# IV SEMESTER

## MCS 40116: DOTNET PROGRAMMING

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| **Unit 1** | **Getting Started with Visual Basic 2012:**<br><br>Visual Basic 2012 Keywords, Operators, Arithmetic Operators, Assignment Operators, Comparison Operators, Concatenation Operators, Logical and Bitwise Operators, Miscellaneous Operators, Operator Precedence, Data Types in Visual Basic 2012, Visual Basic Statements, Working with Selection Statement, Working with Iteration Statement, Variables, Constants, Arrays, Enumerations.<br><br>**Object Oriented Programming:** Basic Principles of Object Oriented Programming, Member Access Modifiers, Define Class, Creating Objects, Constructors, Inheritance, Abstract Classes, Interfaces, Polymorphism<br><br>**Errors and Exceptions Handling:** Exploring Types of Errors, Syntax Errors, Runtime Errors, Logical Errors, Handling Exceptions, Using the *try-catch-finally* Statement, Using the throw Statement, Using the User-Defined Exception Class.<br>**Windows Forms:**<br><br>***Windows Forms Controls-I*:** Introducing the Control Class, Using the Label Control, Using the TextBox Control, Using the Button Control, Using the Radio Button Control, Using the CheckBox Control, Using the ComboBox Control, Using the ListBox Control, Using the GroupBox Control, Using the Panel Control, Using the PictureBox Control, Using the Timer Control, Using the ProgressBar Control.<br><br>***Windows Forms Controls-II*:** Using the ToolStrip Control, Using the MenuStrip Control, Using the StatusStrip Control, Working with DialogBoxes, Using the FolderBrowserDialog Control, Using the Open File Dialog Control, Using the SaveFileDialog Control, Using the FontDialog Control, Using the ColorDialog Control, Using the PrintDialog and PrintDocument Controls. |
| **Unit 2** | **Getting Started with C#2012:** Introducing Key words and Identifiers, Describing Operators and Operator, Precedence, Exploring Data Types in C# 2012, Value Types, Reference Types, Pointer Types, Explaining Data Type Conversion, Implicit Conversion, Explicit Conversion, Describing Variables and Constants, Declaring Variables, Initializing Variables, Declaring Variables of Nullable Type, Declaring Constants, Working with Arrays, Single-Dimensional Arrays, Exploring Control Flow Statements, Selection Statements, Iteration Statements, Jump Statements.<br><br>**Errors and Exceptions Handling:** Exploring Types of Errors, Syntax Errors, Runtime Errors, Logical Errors, Handling Exceptions, Using the *try-catch-finally* Statement, Using the throw Statement, Using the User-Defined Exception Class.<br><br>**Object Oriented Programming:** Basic Principles of Object Oriented Programming, Member Access Modifiers, Define Class, Creating Objects, Constructors, Inheritance, |

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| | Abstract Classes, Interfaces, Polymorphism |
| **Unit 3** | **Standard Controls:** Introducing the WebControl Class, Using the Label Control, Using the TextBox Control, Using the Button Control, Using the ImageButton Control, Using the ListBox Control, Using the RadioButton Control, Using the CheckBox Control, Using the Table Control, Using the Wizard Control, Using the Calendar Control, Using the AdRotator Control.<br><br>**Navigation Controls**: Working with the SiteMapPath Control, Using the SiteMapPath Control, Customizing Appearance of the SiteMapPath Control, Working with the Menu Control, Creating Static Menus, Creating Dynamic Menus, Working with the TreeView Control.<br><br>**Validation Controls**: Introducing the BaseValidator Class, Using the RequiredFieldValidator Control, Using the RangeValidator Control, Using the RegularExpressionValidator Control, Using the CompareValidator Control, Using the CustomValidator Control, Using the ValidationSummary Control.<br><br>**Login Controls**: Creating a User Account in ASP.NET 4.5, Using the Login Control, Using the LoginName Control, Using the LoginView Control, Using the LoginStatus Control, Using the PasswordRecovery Control, Configuring the web.config File for Password Recovery. |
| **Unit 4** | **Database Controls**: Working with ADO.NET, Exploring Disconnected Data Architecture, Accessing Data Using ADO.NET, Introducing DataSource Controls, The SQLDataSource Control, The AccessDataSource Control, The ObjectDataSource Control, The XMLDataSource Control, The LinqDataSource Control, The SiteMapDataSource Control, The EntityDataSource Control, Working with Data-Bound Controls, Using the GridView Control, Using the DataList Control, Using the etailsView Control, Using the FormView Control, Using the ListView and DataPager Controls, Using the Repeater Control, Using the Chart Control, Using the QueryExtender Control.<br><br>**WebParts Controls:** Introducing WebParts Controls, Using the WebPart Manager Control, Using the CatalogZone control, Using the WebPartZone Control, Using the EditorZone Control, Using the ConnectionsZone Control, Using the ProxyWebPartManager Control, Creating a Web Application Using WebParts Controls. |
| **Unit 5** | **Master Pages and Themes**: Creating Master Pages, Simple Master Page, Nested Master Page, Explaining Themes, Creating Themes, Applying Themes on Controls at Runtime, Using the Stylesheet Theme Attribute.<br><br>**Caching in ASP.NET 4.5:** Caching in ASP.NET, Introducing the Cache Class, Describing Output Caching, The Location Attribute, The Shared Attribute, The VaryByCustom Attribute, The VaryByParam Attribute, Implementing Output Caching, Describing Partial-Page Output Caching, Understanding the Disc Output Cache, Describing Post-Cache Substitution and Substitution Control, Data Caching, Adding Items to Cache, Retrieving Data from Cache, Deleting Items from Cache, Implementing Data Caching, Explaining Cache Dependencies. |

