HNDIT2311-Rapid Application Development

Marking Scheme-2016

Q1)

a) Explain the term "Rapid Development". [02 Marks]

Usable systems are built within a short period of time (as little as 2-3 months)

b) "RAD methodology attempts to overcome certain issues in traditional software development methodologies". State and briefly explain three(03)of such issues. [06 Marks]

- **Cost and schedule overruns**
- **Product not fit for business**
- **High workload**
- **Projects get cancelled**
- **Friction among managers, developers and customers**

c) Briefly explain two (02) types of Classic Mistakes. [02x02=04 Marks]

- **People related**
- **Product related**
- **Technology related**
- **Process related**

d) Mention three (03) productivity tools that are used in rapid development. [03 Marks]

Visual studio dot net
NetBeans
EasyEclipse
JBuilder

e) "Rapid Application Development is known as a Customer Oriented Methodology". Justify thisthis statement. [05 Marks]

The developments are time boxed, delivered and then assembled into a working prototype. This can quickly give the customer something to see and use and to provide feedback regarding the delivery and their requirements. Users have to be involved in the development. Which means system is more likely to meet their reuirement.therefore RAD is customer oriented.

Q2)

a) Give six (6) relational operators with examples. [3 Marks]

- > Greater than
- < Less than
- = Equal to
- <> Not equal to
- >= Greater than or equal to
- <= Less than or equal to

b) Give four (4) logical operators in their precedence order (highest to lowest). [2 Marks]

– Not
– And
– Or
– Xor

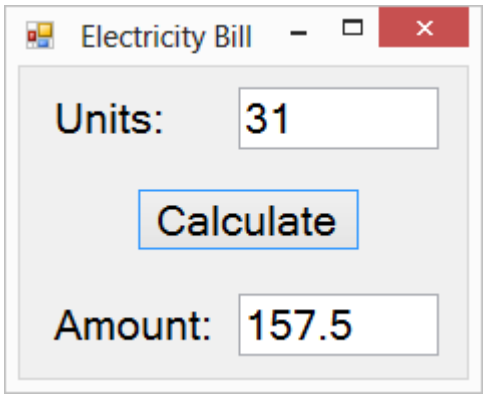
c) Write Visual Basic code to accept two integer values using input box and to obtain the positive difference using message box.

[For example if the inputs are 4 and 7 the output should be 3. If the inputs are 7 and 4 also output should be 3] [5 Marks]

```
Dim a As Integer
    Dim b As Integer
    Dim t As Integer
    Dim d As Integer
    a = InputBox("Enter first number:")
    b = InputBox("Enter second number:")
    If (a > b) Then
      t = a
      a = b
      b = t
    End If
    d = b - a
                MsgBox("The positive difference is " & d)
```

d) Answer the questions given below considering the following electricity charge rates and runtime interface.

Unit Range	**Unit Price**
30 and below	Rs. 5.00
31 – 60	Rs. 7.50
61 – 90	Rs. 11.00
91 and above	Rs. 15.00



i. Give the names for each of the above controls according the Visual Basic naming convention. [2 Marks]

lblUnits, txtUnits

btnCalculate

lblAmount, txtAmount

ii. Write visual basic codes to calculate the amount after entering the units as shown in the interface [8 Marks]

```
Private Sub btnCalculate_Click(…) …
    Dim units As Integer
    Dim amount As Double

    units = txtUnits.Text
    If (units <= 30) Then
       amount = units * 5
    ElseIf (units <= 60) Then
       amount = 30 * 5 + (units - 30) * 7.5
```

```
ElseIf (units <= 90) Then
   amount = 30 * 5 + 30 * 7.5 + (units - 60) * 11
Else
   amount = 30 * 5 + 30 * 7.5 + 30 * 11 + (units - 90) * 15
End If
txtAmount.Text = amount
End Sub
```

Q3.

