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Name _____

Roll No. _____ Year 20____20____

Exam Seat No. _____

COMPUTER GROUP | SEMESTER - IV | DIPLOMA IN ENGINEERING AND TECHNOLOGY

A LABORATORY MANUAL

FOR

GUI APPLICATION DEVELOPMENT USING VB.NET (22034)

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI
(Autonomous) (ISO 9001 : 2015) (ISO / IEC 27001 : 2013)

VISION

To ensure that the Diploma level Technical Education constantly matches the latest requirements of technology and industry and includes the all-round personal development of students including social concerns and to become globally competitive, technology led organization.

MISSION

To provide high quality technical and managerial manpower, information and consultancy services to the industry and community to enable the industry and community to face the changing technological and environmental challenges.

QUALITY POLICY

We, at MSBTE are committed to offer the best in class academic services to the students and institutes to enhance the delight of industry and society. This will be achieved through continual improvement in management practices adopted in the process of curriculum design, development, implementation, evaluation and monitoring system along with adequate faculty development programmes.

CORE VALUES

MSBTE believes in the followings:

- Education industry produces live products.
- Market requirements do not wait for curriculum changes.
- Question paper is the reflector of academic standards of educational organization.
- Well designed curriculum needs effective implementation too.
- Competency based curriculum is the backbone of need based program.
- Technical skills do need support of life skills.
- Best teachers are the national assets.
- Effective teaching learning process is impossible without learning resources.

A Laboratory Manual for

GUI Application Development Using VB.Net

(22034)

Semester - IV

(CO, CM, CW, IF)

Maharashtra State
Board of Technical Education, Mumbai
(Autonomous) (ISO 9001:2015) (ISO/IEC 27001:2013)

Maharashtra State Board of Technical Education,
(Autonomous) (ISO 9001 : 2015) (ISO/IEC 27001 : 2013)
4th Floor, Government Polytechnic Building, 49, Kherwadi,
Bandra (East), Mumbai - 400051.
(Printed on November 2018)

Maharashtra State
Board of Technical Education
Certificate

This is to certify that Mr. / Ms. ……. Roll No……. of Fourth Semester of Diploma in ……. of Institute ……..

(Code……..) has attained predefined practical outcomes (PROs) satisfactorily in course **GUI Application Development Using VB.Net (22034)** for the academic year 20…….to 20…..... as prescribed in the curriculum.

Place ……. Enrollment No……

Date: ..... Exam Seat No. …….....

Course Teacher **Head of the Department** **Principal**

Seal of the Institute

Preface

The primary focus of any engineering laboratory work in the technical education system is to develop the much-needed industry relevant competencies and skills. With this in view, MSBTE embarked on this innovative 'I' scheme curricula for engineering diploma programmes with outcome-based education as the focus and accordingly, relatively large amount of time is allotted for the practical work. This displays the great importance of the laboratory work making each teacher, instructor & student to realize that every minute of the laboratory time need to be effectively utilized to develop these outcomes, rather than doing other mundane activities. Therefore, for the successful implementation of this outcome-based curriculum every practical has been designed to serve as 'vehicle' to develop this industry identified competency in every student. The practical skills are difficult to develop through 'chalk and duster' activity in the classroom situation. Accordingly, the 'I' scheme laboratory manual development team designed the practicals to focus on the outcomes, rather than traditional age old practice of conducting practical's to 'verify the theory' (which may become a byproduct along the way)

This laboratory manual is designed to help all stakeholders, especially the students, teachers and instructors to develop in the student the pre-determined outcomes. It is expected from each student that at least a day in advance, they have to thoroughly read through the theoretical background associated with practical. Every practical in this manual begins by identifying the competency, industry relevant skills, course outcomes and practical outcomes which serve as a key focal point doing the practical. The students will then become aware about the skills they will achieve through procedure shown there and necessary precautions to be taken, which will help them to apply in solving real-world problems in their professional life.

This manual also provides guidelines to the teachers and instructors to effectively facilitate student-centered lab activities through each practical exercise by arranging and managing necessary resources in order that the students follow the procedures and precautions systematically ensuring achievement of outcomes in the students.

This course provides an introduction to the VB.NET. It is the programming language based on Object Oriented Concepts which is prominently used to develop GUI based Applications. Graphical User Interface (GUI) based application includes various user friendly controls to accept or display data. This course will give the students an in-depth understanding of the concepts used in VB .NET and necessary skills to use programming techniques to develop .NET based applications and deploy the same.

Although best possible care has been taken to check for errors (if any) in this laboratory manual, perfection may elude as this is the first edition of this manual. Any errors and suggestions for improvement are solicited and highly welcome.

Programme Outcomes (POs) to be achieved through Practical of this Course

PO1. **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the broad based computer engineering problems.

PO2. **Discipline knowledge:** Apply computer engineering knowledge to solve broad-based Computer Engineering related problems.

PO3. **Experiments and practice:** Plan to perform experiments, practices and to use the results to solve Computer Engineering related problems.

PO4. **Engineering tools:** Apply appropriate Computer Engineering related techniques/tools with understanding of the limitations.

PO6. **Environment and sustainability:** Develop an application which is sustainable in changing environment.

PO7. **Ethics:** Apply Ethical Principles for commitment to professional ethics, responsibilities and norms of the practice also in the field of Computer Engineering.

PO8. **Individual and team work:** Function effectively as a leader and team member in diverse/multidisciplinary teams.

PO9.**Communication:** Communicate effectively in oral & written form

PO10. **Life-long learning:** Engage in independent and life-long learning activities in the context of technological changes in the computer engineering field.

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Practical- Course Outcome matrix->

Course Outcomes (COs):

- **a.** Use Visual Studio IDE to design application.
- **b.** Develop GUI Application using Form Controls and its events.
- **c.** Apply Object Oriented concepts in GUI Application.
- **d.** Use Data access controls to store data in Database and retrieve it.
- **e.** Use Data Binding in GUI Application

Sr. No.	Practical Outcome	CO a.	CO b.	CO c.	CO d.	CO e.
*1.	Install, Set up and Use VB.Net IDE (Integrated Development Environment).	√	-	-	-	-
2.	Use Existing Namespaces and Create user defined Namespace in VB.Net.	√	-	-	-	-
*3.	(a) Write a simple program to display a welcome message using *msgbox()*. (b) Develop programs to solve Arithmetic expressions.	-	√	-	-	-
*4.	Develop programs to demonstrate use of *IF*, *IF-else* Control structures in VB.net.	-	√	-	-	-
*5.	Develop programs to demonstrate use of *Case* Control structures in VB.net.	-	√	-	-	-
*6.	Develop programs to demonstrate use of *While, DO Loops* in VB.net.	-	√	-	-	-
*7.	Develop programs to demonstrate use of *For, For-each* Loops in VB.net.	-	√	-	-	-
*8.	Develop a program using Text box, Label, Button	-	√	-	-	-
*9.	Develop a program using Radio button, check box,	-	√	-	-	-
*10.	Develop a program using List box, Combo box.	-	√	-	-	-
*11.	Write a program using Picture Box, Panel.	-	√	-	-	-
*12.	Write a program using Tab Control, and Timer.	-	√	-	-	-
*13.	Write a program to perform validation using regular expression and error provider.	-	√	-	-	-

*14.	Write a program to perform validation using regular expression and error provider.	-	√	-	-	-
15.	Write a program to demonstrate use of Sub-procedures and Parameterized Sub-Procedures.	-	-	√	-	-
*16.	Write a program to demonstrate use of Simple function and parameterized Functions.	-	-	√	-	-
*17.	Develop a program to create class. Access members of class using its object.	-	-	√	-	-
*18.	Create constructor to initialize object of class. Use Destructor to de-allocate memory using *finalize* method.	-	-	√	-	-
*19.	Develop a program to inherit members of super class in sub class using simple inheritance.	-	-	√	-	-
*20.	Develop a program to demonstrate Overloading a method	-	-	√	-	-
*21.	Develop a program to demonstrate Overriding in inheritance	-	-	√	-	
22.	Develop a program to demonstrate Shadowing in inheritance	-	-	√	-	
*23.	Construct a program to handle runtime errors by using Exception handling.	-	-	√	-	
*24.	Write a program to fetch data from table and display in Data Grid.	-	-	-	√	-
*25.	Write a program to perform following operation using Data Adapter: Fill and Update data in Database.	-	-	-	√	-
26.	Write a program to perform following operation using Data Adapter: Fetch data from multiple tables in Dataset.	-	-	-	√	-
*27.	Write a VB.Net Code to store and retrieve data in Database Table.	-	-	-	√	-
*28.	Write a program that uses Simple Data Binding using Text Box, Check Box and Label.	-	-	-	-	√
29.	Write a program that uses Complex Data Binding	-	-	-	-	√

	using Combo Box.					
30.	Write a program that uses Complex Data Binding using List Box.	-	-	-	-	√
31.	Write a program to Navigate across existing data in table.	-	-	-	-	√
*32.	Create Executable file of VB.Net Application and Deploy it to another computer.	-	-	-	-	√

List of Industry Relevant Skills

The following industry relevant skills of the competency **'Develop GUI based applications using VB.net'** are expected to be developed in you by undertaking the practical of this laboratory manual.