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| | **Developing Web and WCF Services:** Exploring New Features of WCF 4.5, Routing Service, Default Configuration, Support for Discovery Behaviours, Improved REST Service Development, Support for Integration of WCF with WF, Creating a Web Service, Using a Web Service, Creating a WCF Service, Using a WCF Service, Creating WCF Data Services.<br><br>**Introducing Silverlight 5:** Exploring Key Features of Silverlight, Supported by .NET Programming Model, Comprehensive UI Framework, Support for Deep Zoom Technology, Support for 3D Graphics, Animations, and Multimedia, Support for Networking, Support for Higher Quality Video and Audio, Out-of-Browser Capabilities, Exploring New Features of Silverlight 5, Explaining the Silverlight Architecture, Assemblies and Files in Silverlight, Applications. |

**Text books**

| | Author | Title | Publisher |
|---|---|---|---|
| 1 | Vikas Gupta | Comdex .Net 4.5 Programming Course Kit | Dreamtech Press, 2014 |

**Reference books**

| | Author | Title | Publisher |
|---|---|---|---|
| 1 | Kogent Learning Solutions Inc. | ASP .Net Black Book | Dreamtech Press,2011 |
| 2 | Kogent Learning Solutions Inc. | Visual Basic 2010 Programming Black Book, Platinum ed | Dreamtech Press,2011 |
| 3 | Kogent Learning Solutions Inc. | Visual Basic 2010 Programming Black Book, Platinum ed | Dreamtech Press,2011 |

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## MCS 40216: MOBILE COMPUTING

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| **Unit 1** | **INTRODUCTION**<br>World Wide Networks: Computer Networking-Significance of TCP/IP protocol stack in world wide Networking –Internet Applications<br><br>Wireless Networks: Limitations,Mobile Computing Paradigm, Promises/Novel Applications.<br><br>Generation of Mobile Systems: Features of First Generation, Second Generation, Third Generation and Fourth Generation and Comparison. |
| **Unit 2** | **MOBILE SYSTEM ARCHITECTURES**<br>GSM:System Architecture, functional subsystems of GSM:Radio Interfaces, Protocols, Handover, New Data Services<br><br>GPRS:System Architecture, Protocol layers, Comparison of GSM and GPRS.<br><br>Mobility Management: Location Management, Handover, Mobility Management in GSM and GPRS<br><br>Wireless Access Technologies: WPAN- Blue tooth, WLAN – Wi-Fi, WMAN- WiMAX |
| **Unit 3** | **IPV4:** Features of IPV4, Classes in IPV4 Addressing<br>**Mobile IP**:Entities and Terminology, IP packet delivery, Agent discovery, Registration, Tunneling and encapsulation, IPV6, IPV4 versus IPV6 |
| **Unit 4** | **MOBILE TRANSPORT LAYER**<br>Traditional TCP:Congestion control, Slow start, Fast retransmit/fast recovery, Implications of mobility<br>Wireless TCP:Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission/time-out freezing, Selective retransmission, Transaction-oriented TCP, TCP over 2.5/3G wireless networks |
| **Unit 5** | **NEXT GENERATION NETWORKS**<br>Next Generation Networks:Architecture of Next Generation Networks, Core Network, Access Network, Capabilities of NGN, Characteristics of NGN, Generalized mobility in NGN, Transport independent service paradigm.<br>**FILE SYSTEMS**<br>File Systems: Coda, Little work, Ficus, Mio-NFS, Rover<br>Mobile Operating Systems: Symbian, Android<br>Wireless Markup Language (WML) and WML Script, Extensible Markup Language (XML) and its applications |

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**Text books**

| | Author | Title | Publisher |
|---|---|---|---|
| 1 | Rajkamal | Mobile Computing | Oxford University Press, 2007 |
| 2 | Jochen Schiller | Mobile Communications | Addison-Wesley, Second Edition, 2009 |

**Reference books**

| | Author | Title | Publisher |
|---|---|---|---|
| 1 | Asoke K Talukder and Roopa R Yavagal | Mobile Computing | -McGraw-Hill, 2008 |
| 2 | Mukesh Singhal and Niranjan G Shivaratri | Advanced Concepts in Operating Systems | TMH |

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## MCS 403.116: CLOUD COMPUTING