a) Write the differences of following control structures. [4 Marks]

i. Do While loop Vs Do until loop

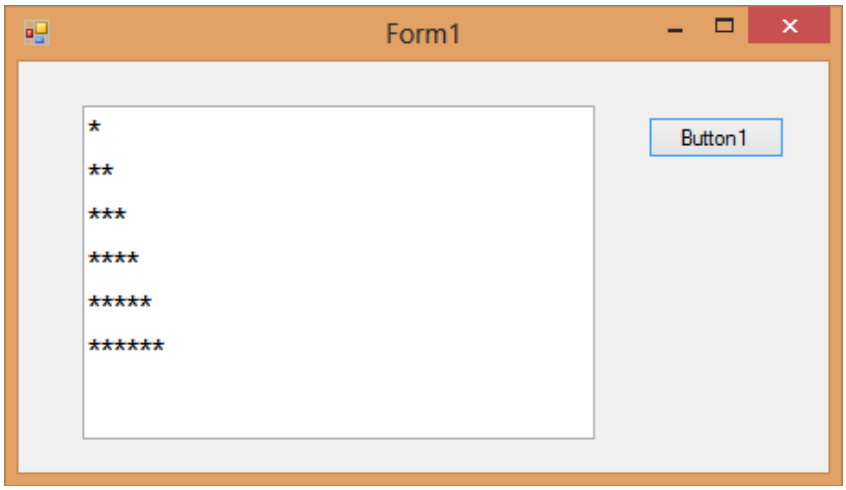
The while loop is run until condition is true once condition false loop is terminate. Until loop is run until condition is false and once condition become true loop is terminate.

b) Write visual basic code to print prime numbers between 1 to 100 [5 Marks]

```
Dim p, n, i AsInteger
        p = 1
'Print("Prime Numbers 1-100 are : ")
For n = 1 To 100
For i = 2 To n - 1
If n Mod i = 0 Then
                    p = 0
Exit For
Else
                    p = 1
EndIf
Next
If p = 1 Then
                TextBox1.Text = TextBox1.Text & n & vbCrLf
EndIf
Next
```

c) Write the output of following code segments. [6Marks]

```
For i = 1 To 6 Step 1
     For j = 1 To i Step 1
     TextBox1.Text = TextBox1.Text &"*"
     Next j
 TextBox1.Text = TextBox1.Text & vbCrLf
Next i
```



i)

```
PublicClassForm1
Public a AsInteger = 25
Public b AsInteger = 30
Friend total AsInteger

PrivateSub Button1_Click(ByVal sender As System.Object, ByVal
e As System.EventArgs) Handles Button1.Click
Dim a AsInteger = 10
Dim b AsInteger = 20
        total = a + b
        TextBox1.Text = total
EndSub

PrivateSub Button2_Click(ByVal sender As System.Object, ByVal
e As System.EventArgs) Handles Button2.Click
        total = a + b
        TextBox2.Text = total
EndSub
EndClass
```

Out put
textbox1 =>30
textbox2=>55

[6 Marks]

Q4.

a) What is the difference between a function and a sub procedure? Write the VB.NET syntax for above. [2 Marks]

A set or block of code statements, used for repeated or shared task that is given a name so that it can be invoked by another part of the program.

b) Give (04) four access modifiers and describe them. [04 Marks]

Keyword	Definition
Public	Accessible everywhere.
Private	Accessible only within the type itself.
Friend	Accessible within the type itself and all namespaces and code within the same assembly.
Protected	Only for use on class members. Accessible within the class itself and any derived classes.
Protected Friend	The union of **Protected** and **Friend**.

c) Explain the deferences between following two keywords [2 Marks]

a. *ByVal*

b. *ByRef*

ByVal - Pass only the value of original variable

ByRef - Pass a reference to original variable

d) Write private VB.net functionsfor followings. [8 Marks]

a. To calculate total marks of three Subjects.

```
   PrivateFunction TotalMarks(ByVal sub1 AsInteger, ByVal sub2 AsInteger,
ByVal sub3 AsInteger) AsInteger
Dim tot as integer
Tot=sub1+sub2+sub3
Return tot
End Function
```

b. To return average marks of three subject.

```
   PrivateFunction AverageMarks(ByVal sub1 AsInteger, ByVal sub2 AsInteger,
ByVal sub3 AsInteger) AsInteger
    Dim avg as integer
avg=(sub1+sub2+sub3)/3
Return avg
End Function
```

Q5.

a) Briefly explain the terms ‘class’ and ‘object’. [04 Marks]

A class is a blueprint that describes an object and defines attributes and operations for the object.