1. Install, configure & use .Net Framework.
2. Develop GUI based application.
3. Apply object-oriented concepts in .Net framework
4. Design & develop interactive applications in VB.Net
5. Use data binding in GUI application

Brief Guidelines to Teachers

1. There will be two sheets of blank pages after every practical for the student to report other matters (if any), which is not mentioned in the printed practical.
2. For difficult practical if required teacher could provide the demonstration of the practical emphasizing of the skills which student should achieve.
3. Teachers should give opportunity to students for hands on after the demonstration.
4. Assess the skill achievement of the students and CO's of each unit.
5. One or two questions ought to be added in each practical for different batches. For this teacher can maintain various practical related question banks for each course.
6. For effective implementation and attainment of practical outcomes, teacher ought to ensure that in the beginning itself of each practical, students must read through the complete write up of that practical sheet.
7. During practical, ensure that each student gets chance and takes active part in tasking observations/readings and performing practical.
8. Teacher ought to assess the performance of students according to the MSBTE guidelines.

Instructions for Students

Note: Kindly do add specific instructions for students for effective implementation of upon your course, if practical depending needed.

1. For incidental writing on the day of each practical session every student should maintain a ***dated log book*** for the whole semester, apart from this laboratory manual which s/he has to ***submit for assessment to the teacher*** in the next practical session.
2. For effective implementation and attainment of practical outcomes, in the beginning of each practical, students need to read through the complete write-up including the practical related questions and assessment scheme of that practical sheet.
3. Student ought to refer the reference books, manuals etc.
4. Student should not hesitate to ask any difficulties they face during the conduct of practical.

Content Page

List of Practical's and Progressive Assessment Sheet

Sr. No	Practical Outcome	Page No.	Date of performance	Date of submission	Assessment marks (50)	Dated sign. of teacher	Remarks (if any)
18	Implement a program for class constructor and destructor to de-allocate memory.	108					
19	Develop a Program for Inheritance	116					
20 & 21	Implement a Program for Overloading & Overriding	123					
22	Implement a Program to Demonstrate Shadowing In Inheritance	131					
23	Implement a Program to Handle Runtime Errors Using Exception Handling	139					
24	Understand the concept of ado.net.	145					
25 & 26	Understand The Concept Of Data Adapter	153					
27	Understand The Concept Of Select And Insert Data In Database Table	159					
28 , 29 & 30	Understand the concept of data binding.	167					
31	Design a program to navigate across existing data in table.	173					
32	Develop an executable file and deploy it	179					
Total							

- **To be transferred to Proforma of CIAAN-2017**.

Practical No. 1: Install Set Up and Use VB.Net IDE (Integrated Development Environment)

I. Practical Significance

Students will be able to analyze the basic requirements of Visual Studio .Net framework software installation. He / She will achieve skill necessary for the installation of software. Also the components of the visual studio .Net framework.

II. Relevant Program Outcomes (POs)

- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Identify the basic hardware and software requirements for the installation of Visual Studio .Net

IV. Relevant Course Outcome(s)

- Use Visual Studio IDE to design application.

V. Practical Outcome (PrOs)

- Install Set up and Use VB.Net Integrated Development Environment (IDE)

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

The Microsoft .NET Framework is a platform for building, deploying, and running Web Services and applications. It consist of components such as common language runtime (CLR) and the .NET Framework class library, which includes classes, interfaces, and value types that support wide range of technologies.

Procedure:

1. Insert visual studio 2012 installation disk into CD drive.
2. Now, set up will start automatically or if not started then locate setup.exe file.
3. Accept license agreement and click on Next Button.
4. It will show the list of products to be installed, click on Install button.
5. Installation process will begin.
6. After Installation Restart the System.

VIII. Resources required

Sr. No.	Name of Resource	Specification	Quantity	Remarks
1	Hardware: Computer System	Computer (i3-i5 preferable), RAM minimum 2 GB and onwards	As per batch size	For all Experiments
2	Operating system	Windows 7 or Later Version/LINUX version 5.0 or Later Version		
3	Software	Microsoft Visual Studio 2012 or later.		

IX. Precautions

1. Check the basic hardware and software requirement.
2. Use only licensed software
3. Follow the instructions as given in the instruction guide of the product.

Sr. No.	Name of Resource	Specification
1	Computer System with broad specifications	
2	Software	
3	Any other resource used	

X. Resources used

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XI. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Differentiate between VB.Net & VB.
2. How many languages are supported by .Net Framework?

(Space for answers)

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XII. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Illustrate the use of Just in Time compiler in VB.net
2. Define user defined namespaces and write procedures.
3. Write the various system requirements for Installation of VB.Net

(Space for answers)

XIII. References / Suggestions for further Reading

1. https://docs.microsoft.com/en-us/dotnet/framework/deployment/deployment-guide-for-developers (20/07/2018)

XIV. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 2: Design VB.NET application using Existing Namespaces and User Defined Namespace.

I. Practical Significance

Namespaces organize the objects defined in an assembly. Assemblies can contain multiple namespaces, which can in turn contain other namespaces. Namespaces prevent ambiguity and simplify references when using large groups of objects such as class libraries.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a VB.NET program to use of Namespaces.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcome(s)

- Use Visual Studio IDE to design application

V. Practical Outcome (PrOs)

- Develop a .Net program using existing & user defined Namespace in VB.net Application.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices

VII. Minimum Theoretical Background

Namespaces make it possible to organize the thousands of .NET Framework objects and all the objects that VB programmers create in projects so they don't clash. For example, if you search .NET for a Color object, you find two. There is a Color object in both:

System.Drawing

System.Windows.Media

If you add an Imports statement for both namespaces (a reference may also be necessary in the project properties) ...

```
Imports System.Drawing
Imports System.Windows.Media
 ... then a statement like ...
Dim a As Color
```

... will be flagged as an error with the note, "Color is ambiguous" and .NET will point out that both namespaces contain an object with that name. This kind of error is called a "name collision."

This is the real reason for "namespaces" and it's also the way namespaces are used in other technologies (such as XML). Namespaces make it possible to use the same object name, such as Color, when the name fits and still keep things organized. You could define a Color object in your own code and keep it distinct from the ones in .NET (or the code of other programmers).

```
Namespace MyColor
  Public Class Color
    Sub Color()
      ' Do something
    End Sub
  End Class
End Namespace
```

You can also use the Color object somewhere else in your program like this:

```
Dim c As New MyColor.Color
c.Color()
```

Before getting into some of the other features, be aware that every project is contained in a namespace. VB.NET uses the name of your project (WindowsApplication1 for a standard forms application if you don't change it) as the default namespace.

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using user defined and existing namespaces in VB.Net.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Differentiate between namespace & assembly
2. Compare between option strict & option explicit

(Space for answers)

XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. List namespaces in VB.net?
2. Write a program to implement the namespace Student in your VB.net Application.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://www.safaribooksonline.com/library/view/programming-visual-basic/0596000936/ch01s03.html (20/07/2018)
2. https://docs.microsoft.com/en-us/dotnet/visual-basic/programming-guide/program-structure/namespaces(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 3: Implement a Message Box program & Arithmetic Expressions.

I. Practical Significance

Message box use to display simple message which gives guidelines. The MsgBox function displays a message and waits for the user to click a button and then an action is performed based on the button clicked by the user. Also follow the arithmetic program.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a VB.NET program demonstrate use of Massage Box & Arithmetic Expressions.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcome(s)

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Write a simple program to display a **"welcome message"** using *msgbox().*
- Develop programs to solve basic arithmetic expressions

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

MessageBox Dialog in Visual Basic .NET

MessageBox is one of the built-in dialog boxes that help you to provide a rich user interface in your front-end applications.

As a developer you will use this dialog box pretty often as it lets you to display custom messages to and accept their input regarding the choice that they have made. You can customize it to display a variety of icons with your messages and choose which buttons to display while still maintaining the standard look of Windows Forms application.

Types of Icons:-

MEMBER	ICON
Asterisk	Information Icon
Information	Information Icon
Error	Error Icon
Hand	Error Icon
Stop	Error Icon
Exclamation	Exclamation Icon
Warning	Exclamation Icon
Question	Question Icon
None	Will not display any icon

Types of Buttons:-

MEMBER	DESCRIPTION
AbortRetryIgnore	Abort, Retry, and Ignore buttons
OK	an OK button
OKCancel	OK and Cancel buttons
RetryCancel	Retry and Cancel buttons
YesNo	Yes and No buttons
YesNoCancel	Yes, No, and Cancel buttons

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using MessageBox & Arithmetic Expressions.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write the difference between MsgBox() & ErrorProvider Control.
2. Describe any four types of MsgBox() window

(Space for answers)

XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Implement the program to generate result of any arithmetic operation using MsgBox ().
2. Write a program using InputBox(), MsgBox() & perform various arithmetic expression.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://www.dotnetperls.com/messagebox-show-vbnet(20/07/2018)
2. http://www.visual-basic-tutorials.com/beginner/Message-Box-Dialog.(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No 4: Implement a program for If-else control structures in VB.NET.