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| **Unit 1** | **Era of Cloud Computing :** Getting to know the cloud - Peer-To-Peer, Client-Server, and Grid Computing – Cloud computing versus Client-server Architecture - Cloud computing versus Peer-To-Peer Architecture - Cloud computing versus Grid Computing - How we got to the Cloud - Server Virtualization versus cloud computing - Components of Cloud computing – Cloud Types – Cloud Computing Service delivery Models.<br>**Introducing Virtualization :** Introducing Virtualization and its benefits – Implementation levels of Virtualization – Virtualization at the OS Level – Virtualization Structure – Virtualization Mechanisms – Open Source Virtualization Technology – Binary Translation with Full Virtualization – Virtualization of CPU, Memory and I/o Devices – Hardware support for Virtualization in Intex x86 Processor - |
| **Unit 2** | **Cloud Computing Services:** Infrastructure as a Service – Platform as a Service – Language and Pass – Software as a Service – Database as a Service.<br>**Open Source Cloud Implementation and Administration:** Open-source Eucalyptus Cloud Architecture – Open-source Openstack Cloud Architecture. |
| **Unit 3** | **Application Architecture for Cloud:** Cloud Application Requirements – Recommendations for Cloud Application Architecture – Fundamental Requirements for Cloud Application Architecture – Relevance and use of Client-server architecture for Cloud Applications – Service oriented Architecture for Cloud Applications.<br>**Cloud Programming:** Programming support for Google Apps Engine – Big Table as Google's NOSQL System – Chubby as Google Distributed Lock Service – Programming support for Amazon EC2 – Elastic Block Store (ESB). |
| **Unit 4** | **Risks, Consequences and Costs for Cloud Computing :** Introducing Risks in Cloud Computing – Risk Assessment and Management – Risk of Vendor Lock-in – Risk of Loss Control – Risk of Not Meeting Regulatory Compliances – Risk of Resource Scarcity – Risk in Multi Tenant Environment – Risk of Failure – Risk of Failure of Supply Chain – Risk of Malware and Internet attacks – Risk of Inadequat SLA – Risk of Management of Cloud Resources – Risk of Network Outages – Risks in the Physical Infrastructure – Legal Risk due to Legislation – Risks with Software and Application Licensing – Security and Compliance Requirements in a Public Cloud – Direct and Indirect Cloud Costs – Calculating Total cost of Ownership for Cloud Computing – Cost Allocations in a Cloud .<br>**AAA administration for clouds :** The AAA Model, Single Sign-on for Clouds – |

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| | Industry Implementations for AAA- Authentication management in the Cloud – Authorization management in the Cloud . |
| **Unit 5** | **Application Development for cloud :** Developing On-Premise Versus Cloud Applications – Modifying Traditional Applications for Deployment in the Cloud – Stages during the development process of Cloud Application - Managing a Cloud Application – Using Agile Software Development for Cloud Applications – Cloud Applications : What Not to do - Static code analysis for cloud applications – Developing Synchronous and Asynchronous Cloud Applications .<br>**Mobile Cloud Computing :** Definition of Mobile Cloud Computing – Architecture of Mobile Cloud Computing – Benefits of Mobile Cloud Computing – Mobile Cloud Computing Challenges |

**Text books**

| | Author | Title | Publisher |
|---|---|---|---|
| 1 | Kailash Jayaswal, Jagannath Kallakurchi, Donald J. Houde Dr. Deven Shah | Cloud Computing, Black Book | Dreamtech press () |

**Reference books**

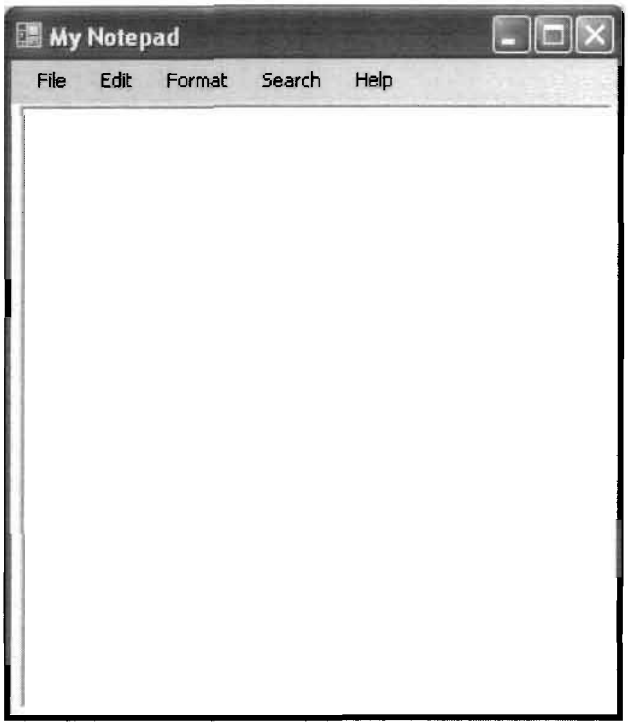
| | Author | Title | Publisher |
|---|---|---|---|
| 1 | Thomas Erl, Zaigham Mahmood, Ricardo Puttini | Cloud Computing - Concepts Technology and Architecture | Pearson |
| 2 | Raj Kumar Buyya, Christen vecctiola, S Tammarai selvi | Mastering Cloud Computing, Foundations and Application Programming | TMH |

## IV SEMESTER

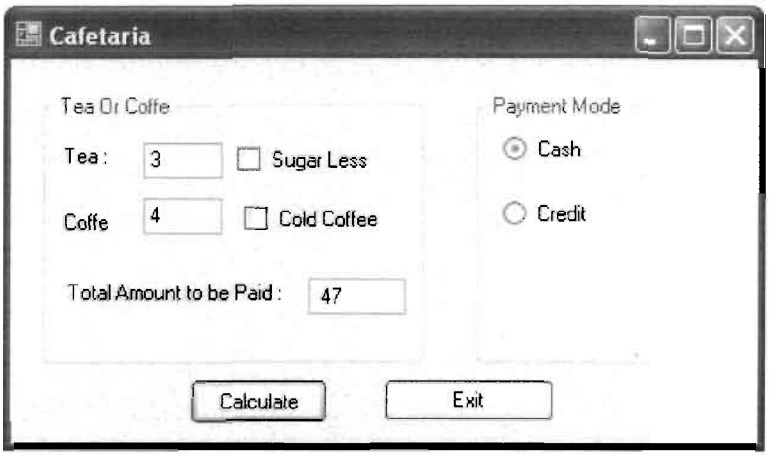
## MCS 40416: Dotnet Programming Lab

### Visual Basic.net

1) Develop an application which is similar to the 'Notepad' using menus and Dialog boxes