An object is an instance of a class.

b) Mention three (03) qualities of an object. [03 Marks]

- **Identity: Objects are distinguishable from one another**
- **Behavior: Objects can perform tasks**
- **State: Objects store information that can vary over time**

c) Briefly describe overloaded methods of a class. [04 Marks]

- **You can define method or property multiple times with different argument list**
- **Derived Class Can Override an Inherited Property or Method**

Example

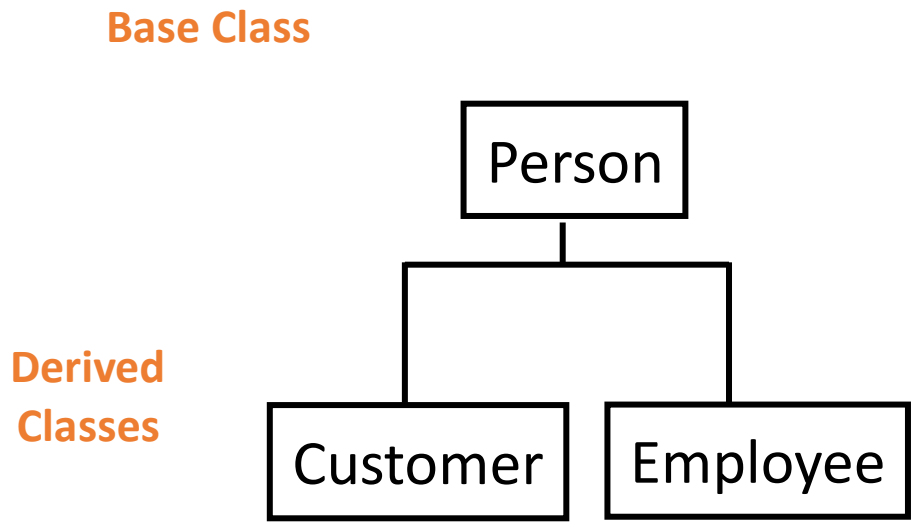
```
Btn1_click
    Dim alerter As New alertclass
    alerter.alert("No Problem")
//alerter.alert()
   //  'alerter.alert("No Problem", MsgBoxStyle.Exclamation)
End Sub
Public Class alertclass
  Public Sub alert(ByVal text As String)
    MsgBox(text)
  End Sub

 Public Sub alert(ByVal text As String, ByVal icon As MsgBoxStyle)
    MsgBox(text, icon)
  End Sub
 Public Sub alert()
    MsgBox("no message")
  End Sub
End Class
```

d) Briefly explain inheritance. [03 Marks]

- **Inheritance specifies an "is-a-kind-of" relationship**
- **Multiple classes share the same attributes and operations, allowing efficient code reuse**
- **Examples:**

  A customer "is a kind of" person
  An employee "is a kind of" person



- **Derived Class Inherits from a Base Class**
- **Properties, Methods, Data Members, Events, and Event Handlers Can Be Inherited (Dependent on Scope)**

f) What is the output of the following code segment?

```
Public Class BaseClass
  Public Overridable Sub OverrideMethod( )
    MsgBox("Base OverrideMethod")
  End Sub
  Public Sub OtherMethod( )
    MsgBox("Base OtherMethod – not overridable")
```

```
    End Sub
End Class

Public Class DerivedClass
    Inherits BaseClass
    Public Overrides Sub OverrideMethod( )
        MsgBox("Derived OverrideMethod")
    End Sub
End Class

Dim x As DerivedClass = New DerivedClass( )
x.OtherMethod
x.OverrideMethod
```