I. Practical Significance

Dive into VB .NET's control structures and learn how to control the order of events in your programs. Study the basics of the If and If-else statements.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a VB.NET program to use of if-else statements.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcome(s)

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Develop programs to demonstrate use of *IF, IF-else* Control structures in VB.net.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practice
2. Follow ethical practices

VII. Minimum Theoretical Background

It is conditonal statement which executes a group of statements depending on the value of an expression.

```
If condition [ Then]
        [ statements]
[ ElseIf  condition  [ Then ]
        [ statements ] ]
[ Else
        [ elsestatements ] ]
End If
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code(Teacher must assign a separate program to a group of 3-4 students)

Write a program using if-else statement.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Implement the program for finding greatest of three numbers.
2. Implement the program using if-else statement to find the number is even or odd.

(Space for answers)

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program using If-Else statement for the following output.

Result	Percentage Criteria
Fail	perc<40
Pass Class	perc > 40 AND perc <60
First Class	Perc >60 AND perc < 75
Distinction	perc >75

2. Write the output of the following code

```
Module Module1
    Sub Main()
        Dim i As Integer
        i = 4
        Dim a As Double
```

```
            a = -1.0
            If (i > 0) Then
                If (a > 0) Then
                    Console.WriteLine("Here I am !!!!")
                Else
                    Console.WriteLine("No here I am ??")
                    Console.WriteLine("Actually here I am ??")
                End If
            End If
            Console.ReadKey()
        End Sub
    End Module
```

(Space for answers)

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XV. References / Suggestions for further Reading

1. http://www.informit.com/articles/article.aspx?p=31092(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 5: Implement a program for Select case control structures in VB.NET.

I. Practical Significance

The VB.Net provides select case statement to write a programs based on decision making constructs. It accepts integers, characters, Strings as an expression values. The select case statement uses the Select Case clause for implementing the Case Control structures in VB.Net.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a VB.NET program to use of Select case Statement.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcome(s)

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Develop programs to demonstrate use of *Case* Control structures in VB.net.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practice
2. Follow ethical practices

VII. Minimum Theoretical Background

A Select Case statement allows a variable to be tested for equality against a list of values. Each value is called a case, and the variable being switched on is checked for each select case is executed depending on variable value.

Syntax for Select Case Statement:

```
Select [Case] expression
        [Case expression list
                [statements] ]
         [Case Else
                [else statements] ]
End Select
```

VIII. Resources required (Additional)

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IX. Precautions.

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using Select Case statement in VB.Net.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write the use of Select Case statement
2. Draw the flowchart for nested Select Case statement

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Implement a program using Select Case Statement to count the number of Vowels in A to Z alphabets.
2. Develop a program for performing arithmetic operations.

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XV. References / Suggestions for further Reading

1. https://www.dotnetperls.com/select-vbnet (20/07/2018)
2. https://www.tutorialspoint.com/vb.net/vb.net_select_case_statements.htm(20/07/2018)
3. https://docs.microsoft.com/en-us/dotnet/visual-basic/language-reference/statements/select-case-statement(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 6: Implement a program for *While, DO Loops* in VB.Net.

I. Practical Significance

Loops allow you to repeat an action for a number of times or until a specified condition is reached. In general, statements are executed sequentially: The first statement in a function is executed first, followed by the second, and so on.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a program to use of while and do loops.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcome(s)

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Demonstrate the use of Do & While loop statements in VB.Net application.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practice
2. Follow ethical practices.

VII. Minimum Theoretical Background

Do loop

The Do loop in VB.Net runs at least once The user can exit the loop by writing the statement Exit Do.The Syntax for the Do loop is given as below

Syntax:

```
Do
    [statements]
    [Continue Do]
    [statements]
    [Exit Do]
    [statements]
Loop { While | Until } condition
```

While loop

The While loop in VB.Net allows the user to execute the statement or block of statements

Till the given condition is true. User can terminate the loop by using Exit While statement.

Syntax:

```
While condition
        Statements
        Exit While
        Statements
End While
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using While & Do loop statements in VB.Net.

XII. Results (output of the program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Differentiate between Do & While loop statements in VB.Net
2. Give the syntax of While & Do loop statements in VB.Net

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program using While statement to print the prime numbers between 1-100
2. Write a program using While statement to print even-odd numbers between 1-50

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://en.wikibooks.org/wiki/Visual_Basic_.NET/Loop_statements(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 7: Implement a program to demonstrate the use of *For, For-Each* Loops In VB.Net.

I. Practical Significance

Loops allow you to repeat an action for a number of times or until a specified condition is reached. A For loop iterates a certain number of times, the value of the counter variable change every iteration. For loop executes till it satisfies the condition.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a program to demonstrate the use of For, For-Each loops.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcome(s)

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Develop programs to demonstrate use of *For, For-each* Loops in VB.net.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practice
2. Follow ethical practices

VII. Minimum Theoretical Background

For/Next Loop:

If you want to repeat the statements in a loop specific number of times, the For/Next loop is ideal. It uses For & Next statements and a counter variable called the loop index. The loop index will be checked for number of times till satisfies the given condition.

Syntax:

For loopIndex=Initial_Value to TestValue [step Increment]
.
. (Body of the loop)
.
Next [LoopIndex]
LoopIndex must be a numeric variable.

For Each loop in VB.Net

For each loop statement is used to access every single element in an array and also group of elements from

Syntax:

```
For Each [Item] In [Group]
        [loopBody]
Next [Item]
```

Item: The Item in the group

Group: The group containing similar items

LoopBody: The code you want to execute within For Each Loop

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using For & For Each statement.

XII. Results (Output of the Program)

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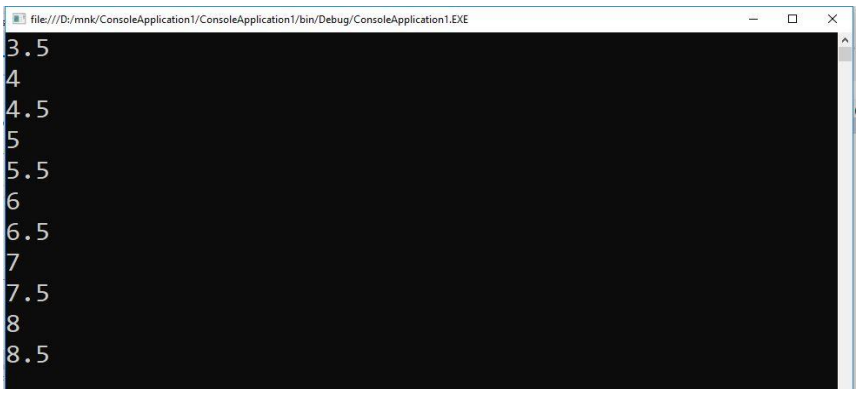
XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write the output of the following code?

```
Module Module1
    Sub Main ()
        For i = 0 To -10 Step -1
            onsole. WriteLine(i)
        Next
        Console.ReadKey()
    End Sub
End Module
```

2. Write a program to generate the following output



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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write the situations where For Each loop statements can be implemented.
2. Write a program using For Next loop statement to find the Armstrong numbers between 1 to 500(153 is Armstrong number $1^3+5^3+3^3=153$)

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XV. References / Suggestions for further Reading

1. https://docs.microsoft.com/en-us/dotnet/visual-basic/language-reference/statements/for-next-statement (20/07/2018)
2. https://www.tutorialspoint.com/vb.net/vb.net_fornext_loops.htm(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1 ……..

2 ……..

3 ……..

4 ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 8: Design windows application using Text Box, Label & Button

I. Practical Significance

The label, button & textbox are the fields used to design GUI in vb.net. The label is used to give some informative text. Textbox is used as the input field in which user can enter some data. Button is used to trigger some event.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Design a GUI in VB.Net using Button, Label & Textbox.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcome(s)

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Develop a program using Text box, Label, Button

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practice
2. Follow ethical practices

VII. Minimum Theoretical Background

Textbox: It is used when you want to input some information. The user can use **Text Property** of the textbox control to edit the text or access it. You can set the **Text Align** property of the textboxes to change the alignment of text within the box. It has following values.

HorizontalAlignment.Left
HorizontalAlignment.Right
HorizontalAlignment.Center

Label: The label control is used to display some information in text form in GUI application which doesn't change. It has the following properties

Sr. No	Property	Description
1	**BorderStyle**	Used to get or set the BorderStyle of the label
2	**Font**	Used to set the font to the label
3	**FontHeight**	Used to set/Get the font for the label control
4	**ForeColor**	Used to set the foreground color of the label.
5	**Text**	Used to set/get some text (caption) to the label
6	**TextAlign**	Gets or sets the alignment of text in the label.

Methods defined by the Label control:

Sr. No	Method Name & Description
1	**GetPreferredSize** This method is used to get the size (rectangular area) of the label.
2	**Show** Displays the control to the user.
3	**ToString** Returns a String that contains the name of the control.

Button Control:

Button control in Windows Forms represents a Button. A Button control is a child control placed on a Form and used to process click event and can be clicked by a mouse click or by pressing ENTER or SPACEBAR keys depending on the focus event of the Button class.

Properties or Events of the Button Controls:

Sr. No	Name of property/Methods	Description
1	**AutoSizeMode**	Sets the mode by which button gets automatically resized
2	**BackColor**	Sets the background color of the button
3	**BackgroundImage**	Sets the background image for the button control
4	**ForeColor**	Sets the Forecolor of the button controls
5	**Image**	Sets the image to be displayed on button control
6	**TabIndex**	Sets the tab order for the button control within its controller
7	**Text**	Gets or sets the text associated with this control.

Events of the Button Control

Sr. No	Name of Event	Description
1	Click	It is invoked when the user clicks on a button
2	DoubleClick	It is invoked occurred when the user double clicks on the button.
3	GotFocus	It is invoked when control gets the focus
4	TabIndexChanged	Occurs when the TabIndex property value changes.
5	TextChanged	Occurs when the Text property value changes.
	Validated	Occurs when the control is finished validating.

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a Program to demonstrate the use of Button, Textbox & Label.

XII. Results (output of the program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write the use of Tab Index property of the control
2. Write a code to generate the button at runtime in VB.Net

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program to perform the arithmetic operations using controls label, button & textbox
2. Write a program to change the background color of the form when user clicks on different button.

