bourgeoisie and many influential liberals opposed him, encouraging the people to rise up against him. France became a constitutional monarchy.
- **Belgium**: The Kingdom of the Netherlands, established after the **Congress of Vienna,** included a southern part (now Belgium) which was Catholic and mainly Frenchspeaking. The north (now Holland) was Dutchspeaking and Protestant (Calvinist). In 1830 a rebellion began in **Brussels** which finally resulted in **Belgian independence (1831)**, with a new king, **Leopold Ist,** and a **liberal regime.**
- After the revolutions of **1820 and 1830**, **liberal governments spread throughout Europe.** Only Central Europe, the German and Italian states (except Savoy), and the empires of Russia, Austria and Turkey remained absolutist.
- **Europe** was now divided between a **liberal west and a conservative centre and east**. **Russia,** indeed, seemed largely **exempt** from the political currents swirling in the rest of the continent, partly because of the absence of significant social and economic change. A revolt by some liberal-minded army officers in 1825 (the **Decembrist revolt)** was put down with ease, and a new **tsar, Nicholas I,** installed a more rigorous system of political police and censorship. Nationalist revolt in Poland, a part of the 1830 movement, was suppressed with great force. Russian diplomatic interests continued to follow largely traditional lines, with recurrent warfare with the **Ottoman Empire** in an effort to gain territory to the south. Only after 1850 did the Russian regime seriously rethink its adamantly conservative stance.
- This pattern could not **prevail** elsewhere in Europe. **Scandinavian** governments moved toward increasing **liberalism by expanding the power of parliaments,** a development that was completed in the late 1840s; the **Dutch monarchy did the same.** Elsewhere, the **next major step** resulted once again from a series of **revolutions in 1848**, which proved to be western **Europe's final revolutionary round.**

Revolutions of 1848

- **1848** was a special year in European history because of a general outbreak of revolutions and uprisings. Historians call this year "**The Spring of Nations**". Added to the factors of the previous revolutions, we could argue the following causes:
- Some of the previous revolutions began to take effect – for example **in France.**
- In the countries where **absolutism was still strong,** the bourgeoisie rose up against it. But in the countries that already had a **constitutional monarchy,** the radical politicians, usually **proletarian, (called democrats),** were looking for greater changes in their parliamentary governments **(for example, universal suffrage).**
- **Technological changes** were taking place in society through industrialisation, creating a new class, the proletariat.
- Technological changes were also responsible for a wider press, helping to spread ideas more quickly to a wider range of people in society.
- **Nationalism** was becoming stronger.
- **Socialism** appeared, growing more rapidly after **Marx** and **Engels** published the **Communist Manifesto** in **1848.**
- Another factor was the **crop failures** in **1846** in Europe. The resulting economic crisis caused discontent among the peasants, and also in the new working classes.
- The **revolutions of 1848 took place** in most of the Western and Central european countries (**France, Austrian Empire, Kindom of Hungary, Denmark, Sweden, Switzerland, Poland, Belgium, Ireland, some German states like Prussia, Saxony, Venice-Lombardy…**) and also parts of South America such as Brazil. Some of these uprisings had also nationalist components as in the **Italian and German territories**.
- **Important changes resulted from the 1848 rising**, which are mentioned in the folowing:
- **Manorialism** was permanently **abolished throughout Germany** and the **Habsburg lands,** giving **peasants new rights.**
- **Democracy** ruled in France, even under the new empire and despite considerable manipulation; **universal manhood suffrage had been permanently installed.**

- **Prussia,** again in **conservative hands**, nevertheless established a parliament, based on a limited vote, as a gesture to liberal opinion.
- The **Habsburg monarchy** installed a rationalized **bureaucratic structure** to replace **localized landlord rule**.
- Some **feminist agitation** had surfaced in **France and Germany.** The stage was set for rapid political evolution after 1850, in a process that made literal revolution increasingly difficult.

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Value Added Course
Title: History of Revolutions

Test Exercise:

1. Which civilisation is the oldest in the world? [B]

A. Egyptian Civilization
B. Mesopotamian Civilization
C. Chinese Civilization
D. Indus Valley Civilization

2. Egypt is also called what? [A]

A. Gift of Nile
B. Gift of the World
C. Gift of Sun
D. Gift of Sphinx

3. The potter's wheel was first used in this civilisation. [D]

A. Harappan Civilization
B. Chinese Civilization
C. Indus Valley Civilization
D. Mesopotamian Civilization

4. The first Olympic Games were held in? [A]

A. 776 BC
B. 745 BC
C. 779 BC
D. 749 BC

5. Who is known as the father of History? [C]

A. Sophocles
B. Homer
C. Herodotus
D. Aristophanes

6. The 'Age of Renaissance' started in the century? [A]

A. 16th Century
B. 15th Century
C. 14th Century
D. 19th Century

7. When did the Reformation movement start? [D]

A. 1516

B. 1518

C. 1519

D. 1517

8. **What was the Reformation movement?** [A] ✗

A. It was a revolt against King Henry VIII.

B. It was the rise of the Church's control over Rome.

C. It was a revolt against the Pope and the letter of Indulgence.

D. A movement to reform and rebirthing the art and literature of the 16th century.

9. **The Industrial Revolution started in?** [A] ✓

A. 1760

B. 1764

C. 1761

D. 1762

10. **Where did the Industrial Revolution first start?** [A] ✓

A. Great Britain.

B. France.

C. Rome.

D. America.

11. **Which year did Christopher Columbus discover America?** [B] ✓

A. 1490

B. 1492

C. 1491

D. 1494

12. **What is the Magna Carta or the Great Charter of 1215?** [C] ✓

A. It was the Charter to increase the power of the king.

B. Foundation of ending the tax system in England.

C. The foundation of Rights and Liberties of English people.

D. It was the setting stone for the king to rule over the Pope.

13. **The Reformation Movement was started by whom?** [B] ✓

A. King Henry VIII.

B. Martin Luther.

C. John Calvin.

D. William Tyndale.

14. **The American war of Independence was fought from _____ to _____.** [C] ✓

A. 1775 – 1784

B. 1777 – 1783

C. 1775 – 1783

D. 1770 – 1780

15.What is the idea behind the Boston Tea Party? [A]

A. Protest against the tax imposed on tea.
B. Protest against the British rulers in the American colonies.
C. Protest against the ending of the taxation imposed by the Britishers.
D. Protest against the difficult conditions of tea plantation workers.

16. When did Americans gain independence? [D]

A. 4th July 1773
B. 4th July 1774
C. 4th July 1771
D. 4th July 1775

17. What is the duration of the French Revolution? [B]

A. 1788 – 1792
B. 1789 – 1799
C. 1789 – 1799
D. 1781 – 1790

18.What was the slogan for the French Revolution? [A]

A. Liberty, Equality, Fraternity.
B. Liberty, Equality, Reform.
C. Liberty, Revolution, Equality.
D. Revolution, Reform, Fraternity.

19. The Thirty Years' war was fought from _____ to _____. [A]

A. 1618 – 1648.
B. 1620 – 1640.
C. 1629 – 1649.
D. 1619 – 1949.

20. Whose reign was the king during the French Revolution? [A]

A. Louis XVI.
B. Louis XV.
C. Napoleon.
D. Louis XIV.

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Vuyyuru-521165, Krishna District, Andhra Pradesh

18/20

2211015
V. Thirupathamma

Value Added Course
Title: History of Revolutions

Test Exercise:

1. Which civilisation is the oldest in the world? [B]

A. Egyptian Civilization
B. Mesopotamian Civilization
C. Chinese Civilization
D. Indus Valley Civilization

2. Egypt is also called what? [A]

A. Gift of Nile
B. Gift of the World
C. Gift of Sun
D. Gift of Sphinx

3. The potter's wheel was first used in this civilisation. [D]

A. Harappan Civilization
B. Chinese Civilization
C. Indus Valley Civilization
D. Mesopotamian Civilization

4. The first Olympic Games were held in? [A]

A. 776 BC
B. 745 BC
C. 779 BC
D. 749 BC

5. Who is known as the father of History? [C]

A. Sophocles
B. Homer
C. Herodotus
D. Aristophanes

6. The 'Age of Renaissance' started in the century? [A]

A. 16th Century
B. 15th Century
C. 14th Century
D. 19th Century

7. When did the Reformation movement start? [D]

A. 1516

B. 1518

C. 1519

D. 1517

8. **What was the Reformation movement?** [A] ✗

A. It was a revolt against King Henry VIII.

B. It was the rise of the Church's control over Rome.

C. It was a revolt against the Pope and the letter of Indulgence.

D. A movement to reform and rebirthing the art and literature of the 16th century.

9. **The Industrial Revolution started in?** [A] ✓

A. 1760

B. 1764

C. 1761

D. 1762

10. **Where did the Industrial Revolution first start?** [A] ✓

A. Great Britain.

B. France.

C. Rome.

D. America.

11. **Which year did Christopher Columbus discover America?** [B] ✓

A. 1490

B. 1492

C. 1491

D. 1494

12. **What is the Magna Carta or the Great Charter of 1215?** [C] ✓

A. It was the Charter to increase the power of the king.

B. Foundation of ending the tax system in England.

C. The foundation of Rights and Liberties of English people.

D. It was the setting stone for the king to rule over the Pope.

13. **The Reformation Movement was started by whom?** [B] ✓

A. King Henry VIII.

B. Martin Luther.

C. John Calvin.

D. William Tyndale.

14. **The American war of Independence was fought from _____ to _____.** [C] ✓

A. 1775 – 1784

B. 1777 – 1783

C. 1775 – 1783

D. 1770 – 1780

15.What is the idea behind the Boston Tea Party? [A]

A. Protest against the tax imposed on tea.
B. Protest against the British rulers in the American colonies.
C. Protest against the ending of the taxation imposed by the Britishers.
D. Protest against the difficult conditions of tea plantation workers.

16. When did Americans gain independence? [D]

A. 4th July 1773
B. 4th July 1774
C. 4th July 1771
D. 4th July 1775

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D. Louis XIV.

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Value Added Course
Title: History of Revolutions

KEY:

1. **Answer. B – Mesopotamian Civilization.**
2. **Answer. A – Gift of Nile.**
3. **Answer. D – Mesopotamian Civilization.**
4. **Answer. A – 776 BC.**
5. **Answer. C – Herodotus.**
6. **Answer. A – 16th Century**
7. **Answer. D – 1517**
8. **Answer. C – It was a revolt against the Pope and the letter of Indulgence.**
9. **Answer. A – 1760**
10. **Answer. A – Great Britain.**
11. **Answer. B – 1492**
12. **Answer. C – Foundation of Rights and Liberties of English People.**
13. **Answer. B – Martin Luther.**
14. **Answer. C. 1775 – 1783.**
15. **Answer. A. Protest against the tax imposed on tea.**
16. **Answer. D. 4th July 1775**
17. **Answer. B. 1789 – 1799**
18. **Answer. A. Liberty, Equality, Fraternity.**
19. **Answer. A. 1618 – 1648.**
20. **Answer. A. Louis XVI.**

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Department of HISTORY

Value Added Course
Title: History of Revolutions

Marks List

Class: I B.A

S. No	Roll No.	Name of the Student	Marks
1	2211001	Vankala Durga Prasad	17
2	2211002	Kodali Sree Lokesh	18
3	2211003	Nalluri Ravali	16
4	2211004	Bandela Sampath	17
5	2211005	Landa Leela Manojkumar	18
6	2211006	Bandi Sivaleela	16
7	2211007	Pandeti Naga Malleswari	17
8	2211008	Vadapalli Harshavardhan	19
9	2211009	Maddu Akhil	15
10	2211010	Gummadi Sukanya	15
11	2211011	Ampolu Bhargavi	17
12	2211012	Gontupalli Chanakya Venkata Sai Ram	15
13	2211013	Mididodla Sireesha	18
14	2211014	Nerusu Gayatri	17
15	2211015	Veerla Thirupathamma	18

T. Narasimha Rao
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Vuyyuru-521165, Krishna District, Andhra Pradesh

2211008

V. Harsha Vardhan

Department of HISTORY

Value Added Course

Title: History of revolutions

Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

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Vuyyuru-521165, Krishna District, Andhra Pradesh

2211015
V. Thirupathamma

Department of HISTORY

Value Added Course

Title: History of revolutions

Feed Back Form

1. Is the programme interested to you (Yes/No)
2. Have you attended all the session (Yes/No)
3. Is the content of the program is adequate (Yes/No)
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5. Is the number of hours adequate? (Yes/No)
6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No)
7. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No)
8. Do you have any suggestions on the program? (Yes/No)

T. Narasimha Rao

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Value Added Course - Attendance Register

Class / Section: I B.A Year : 2022-23 Department : Historyn Paper: History of revolutions Lecturer: T. Narasimha Rao

Sl.No	Roll No	Student Name	Category	1 (5/12/22)	2 (6/12)	3 (7/12)	4 (8/12)	5 (9/12)	6 (12/12)	7 (13/12)	8 (14/12)	9 (15/12)	10 (16/12)	11 (19/12)	12 (20/12)	13 (21/12)	14 (22/12)	15 (27/12)	Total
1	2211001	V. Durga prasad	BC-D	P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	13
2	2211002	K. Sree Lokesh	SC	P	P	A	P	P	P	P	P	A	P	P	P	P	A	P	12
3	2211003	N. Ravali	SC	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	14
4	2211004	B. Sampath	SC	P	P	P	P	P	A	A	P	P	P	P	P	P	P	P	13
5	2211005	L. Leela Manoj kumar	BC-D	P	P	P	P	P	P	P	P	A	A	P	P	P	P	A	12
6	2211006	B. Siva Leela	SC	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
7	2211007	P. Naga Malleswari	SC	P	P	P	A	A	P	P	P	P	P	P	P	P	P	P	13
8	2211008	V. Harsha Vardhan	SC	P	P	P	P	P	P	P	A	P	P	A	P	A	P	P	12
9	2211009	M. Akhil	SC	P	P	P	P	P	A	A	P	P	A	P	P	A	P	P	11
10	2211010	G. Sukanya	SC	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P	13
11	2211011	A. Bhargavi	BC-A	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P	12
12	211012	G. chankya Venkata sai Ram	SC	P	P	P	P	A	P	P	P	P	A	P	P	A	A	P	11
13	2211013	M. Sireesha	BC-B	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
14	2211014	Nerusu. Gayatri	BC-D	P	P	A	P	P	P	P	A	P	P	P	P	P	P	P	13
15	2211015	V. Thirupathamma	BC-D	P	P	P	P	A	P	P	P	P	A	P	P	P	A	P	12

T. Narasimha Rao

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course - Attendance Register

Class / Section:I B.A Year : 2022-23 Department : Historyn Paper: History of revolutions Lecturer:T.Narasimha Rao

Sl.No	Roll No	Student Name	Category	30/12/22	2/1/23	3/1/23	4/1/23	5/1/23	6/1/23	10/1/23	11/1/23	13/1/23	17/1/23	20/1/23	23/1/23	24/1/23	27/1/23	30/1/23	Total
				16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
1	2211001	V. Durga prasad	BC-D	P	P	A	P	P	P	A	P	P	P	P	P	P	P	P	13
2	2211002	K. Sree Lokesh	SC	P	P	P	P	A	P	P	A	P	P	A	P	P	P	P	12
3	2211003	N. Ravali	SC	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	14
4	2211004	B. Sampath	SC	P	P	A	P	P	A	P	P	A	P	P	P	A	P	P	11
5	2211005	L. Leela Manoj kumar	BC-D	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P	13
6	2211006	B. Siva Leela	SC	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
7	2211007	P. Naga Malleswari	SC	P	P	P	P	P	A	A	P	P	A	P	P	P	P	P	12
8	2211008	V. Harsha Vardhan	SC	P	P	P	P	P	P	P	A	A	P	P	A	P	A	P	11
9	2211009	M. Akhil	SC	P	P	A	A	P	P	P	A	P	P	P	P	P	P	P	12
10	2211010	G. Sukanya	SC	P	A	A	A	P	P	P	P	P	A	A	P	P	P	P	10
11	2211011	G. chankya venkata sai Ram	BC-A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	14
12	2211012	M. Sireesha	SC	P	P	A	P	P	P	P	P	A	P	A	P	P	P	P	13
13	2211013	A. Bhargavi	BC-B	P	P	P	A	A	P	P	P	P	A	A	P	P	P	P	11
14	2211014	N. Gayatri	BC-D	P	P	P	P	P	A	P	P	P	A	P	P	P	A	P	12
15	2211015	V. Thirapathamma	BC-D	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14

