BABU MADHAV INSTITUTE OF INFORMATION TECHNOLOGY, UTU | 2019-20

Integrated M.Sc.(IT
Semester-IV
0 6 0 0 1 0 4 0 8 | CC10 - GUI Programming

Practical List: 01	**Enrollment No.:**

1. Create a console application in C# to perform Celsius to Fahrenheit Conversion.
2. Create a console application which takes radius as an input and calculate the area and circumference of circle. [Note: declare PI (π) as constant with value 3.14159265 or you can use inbuilt constant PI.]
3. Create a console application which takes age and annual income as input. Calculate tax payable according to following given slab.
4. Create an application to convert a given number of days in terms of Years, Weeks & Days.
5. Create a console application which takes three numbers as input and find the smallest number out of those three numbers.
6. Create a console application which calculates sum of digits of a given number using recursion.
7. Create a console application which takes year and month as input and check whether the year is leap year or not and also display a number of days in that month of a year.
8. Create a console application which takes string number as an input and check whether the string number is palindrome or not.
9. Create an application to take inputs from the user and perform addition, subtraction, multiplication and division of two numbers using switch…case and function.
10. Create a console application which takes marks of six subjects out of 40. Calculate grade of a student. If student score more than or equal to 90% then grade is OO, if student score between 80% and 90% then grade is AA, if student score between 70% and 80% then grade is AB, if student score between 60% and 70% then grade is BB, if student score between 50% and 60% then grade is BC, if student score between 40% and 50% then grade is CC else grade is FF.
11. Create an application to find the sum of first 50 natural numbers using For Loop.
12. Create a console application which generates prime numbers between given range.
13. Create a console application which passes an array to function and the function will return maximum and minimum number from that array elements.
14. Create a console-based application in C# to generate the Mark sheet of the student using function for inputting enrolment no., name, semester and five subject marks. Make spread function for calculating percentage and for displaying Total Marks, Percentage and Grade.
15. Create a console application which passes a string to a function and the function reverse the supplied string and return a new string.
    [Note: Do not make use of inbuilt Reverse function.]
16. Create a console application which demonstrates the use of ArithmeticException handling.
17. Create a console application which demonstrates the use of StackOverflowException handling.
18. Create a console application which demonstrates the use of ArgumentOutOfRangeException handling.
19. Create a C# console application to perform basic ATM transaction like Balance Check, Cash Withdraw and Cash Deposit.

	20. Create a console application which demonstrates the use of DivideByZeoException handling.
Objective(s)	To understand the basic concept of .NET platform, creating console applications in C#, flow control and procedures.
Pre-requisites	Knowledge of procedural and Object-Oriented Programming concept
Duration for Completion	12 Hours
PEO(s) to be achieved	To provide quality practical skill of tools and technologies to solve industry problems.
PO(s) to be achieved	Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO2: Describe basic constructs of C# language.
Solution must contain	Program and output
Nature of submission	Handwritten
References for solving the problem	--
Post Laboratory questions	1. List commonly used data types in C#.NET. Give example of each. 2. Give the difference between Write() and WriteLine() Method with proper example. 3. What is the difference between Read(), ReadLine() and ReadKey() Method?

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<table>
<tr><td>Practical No. 02</td><td>Enrolment No.</td></tr>
<tr><td>Practical Problem</td><td>Consider the following class diagram

<table>
<tr><td>Class
Vehicle</td><td>Class
Bicycle</td><td>Class
MotorBike</td></tr>
<tr><td>Data Member
color : String</td><td>Data Member
gear : Boolean</td><td>Data Member
gear : Boolean
fuelType : String</td></tr>
<tr><td>Member Function
turnLeft()
turnRight()</td><td>Member Function
ringBell()</td><td>Member Function
horn()</td></tr>
</table>