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XV. References / Suggestions for further Reading

1. https://msdn.microsoft.com/en-us/library/dd492178.aspx(20/07/2018)
2. https://stackoverflow.com/questions/20991539/how-to-add-textboxes-labels-and-buttons-dynamically-at-runtime-in-vb(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 9: Design windows application using Radio Button & Check Box.

I. Practical Significance

The radio buttons allows the user to select single option/choice from multiple options. The checkbox control allows the user to select multiple options from multiple options.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Develop VB.NET application using radio buttons & checkboxes.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Develop a program using Radio button, check box.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practice
2. Follow ethical practices

VII. Minimum Theoretical Background

Checkbox:

Checkboxes allows the user to select multiple options. User can select multiple checkboxes by clicking on checkbox. The **Checked** property of the checkbox determines whether it's selected or deselected if it true then checkbox is selected or if its false then it is deselected.

Checkbox **CheckChanged** event is executed when the user clicks in the checkbox. You can set the text to checkbox by using **Text** property.

RadioButton.

From group of radio buttons user can select a single radio button. Radio buttons group can be created by using its array .The **Checked** property of the radio button determines whether it is checked or unchecked. If true then its checked and if false then its unchecked.

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to demonstrate the use of Checkbox & Radio button

XII. Results (output of the program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write a program using Radio button to change the bulb state ON/OFF (Use two images one for ON state and another for Off State)
2. Differentiate between Radio button and Checkbox Control

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program to change the forecolor of the text in Label (Use different radio buttons for colors i.e. Red, Green, Blue

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XV. References / Suggestions for further Reading

1. https://www.vbtutor.net/vb2013/vb2013_lesson21.html(20/07/2018)
2. http://vb.net-informations.com/gui/vb.net-radiobutton.htm(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
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Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 10: Design windows application using List Box & Combo Box.

I. Practical Significance

The List box and combo box controls are used to display the collection of items. User can select item of his/her choice from the combo box. The combo box displays the list of items in text format. In list box control user can select multiple items at a time from down menu list.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of mathematics and engineering as it applies to the field of computer software and hardware.
- **Discipline knowledge:** To apply knowledge of computer engineering field to solve core and applied engineering problems.
- **Experiments and practice:** Able to plan and perform experiments and practices with its results to solve computer engineering problems.
- **Engineering tools:** Formulate and solve problems related to computer engineering field using appropriate techniques/tools.

III. Competency and Practical skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Develop VB.NET application using List Box and Combo Box.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Develop GUI Application using Form Controls and its events

V. Practical Outcome (PrOs)

- Develop a program using List box, Combo box.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practice
2. Follow ethical practices

VII. Minimum Theoretical Background

List Boxes and Combo Boxes

List boxes and combo boxes operates in the similar fashion. But, the main difference between List Box and Combo Box is that a combo box control has a DropDownStyle property. VB.net automatically adds the scrollbar if size of the list box is small for displaying the list items.

List Box Properties, Methods & Events.:

Sr. No.	Property	Sr. No.	Method Name
1	AllowSelection	1	BeginUpdate
2	BorderStyle	2	ClearSelected
3	ColumnWidth	3	EndUpdate
4	HorizontalExtent	4	FindString
5	HorizontalScrollBar	5	FindStringExact

6	ItemHeight	6	GetSelected
7	Items	7	SetSelected
8	MultiColumn	8	OnSelectedIndexChanged
9	ScrollAlwaysVisible	9	OnSelectedValueChanged
10	SelectedIndex	**Events of ListBox**	
11	SelectedIndices	**Sr. No**	**Event name**
12	SelectedItem	1	SelectedIndexChanged.
13	SelectedItems	2	Click
14	SelectedValue		
15	SelectionMode		
16	Sorted		
17	Text		
18	TopIndex		

ComboBox Properties, Methods & Events:

Sr. No.	Property	Sr. No	MethodName
1	AllowSelection	1	BeginUpdate
2	AutoCompleteCustomSource	2	EndUpdate
3	AutoCompleteMode	3	FindString
4	AutoCompleteSource	4	FindStringExact
5	DataBindings	5	SelectAll
6	DataManager	**Events of ComboBox class**:	
7	DataSource		
8	DropDownHeight		
9	DropDownStyle	**Sr. No**	**Event name**
10	DropDownWidth	1	DropDown
11	DroppedDown	2	DropDownClosed
12	FlatStyle	3	DropDownStyleChanged
13	ItemHeight	4	SelectedIndexChanged
14	Items	5	SelectionChangeCommitted
15	MaxDropDownItems		
16	MaxLength		
17	SelectedIndex		
18	SelectedItem		
19	SelectedText		
20	SelectedValue		
21	SelectionLength		
22	SelectionStart		
23	Sorted		
24	Text		

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to demonstrate the use of List Box & Combo Box Control.

XII. Results (output of the program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write a program to select multiple subjects using list box control.
2. Write a program to select colleges using single combo box.

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Differentiate between list box & combo box.
2. Implement a program for student registration which will allow the student to register for multiple subjects for single semester using List & Combo box.

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XV. References / Suggestions for further Reading

1. https://www.vbtutor.net/index.php/visual-basic-2015-lesson-6-list-box-combo-box/(20/07/2018)
2. https://docs.microsoft.com/en-us/dotnet/framework/winforms/controls/add-and-remove-items-from-a-wf-combobox(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 11: Design windows application using Picture Box & Panel.

I. Practical Significance:

The picture box control is used to hold the image on the form. We can add image in the Picture Box control at runtime or compile time. The panel control allows us to add multiple pictures by separating each picture.

II. Relevant Program Outcomes (POs)

- Basic knowledge: Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- Discipline knowledge: Apply Computer Programming knowledge to solve the computer group related problems.
- Experiments and practice: Plan to perform experiments and practices to use the results to solve the computer group related problems.
- Engineering tools: Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- Communication: Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Add image in the Picture Box Control
2. Add group of controls on Panel Control

IV. Relevant Course Outcomes

- Develop GUI Application using Form Controls and its events

V. Practical Outcome

- Write a program using picture box, panel.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

Panel Control

Panel's hide property allows visibility depending on selecting true or false.

Properties of the Panel Control

1. Autoscroll
2. BackColor
3. BackGroundImage
4. BorderStyle

Picture Box:

The picture box control enables us to load an image in the picture box and display it. The Image property of the Picture Box control can be used to set the image.

Properties of the Picture Box Control

1. Image
2. ImageLocation
3. InitialImage
4. SizeMode
5. TabIndex
6. Text

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using Toolbar, Form & Panel Control.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. List the control which is used to set the icons on the Toolbar Control
2. Differentiate between Form & Panel Control in VB.Net

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program using picture box control to load an image at run time
2. Write a program to demonstrate the use of Panel Control in VB.Net

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XV. References / Suggestions for further Reading

1. https://www.tutorialspoint.com/vb.net/vb.net_picturebox.htm(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 12: Design windows application using Tab Control &Timer.

I. Practical Significance:

The Tab Control lets you add different controls on each tab to design GUI of your choice. We can create a Tab Control using a Forms designer at design-time or using the Tab Control class in code at run-time or dynamically. The timer control allows you to write event driven program code.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a program using Tab and timer control.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Develop GUI Application using Form Controls and its events.

V. Practical Outcome

- Write a program using Tab Control, and Timer.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

Tab Control:

The Tab Control manages tab pages where each page may host different child controls. We can create a Tab Control using a Forms designer at design-time or using the Tab Control class in code at run-time or dynamically.

Timer Control:

Timer Control plays an important role in the Client-side programming and Server-side programming, also used in Windows Services. Timer continues its execution even if interrupted by the event.

Properties of Timer Control:

1. **Enabled:** This property is used to enable/disable the timer control.
2. **Interval:** This property is used to set timing interval

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using Tab control.

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XII. Results (Output of the program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write a procedure to display the icons on the Toolbar Control.
2. Differentiate between Form & Panel Control in VB.Net

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program to display the traffic signal using timer control
2. Write a program to demonstrate the use of Tab Control in VB.Net

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XV. References / Suggestions for further Reading

1. https://www.dotnetheaven.com/article/tab-control-in-vb.net1(20/07/2018)
2. http://vb.net-informations.com/gui/timer-vb.htm(20/07/2018)

XVI. Assessment Scheme

Performance indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. …….

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 13 & 14: Implement a Windows application to Perform Validation on various controls.

I. Practical Significance:

The Error Provider and Regular Expression controls can be used for validation. The Error Provider control can be implemented on the GUI design controls such as Text Box, Radio Button, Button and so on. The Regular Expression control can be used to check (Validate) the strings or expressions.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a program Using Regular Expression and Error Provider Control
2. Solve some pattern matching problems using Regular Expressions.

IV. Relevant Course Outcomes

- Develop GUI Application using Form Controls and its events.

V. Practical Outcome

- Write a program to perform validation using regular expression and error provider.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures
2. Follow ethical practices.

VII. Minimum Theoretical Background

ErrorProvider:

The ErrorProvider control allows you to show the error message icon when user enters some invalid data. You can use the SetError() method of an ErrorProvider control.

RegularExpression :

RegEx class provides the regular expression we can define the various categories of regular expressions such as characters, operators and constructs. We can use the following methods for defining the RegularExpression.