T Narasimha Rao

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SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department of History

VALUE ADDED COURSE: History of Revolutions

CERTIFICATE

This is to Certify that V. Harsha Vardhan **of** I BA **has successfully completed Value Added Course in History of Revolutions organised by the Department of History during the Year 2022-2023 and passed the Examination in grade....A.....**

T. Narasimha Rao
Co-ordinator

T. Narasimha Rao
Head of Department
Head, Department of History
A.G. & S.G. Siddhartha Degree College
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Principal
Principal
Adusumilli Gopalakrishnaiah & Sugarcane Growers
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Vuyyuru-521 165, Krishna

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Department of History

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T. Narasimha Rao
Co-ordinator

T. Narasimha Rao
Head of Department
Head, Department of History
A.G. & S.G. Siddhartha Degree College
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AdusumilliGopalakrishnaiah& Sugarcane Growers Siddharatha Degree College of Arts and Science

Autonomous College :: Aided College of Govt. of AP

NAAC 'A' Grade College

Vuyyuru, Krishna (Dt).,Andhra Pradesh-521165

VALUE ADDED COURSE

TITLE: Statistical Computing

VAC CODE: STCO-001

On 01-04-2023 to 10-05-2023

Duration of the Course: 30DAYS

Organized By

Department of Computer Science

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh
(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)
An Autonomous College in the Jurisdiction of Krishna University
Accredited by NAAC with "A" Grade **ISO 9001:2015 Certified Institution**

DEPARTMENT OF COMPUTER SCIENCE

Value Added Course in Statistical Computing

Name of the Lecturer	:	Sri. T. Naga Prasada Rao
Class	:	II B.Sc (MSCS)
Duration of the Course	:	30 Days
VAC Code	:	STCO-001

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course in Statistical Computing

Objectives:

This course will review and expand upon core topics in probability and statistics through the study and practice of data analysis and graphical interpretation using `R'.

Methodology:

1) Lecture-based Learning
2) Experimental Learning
3) ICT

Duration:

30 Days

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course in Statistical Computing

Student Enrolment Sheet

Class: II B.Sc. (MSCS)

S. No	Roll No.	Name of the Student	Signature
1	2155301	K. Dharani	K. Dharani
2	2155302	G. Divya	G. Divya
3	2155303	M. Sri Lakshmi	M. srilakshmi
4	2155304	S. Sai Sowmya	S. Sai Sowmya
5	2155305	A. Sushanth	A. sushanth
6	2155306	B. Manoj Phanindra	B. Manoj phanindra
7	2155307	J. Keerthi Priya	J. keerthi priya
8	2155308	K. Alekhya	K. Alekhya
9	2155310	N. Anusha	N. Anusha
10	2155311	A. Chakradhar	A. chakradhar
11	2155312	MD. Khadeera Begam	MD. Khadeera Begam
12	2155314	J. Jhansi Lakshmi	J. Jhansi lakshmi
13	2155315	K. Tulasi	K. Tulasi
14	2155316	P. Hima Sri	P. Hima Sri
15	2155317	K. Naga Sravani	K. Naga sravani
16	2155319	M. Karuna Sri	M. Karuna Sri
17	2155320	P. Phani Supraja	P. phani Supraja
18	2155321	K. Hema Sri	K. Hemasri
19	2155322	R. Durga Bhavani	R. Durga Bhavani
20	2155323	D. Naga Gireesha	D. Naga Gireesha

Head of the Department of Computer...
...Siddhartha Degree College...

Principal
Adusumilli Gopalakrishnaiah & Sugarcane ...
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A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

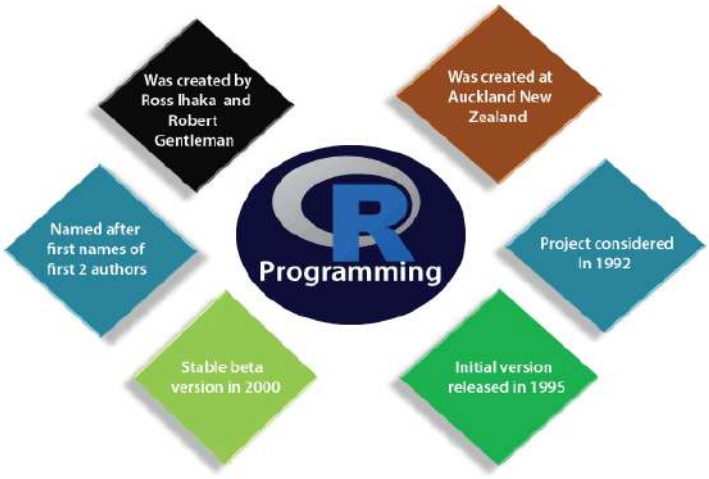
Value Added Course in Statistical Computing

Date(s) **From: 01-04-2023** **to: 10-05-2023**

Content	Module No.
Introduction to R Programming, Data types of R, Expressions, Variables, Functions	I
Conditional Statements, Looping statements, Control flow functions	II
Arrays, Matrix, Vectors, Factors, Packages	III
Data frames, Data frame access, ordering data frames, functions of data frames	IV

What is R:

R is a programming language and environment used for statistical computing and graphics. It was first released in 1993 and has since become a popular tool for data analysis and research in academia, industry, and government.



R is open source software, which means that it is free to use, distribute, and modify. It is highly extensible and has a large collection of packages and libraries that enable users to perform a wide range of statistical analyses, data visualization, and machine learning tasks.
R is widely considered to be one of the most powerful and flexible tools for data analysis available today.

Data types in R:

In R, there are several data types that are used to store and manipulate data. Some of the commonly used data types in R are:

- **Logical:**
  In R, the logical data type is used to store Boolean values which can take on one of two possible values: TRUE or FALSE. The logical data type is commonly used in conditional statements and logical operations.For example, consider the following code:

```
x <- 5
y <- 10
z <- x < y
```

  In this code, we first assign the value 5 to the variable x and the value 10 to the variable y. We then use the logical operator "<" to compare x and y, which returns TRUE because x is less than y. This value is then assigned to the variable z.

- **Numeric:**
  In R, the numeric data type is used to store numbers, including integers and real numbers. Numeric values are represented by the "numeric" data type in R.Numeric variables can be used in a variety of operations, including arithmetic operations such as addition, subtraction, multiplication, and division. For example:

```
a <- 5
b <- 10
c <- a + b
d <- b - a
```

```
e <- a * b
f <- b / a
```

In this code, we first assign the values 5 and 10 to the variables a and b, respectively. We then perform various arithmetic operations using these variables, including addition (c), subtraction (d), multiplication (e), and division (f).
Numeric variables can also be used in statistical calculations and analysis, as well as in creating graphs and visualizations. In fact, R has many built-in functions and packages that are specifically designed for statistical analysis and visualization.

- **Integer:**
  In R, the integer data type is used to store whole numbers. Integers are represented by the "integer" data type in R.Integers can be used in a variety of operations, including arithmetic operations such as addition, subtraction, multiplication, and division. For example:

```
a <- 5L
b <- 10L
c <- a + b
d <- b - a
e <- a * b
f <- b / a
```

In this code, we first assign the values 5 and 10 to the variables a and b, respectively, using the "L" suffix to indicate that they should be treated as integers. We then perform various arithmetic operations using these variables, including addition (c), subtraction (d), multiplication (e), and division (f).

- **Character:**
  A character data type represents text or string values. A character object is created by enclosing text within quotes (either single or double quotes). For example:

```
my_string <- "Hello, world!"
```

In this example, my_string is a character object that contains the text "Hello, world!". Note that the quotes are required to indicate that this is a character value.

- **Double:**
  A double data type is used to represent floating-point numbers (i.e., numbers with a decimal point). Double precision is the default for R's numeric data type.For example, you can create a double variable my_var with the value 3.14159 like this:

```
my_var <- 3.14159
```

R provides a variety of operators and functions for working with numeric data, including the basic arithmetic operators (+, -, *, /), as well as more advanced functions for trigonometry, logarithms, and other mathematical operations.