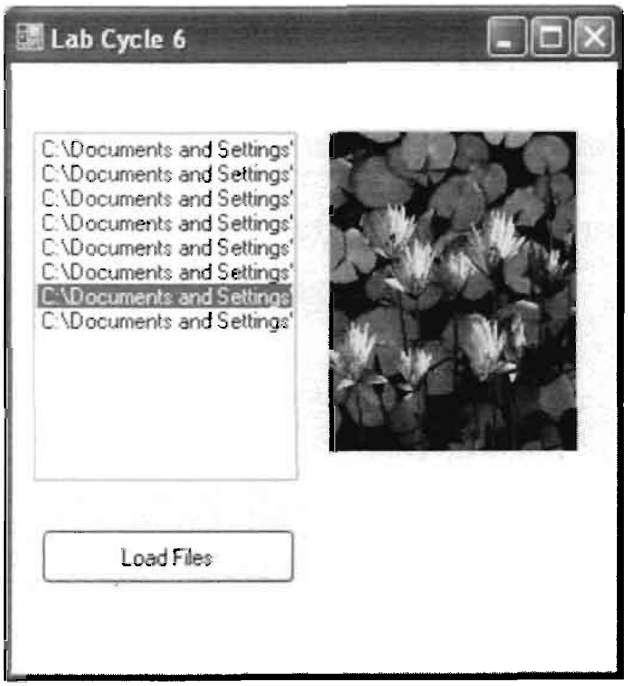

2) Develop an application for billing system in coffee shops which will look like as shown below :




3) Develop an application for fruits billing system which will look like as

shown below :


4) Develop an application to display the image selected by the user




5) Develop an application to demonstrate the group box, radio buttons, check box.

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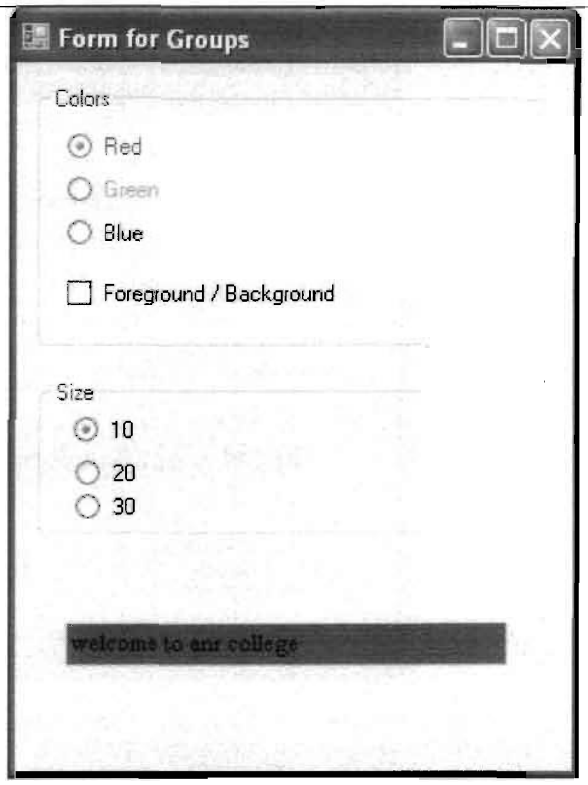
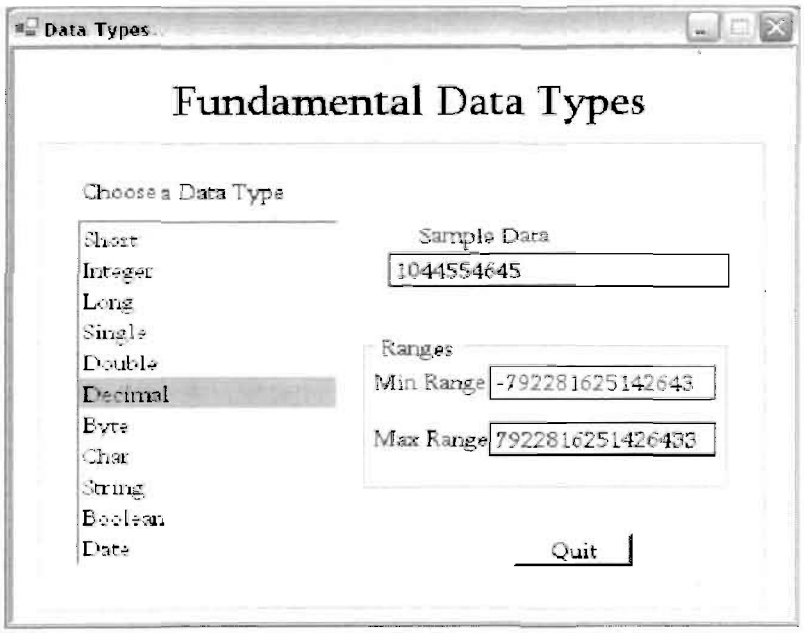