Vehicle is a base class and Bicycle and MotorBike are derived from Vehicle class. Provide appropriate property procedure for each data members of class and implement the member functions. Supply a test program that tests these classes and methods.</td></tr>
<tr><td>Objective(s)</td><td>Student must be able to understand the object oriented perspective of Visual Basic language.</td></tr>
<tr><td>Pre-requisite</td><td>Understanding of basic constructs of Visual Basic and its basic windows controls.</td></tr>
<tr><td>Duration for completion</td><td>3</td></tr>
<tr><td>PEO(s) to be achieved</td><td>To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field.</td></tr>
<tr><td>PO(s) to be achieved</td><td>Ability to design and develop system, component or process as well as test and maintain it.</td></tr>
<tr><td>CO(s) to be achieved</td><td>CO4: Design well integrated and rich GUI windows applications.</td></tr>
<tr><td>Solution must contain</td><td>Source code, Sample test data with output</td></tr>
<tr><td>Nature of submission</td><td>Handwritten</td></tr>
<tr><td>References for solving the problem</td><td>Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.12 Page No. 473-508</td></tr>
<tr><td>Sample Testing data and outcome</td><td></td></tr>
<tr><td>Post Laboratory questions</td><td>1. How can you assign value to private data member?
2. Can private data members be inherited to derived class?
3. List out the access modifiers available in Visual Basic .NET.
4. How can you create abstract class?</td></tr>
<tr><td colspan="2">Assessment</td></tr>
<tr><td colspan="2">
<table>
<tr><td>Faculty Name & Signature</td><td></td></tr>
<tr><td>Date</td><td></td></tr>
</table>
</td></tr>
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<table>
<tr><td>Practical No. 03</td><td>Enrolment No.</td></tr>
<tr><td>Practical Problem</td><td>Consider the following class diagram

<table>
<tr><td>Class
Person</td></tr>
<tr><td>Data Member
firstName : String
lastName : String</td></tr>
<tr><td>Member Function
displayName()</td></tr>
</table>
<table>
<tr><td>Class
Professor</td></tr>
<tr><td>Data Member
salary : Numeric</td></tr>
<tr><td>Member Function
getAnnualIncome()</td></tr>
</table>
<table>
<tr><td>Class
Student</td></tr>
<tr><td>Data Member
major : String</td></tr>
<tr><td>Member Function
isEligible()</td></tr>
</table>
Person is a base class and Professor and Student are derived from Person class. Provide appropriate property procedure for each data members of class and implement the member functions. Supply a test program that tests these classes and methods.</td></tr>
<tr><td>Objective(s)</td><td>Student must be able to understand the object oriented perspective of Visual Basic language.</td></tr>
<tr><td>Pre-requisite</td><td>Understanding of basic constructs of Visual Basic and its basic windows controls.</td></tr>
<tr><td>Duration for completion</td><td>3</td></tr>
<tr><td>PEO(s) to be achieved</td><td>To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field.</td></tr>
<tr><td>PO(s) to be achieved</td><td>Ability to design and develop system, component or process as well as test and maintain it.</td></tr>
<tr><td>CO(s) to be achieved</td><td>CO4: Design well integrated and rich GUI windows applications.</td></tr>
<tr><td>Solution must contain</td><td>Source code, Sample test data with output</td></tr>
<tr><td>Nature of submission</td><td>Handwritten</td></tr>
<tr><td>References for solving the problem</td><td>Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.12 Page No. 473-508</td></tr>
<tr><td>Sample Testing data and outcome</td><td></td></tr>
<tr><td>Post Laboratory questions</td><td>1. Can public data members be inherited to derived class?
2. Can you derive class from two base classes?
3. What is data hiding?
4. When destructor gets called?</td></tr>
<tr><td colspan="2">Assessment</td></tr>
<tr><td colspan="2">
<table>
<tr><td>Faculty Name & Signature</td><td></td></tr>
<tr><td>Date</td><td></td></tr>
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</td></tr>
</table>