- **Complex:**
  A complex data type is used to represent numbers with both a real and imaginary component. Complex numbers are created using the complex() function or by appending an i or I to the imaginary component. For example:

```
# Create a complex number using the complex() function
my_complex <- complex(real = 3, imaginary = 4)


# Create a complex number using the i notation
my_complex2 <- 2 + 3i
```

In these examples, my_complex and my_complex2 are both complex numbers. my_complex has a real component of 3 and an imaginary component of 4, while my_complex2 has a real component of 2 and an imaginary component of 3.

- **Raw:**

A raw data type is used to represent raw bytes of data. Raw vectors are created using the raw() function or by using a hexadecimal notation. For example:

```
# Create a raw vector using the raw() function
my_raw <- raw(4)
my_raw[1] <- as.raw(0x4c)
my_raw[2] <- as.raw(0x6f)
my_raw[3] <- as.raw(0x72)
my_raw[4] <- as.raw(0x65)

# Create a raw vector using hexadecimal notation
my_raw2 <- as.raw(c(0x48, 0x65, 0x6c, 0x6c, 0x6f))
```

In these examples, my_raw and my_raw2 are both raw vectors. my_raw contains the raw bytes for the ASCII characters "L", "o", "r", and "e", while my_raw2 contains the raw bytes for the ASCII characters "H", "e", "l", "l", and "o".

Raw vectors are typically used to represent binary data, such as images, audio files, or network packets. R provides a variety of functions for working with raw vectors, including functions for reading and writing binary data to files, converting raw data to other formats, and manipulating the bytes within a raw vector.

Expressions:

In R, an expression is a set of instructions that can be evaluated to produce a value or result. Expressions can include arithmetic or logical operations, function calls, and variable assignments.For example, the following code is an expression that calculates the sum of two numbers:

```
2 + 3
```

This expression evaluates to the value 5, which can be printed or assigned to a variable.Expressions can also include function calls, such as the following code:

```
sqrt(25)
```

This expression calls the sqrt() function with an argument of 25, which evaluates to the value 5.

In addition to simple expressions, R also supports more complex expressions that combine multiple operations and function calls. For example, the following code calculates the factorial of a number:

```
factorial<- function(n)
{
        if (n == 0)
    {
                return(1)
        }
        Else
        {
                return(n * factorial(n - 1))
        }
    }
    factorial(5)
```

This expression defines a function called factorial() that recursively calculates the factorial of a number. When the expression factorial(5) is evaluated, it returns the value 120.

Variables:

Variables are used to store data values that can be used in expressions or operations. A variable is created by assigning a value to a name using the assignment operator <- or =. The name of the variable can contain letters, numbers, underscores, and dots, but it cannot start with a number or a dot, and it cannot be a reserved keyword.For example, to create a variable called x with a value of 5, we can use the following code:

```
x <- 5
```

We can then use the variable x in an expression or operation, such as:

```
y <- x + 2
```

This code assigns the result of adding 2 to the value of x to a new variable called y.
Variables can store values of different types, such as numbers, strings, logical values, and more complex data structures like arrays and data frames. The type of a variable is determined by the value it holds, and can be checked using the class() function.
Variables in R are mutable, which means that their values can be changed by assigning a new value to the same name. For example, we can change the value of x by assigning a new value to it:

```
x <- 10
```

Overall, variables are a fundamental concept in programming and are used extensively in R to store, manipulate, and analyse data.

Functions:

A function is a set of instructions that perform a specific task and can be called repeatedly with different inputs. R provides a series of in-built functions, and it allows the user to create their own functions. Functions are used to avoid repeating the same task and to reduce complexity. A function should be:

- Written to carry out a specified task.
- May or may not have arguments
- Contain a body in which our code is written.
- May or may not return one or more output values.

Function Definition:

An R function is created by using the keyword 'function'. There is the following syntax of R function:

```
func_name <- function(arg_1, arg_2, ...)
{
  Function body
}
```

Here is an example of a simple function in R:

```
square<- function(x)
{
result<- x^2
return(result)
}
```

This function takes an input parameter x, calculates its square, and returns the result as an output value. To call the function with a specific input value, we can simply pass the value as an argument:

```
y <- square(5)
```

This code calls the square() function with an input value of 5, and assigns the resulting output value (25) to the variable y.

Conditional Statements:

Conditional statements in R allow you to execute different blocks of code based on the result of a logical test.

1) if Statement:

The most common conditional statement is the if statement, which has the following syntax:

```
if (condition)
{
 # Code to execute if the condition is TRUE
}
```

For example, the following code uses an if statement to print a message if a number is positive:

```
x <- 5
if (x > 0)
{
print("x is positive")
}
```

This code checks whether x is greater than 0, and if it is, prints the message "x is positive".

2) if-else statement:
This statement allows you to execute one block of code if a condition is TRUE, and another block of code if the condition is FALSE. The basic syntax of an if-else statement in R is as follows:

```
if (condition)
{
        # code to execute if condition is TRUE
}
else
{
        # code to execute if condition is FALSE
}
```

For example:

```
x <- -5
if (x > 0)
{
        print("x is positive")
}
else
{
        print("x is negative or zero")
}
```

Loops:

Loops in R allow you to execute the same block of code multiple times, based on certain conditions or criteria. The most common types of loops are 'for' and 'while' loops.

1) For Loop
The 'for loop' has the following syntax:

```
for (variable in sequence)
{
  # Code to execute for each value of the variable
}
```

For example, the following code uses a for loop to print the first five positive integers:

```
for (i in 1:5)
{
    print(i)
}
```

This code loops through the sequence 1:5, and for each value of i, prints the value to the console.

2) While loop:
The while loop has the following syntax:

```
while (condition)
{
      # Code to execute while the condition is TRUE
```

```
}
```

For example, the following code uses a while loop to print the first five positive even numbers:

```
i <- 2
count<- 0
while (count < 5)
{
    print(i)
      i <- i + 2
    count<- count + 1
}
```

This code uses a while loop to increment the value of i by 2 for each iteration, until it prints the first 5 even numbers.

Control Flow Functions:

Control flow functions in R allow you to perform various control operations, such as breaking out of loops, skipping iterations, and restarting loops. The most common control flow functions are break, next, and return.

1) Break statement:
   The break statement is used to break out of a loop prematurely:

```
for (i in 1:10)
{
    if (i == 5)
    {
    break
    }
    print(i)
}
```

This code loops through the sequence 1:10, and if the value of i is 5, it breaks out of the loop prematurely.

2) next statement:
   The next statement is a control flow statement in R that allows you to skip to the next iteration of a loop without executing the remaining code in the current iteration. Here is an example of using the next statement in R:

```
for (i in 1:10)
{
        if (i %% 2 == 0)
        {
                next
        }
        print(i)
}
```

In this example, the loop iterates over the values of i from 1 to 10. Inside the loop, the if statement tests whether i is even (i.e., whether it is divisible by 2 using the modulus operator %%). If i is even, the next statement is executed, which skips to the next iteration of the loop without executing the print(i) statement. If i is odd, the print(i) statement is executed, which prints the value of i.

3) return statement:
The return statement is a control flow statement in R that allows you to terminate a function and return a value to the calling environment. When a return statement is encountered inside a function, the function immediately stops executing and returns the specified value to the calling environment.Here is an example of using the return statement in R:

```
sum_squared <- function(x, y)
{
        result<- x^2 + y^2
        return(result)
}
z <- sum_squared(3, 4)
print(z)
```

In this example, the sum_squared function takes two arguments (x and y) and returns the sum of their squares. Inside the function, the result variable is assigned the value of x^2 + y^2, and then the return(result) statement is executed to return the value of result to the calling environment. Outside the function, the value returned by sum_squared(3, 4) is assigned to the variable z, and then the print(z) statement is executed to print the value of z, which is 25 (i.e., the sum of 3^2 and 4^2).

Array:

An array is a data structure that allows you to store a collection of values of the same data type. An array can have one or more dimensions, and each dimension can have a specific length.To create an array in R, you can use the array() function, which has the following syntax:

```
array(data, dim, dimnames = NULL)
```

The data parameter specifies the values to be stored in the array, while the dim parameter specifies the dimensions of the array. The dimnames parameter is an optional argument that can be used to specify names for the dimensions.