1. Public Function IsMatch (input As String) As Boolean
2. Public Function IsMatch (input As String, startat As Integer) As Boolean
3. Public Shared Function IsMatch (input As String, pattern As String) As Boolean
4. Public Function Matches (input As String) As MatchCollection
5. Public Function Replace (input As String, replacement As String) As String

6. Public Function Split (input As String) As String()

Expression	Description
[abc]	Find any character between the brackets
[^abc]	Find any character NOT between the brackets
[0-9]	Find any character between the brackets (any digit)
[^0-9]	Find any character NOT between the brackets (any non-digit)
(x|y)	Find any of the alternatives specified

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to perform validation using ErrorProvider & Regular Expression.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO

1. Enlist the different types of constructs used for regular expression.
2. Write a program code perform the date Validation using ErrorProvider Control

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a Program using ErrorProivider for username & password authentication
2. Write a Program using ErrorProvider control to validate the Mobile Number and Email ID in GUI application

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XV. References / Suggestions for further Reading

https://www.w3schools.com/jsref/jsref_obj_regexp.asp (20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
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Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 15: Implement a windows application using Sub-Procedures & Parameterized Sub-Procedures.

I. Practical Significance:

A Sub procedure is a series of Visual Basic statements enclosed by the Sub and End Sub statements. The Sub procedure performs a task and then returns control to the calling code, but it does not return a value to the calling code.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Design Windows application using sub procedure.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

- Write a program to demonstrate use of sub-procedures and parameterized sub-procedures

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

A sub procedure is a series of statements enclosed by the Sub and End Sub statements. It performs the task and then returns control to the calling code but it does not return a value to the calling code. We can define a Sub Procedure within modules, classes and structures in VB.Net .By default the Sub Procedure is public it means you can call it from anywhere in your program that has access to module, class or structure.

Syntax of Sub Procedure:

```
[modifiers] Sub subname [(parameterlist)]
        ' Statements of the Sub procedure.
End Sub
```

Parameterized Sub Procedure:

We can pass the parameters to sub procedure using two methods

1. Parameters by Value : The values passed by parameters to the sub procedure are preceded by the keyword ByVal .

2. Parameters by Reference: The values passed by parameters to the sub procedure are preceded by the keyword ByRef.

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a Program using sub procedure & parameterized sub procedures.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO

1. Differentiate between ByVal & ByRef keyword in parameter passing of Sub Procedure.
2. Write any procedure using recursion.

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Develop a program to calculate the Fibonacci series of given number.
2. Develop a program to print the reverse of any number using Sub Procedure.

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XV. References / Suggestions for further Reading

1. https://www.tutorialspoint.com/vb.net/vb.net_subs.htm(20/07/208)
2. https://docs.microsoft.com/en-us/dotnet/visual-basic/programming-guide/language-features/procedures/sub-procedures(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
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Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No.16: Implement a Program to Demonstrate Use of Simple Function & Parameterized Functions

I. Practical Significance:

In order to perform set of tasks in repetitive manner simple function & parameterized functions are used.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write algorithm and draw flow chart of Simple Function and Parameterizes Functions.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

- Write a program to demonstrate use of Simple function and parameterized Functions.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

The Function statement is used to declare the name, parameter and the body of a function. A Function returns a value. It uses a special syntax form in the VB.NET language. The Function has one or more parameters—these are called formal parameters. A Function is part of a Module, Class or Structure.

The syntax for the Function statement is:

```
[Modifiers] Function FunctionName [(ParameterList)] As ReturnType
        [Statements]
End Function
```

- **Modifiers:** specify the access level of the function; possible values are: Public, Private, Protected, Friend, Protected Friend and information regarding overloading, overriding, sharing, and shadowing.
- **FunctionName:** indicates the name of the function
- **ParameterList:** specifies the list of the parameters
- **ReturnType:** specifies the data type of the variable the function returns

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using simple function & parameterized function.

XII Results (Output of the Program)

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XIII Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Function return a value is (True / False).
2. Find error in following code.

Function FindMax(ByVal num1 As Integer, ByVal num2 As Integer) As

```
Dim result As Integer
If (num1 > num2) Then
        result = num1
Else
        result = num2
End If
FindMax = result
End sub
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XIV Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program to identify maximum number using parameterized function.
   (Use a two Textbox for input a integer number and display output in Message Box)
2. Implement a program for recursion using a function.

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XV References / Suggestions for further Reading

1. https://www.tutorialspoint.com//vb.net/vb.net_functions.htm(20/07/2018)

XVI Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related(15)	**Product Related(35)**	**Total(50)**	

Practical No. 17: Understand the Concept of Class and Object of Class

I. Practical Significance:

Thinking in terms of classes and objects (in other words, thinking in terms of object−oriented programming) class is collection of different types of data members & objects and methods.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an Object- Oriented program to use of class and object.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

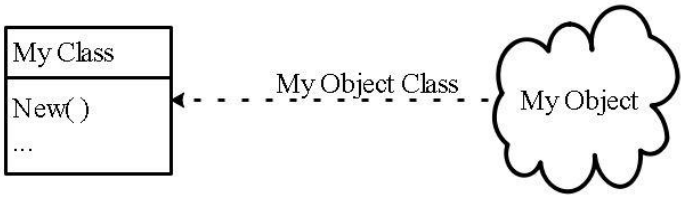
- Develop a program to create class. Access members of class using its object.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

A class is a template, a specification or a pattern, which may contain different type of data methods objects .Class is instatntiated when object is created.Folllowing is an example of class & object.



Syntax of a class and its object

```
Module Module1
 Class Name_of_class
            [Statement]
```

```
    End Class
    Sub main()
        Dim Object As Name_of_class=New Name_of_Class()
    End sub
End Module
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write program using the concept of class & object in VB.Net

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Find Output in following code.

Class Example

```
Private _value As Integer
        Public Sub New()
        _value = 2
End Sub

Public Function Value() As Integer
        Return _value * 2
        End Function
End Class

Module Module1
        Sub Main()
                Dim x As Example = New Example()
                Console.WriteLine(x.Value())
        End Sub
End Module
```

2. Find error in following code.

```
Module Module1
        Sub Main()
                Dim b As B = New B(5)
                B=Display()

                Dim c As C = New C(5)
                C=Display()
```

```
        End Sub
End Module
```

(Space for answers)

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program to identify Volume of Box class, with three data members, length, breadth and height
2. Implement a program to accept values from combobox and display average of this in message box using a class.

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XV. References / Suggestions for further Reading

1. https://www.tutorialspoint.com//vb.net/ vb.net_classes_objects.htm (20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
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Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 18: Implement A Program For Class Constructor And Destructor To De-Allocate Memory.

I. Practical Significance:

Using constructor memory is allocated dynamically and de-allocated by the destructor

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an Object- Oriented program to use constructor and destructor.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

- Create constructor to initialize object of class. Use Destructor to de-allocate memory using finalize method.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

Constructor is a special member Sub of a class that is executed whenever we create new objects of that class. A constructor has the name **New** and it does not have any return type.

Syntax of constructor

```
Class classname
        Public sub New()
                [Statement]
        End Sub
        sub main()
                Dim Object1   As Classname=New Classname()
        End sub
End Class
```

A **destructor** is a special member Sub of a class that is executed whenever an object of its class goes out of scope.

A **destructor** has the name **Finalize** and it can neither return a value nor can it take any parameters. Destructor can be very useful for releasing resources before coming out of the program like closing files, releasing memories, etc.
Destructors cannot be inherited or overloaded.

Example of Destructor

```
Class classname
        Public sub New()
                [Statement]
        End Sub
        Protected overrides sub Finalize ()
                [statement]
        End sub
        sub main()
                Dim Object1    As Classname=New Classname()
        End sub
End Class
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to demonstrate the use of constructor & destructor

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Find output of following code.

```
Imports System.Console
Module Module1
        Sub Main()
                Dim con As New Constructor(20)
                WriteLine(con.ShowAge())
                Read()
        End Sub
End Module

Public Class Constructor
        Public Age As Integer=40
        Public Sub New(ByVal x As Integer)
        End Sub
        Public Function ShowAge() As Integer
        Return Age
        End Function
End Class
```

2. Find error in following code.

```
Imports System.Console
Module Module1
    Sub Main()
            Dim obj As New Destroy()
    End Sub
End Module

Public Class Destroy
    Protected Overrides Finalize()
            Write("VB.NET")
            Read()
    End Sub
End Class
```

(Space for answers)

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Implement a program to display any message at run time. (Using a constructor).
2. Implement a program to calculate area of circle using parameterized constructor.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://www.tutorialspoint.com//vb.net/ vb.net_classes_objects.htm (20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. …….

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No.19: Develop a Program for Inheritance

I. Practical Significance:

Inheritance is a mechanism in which the data, attributes, properties, and behavior of classes is inherits parents to children. Parent class is base class & child is derived class

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an Object- Oriented program to use of inheritance.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

- Develop a program to inherit members of super class in sub class using simple inheritance.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

The inheritance relationship between two classes implies that code implemented in the parent class is derived to the child class.

Syntax of Inheritance

```
public class class_name
        [Statement]
End class

public class class2
        Inherits class_name
        [Statement]
End class
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using concept of Inheritance.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write an output of following class.

```
Public class Booksale
    sub New()
            Console.WriteLine("My Base Class")
    End sub
End class

Public class studentbooksale
    Inherits Booksale
    Sub New()
            MyBase.New()
            Console.WriteLine("My child Class")
    End sub
End class
```

2. Find out Error in following code.

```
Public Class Person

    Public FirstName As String
    Public LastName As String
    Public DateOfBirth As Date
    Public Gender As String

    Public ReadOnly Property FullName() As String
            Get
                    Return FirstName & " " & LastName
            End Get
    End Property

End Class

Public Class Customer=>Inherits Person
    Public CustomerID As String
```

```
    Public CustomerType As String
End Class
```

(Space for answers)

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Implement a Program for inheritance where Student is Child class and faculty is Base class.(Take Appropriate variables in Base and child class)

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XV. References / Suggestions for further Reading

1. https://www.tutorialspoint.com//vb.net/ vb.net_classes_objects.htm (20/07/2018)
2. https://docs.microsoft.com/en-us/dotnet/visual-basic/programming-guide/language-features/objects-and-classes/inheritance-basics(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. …….