Practical List: 04	**Enrollment No.:**
Explain the following windows controls with the below given properties of each:	
Controls	**Properties**
1. Button	▪ Text ▪ Name ▪ Enabled ▪ TextAlign ▪ Image ▪ ImageAlign
2. Label	▪ Autosize ▪ Font ▪ Text ▪ Name ▪ TextAlign ▪ Visible
3. TextBox	▪ MaxLength ▪ Multiline ▪ PasswordChar ▪ TextLength ▪ WordWrap
4. RadioButton	▪ AutoCheck ▪ CheckAlign ▪ Checked ▪ Text ▪ TabStop
5. CheckBox	▪ AutoCheck ▪ CheckAlign ▪ Checked ▪ CheckState ▪ ThreeState ▪ Text
6. ComboBox	▪ AllowSelection ▪ AutoCompleteMode ▪ Items ▪ MaxLength ▪ SelectedIndex ▪ SelectedItem ▪ SelectedText ▪ SelectedValue ▪ SelectionStart ▪ Sorted
7. ListBox	▪ Items ▪ MultiColumn ▪ ScrollAlwaysVisible ▪ SelectedIndex ▪ SelectedItem ▪ SelectedItems ▪ SelectionMode ▪ Sorted
8. PictureBox	▪ ErrorImage ▪ Image ▪ ImageLocation ▪ InitialImage ▪ SizeMode ▪ WaitOnLoad
9. DateTimePicker	▪ Checked ▪ DropDownAlign ▪ Format ▪ Text ▪ Value
10. Timer	▪ Enabled ▪ Interval ▪ GenerateMember
Objective(s)	To understand the use of control properties and events.
Pre-requisites	Knowledge of programming and Object-Oriented Programming concepts.
Duration for Completion	4 Hours
PEO(s) to be achieved	To provide quality practical skill of tools and technologies to solve industry problems.

PO(s) to be achieved	Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3: Create windows form, react to its events and manipulate its content in code.
Solution must contain	Explanation with proper examples.
Nature of submission	Handwritten
References for solving the problem	▪ Text Book: Karli Watson, Christian Nagel, Jacob Hammer Pedersen, Jon D. Reid, Morgan Skinner "Beginning Visual C# 2010" – Wrox Publication.
Post Laboratory questions	1. State the difference between KeyDown event, KeyPress event and KeyUp event with example. 2. Define TextChanged event of TextBox. 3. Give the use of CheckStateChanged property. 4. State the use of CheckedChanged of RadioButton and CheckBox with example. 5. What is the usage of SelectedIndexChanged event of ComboBox and ListBox? Give one proper example for both.
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Practical No. 5	**Enrolment No.**
Practical Problem	Create a Windows application that creates a form as show in figure 1. After filling up all the details if user clicks on Show button it should display all detail line by line in message box or if user clicks on Close button it should close the application. Do following validation 1. Enrolment No. textbox can only accept numbers 2. Name and Class textbox can only accept alphabets 3. Division textbox only accept single alphabet 4. Email Id textbox must have proper format [Note: The Department, Course Name and Course Code textboxes are not editable, Password should have special character and Address textbox can accept input in multiple lines. Tab order must be set.]  Figure 1.
Objective(s)	Student must be able to design and develop GUI application.
Pre-requisite	Familiar with basic constructs of visual basic language.
Duration for completion	4
PEO(s) to be achieved	PEO4: To develop the awareness and skills to become professionally competent leaders in service to industry.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3. Create windows form, react to its events and manipulate its content in code.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.4 Page No. 138-162, Chapter No.5 Page No. 196-197,200-208.

Sample Testing data and outcome

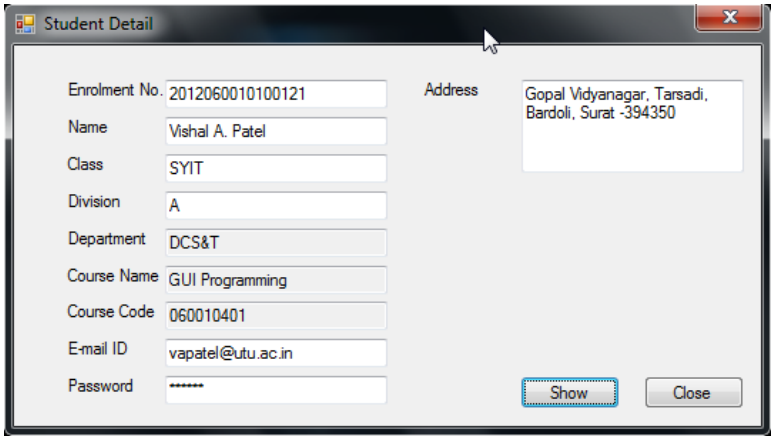

Figure 2.