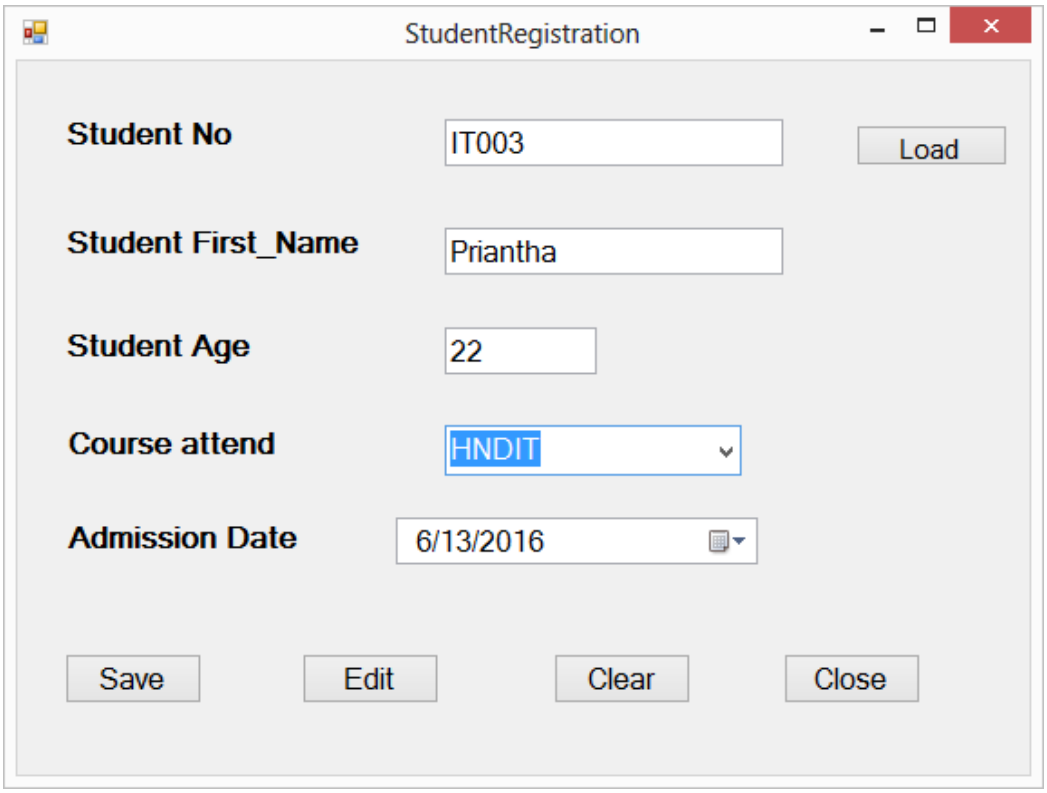
[6 Marks]

Base OtherMethod – not overridable

Derived OverrideMethod

Q6)

The following interface was created using VB.Net to facilitate student registration activities of ATIs.The back end for the system has been created using Microsoft SQL Server.



a) Write the code segment for connecting above interface with the SQL Database.
Hint: Data Source=ATI; Initial Catalog=StudentReg;Integrated Security=True
(Indicate any relevant libraries/packages/etc., required to create the connection)

```
Imports System.Data.SqlClient

   Dim connection As SqlConnection = New sqlconnection()
   connection.ConnectionString = "Data Source=ATI;
          Initial Catalog=studentReg;Integrated Security=True"
```

[05 Marks]

b) Write the code segmentto save the information displayed on the form into the database.(Save Button)
Assume that the database contains a table with the following structure:
StudentReg (StNo, StFname, Age, Course, DoA) [05 Marks]

```
   connection.Open()
        Dim cmsql As New SqlCommand
        cmsql.Connection = connection
        cmsql.CommandText = "INSERT INTO VALUES ('" &
txtStNo.Text & "',’" & txtStFName.Text & "’," & val(txtAge.Text
)&", '" & cboCourse.SelectedValue.ToString & "', '" &
cboDoA.Value.Date & "')"
        cmsql.ExecuteNonQuery()

      MsgBox("Data inserted")
```

c) Write the code segment to modify the course of a student who has already registered (Edit Button).

[05 Marks]

```
connection.Open()

        Dim cmsql1 As New SqlCommand
cmsql1.Connection=connection
        cmsql1.CommandText= "UPDATE StudentReg SET Course='" +
cboCourse.SelectedItem + "' WHERE StNo='" + txtStNo.Text + "'"
        cmsql1.ExecuteNonQuery()

MsgBox("Data updated")
```

d) Write the code segment to view the record according to the given student number (Load Button). [05 Marks]

```
    connection.Open()

    Dim cmsql2 As New SqlCommand
    cmsql2.Connection=connection
    cmsql2.CommandText="SELECT * FROM StudentReg WHERE StNo='" +
    txtStNo.Text + "'"
adaptor = NewOleDbDataAdapter(cmsql2)
    dataset = NewDataSet()
    adaptor.Fill(dataset, "ST")
    txtStFname.Text = dataset.Tables(0).Rows(0).Item("stFname")
    txtAge.Text = dataset.Tables(0).Rows(0).Item("Age")

 cmbCourse.Text = dataset.Tables(0).Rows(0).Item("Course")
    cboDoA.Value = dataset.Tables(0).Rows(0).Item("DoA")
cmsql2.ExecuteNonQuery()
```