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 20 & 21: Implement a Program for Overloading & overriding

I. Practical Significance:

Overloading of method is same name for function having different parameters. Overriding is method of defining same function name in base & derived classes.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an Object- Oriented program to use method overloading and overriding.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

- Develop a program to demonstrate overloading a method.
- Develop a program to demonstrate overriding in inheritance.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

In method overloading, multiple method having the same name but different type of argument.In method overriding multiple method having same name and same parameters in Base & Dervied classes.

Syntax of Overload function

```
Public Overloads Sub area(ByVal r)
Public Overloads Sub area(ByVal length, ByVal width)
```

Syntax of method overring.

```
Imports system

    Class c1
        Overridable Sub hi()
            console.writeline("Old Method hi")
        End Sub
```

```
End Class

Class c2
        Inherits c1
        Shared Sub main()
                Dim o As New c2()
        o.hi()
        End Sub
        Overrides Sub hi()
                console.writeline("New and Improved method hi")
        End Sub
End Class
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to implement the concept of method overloading & overriding

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Find output of following code.

```
Imports System
Module Module1
    Class overload
        Dim r As Double
        Public Overloads Sub area(ByVal r)
            Console.Write("Area of the Circle :")
            Console.WriteLine(1 / 3 * 3.14 * r * r * r)
        End Sub
        Dim length As Integer
        Dim width As Integer
        Public Overloads Sub area(ByVal length, ByVal width)
            Console.Write(" Area of the Rectangle :")
            Console.WriteLine(length * width)
        End Sub
    End Class
    Sub Main()
        Dim r As New overload()
        r.area(3.1)
        r.area(4, 5)
    End Sub
End Module
```

2. Implement windows application for employee details using overriding methods

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Implement a windows application for show string concatenation using overload method.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://msdn.microsoft.com/en-us/library/ms973896.aspx (20/07/2018)
2. https://www.dotnetheaven.com/article/how-to-method-overloading-in-vb.net (20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 22: Implement a Program to Demonstrate Shadowing In Inheritance

I. Practical Significance:

Specifies that a property or procedure overrides an identically named property or procedure inherited from a base class.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an Object- Oriented program to use of shadowing in inheritance.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

- Develop a program to demonstrate Shadowing in inheritance.

VI. Relevant Affective domain related Outcome(s)

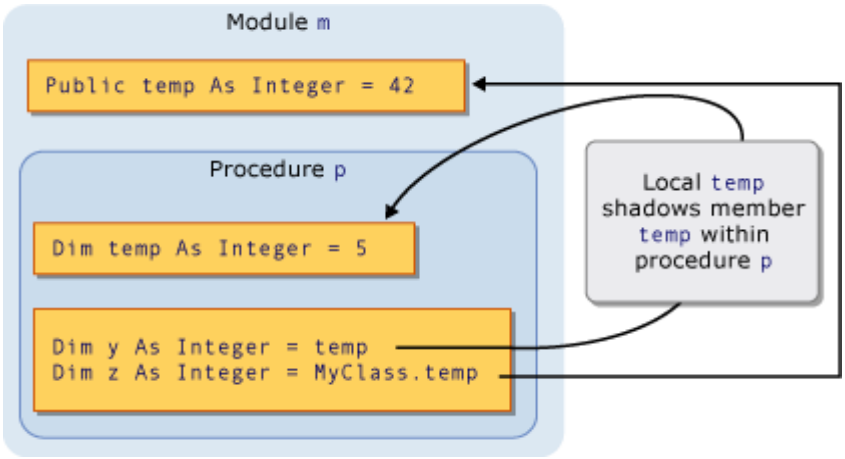
1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

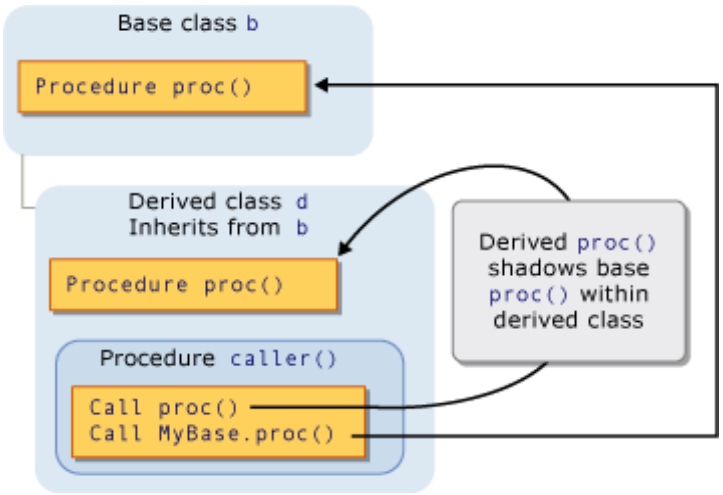
It is a feature used when two programming elements share the same name one of them can hide or shadow the other one. The main purpose is to protect the definition of class members. An element can shadow another element by two ways

1. Through scope
2. Through Inheritance

Syntax of through scope



Syntax of Through Inheritance



VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to using shadowing in inheritance.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write output of following code

```
Class Shadow
    Shared x As Integer = 1
    Shared Sub Main()
        Dim x As Integer = 10
        Console.WriteLine("main: x" & x)
        Console.WriteLine("main sahdow x:" & Shadow.x)
    End Sub
End Class
```

2. Write output of following code

```
Public Class Form2
    Dim x As Integer = 10
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
    System.EventArgs) Handles Button1.Click
        Dim x As Integer = 30
        MsgBox(x)
    End Sub
    End Class
```

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Implement the concept of shadowing through inheritance in a console application.

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XV. References / Suggestions for further Reading

1. http://www.dotnetfunda.com/codes/show/4700/shadowing-in-vbn(20/07/2018)
2. https://www.dotnetheaven.com/article/shadowing-in-vb.net (20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 23: Implement a program to handle runtime errors using Exception handling

I. Practical Significance:

An exception is a problem that arises during the execution of a program. An exception is a error that arises while a program is running, such as an attempt to divide by zero.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an Object- Oriented program to use of exception handling.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Apply Object Oriented concepts in GUI Application.

V. Practical Outcome

- Construct a program to handle runtime errors by using Exception handling.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

Exceptions provide a way to transfer control from one part of a program to another. VB.Net exception handling is built upon four keywords:

Try, Catch, Finally and Throw.

Syntax of Exception handling

```
Try
        [tryStatements]
                [Exit Try]
        [Catch[exception[As type]][When expression]
        [catchStatements]
                [Exit Try]]
        [Catch ...]
        [Finally
                [finallyStatements ]]
End Try
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write any program using Exception handling.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write output of following code.

```
Module Module1
    Sub Main()
        Try
            Throw New Exception("Mega-error")
        Catch ex As Exception
            Console.WriteLine(ex.Message)
        End Try
    End Sub
End Module
```

2. Write output of following code.

```
Module Module1
    Sub Main()
        Try
            ' Try to divide by zero.
            Dim value As Integer = 1 / Integer.Parse("0")
            ' This statement is sadly not reached.
            Console.WriteLine("Hi")
        Catch ex As Exception
            ' Display the message.
            Console.WriteLine(ex.Message)
        End Try
    End Sub
End Module
```

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write a program for student registration using exception handling.

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XV. References / Suggestions for further Reading

1. https://www.tutorialspoint.com/vb.net/vb.net_exception_handling.htm(20/7/2018)
2. https://www.dotnetperls.com/exception-vbnet(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 24: Understand The Concept Of Ado.Net.

I. Practical Significance:

ActiveX Data Object. NET (ADO.NET) is a set of framework database programming classes (System. Data namespace) that render the data access services of the .NET framework.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an ADO.NET program for database connection with data Grid view.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Use Data access controls to store data in Database and retrieve it.