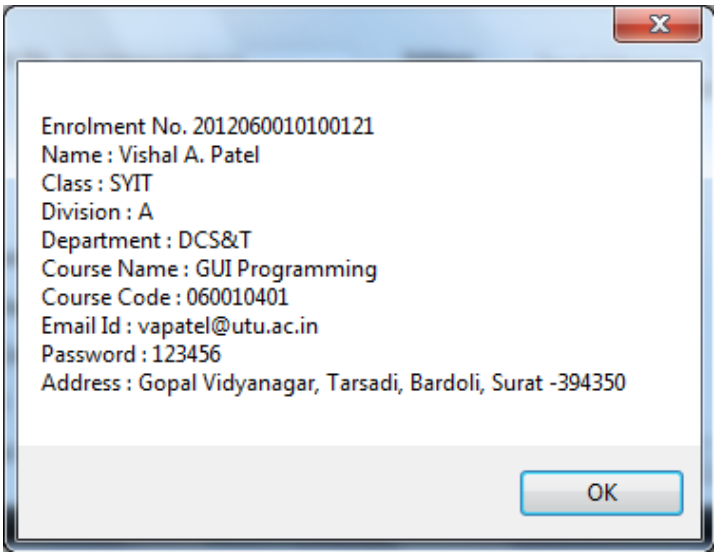

Figure 3.

Post Laboratory questions

1. How can you allow button to be clicked by pressing key?
2. Which property of TextBox allows multiple lines to be accepted by a textbox?
3. What is the difference between Locked and ReadOnly property of TextBox control?
4. When does the KeyPressed event will be fired?

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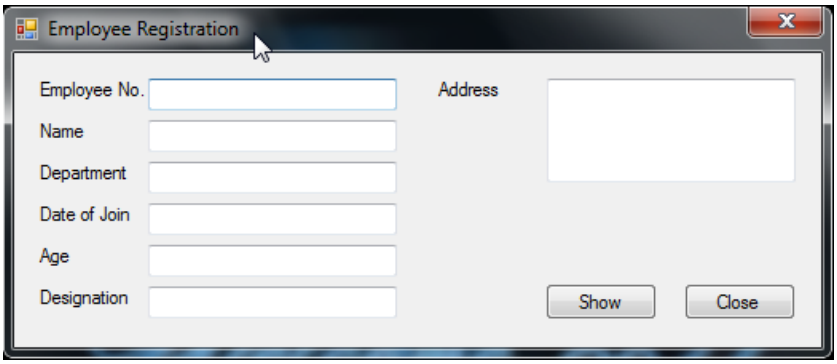
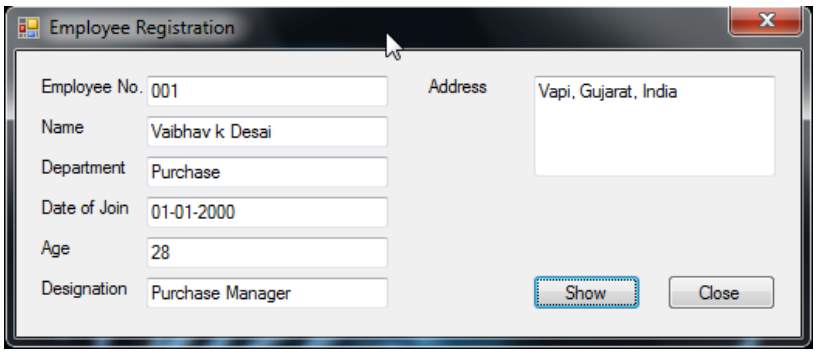
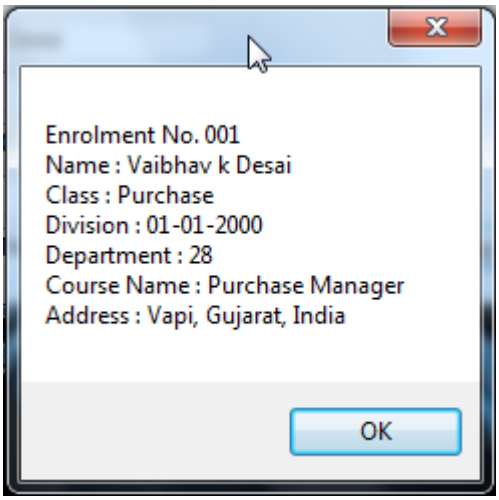
Practical No. 6	**Enrolment No.**
Practical Problem	Create a Windows application that creates a form as show in figure 1. After filling up all the details if user clicks on Show button it should display all detail line by line in message box or if user clicks on Close button it should close the application. Do following validation 1. Employee No. textbox can only accept numbers 2. Name, Department and designation textbox can only accept alphabets 3. Date of join textbox must have dd-mm-yyyy format. [Note: Address textbox can accept input in multiple lines. Tab order must be set.]  Figure 1.
Objective(s)	Student must be able to design and develop GUI application.
Pre-requisite	Familiar with basic constructs of visual basic language.
Duration for completion	4
PEO(s) to be achieved	PEO4: To develop the awareness and skills to become professionally competent leaders in service to industry.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3. Create windows form, react to its events and manipulate its content in code.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.4 Page No. 138-162, Chapter No.5 Page No. 196-197,200-208.