6) Develop an application to implement different data types

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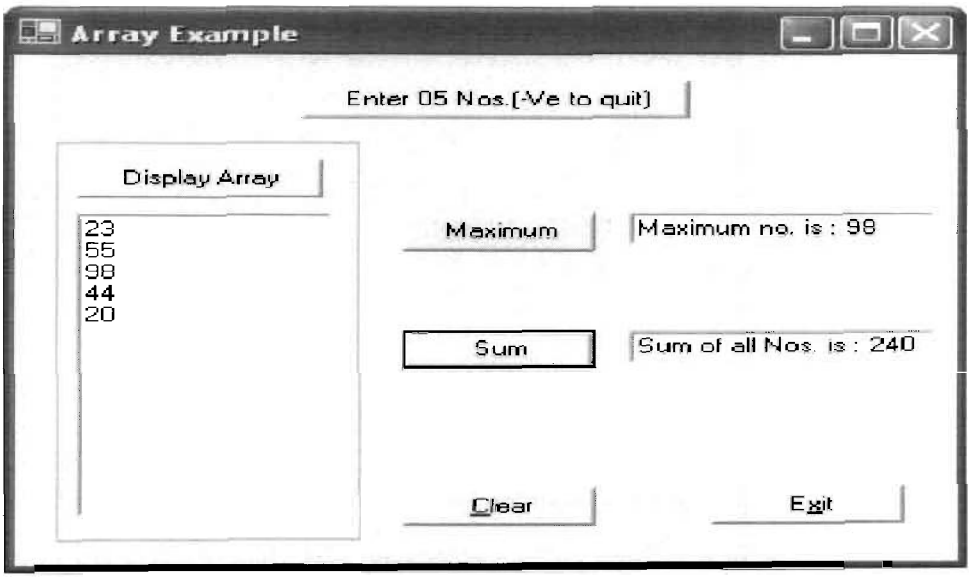
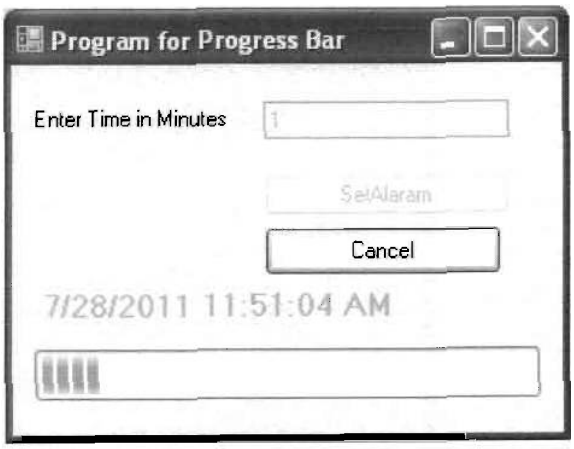
7) Application to store numbers in single dimensional array and to find Maximum no & sum of all numbers in array.




8) Develop an application to simulate the Alarm

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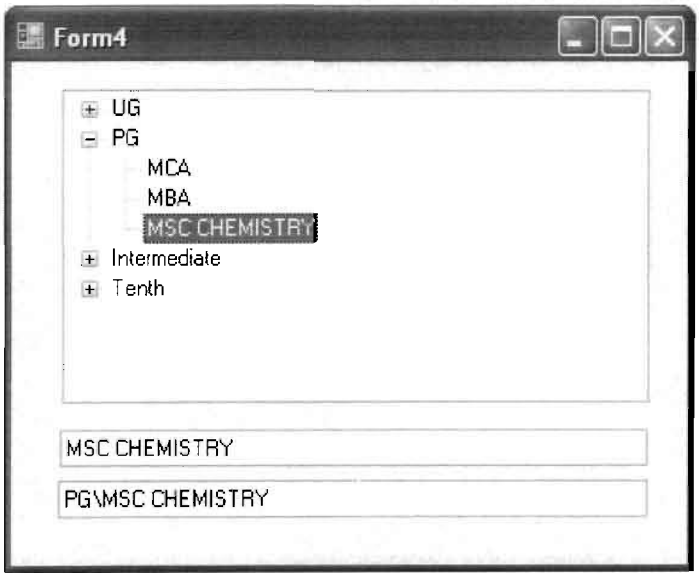
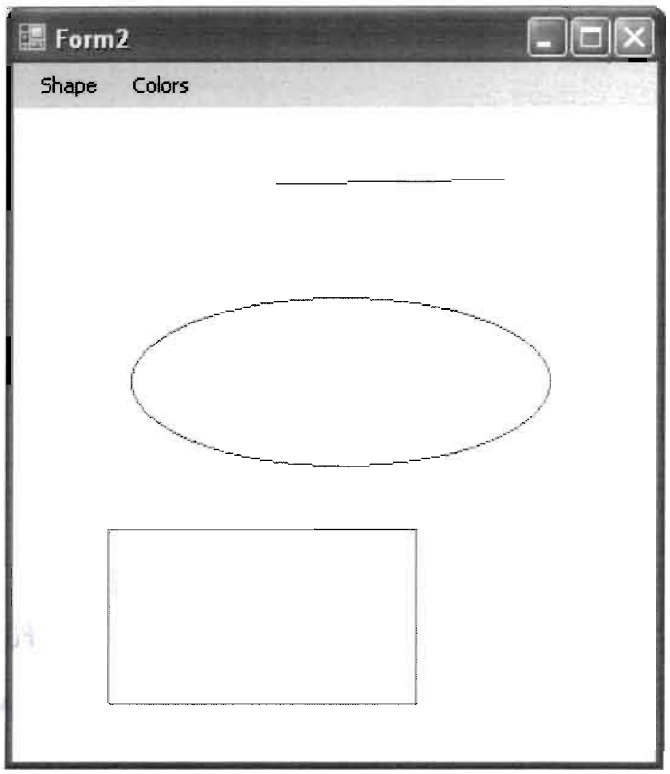
9) Develop an application to demonstrate the Tree View