V. Practical Outcome

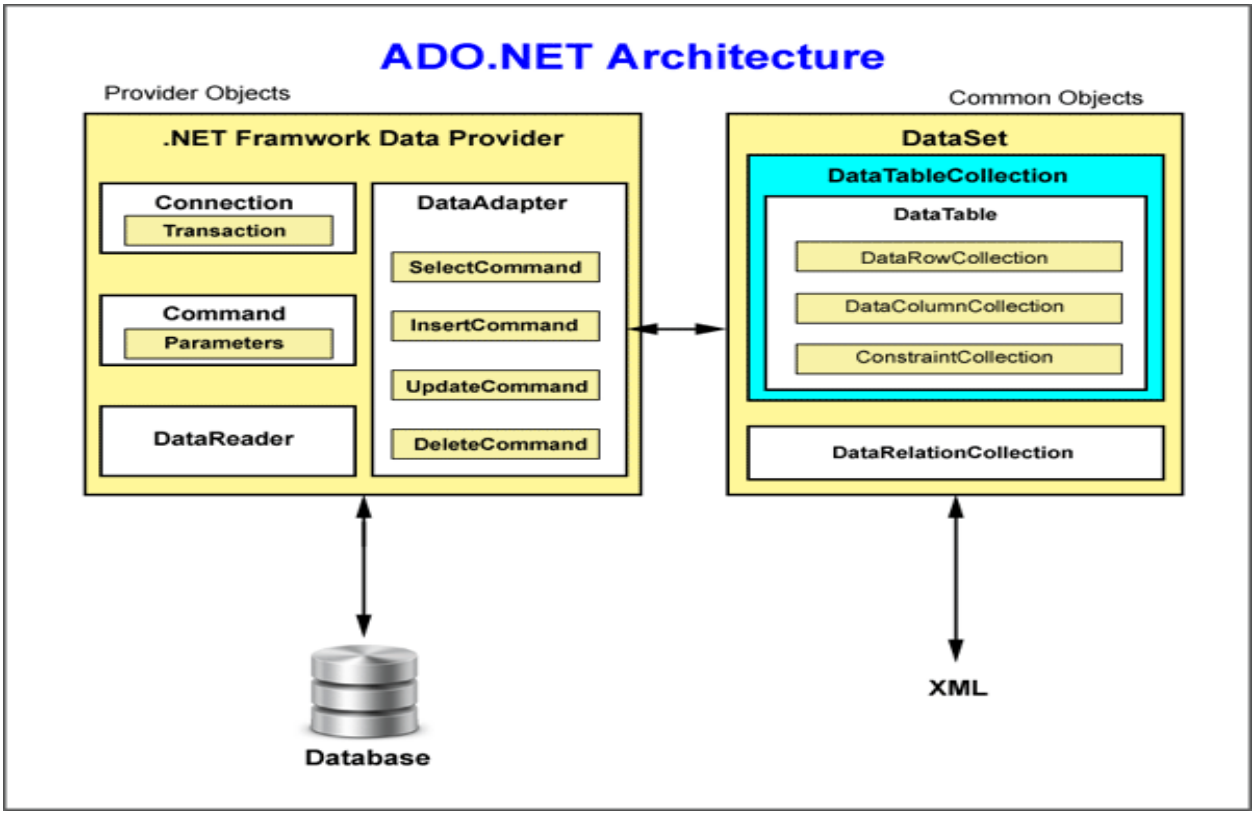
- Write a program to fetch data from table and display in Data Grid.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

ADO.Net object model is structured process flow through various components. Architecture of ADO.Net



There are many different types of databases available

1. Microsoft SQL Server,
2. Microsoft Access,
3. Oracle,
4. Borland Interbase,
5. IBM DB2
6. MySQL

Data Provider

Provider name	API prefix	Data Source Description
ODBC Data Provider	Odbc	Data Sources with an ODBC interface. Normally older data bases.
OleDb Data Provider	OleDb	Data Sources that expose an OleDb interface, i.e. Access or Excel.
Oracle Data Provider	Oracle	For Oracle Databases.
SQL Data Provider	Sql	For interacting with Microsoft SQL Server.

Syntax of Database Connection

Connection

```
Dim Con As OleDbConnection
Con=New OleDbConnection("Provider=Microsoft.ACE.OLEDB.12.0; Data
Source=C:\MyDB.accdb;")
```

Dim Con as SqlConnection
Con=New SqlConnection("server=.; user id=sa; password=sa; database=student")

Command

Dim cmd As OleDbCommand
cmd=New OleDbCommand("select * from student", con)
Dim cmd As SqlCommand
cmd=New SqlCommand("select * from student",con)

DataReader

Dim dr As OleDbDataReader
Dr=cmd.ExecuteReader
Dim dr As SqlDataReader
Dr=cmd.ExecuteReader

DataSet

Dim dataset As New DataSet()
Da.fill(dataset, "table1")

DataGrid

DataGridView1.DataSource = ds.Tables(0)

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using ADO.Net to connect to the database.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Find error from following code
   Dim con As New
   OledbConnection ("Provider=microsoft.oledb.4.0DataSource=D:\mydata.accdb ;")
2. Write a connection string with MS-access using any database.

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Design the windows application that will dispaly the content of a table in MS-Access database on DataGrid control using data adapter.

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XV. References / Suggestions for further Reading

1. https://www.programmingcraze.com/visual-basic-database-connectivity(20/07/2018)
2. https://www.tutorialspoint.com/vb.net/vb.net_database_access.htm(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 25 & 26: Understand The Concept Of Data Adapter.

I. Practical Significance:

This is integral working of Data Adapter & Datasets since data is transferred to and from a database through a data adapter. It retrieves data from a database into a dataset and updates the database. When changes are made to the dataset, those are reflected to actual database by data adapter.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an ADO.NET program for database connection with data adapter.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Use Data access controls to store data in Database and retrieve it.

V. Practical Outcome

- Write a program to perform following operation using Data Adapter:
  Fill and Update data in Database.
- Write a program to perform following operation using Data Adapter:
  Fetch data from multiple tables in Dataset

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

To create and update central data source Connection, Command & Data Reader objects are used

Syntax of DataAdapter

```
Dim da As OleDbDataAdapter
da=New OleDbDataAdapter (cmd)
Dim da As SqlDataAdapter
da=New SqlDataAdapter (cmd)
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using data adapter to connect to the database.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Find error in following code

```
Dim adp As SqlDataAdapter = New SqlDataAdapter("select * from Customers", connection)
Dim ds As DataSet = New DataSet()
Fill(ds)
```

2. Write a data adapter syntax using a MS-Access code with a student table.

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Design a window application in MS-Access which have navigation (Next, First, Previous, Last).
2. Develop a window application that will contain multiple tables in a single dataset.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://www.programmingcraze.com/visual-basic-database-connectivity (20/07/2018)
2. https://www.tutorialspoint.com/vb.net/vb.net_database_access.htm(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 27: Understand the concept of select and insert data in database table.

I. Practical Significance:

In VB.Net for connection & communication with database to data retrieval & updating with data access controls

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an ADO.NET program for database connection with retrieve and store.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Use Data access controls to store data in Database and retrieve it.

V. Practical Outcome

- Write a VB.Net Code to store and retrieve data in Database Table.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

A Command object executes SQL statements on the database. These SQL statements can be SELECT, INSERT, UPDATE, or DELETE. It uses a connection object to perform these actions on the database.

Syntax of SELECT, INSERT, UPDATE and DELETE

- **SELECT**
  cmd =new SqlCommand("select * from Employee", con);
- **INSERT**
  cmd = new SqlCommand("INSERT INTO Employee(Emp_ID, Emp_Name)VALUES ('" + aa + "','" + bb + "')", con);
- **UPDATE**
  SqlCommand cmd =new SqlCommand("UPDATE Employee SET Emp_ID ='" + aa +
  "', Emp_Name ='" + bb + "' WHERE Emp_ID = '" + aa + "'", con);

- **DELETE**
  cmd =new SqlCommand("DELETE FROM Employee where Emp_ID='" + aa + "'", con);
- **A Command object exposes several execute methods like:**
  1. **ExecuteScaler()**
     Executes the query, and returns the first column of the first row in the result set returned by the query. Extra columns or rows are ignored.
     dr = cmd.ExecuteScaler();
  2. **ExecuteReader()**
     Display all columns and all rows at client-side environment. In other words, we can say that they display datatables client-side.
     dr = cmd.ExecuteReader();
  3. **ExecuteNonQuery()**
     Something is done by the database but nothing is returned by the database.
     dr = cmd.ExecuteNonQuery();

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to insert the data & retrieve the data from database.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write syntax of command object execute method.

(Space for answers)

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Write working of each line in the following code

```
Dim strQuery As String = "select Name, ContentType, Data from tblFiles where id=@id"
Dim cmd As SqlCommand = New SqlCommand(strQuery)
cmd.Parameters.Add("@id", SqlDbType.Int).Value = 1
Dim dt As DataTable = GetData(cmd)
If dt IsNot Nothing Then
    download(dt)
End If
```

2. Design a simple Windowsform for accepting the details of Employee. Using the connected architecture of ADO.NET, perform the following operations:

- Insert record.
- Search record.
- Update record.
- Delete record.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://www.c-sharpcorner.com/UploadFile/abb1a5/connecting-database-using-ado-net-in-VB-Net/(20/07/2018)
2. https://www.aspsnippets.com/Articles/Save-and-Retrieve-Files-from-SQL-Server-Database-in-ASPNet-using-C-and-VBNet.aspx(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. …….

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No.28, 29 & 30: Implement the Concepts Of Data Binding.

I. Practical Significance:

Data binding is a powerful feature provided by the .NET framework that enables visual elements in a client to connect to a data source such as DataSets, DataViews, and Arrays etc. Two types of data binding are available for Windows Forms: Simple Data Binding and Complex Data Binding.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write an ADO.NET program for database connection using data binding.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Use Data Binding in GUI Application.

V. Practical Outcome

- Write a program that uses Simple Data Binding using Text Box, Check Box and Label.
- Write a program that uses Complex Data Binding using Combo Box.
- Write a program that uses Complex Data Binding using List Box.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

Simple data binding allows you to bind a control to a single data element. Uses of simple data binding include binding data to text boxes and labels.

Complex data binding allows you to bind more than one data element to a control. Use of complex data binding include data grid controls, combo boxes, and list boxes.

Syntax of Data Binding

```
txt1.DataBindings.Add ()
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program using data binding in VB.Net

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write a syntax of simple binding for text box.
2. Write a syntax of complex binding for combo box.

(Space for answers)

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Design a window application for student name and college name using a simple data binding use appropriate database.
2. Design a window application for bank customer record & display it using Complex data binding use appropriate database.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://www.codeproject.com/Articles/3665/Data-binding-concepts-in-NET-windows-forms(20/07/2018)
2. https://msdn.microsoft.com/en-us/library/ms973824.aspx(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related (15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No. 31: Design a Program to Navigate Across Existing Data in table.