Here is an example of how to create a simple 2-dimensional array in R:

```
# Create a 2x3 array
my_array <- array(c(1:6), dim = c(2, 3))

# Print the array
print(my_array)
```

This code creates a 2-dimensional array with 2 rows and 3 columns, and stores the numbers 1 through 6 in the array. The resulting output will look like this:

```
     [,1] [,2] [,3]
[1,]    1    3    5
[2,]    2    4    6
```

In R, arrays can be indexed using square brackets [ ], where each index corresponds to a specific dimension of the array. For example, to access the value at row 1, column 2 of the my_array array, you can use the following code:

```
value<- my_array[1, 2]
```

This code assigns the value 3 to the variable value, which corresponds to the value at row 1, column 2 of the array.

Matrix:

A matrix is a two-dimensional data structure that contains a collection of values of the same data type. The matrix can be thought of as a grid or table of values, where each row represents a separate observation or case, and each column represents a separate variable.To create a matrix in R, you can use the matrix() function, which has the following syntax:

```
matrix(data, nrow, ncol, byrow = FALSE, dimnames = NULL)
```

The data parameter specifies the values to be stored in the matrix, while the nrow and ncol parameters specify the number of rows and columns in the matrix, respectively. The byrow parameter is an optional argument that can be used to specify whether the values should be filled in by row or by column, and the dimnames parameter is an optional argument that can be used to specify names for the rows and columns.Here is an example of how to create a simple 2x3 matrix in R:

```
# Create a 2x3 matrix
my_matrix <- matrix(c(1, 2, 3, 4, 5, 6), nrow = 2, ncol = 3)
# Print the matrix
print(my_matrix)
```

This code creates a 2x3 matrix with the values 1 through 6, and stores the matrix in the variable my_matrix. The resulting output will look like this:

```
     [,1] [,2] [,3]
[1,]    1    3    5
[2,]    2    4    6
```

In R, matrices can be indexed using square brackets [ ], where the first index corresponds to the row number and the second index corresponds to the column number. For example, to access the value in row 1, column 2 of the my_matrix matrix, you can use the following code:

```
value<- my_matrix[1, 2]
```

This code assigns the value 3 to the variable value, which corresponds to the value at row 1, column 2 of the matrix.

Vectors:

A vector is a one-dimensional data structure that contains a collection of values of the same data type. The vector can be thought of as a simple list or array of values, and is often used to store a single variable or observation.

To create a vector in R, you can use the c() function, which is short for "combine". This function takes one or more values as arguments and combines them into a vector. Here is an example of how to create a simple vector in R:

```
# Create a vector
my_vector <- c(1, 2, 3, 4, 5)
# Print the vector
print(my_vector)
```

This code creates a vector with the values 1 through 5, and stores the vector in the variable my_vector. The resulting output will look like this:

```
[1] 1 2 3 4 5
```

In R, vectors can be indexed using square brackets [ ], where each index corresponds to a specific element of the vector. For example, to access the value at position 3 of the my_vector vector, you can use the following code:

```
value<- my_vector[3]
```

This code assigns the value 3 to the variable value, which corresponds to the third element of the vector.

Factors:

A factor is a data structure that represents categorical data. Factors are used to store data that can take on a limited number of possible values, such as nominal or ordinal data. Factors are useful in statistical analysis because they allow you to easily summarize and analyze categorical data.
To create a factor in R, you can use the factor() function, which takes one or more vectors as arguments and returns a factor object. Here is an example of how to create a simple factor in R:

```
# Create a factor
my_factor <- factor(c("red", "green", "blue", "red", "green"))
# Print the factor
print(my_factor)
```

This code creates a factor with the values "red", "green", and "blue", and stores the factor in the variable my_factor. The resulting output will look like this:

```
 [1] red   green blue  red   green
Levels: blue green red
```

In this example, the factor has three possible levels: "blue", "green", and "red". The levels of a factor are determined by the unique values in the vector that is used to create the factor.
You can also assign labels to the levels of a factor using the levels() function. For example:

```
# Assign labels to the levels of the factor
levels(my_factor) <- c("R", "G", "B")
# Print the factor with labels
print(my_factor)
```

This code assigns the labels "R", "G", and "B" to the levels of the my_factor factor, and prints the factor with the labels.

R Packages:

A package is a collection of functions, data sets, and other resources that are designed to work together to solve a specific problem or accomplish a specific task. R packages are created and maintained by developers and are hosted on public repositories such as CRAN (Comprehensive R Archive Network) and GitHub.

To use a package in R, you first need to install it using the install.packages() function. For example, to install the dplyr package, which is a popular package for data manipulation, you can run the following code:

```
install.packages("dplyr")
```

Once the package is installed, you can load it into your R session using the library() function:

```
library(dplyr)
```

This makes all of the functions and data sets in the dplyr package available for use in your R code.

In addition to the base R functions and packages, there are thousands of third-party packages available for R that can be used for a wide range of tasks, including data manipulation, statistical analysis, machine learning, data visualization, and more. Some popular packages in R include ggplot2, tidyr, caret, randomForest, and shiny.

If you want to create your own package in R, you can use the devtools package to help you set up and manage the package. The devtools package provides functions for creating and building packages, adding documentation, and testing the package code.

Data frames:

A data frame is a two-dimensional array-like structure or a table in which a column contains values of one variable, and rows contains one set of values from each column. A data frame is a special case of the list in which each component has equal length.

A data frame is used to store data table and the vectors which are present in the form of a list in a data frame, are of equal length.In a simple way, it is a list of equal length vectors. A matrix can contain one type of data, but a data frame can contain different data types such as numeric, character, factor, etc.

There are following characteristics of a data frame.

- The columns name should be non-empty.
- The rows name should be unique.
- The data which is stored in a data frame can be a factor, numeric, or character type.
- Each column contains the same number of data items.

Data frames in R are usually created by importing data from external sources, such as CSV files or databases. They can also be constructed directly in R using functions like data.frame() or by converting other types of R objects like matrices or lists using functions like as.data.frame().

Once a data frame is created, you can manipulate and analyze the data using a wide range of built-in functions and packages in R. Some common operations include selecting, filtering, and sorting rows and columns, calculating summary statistics, and creating visualizations.

Here is an example of creating a simple data frame in R:

```
# create a data frame
df<- data.frame
(
        name = c("Alice", "Bob", "Charlie"),
```

```
    age = c(25, 30, 35),
    gender = c("F", "M", "M")
)

# print the data frame
print(df)
```

This will create a data frame with three columns (name, age, gender) and three rows (one for each person), and print it to the console:

```
name age gender
1   Alice  25      F
2     Bob  30      M
3 Charlie  35      M
```

Data frame access:

In R, you can access and manipulate data frames using various methods. Here are some common ways to access data frames:

Consider the following data frame named df:

```
# Creating a sample data frame
df<- data.frame(
  Name = c("John", "Jane", "Alice", "Bob"),
  Age = c(25, 30, 35, 40),
  Country = c("USA", "Canada", "UK", "Australia")
)

# Print the data frame
Output:
   Name Age  Country
1  John  25      USA
2  Jane  30   Canada
3 Alice  35       UK
4   Bob  40 Australia
```

Accessing Columns:

You can access columns of a data frame using the dollar sign $ or square brackets [] notation. Here's an example:

```
# Using the dollar sign notation
df$column_name
# Accessing the "Name" column using the dollar sign notation
df$Name

Output:
 [1] "John"  "Jane"  "Alice" "Bob"

# Using the square brackets notation
df["column_name"]

# Accessing the "Country" column using the square brackets notation
df["Country"]
```

Output:
1 USA
2 Canada
3 UK
4 Australia

Accessing Rows:

You can access rows of a data frame using the square brackets [] notation. Here's an example:

```
# Accessing a single row
df[row_index, ]

# Accessing the second row
df[2, ]
```

Output:

```
  Name Age Country
2 Jane  30  Canada
```

```
# Accessing multiple rows
df[row_indices, ]

# Accessing multiple rows (3rd and 4th rows)
df[3:4, ]
```

Output:

```
   Name Age  Country
3 Alice  35       UK
4   Bob  40 Australia
```

Accessing Specific Cells:

You can access individual cells in a data frame using the square brackets [] notation with row and column indices. Here's an example:

```
df[row_index, column_index]

# Accessing the cell in the third row and second column
df[3, 2]
```

Output:

```
 [1] 35
```

Accessing Rows Based on Conditions:

You can use logical conditions to access rows based on specific criteria. Here's an example:

```
# Accessing rows where a condition is true
df[condition, ]

# Accessing rows where the age is greater than or equal to 30
df[df$Age >= 30, ]
```

Output:

```
  Name Age  Country
2  Jane  30   Canada
3 Alice  35       UK
4   Bob  40 Australia
```

Ordering data frames:

In R, you can order or sort a data frame based on specific columns using the order() function or the dplyr package's arrange() function. Let's explore both approaches with examples.