10) Develop an application to draw the shape on the form

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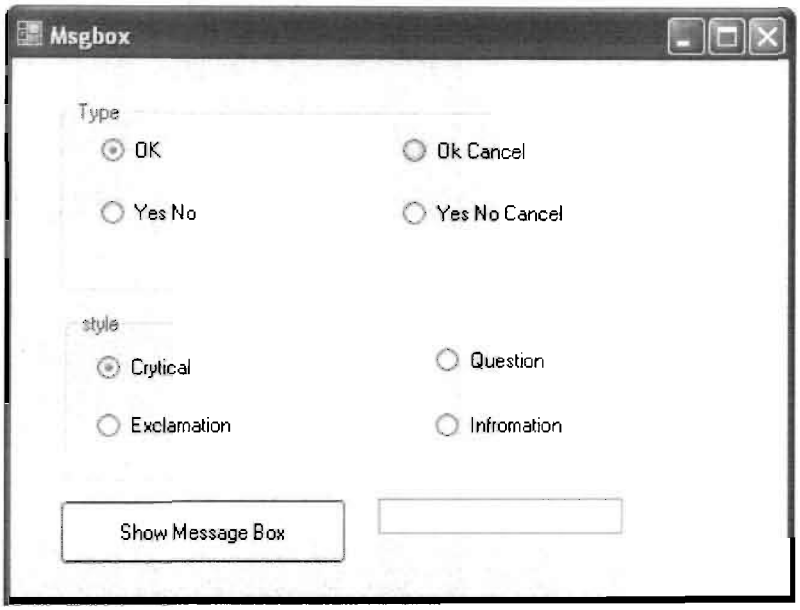
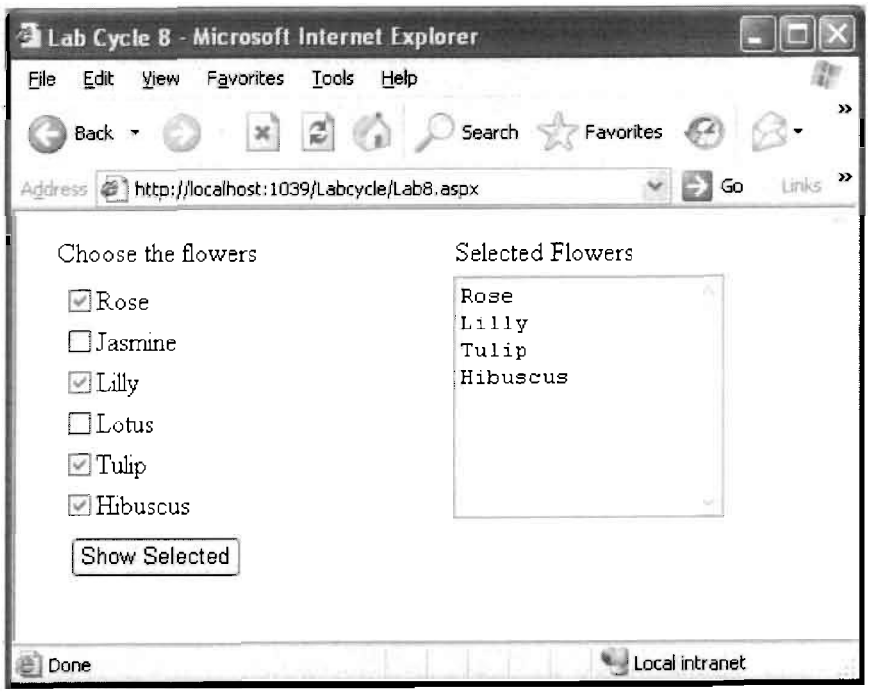
11) Develop an application to build to demonstrate the option of the msgbox function.




**ASP.net**

12) Design an application for dynamically populating a checkbox list

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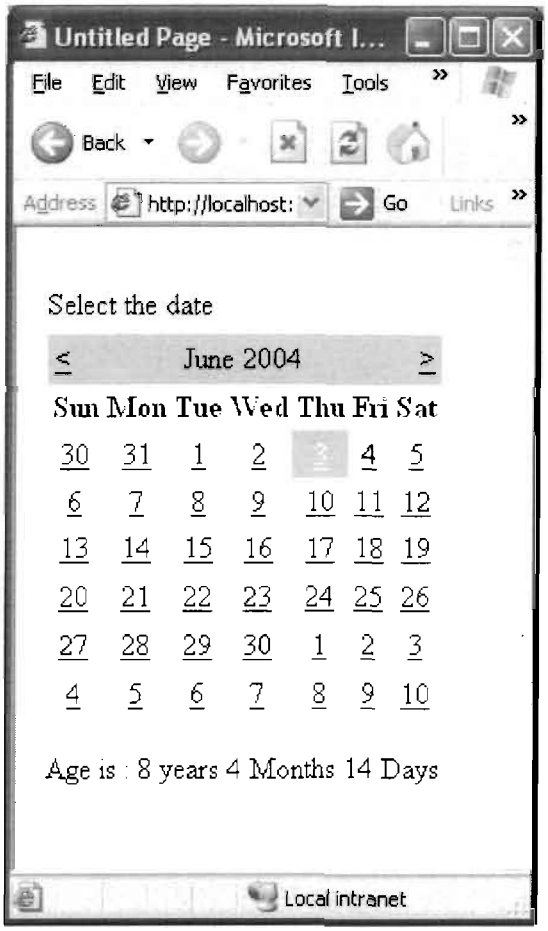
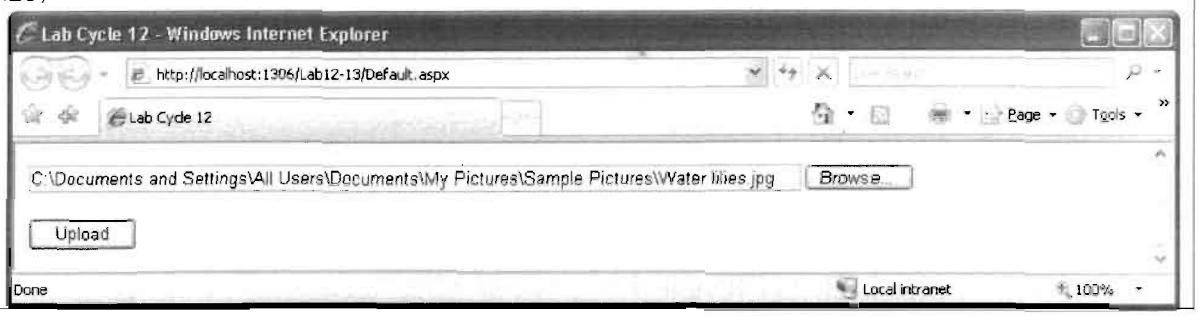
13) Develop an application for selecting a day in the calendar control (ASP.NET)