Sample Testing data and outcome	 Figure 2.
	 Figure 3.
Post Laboratory questions	1. Which property does not allow user to enter text in TextBox? 2. List at least three events related to TextBox control. 3. What is the use of Asc function? 4. Name the class which provides data for the KeyPress event.

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Practical No. 7	**Enrolment No.**
Practical Problem	Create a Windows Forms Application which is similar to Windows Calculator. Do necessary validation. [Note: To open windows calculator open Run window by pressing Window Key plus R and type CALC and press enter.]
Objective(s)	Student must be able to design and develop GUI application and understand the event handling.
Pre-requisite	Familiar with basic constructs of visual basic language and have knowledge of basic windows controls.
Duration for completion	4
PEO(s) to be achieved	PEO4: To develop the awareness and skills to become professionally competent leaders in service to industry.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3. Create windows form, react to its events and manipulate its content in code.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.5, 6 and 7 Page No. 189-299.
Sample Testing data and outcome	
Post Laboratory questions	1. Which is the default event of Button control? 2. How you can assign value to a TextBox on click of Button control? 3. Which property is used in setting the alignment of text in TextBox control? 4. Which property is used to set icon of a Form control?
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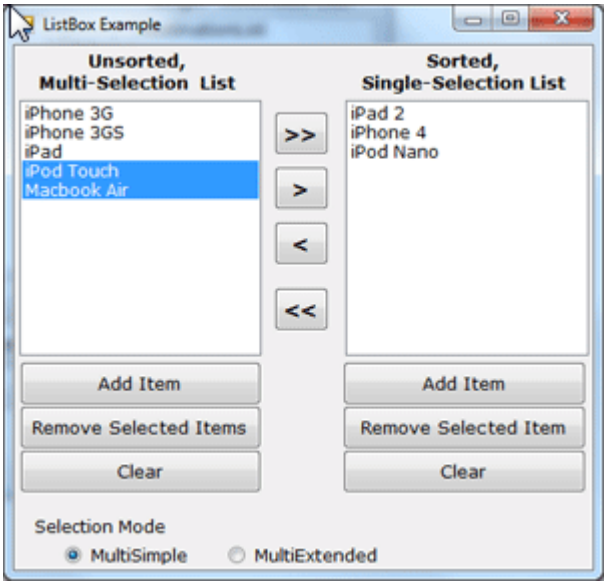
Practical No. 8	Enrolment No.
Practical Problem	Design a Windows Form as shown in Figure 3. Add, Remove items in the two ListBox control upon clicking on specific Button controls below that ListBox and also move items to and from ListBox controls to one another. Selection of item depends on Selection Mode RadioButton value.  Figure 3.
Objective(s)	Student must be able to design and develop GUI application and understand the event handling.
Pre-requisite	Familiar with basic constructs of visual basic language and have knowledge of basic windows controls.
Duration for completion	4