Using the order() function

Consider the following data frame df:

```
# Creating a sample data frame
df<- data.frame(
  Name = c("John", "Jane", "Alice", "Bob"),
  Age = c(25, 30, 35, 40),
  Country = c("USA", "Canada", "UK", "Australia")
)

# Print the data frame
df
```

Output:

```
  Name Age  Country
1  John  25      USA
2  Jane  30   Canada
3 Alice  35       UK
4   Bob  40 Australia
```

Now, let's order the data frame based on the Age column:

```
# Ordering the data frame by Age column
df_ordered <- df[order(df$Age), ]

# Print the ordered data frame
df_ordered
```

Output:

```
  Name Age  Country
1  John  25      USA
2  Jane  30   Canada
3 Alice  35       UK
4   Bob  40 Australia
```

The data frame df_ordered is now sorted based on the Age column in ascending order.

Using the arrange() function from dplyr package

First, make sure you have the dplyr package installed by running install.packages("dplyr"). Then, you can load the package and use the arrange() function:

```
# Loading the dplyr package
library(dplyr)

# Ordering the data frame by Age column using arrange()
df_ordered <- arrange(df, Age)

# Print the ordered data frame
df_ordered
```

Output:

```
  Name Age  Country
1  John  25      USA
2  Jane  30   Canada
3 Alice  35       UK
4   Bob  40 Australia
```

Functions for data frames:

In R, there are several useful functions available for working with data frames. Here are some commonly used functions for data frames:

```
# Creating a sample data frame
df<- data.frame(
  Name = c("John", "Jane", "Alice", "Bob"),
  Age = c(25, 30, 35, 40),
  Country = c("USA", "Canada", "UK", "Australia")
)

# Print the data frame
df
```

Output:

```
  Name Age  Country
1  John  25      USA
2  Jane  30   Canada
3 Alice  35       UK
4   Bob  40 Australia
```

- head(df) and tail(df): These functions display the first few rows (head()) or last few rows (tail()) of a data frame. By default, they show the first/last six rows, but you can specify a different number of rows if needed.

```
# Displaying the first few rows of the data frame
head(df)
```

Output:

```
  Name Age  Country
1  John  25      USA
2  Jane  30   Canada
3 Alice  35       UK
```

```
# Displaying the last few rows of the data frame
tail(df)
```

Output:

```
  Name Age  Country
1  John  25      USA
2  Jane  30   Canada
3 Alice  35       UK
4   Bob  40 Australia
```

- nrow(df) and ncol(df): These functions return the number of rows (nrow()) or number of columns (ncol()) in a data frame.

```
nrow(df) and ncol(df):
# Getting the number of rows in the data frame
nrow(df)
```

Output:

```
[1] 4
```

```
# Getting the number of columns in the data frame
ncol(df)
```

Output:

```
[1] 3
```

- dim(df): This function returns a vector containing the dimensions of the data frame, i.e., the number of rows and columns.

```
# Getting the dimensions of the data frame
dim(df)
```

Output:

```
[1] 4 3
```

- names(df) and colnames(df): These functions return the column names of a data frame as a character vector.

```
# Getting the column names of the data frame
names(df)
```

Output:

```
[1] "Name"    "Age"     "Country"
```

- summary(df): This function provides a summary of the data frame, including descriptive statistics (e.g., minimum, maximum, mean) for each numeric column and frequency counts for each categorical column.

```
# Getting the summary of the data frame
summary(df)
```

Output:

```
    Name           Age       Country
 Length:4           Min.   :25.00   Length:4
Class :character   1st Qu.:27.50   Class :character
Mode  :character   Median :32.50   Mode  :character
                   Mean   :32.50
```

```
                3rd Qu.:37.50
                Max.   :40.00
```

- str(df): This function displays the structure of a data frame, including the variable names, data types, and the first few values of each variable.

```
str(df):
# Displaying the structure of the data frame
str(df)

Output:
'data.frame':   4 obs. of  3 variables:
 $ Name   : chr  "John" "Jane" "Alice" "Bob"
 $ Age    : num  25 30 35 40
 $ Country: chr  "USA" "Canada" "UK" "Australia"
```

- subset(df, condition): This function allows you to subset a data frame based on a condition. You can specify the condition using logical expressions to filter rows based on specific criteria.

```
# Subsetting the data frame based on a condition
subset(df, Age > 30)

Output:
  Name Age  Country
3 Alice  35       UK
4   Bob  40 Australia
```

- unique(df$column): This function returns the unique values in a specific column of a data frame.

```
# Getting the unique values in the "Country" column
unique(df$Country)

Output:
 [1] "USA"       "Canada"    "UK"        "Australia"
```

- edit():

In R, the edit() function allows you to interactively edit the contents of a data frame. When you call edit() on a data frame, it opens a spreadsheet-like editor that allows you to make changes to the data directly.Here's an example of how to use the edit() function:

```
# Create a sample data frame
df<- data.frame(
  Name = c("Alice", "Bob", "Charlie"),
  Age = c(25, 30, 35),
  Gender = c("Female", "Male", "Male")
)

# Open the data frame in the editor
edit(df)
```

After executing the code, a separate window or tab will open with the data frame displayed in an editable format. You can modify the values, add or remove rows, or make any necessary changes to the data.

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course in Statistical Computing

Test Exercise

Answer all questions, each question carries 2 marks

1. Explain what is “R”?
2. What are the data structures in R that is used to perform statistical analyses and create graphs?
3. Write the example of creating vector in R?
4. Write the syntax of creating matrix in R?
5. Write the syntax of creating array in R?
6. Write the syntax of creating factor in R?
7. Example for creating Data frames in R?
8. Example statement for installing packages?
9. How to print dimensions of ‘df’ dataframe
10. Write the syntax for break statement

Key

1. R is data analysis software which is used by analysts, quants, statisticians, data scientists and others.
2. Vectors, Matrices, Arrays, Data frames
3. my_vector <- c(1, 2, 3, 4, 5)
4. matrix(data, nrow, ncol, byrow = FALSE, dimnames = NULL)
5. array(data, dim, dimnames = NULL)
6. my_factor <- factor(c("red", "green", "blue", "red", "green"))
7. df<- data.frame
   (
   name = c("Alice", "Bob", "Charlie"),
   age = c(25, 30, 35),
   gender = c("F", "M", "M")
)
8. install.packages("dplyr")
9. dim(df)
10. for (i in 1:10)
    {
    if (i == 5)
    {
    break
    }
    print(i)
    }

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Value Added Course - Attendance Register

Class / Section: II B.Sc (MSCS) Year : 2022-23 Paper: Statistical Computing Lecturer: T. Naga Prasada Rao

Sl. No	Roll No	Student Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	2155301	K. Dharani	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
2	2155302	G. Divya	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
3	2155303	M. Sri Lakshmi	P	P	P	P	P	A	A	P	P	P	P	P	P	P	P	14
4	2155304	S. Sai Sowmya	P	P	P	P	P	P	P	A	A	P	P	P	P	P	P	14
5	2155305	A. Sushanth	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
6	2155306	B. Manoj phanindra	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
7	2155307	J. Keerthi priya	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	14
8	2155308	K. Alekhya	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
9	2155310	N. Anusha	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	14
10	2155311	A. chakradhar	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	14
11	2155312	MD. Khadeera Begam	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
12	2155313	J. Jhansi Lakshmi	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
13	2155315	K. Tulasi	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
14	2155316	P. Hima sri	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
15	2155317	K. Naga Sravani	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	14
16	2155319	M. karuna sri	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	14
17	2155320	P. Phani Supraja	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
18	2155321	K. Hema sri	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	14
19	2155322	R. Durga Bhavani	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	14
20	2155323	D. Naga Gireesha	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course - Attendance Register

Class / Section: II B.Sc (MSCS) Year : 2022-23 Paper: Statistical Computing Lecturer: T. Naga Prasada Rao