14) Design an application for uploading files using new fileupload control (ASP.NET)

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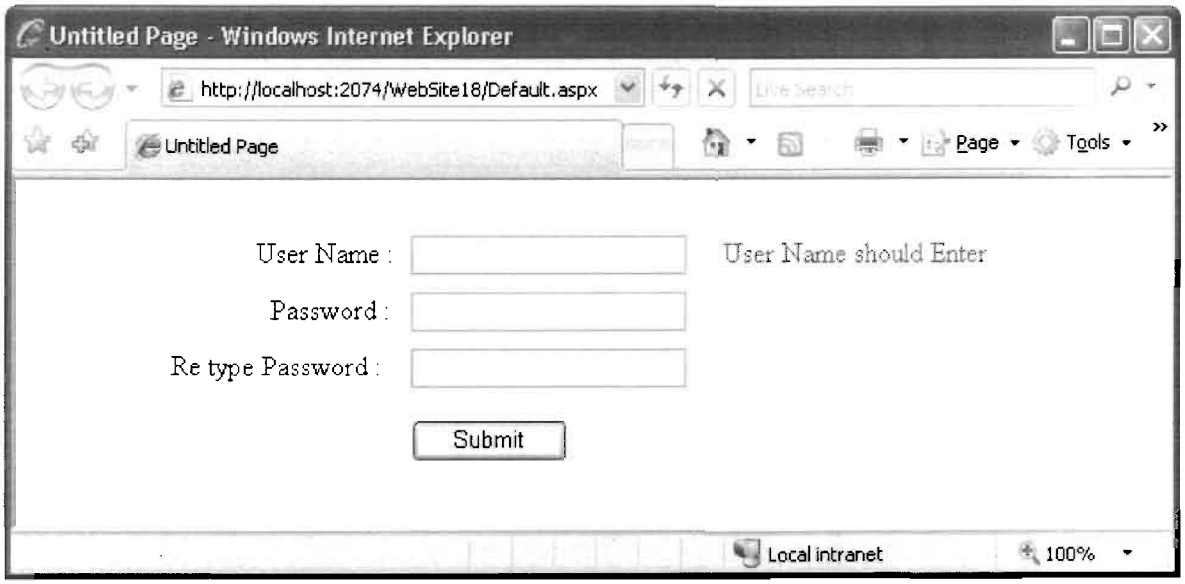
15) Design an application by using the compare validator to test the values (ASP.NET)




16) Develop ASP.net Application to demonstrate the Session tracking using Cookies & Query String.

17) Develop ASP.net Application to demonstrate the Session tracking using session and application objects.

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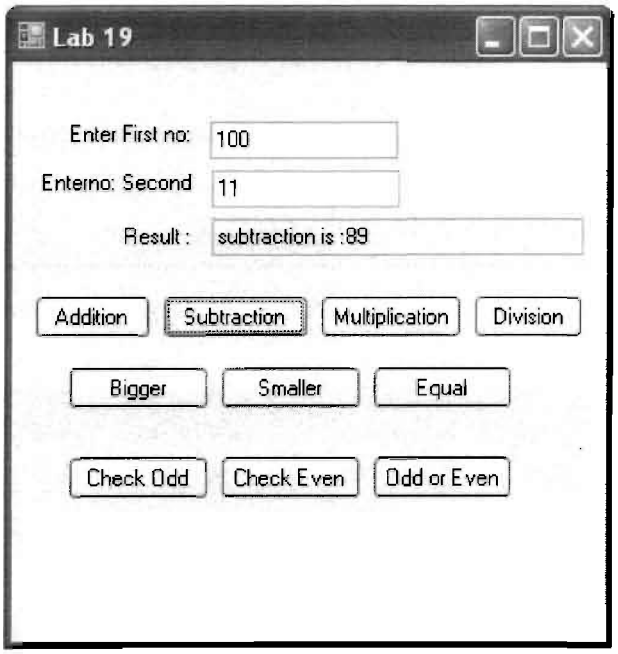
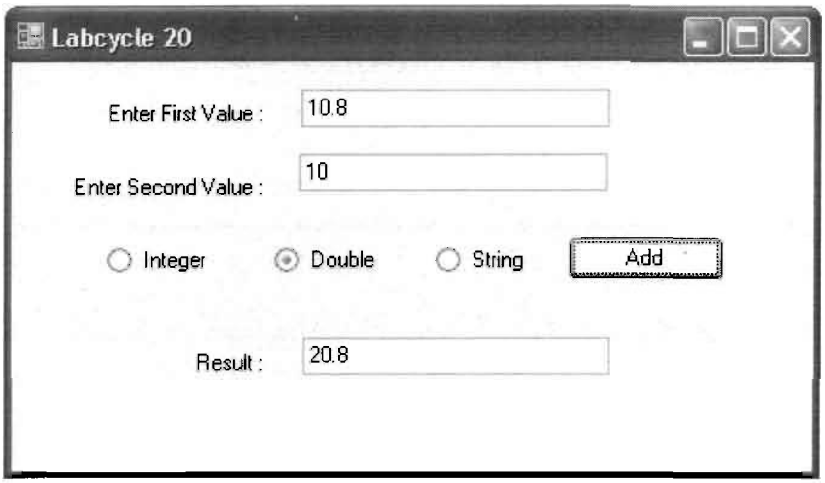
C#.net