PEO(s) to be achieved	PEO4: To develop the awareness and skills to become professionally competent leaders in service to industry.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3. Create windows form, react to its events and manipulate its content in code.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.5, 6 and 7 Page No. 189-299
Sample Testing data and outcome	
Post Laboratory questions	1. Provide a code snippet to count the number of selected items in a ListBox. 2. List the four values of SelectionMode property of ListBox control. 3. What is the difference between property value MultiSimple and MultiExtended of SelectionMode property of ListBox control? 4. What will be the order of items 1 to 10 if sorted property of ListBox control is set to true?
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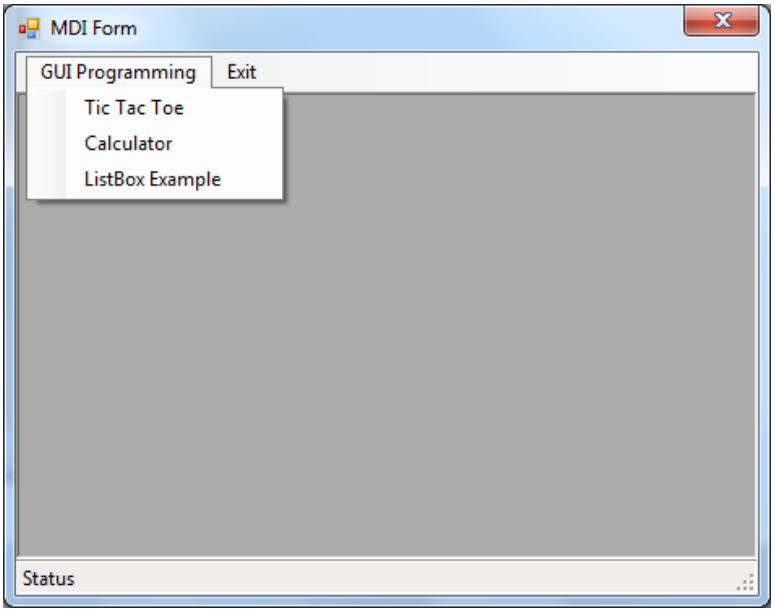
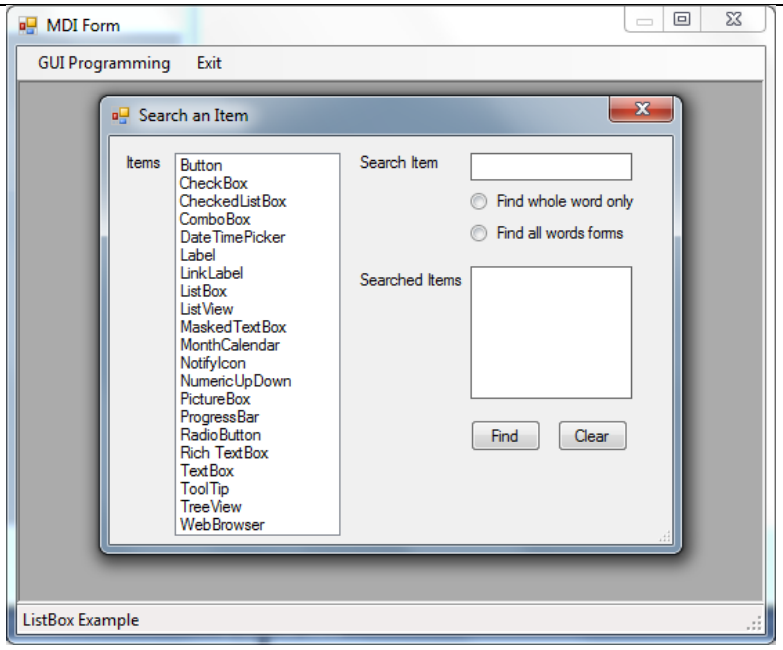
Practical No. 9	**Enrolment No.**
Practical Problem	Design a Windows MDI Form with menu items as your 7th and 8th practical list problems. When user click on particular menu item appropriate form will be display on top of MDI Form and user can be able to work with that problem. Upon click on Exit menu item programs needs to be terminated. Also change the Status bar text as per the child Form's Text property. [Note: See Sample Testing Data and Output. Make sure that menu items are from your group's practical list only.]  Figure 5.
Objective(s)	Student must be able to design and develop GUI application and understand the event handling.
Pre-requisite	Familiar with basic constructs of visual basic language and have knowledge of basic windows controls.
Duration for completion	4
PEO(s) to be achieved	PEO4: To develop the awareness and skills to become professionally competent leaders in service to industry.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3. Create windows form, react to its events and manipulate its content in code.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.4 and 9 Page No. 137-188 & 343-388

Sample Testing data and outcome	 Figure 6.
Post Laboratory questions	1. What is the difference between Show and ShowDialog method? 2. What is context menu? 3. Provide code snippet to open a new Form on click of menu item. 4. How to place form on center of a screen?