Sl. No	Roll No	Student Name	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
1	2155301	K. Dharani	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	14
2	2155302	G. Divya	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	14
3	2155303	M. Sri Lakshmi	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	14
4	2155304	S. Sai Sowmya	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
5	2155305	A. Sushanth	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	14
6	2155306	B. Manoj phanindra	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	14
7	2155307	J. Keerthi priya	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	14
8	2155308	K. Alekhya	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	14
9	2155310	N. Anusha	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
10	2155311	A. chakradhar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
11	2155312	MD. khadeera Begam	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	14
12	2155314	J. Jhansi lakshmi	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
13	2155315	K. Tulasi	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	14
14	2155316	P. Hima Sri	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	14
15	2155317	K. Naga sravani	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
16	2155319	M. karuna sri	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
17	2155320	P. Phani Supraja	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
18	2155321	K. Hema Sri	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	14
19	2155322	R. Durga Bhavani	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
20	2155523	D. Naga Gireesha	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15

A & SG Siddhartha Degree Coll...
VUYYURU - 521 165

Principal
Adusumilli Gopalakrishnaiah & Sugarcane Grow...
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Computer Science

Value Added Course in Statistical Computing
Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

K. Hema Sai
2155321

Head of the Department of Computer
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VUYYURU-521 165

Assistant Professor
Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Computer Science

Value Added Course in Statistical Computing
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[illegible] of the Department of Computer [illegible]
A.G. & S.G. Siddhartha Degree College
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K. Tulasi
2155315

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Computer Science

Value Added Course in Statistical Computing
Feed Back Form

1.	Is the programme interested to you	(Yes/No)
2.	Have you attended all the session	(Yes/No)
3.	Is the content of the program is adequate	(Yes/No)
4.	Have the teacher covered the entire syllabus?	(Yes/No)
5.	Is the number of hours adequate?	(Yes/No)
6.	Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7.	On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8.	Do you have any suggestions on the program?	(Yes/No)

Asushanth
2155305

Head of the Department of Comp.
A & SG Siddhartha Degree Coll.
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Siddhartha Degree College of Arts & Science,
Vuyyuru-521 165, Krishna District.

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of Computer Science

Value Added Course in Statistical Computing

Marks List

Class: II B.Sc (MSCS)

S. No	Roll No.	Name of the Student	Marks
1	2155301	K. Dharani	20
2	2155302	G. Divya	18
3	2155303	M. Sri Lakshmi	18
4	2155304	S. Sai Sowmya	16
5	2155305	A. Sushanth	20
6	2155306	B. Manoj Phanindra	18
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16	2155319	M. Karuna Sri	20
17	2155320	P. Phani Supraja	20
18	2155321	K. Hema Sri	16
19	2155322	R. Durga Bhavani	18
20	2155323	D. Naga Gireesha	16

Head of the Department of Computer Science
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Principal
Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE, (AUTONOMOUS) VUYYURU A.P

(Accredited at "A" level by NAAC, Bengaluru)

Department of Computer Science

VALUE ADDED COURSE: Statistical Computing

CERTIFICATE

This is to Certify that ..G. Divya.....of ..I.B.Sc.(M.S.C.S.).... has successfully completed Value Added Course in Statistical Computing organised by the Department of Computer Science during the Year 2022-2023 and passed the Examination in grade....'A'....

Co-ordinator

Head of Department

Head of the Department of Comp...

AG & SG Siddhartha Degree Co...

VUYYURU - 521 16...

Principal

Principal

Adusumilli Gopalakrishnaiah & Sugarcane Gr...

Siddhartha Degree College of Arts & Science,

Vuyyuru-521 165, Krishna District.

ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
(AUTONOMOUS) VUYYURU A.P
(Accredited at "A" level by NAAC, Bengaluru)

Department of Computer Science

VALUE ADDED COURSE: Statistical Computing

CERTIFICATE

This is to Certify that ..K..Hema Sri.....of ..II B.Sc(MSCS)..... has successfully completed Value Added Course in Statistical Computing organised by the Department of Computer Science during the Year 2022-2023 and passed the Examination in grade.....'A'....

Co-ordinator

Head of Department

Principal

Principal
Adusumilli Gopalakrishnaiah & Sugarcane Growers
Siddhartha Degree College of Arts & Science
Vuyyuru-521 165, Krishna District

A.G. & S.G. Siddhartha Degree College of Arts & Science,Vuyyuru

Value Added Course

2022-23

Vermimicomposting

Course Code :ZOOVAC-07

Duraration:30 days

on 01-12-2022 to 07-01-2023

Class -I B.Sc.BZc (E.M)

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)

An Autonomous College in the Jurisdiction of Krishna University

Accredited by NAAC with "A" Grade **ISO 9001:2015 Certified Institution**

2022-2023

DEPARTMENT OF ZOOLOGY

Value Added Course

Title: Vermicomposting

Name of the Lecturer	:	K.Padmaja
Class	:	I B.Sc BZC(EM)
Duration of the Course	:	30 Days
VAC Code	:	ZOOVAC -07

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: Vermicomposting

Objectives :

- The chief objective is to compost organic wastes not for the disposal of solid organic wastes but also to produce superior quality manure to feed our "nutrient/organic matter hungry" soils.
- Large volume of organic matter generated from agricultural activities, dairy farms and animal shelters usually dumped in corners emanating foul smell, can be utilized by properly composting it into a value-added end product

Methodology :

- Vermiculture is a technique based on utilizing some species of earthworms to convert organic waste into Vermicompost which is again, the product of decomposition by various worms. It is a practice of harvesting worms that take part in decomposing organic waste and turning it into nutrient-rich fertilizer.

Duration : 30 Days

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course
Student Enrolment Sheet

Class :I B.Sc BZC (EM)

S. No	Roll No.	Name of the Student	Signature
1	22-501	P.UMA	P. Uma.
2	22-502	CH.HARITHA	Ch.Haritha.
3	22-503	V.NITHYA SRI	V. NithyaSri
4	22-504	B.SUMATHI	B. Sumathi
5	22-505	M.BHUVANA SRI	M. Bhuvana Sri
6	22-506	ABDUL AYESHA BEGUM	AB. Ayesha Begum.
7	22-507	K.VIJAYA SRI	K. Vijaya Sri
8	22-508	G.DHANEESHA	G. Danisha
9	22-509	S.VISHNU PRIYANKA	S. Vishnu Priyanka
10	22-510	B.JAHANAVI	B. Jahanavi
11	22-511	K.SARWAN CHOWDARY	K Sarwan Chowdary
12	22-512	P.KARTHIKEYA	P. Karthikeya.

D. A. Kiranmayee
Head, Department of Zoology.
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A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: Vermicomposting

Content	Module No.
General Vermiculture/ Vermicompost 1.1ntroduction to vermiculture. definition, meaning, history, economic importance, their value in maintenance of soil structure, role as four r's of recycling reduce, reuse, recycle, restore. 1.2The role in bio transformation of the residues generated by human activity and production of organic fertilizers. How does nature works. 1.3 The matter and humus cycle (product, qualities). Ground population, transformation process in organic matter	**Unit-I**
Earthworm Biology and Rearing 2.1Choosing the right worm. Useful species of earthworms. Local species of earthworms. Exotic species of earthworms. 2.2 Key to identify the species of earthworms. 6 Biology of Eisenia fetida. a) Taxonomy Anatomy, physiology and reproduction of Lumbricidae. b) Vital cycle of Eisenia fetida: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors). Complementary activities of auto evaluation	**Unit-II**
Vermicompost Technology (Methods and Products) 3.1 **Vermicompost Technology (Methods and Products)** 3.2Conventional commercial composting - Earthworm 3.3Composting la Conventional commercial composting - Earthworm Composting larger scale rger scale	**Unit-I11**
Applied vermiculture 4.1Nutritional Composition of Vermicompost for plants, comparison with other fertilizers 11 Vermiwash collection, composition &use 4.2 Considerations about economical aspects of this activity. Research and ratability according to different exploitation orientations	**Unit-IV**

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: Vermicomposting

Test Exercise:

1. **What is Vermiculture?**?
2. **How does Vermiculture work?**?

3.What is the importance of vermiculture products??