18) Develop a project for performing arithmetic, relational and logical operations( C#.NET)




19) Develop a project for demonstrating polymorphism (C#.NET)

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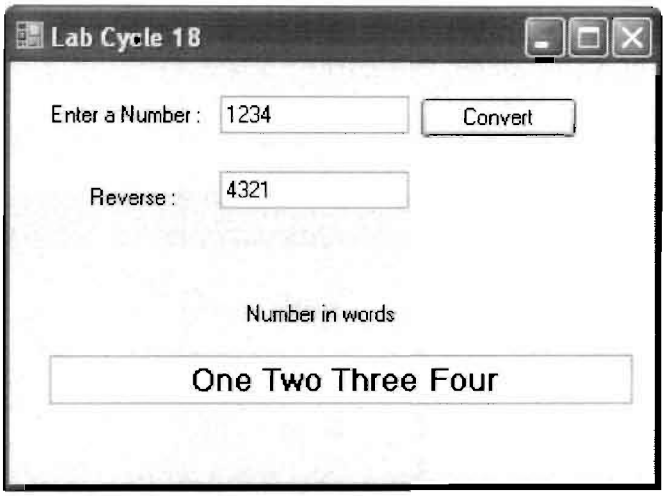
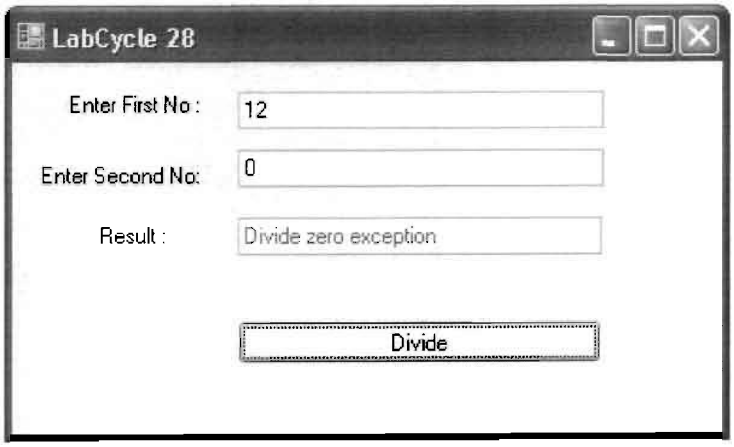
20) Develop a project for demonstrating the switch statement (C#.NET)

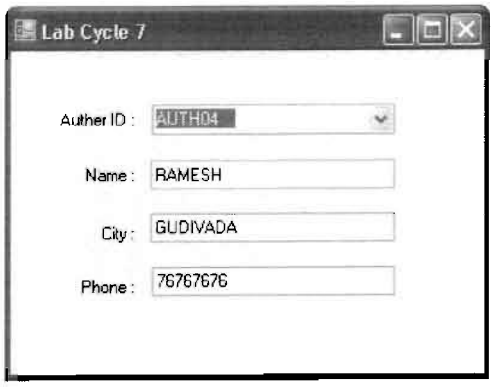



21) Develop a project for implementing exception handling (C#.NET)

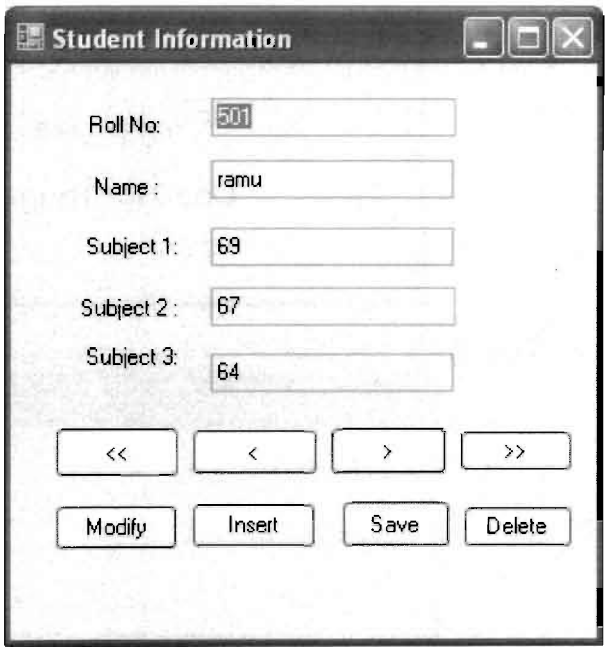



**ADO.NET**

22) Develop an application using the data reader to read from the database (VB.NET)



23) Create a web application using ADO.Net that uses which performs basic dataManipulations:
(i). Insertion (ii) Updating (iii) Deletion (iv) Selection.
24) Create an application using Data grid control to access information's from table in SQL server.
25) Develop a project which displays the student information from the existing database(C#.NET)

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