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Practical No. 10	Enrolment No.
Practical Problem	Create a functional word processor application based on RichTextBox control. Implement the Save and SaveAs, cut, copy and past commands. [Note: Make use of appropriate Dialog control.]
Objective(s)	To be familiar with Windows Environment and programming style.
Pre-requisite	Knowledge of windows basic control and its event driven programming.
Duration for completion	4
PEO(s) to be achieved	PEO1: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3, CO4 & CO5: Development of rich windows form applications with event driven programming model.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.5 page no. 208-218, Chapter No.9 Page No. 343-388
Sample Testing data and outcome	
Post Laboratory questions	1. Which method of RichTextBox control is use to save a file? 2. How you can check whether the file exists or not? 3. What is use of Filter property of RichTextBox control? 4. How you can display only .pdf files when the SaveFileDialog Box open?

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Practical No. 11	**Enrolment No.**
Practical Problem	Develop a data driven application based on following tables. **Title**(TitleID, Title, Type, Publisher, Price) **Author**(Auther_ID, AutherLastName, AutherFirstName) **TitleAuther**(Auther_ID, TitleID) [**Note**: Make use of ListView control to display records of a table. Provide user interface to add, update, delete and navigate the table records.]
Objective(s)	To be familiar with Windows Environment and programming style.
Pre-requisite	Knowledge of windows basic control and its event driven programming.
Duration for completion	8
PEO(s) to be achieved	PEO1: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3, CO4 & CO5: Development of rich windows form applications with event driven programming model.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code, table with its data types and constraints, stored procedures if used.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.21,22,23 page no. 821-957
Sample Testing data and outcome	
Post Laboratory questions	1. Which property is used to check whether a DataReader is closed or opened? 2. What is the use Direction property of SqlParameter class? 3. What are basic methods of Data adapter? 4. What is connection pooling?

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Practical No. 12	**Enrolment No.**
Practical Problem	Develop a data driven application based on following tables. **Customer**(CustomerID, CompanyName, ContactName) **Product**(ProductID, ProductName, SupplierID, CategoryID, Quantity, UnitPrice) **Order**(CustomerID, OrderID) **OrderDetails**(OrderID, ProductID, UnitPrice, Quantity, Discount) [**Note**: Make use of ListView control to display records of a table. Provide user interface to add, update, delete and navigate the table records.]
Objective(s)	To be familiar with Windows Environment and programming style.
Pre-requisite	Knowledge of windows basic control and its event driven programming.
Duration for completion	8
PEO(s) to be achieved	PEO1: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3, CO4 & CO5: Development of rich windows form applications with event driven programming model.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code, table with its data types and constraints, stored procedures if used.
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.21,22,23 page no. 821-957
Sample Testing data and outcome	
Post Laboratory questions	1. How can we connect to Microsoft Access, FoxPro, and Oracle etc? 2. What is the difference between ExecuteNonQuery() and ExecuteScalar() method of command class? 3. What is the use of command objects? 4. What is Dataset object?

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Practical No. 13	**Enrolment No.**
Practical Problem	Develop a data driven application based on following tables. **Supplier**(SupplierID, CompanyName, ContactName, ContactTitle) **Category(**CategoryID, CategoryName, Description) **Product**(ProductID, ProductName, SupplierID, CategoryID, Quantity, UnitPrice) [**Note**: Make use of ListView control to display records of a table. Provide user interface to add, update, delete and navigate the table records.]
Objective(s)	To be familiar with Windows Environment and programming style.
Pre-requisite	Knowledge of windows basic control and its event driven programming.
Duration for completion	8
PEO(s) to be achieved	PEO1: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development.
CO(s) to be achieved	CO3, CO4 & CO5: Development of rich windows form applications with event driven programming model.
Solution must contain	Drawing of form layout with table which contains details such as control, name of control, text property of control, any specific property set during design time, Source code, table with its data types and constraints, stored procedures if used
Nature of submission	Handwritten
References for solving the problem	Text book- Holzner Steven, Visual Basic .NET Programming Black Book, Dreamtech Press. Chapter No.21,22,23 page no. 821-957
Sample Testing data and outcome	
Post Laboratory questions	1. What are the two fundamental objects in ADO.NET? 2. Which properties are used to bind a DataGridView control? 3. What is the use of data adapter? 4. What is the use of connection object?

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