***4What should I feed the worms? What should I avoid adding to the vermicomposting bin?*?**

5. ***How do I maintain the worms in the winter?***
6. **What are some of the materials required for Vermicomposting?**
7. **What are the Advantages of Vermicompost Over Regular Compost?**
8. **What are the Benefits of Vermicomposting**?
9. **. What are earthworms like?**
10. **What are the three techniques of Vermiculture?**

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: Vermicomposting

Key:

1. Vermiculture can be defined as culture of earthworms. Earthworms are divided into two groups: humus formers and humus feeders. The first group dwell on the surface and feed on nearly 90% organic materials. They are generally darker in colour, and are also called epigeic or detritivorous earthworms. It is these worms that are generally harnessed for vermicomposting. The second group, the humus feeders, are burrowing worms some of which are useful in both compost preparation as well as making the soil porous. Generally the burrowers help in mixing and distributing humus through the soil.

It has been proved that earthworms can degrade organic wastes speedily and efficiently. However, to increase the efficiency of vermicomposting, care should be taken to see that worms thrive well on organic matter, breed faster adapting to moisture and climatic fluctuations. The most beneficial feature of vermicomposting is that it eliminates foul smell of decaying organic wastes, as it is a fully aerobic system. The concept of vermiculture became well known in the 50s of this century when facilities were set up in industrialised countries of Western Europe for the mass breeding of earthworms. Subsequently, USA, England and France conducted several experiments related to vermiculture technology for efficient disposal of organic wastes.

2. Earthworms feed on organic waste, consuming two to five times their body weight. They use a relatively small amount of their intake for their growth and excrete the mucus coated undigested matter as vermicasts. Vermicasts consist of organic matter that has undergone physical and chemical breakdown through the activity of the muscular gizzard that grinds the material. The nutrients present in the vermicasts are readily soluble in water for uptake by plants. Vermicast is a rich source of macro and micronutrients, vitamins, enzymes, antibiotics, growth hormones and microflora.

3. The products of vermiculture act as environmentally friendly long-term soil conditioners containing nutrients readily available to plants, which greatly improve soil performance and crop yields. Scientific research conducted into the effects of vermicast has found 30-50% increases in nitrogen uptake, 100% increases in potassium and phosphate uptake, increases in root length, root numbers, and shoot length, and 40-60% increases in cucumber and tomato yields. There are also reported increases in flavour and shelf-life, though these findings are not as easily quantified.

4. I tell my students that worms are vegan and therefore should only be fed scraps from fruit and vegetables. No meat, no dairy, no cheese, no bones, no manure, or any other animal product should be added to the vermicomposting bin. Shredded newspaper, copy paper, or even shredded cardboard is beneficial. Avoid adding plant material that has been sprayed with insecticides or other chemicals. Also avoid adding plastic, metal, or other non-biodegradable products.

5. Red wigglers prefer temperatures between 55-75 degrees Fahrenheit. Most homes maintain these temperatures during the winter months so it is best to bring vermicomposting bins indoors during the winter. Dark locations like a basement corner or under the kitchen sink are ideal. A well-maintained vermicomposting system has little or no odor. Indoors the worms can be continually fed throughout the winter months as they do not go dormant. Ideally vermicomposting systems are not allowed to freeze, as this will kill the worms.

6. Crop residues, vegetable waste, dried leaves, cattle dung, earthworms, water supply, a container, and a few other materials are needed for Vermicomposting. These need to be ready prior to Vermicomposting. Vermicomposting is good for the soil and plants as it enriches them with nutrients and is a great alternative to chemical fertilizers and pesticides that make any plant unhealthy. The page on Vedantu Vermiculture has ample information on the subject and can be read by all students to quell all their doubts.

7. Worm-made compost material is far superior to normal compost

1. The compost material size of Vermicompost is less than 2 microns which is smaller than regular compost
2. Vermicompost improved soil water retention, drainage, aeration, and soil stability.
3. Vermicompost contains high amounts of natural plant growth hormones and has more antibiotic properties than regular compost.

8. Worm-made compost material is far superior to normal compost

- The compost material size of Vermicompost is less than 2 microns which is smaller than regular compost
- Vermicompost improved soil water retention, drainage, aeration, and soil stability.
- Vermicompost contains high amounts of natural plant growth hormones and has more antibiotic properties than regular compost.

9.Earthworms have no eyes and ears but five hearts. They breathe through their skin. More about them is covered if the students read from Vermiculture - Meaning, Technique, Methods, Process, Preparation, and FAQ. This page on Vedantu is completely free of cost for all those who need access to it. It can even be downloaded in PDF format and then be referred to. It has all the details on earthworms and Vermicomposting that's needed by the students before a test on the same.

10 The three techniques of Vermiculture are manual, migration, and mechanical. More about this has been explained in Vermiculture on Vedantu's platform. This page has all the answers for the students to read from and then find out. The techniques of Vermiculture are each used for the purpose of harvesting worms. This page has been created by expert Biology as well as environmental science teachers. It contains only the most relevant inputs needed by students.

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of ZOOLOGY

Value Added Course

Title: Vermicomposting

Marks List

Class: I B.Sc BZC(EM)

S. No	Roll No.	Name of the Student	Marks
1	22-501	P.UMA	**40**
2	22-502	CH.HARITHA	**45**
3	22-503	V.NITHYA SRI	**42**
4	22-504	B.SUMATHI	**46**
5	22-505	M.BHUVANA SRI	**44**
6	22-506	ABDUL AYESHA BEGUM	**43**
7	22-507	K.VIJAYA SRI	**42**
8	22-508	G.DHANEESHA	**47**
9	22-509	S.VISHNU PRIYANKA	**45**
10	22-510	B.JAHANAVI	**43**
11	22-511	K.SARWAN CHOWDARY	**43**
12	22-512	P.KARTHIKEYA	**44**

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of ZOOLOGY
Value Added Course

Title: Vermicomposting

Feed Back Form

1. Is the programme interested to you	(Yes/No)
2. Have you attended all the session	(Yes/No)
3. Is the content of the program is adequate	(Yes/No)
4. Have the teacher covered the entire syllabus?	(Yes/No)
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6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program?	(Yes/No)
7. On the whole, is the program useful in terms of enriching your knowledge?	(Yes/No)
8. Do you have any suggestions on the program?	(Yes/No)

B. Jahnavi
I. B.Sc - 22-510

D. A. Ciranmayee

Head, Department of Zoology,
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Vuyyuru-521165, Krishna District, Andhra Pradesh

Department of ZOOLOGY
Value Added Course

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8. Do you have any suggestions on the program?	(Yes/No)

P. Uma
I. B.Sc. 22-501

B. A. Varunmayee

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Name Of The Office : A.G.S.G.S Degree College Vijayawada

Attendance Register

Vermicomposting

Month : December to January

Year : 2022 - 2023

S. No.	NAME	Desig-nation	1 1/12	2 2/12	3 3/12	4 5/12	5 6/12	6 7/12	7 8/12	8 9/12	9 10/12	10 12/12	11 13/12	12 14/12	13 19/12	14 20/12	15 21/12	16 22/12	17 23/12	18 24/12	19 26/12	20 27/12	21 28/12	22 29/12	23 30/12	24 31/12	25 2/01	26 3/01	27 4/01	28 5/01	29 6/01	30 7/01	31	Remarks
1.	22-501 P. Uma		P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	A	P	P	P	P	P	P	P	A	P	P	P	P	
2.	502 Ch. Haritha		P	P	A	P	P	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P	A	P	P	P	A	P	P	P	
3.	503 V. Nitya Sri		P	P	P	A	P	P	P	A	P	P	P	A	A	A	A	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	
4.	504 B. Sumathi		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	
5.	505 M. Bhavana Sri		P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	
6.	506 Sk. Ayesha Begum		P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	
7.	507 K. Vijaya Sri		P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	
8.	508 G. Dhaneesha		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
9.	509 S. Vishnu priyanka		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
10.	510 B. Jahnavi		P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
11.	511 K. Saranya Chowdary		P	P	P	A	A	P	P	P	P	P	P	P	P	P	P	P	A	P	P	A	P	P	P	A	P	P	A	P	P	P	
12.	512 P. Kavithi Keya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	1		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

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Department of Zoology

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CERTIFICATE

This is to Certify that ...G. Dhaneesha.....**of** ...I.BSc.BZC..... **has successfully completed Value Added Course in Varmicomposting organised by the Department of Zooology during the Year 2022-2023 and passed the Examination in grade**....'A'....

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