I. Practical Significance:

Manage record in database using navigation through the records of a database by incrementing or decrementing the Row number of the DataSet.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a navigation program to use of record searching in database.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Use Data Binding in GUI Application.

V. Practical Outcome

- Write a program to Navigate across existing data in table

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

The concept of basic navigation in a set of data is manage forward & backward to access,update & display data elements.You will be able to move forwards & backwards to access the Next & Previous records in database.

Syntax of Navigation

```
Dim MaxRows As Integer
Dim inc As Integer
MaxRows = ds.Tables("AddressBook").Rows.Count
inc = - 1
Private Sub NavigateRecords()

        txtFirstName.Text = ds.Tables("AddressBook").Rows(inc).Item(1)
        txtSurname.Text = ds.Tables("AddressBook").Rows(inc).Item(2)
End Sub
```

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to navigate in the database.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. Write a method to count Rows in table.

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Create a window application that will use Binding Navigator Control.
2. Design the window application using MS-Access database table with name student & navigate to First, Next, Previous, Last records.

(Space for answers)

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XV. References / Suggestions for further Reading

1. https://www.dotnetheaven.com/article/record-searching-navigation-in-vb.net(20/07/2018)
2. https://www.homeandlearn.co.uk/NET/nets12p7.html(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
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Marks Obtained			Dated signature of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

Practical No.32: Develop An Executable File and Deploy It.

I. Practical Significance:

The process of setting up executable file to order system is called deployment. To deploy an application, you create another type of project called an installer. An installer consists of two files named Setup.exe and Setup.msi.

II. Relevant Program Outcomes (POs)

- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming / technologies and tools with an understanding of the limitations.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical Skills

This practical expects to develop the following skills in the student.

Develop VB.NET programs to solve computer group related problems.

1. Write a program for creating a executable file and deploy it.
2. Compile/Debug/Save the 'VB.NET' program.

IV. Relevant Course Outcomes

- Use Data Binding in GUI Application.

V. Practical Outcome

- Create Executable file of VB.Net Application and deploy it to other computer.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety measures.
2. Follow ethical practices.

VII. Minimum Theoretical Background

The process of setting up executable file to order system is called deployment. This appendix uses the term Setup project to refer to a specific type of project supported by Visual Studio. The Setup project bundles all of the elements of an application so that it can be distributed to another computer.

The end user's computer is called the target computer. The end user typically runs the installer (the file named Setup.exe) that you created to install your application on their computer.

VIII. Resources required (Additional)

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IX. Precautions

1. Save the program in specific directory / folder.
2. Follow safety practices.

X. Resources used (Additional)

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XI. Program Code: (Teacher must assign separate program statement to group of 3-4 student)

Write a program to create the executable & deploy the file.

XII. Results (Output of the Program)

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XIII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. List type of setup files
2. Write steps to create setup file.

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XIV. Exercise (Teacher must assign separate exercise to group of 3-4 student)

1. Create a MySetup.exe file using student registration project (Create Student Registration windows application)
2. Deploy college admission form.

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XV. References / Suggestions for further Reading

1. https://www.dotnetheaven.com/article/deploying-from-visual-studio-using-vb.net(20/07/2018)

XVI. Assessment Scheme

Performance Indicators		Weightage
Process related(15 Marks)		**30%**
1.	Debugging ability	20%
2.	Follow ethical practices.	10%
Product related (35 Marks)		**70%**
3.	Correctness of Program codes	25%
4.	Quality of input/output messaging and output formatting	25%
5.	Timely Submission of report	10%
6.	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. ……..
2. ……..
3. ……..
4. ……..

Marks Obtained			Dated Signature Of Teacher
Process Related (15)	**Product Related (35)**	**Total (50)**	

List Of Laboratory Manuals Developed by MSBTE

First Semester:

1	Fundamentals of ICT	22001
2	English	22101
3	English Work Book	22101W
4	Basic Science (Chemistry)	22102
5	Basic Science (Physics)	22102

Second Semester:

1	Bussiness Communication Using Computers	22009
2	Computer Peripherals & Hardware Maintenace	22013
3	Web Page Design with HTML	22014
4	Applied Science (Chemistry)	22202
5	Applied Science (Physics)	22202
6	Applied Machines	22203
7	Basic Surveying	22205
8	Applied Science (Chemistry)	22211
9	Applied Science (Physics)	22211
10	Fundamental of Electrical Engineering	22212
11	Elements of Electronics Engineering	22213
12	Elements of Electrical Engineering	22215
13	Basic Electronics	22216
14	C Language programming	22218
15	Basic Electronics	22225
16	Programming in C	22226
17	Fundamental of Chemical Engineering	22231

Third Semester:

1	Applied Multimedia Techniques	22024
2	Advanced Serveying	22301
3	Highway Engineering	22302
4	Mechanics of Structures	22303
5	Building Construction	22304
6	Concrete Technology	22305
7	Strength Of Materials	22306
8	Automobile Engines	22308
9	Automobile Transmission System	22309
10	Mechanical Operations	22313
11	Technology Of Inorganic Chemicals	22314
12	Object Oriented Programming Using C++	22316
13	Data Structure Using 'C'	22317
14	Computer Graphics	22318
15	Database Management System	22319
16	Digital Techniques	22320
17	Principles Of Database	22321
18	Digital Techniques & Microprocessor	22323
19	Electrical Circuits	22324
20	Electrical & Electronic Measurment	22325
21	Fundamental Of Power Electronics	22326
22	Electrical Materials & Wiring Practice	22328
23	Applied Electronics	22329
24	Electrical Circuits & Networks	22330
25	Electronic Measurments & Instrumentation	22333
26	Principles Of Electronics Communication	22334
27	Thermal Engineering	22337
28	Engineering Matrology	22342
29	Mechanical Engineering Materials	22343
30	Theory Of Machines	22344

Fourth Semester:

1	Hydraulics	22401
2	Geo Technical Engineering	22404
3	Chemical Process Instrumentation & Control	22407
4	Fluid Flow Operation	22409
5	Technology Of Organic Chemical	22410
6	Java Programming	22412
7	GUI Application Development Using VB.net	22034
8	Microprocessor	22415
9	Database Managment	22416
10	Electric Motors And Transformers	22418
11	Industrial Measurement	22420
12	Digital Electronic And Microcontroller Application	22421
13	Linear Integrated Circuits	22423
14	Microcontroller & Applications	22426
15	Basic Power Electronics	22427
16	Digital Communication Systems	22428
17	Mechanical Engineering Measurments	22443
18	Fluid Mechanics and Machinery	22445
19	Fundamentals Of Mechatronics	22048
20	Micro Project & Industrial Training Assessment Manual	22049

Fifth Semester:

1	Network Management & Administration	17061
2	Solid Modeling	17063
3	CNC Machines	17064
4	Behavioral Science(Hand Book)	17075
5	Behavioral Science (Assignment Book)	17075
6	Windows Programming using VC++	17076
7	Estimation and Costing	17501
8	Public Health Engineering	17503
9	Concrete Technology	17504
10	Design of Steel Structures	17505
11	Switchgear and Protection	17508
12	Microprocessor & Application	17509
13	A.C. Machines	17511
14	Operating System	17512
15	Java Programming	17515
16	System Programming	17517
17	Communication Technology	17519
18	Hydraulic & Pneumatics	17522
19	Advanced Automobile Engines	17523
20	Basic Electrical & Electronics	17524
21	Measurement and Control	17528
22	Power Engineering	17529
23	Metrology & Quality Control	17530
24	Computer Hardware & Networking	17533
25	Microcontroller	17534
26	Digital Communication	17535
27	Control System & PLC	17536
28	Audio Video Engineering	17537
29	Control System	17538
30	Industrial Electronics and applications	17541
31	Heat Transfer Operations	17560
32	Chemical Process Instrumentation & control	17561

Sixth Semester:

1	Solid Modeling	17063
2	Highway Engineering	17602
3	Contracts & Accounts	17603
4	Design of R.C.C. Structures	17604
5	Industrial Fluid Power	17608
6	Design of Machine Elements	17610
7	Automotive Electrical and Electronic Systems	17617
8	Vehicle Systems Maintenance	17618
9	Software Testing	17624
10	Advanced Java Programming	17625
11	Mobile Computing	17632
12	System Programing	17634
13	Testing & Maintenance of Electrical Equipments	17637
14	Power Electronics	17638
15	Illumination Engineering	17639
16	Power System Operation & Control	17643
17	Environmental Technology	17646
18	Mass Transfer Operation	17648
19	Advanced Communication System	17656
20	Mobile Communication	17657
21	Embedded System	17658
22	Process Control System	17663
23	Industrial Automation	17664
24	Industrial Drives	17667
25	Video Engineering	17668
26	Optical Fiber & Mobile Communication	17669
27	Therapeutic Equipment	17671
28	Intensive Care Equipment	17672
29	Medical Imaging Equipment	17673

Pharmacy Lab Manual

First Year:

1	Pharmaceutics - I	0805
2	Pharmaceutical Chemistry - I	0806
3	Pharmacognosy	0807
4	Biochemistry and Clinical Pathology	0808
5	Human Anatomy and Physiology	0809

Second Year:

1	Pharmaceutics - II	0811
2	Pharmaceutical Chemistry - II	0812
3	Pharmacology & Toxicology	0813
4	Hospital and Clinical Pharmacy	0816

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