Technical Preview

Group 1

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Introduction

The application is all about showing a World Map and whenever a part on World Map is clicked, it shows corresponding current type displayed in analog clock. The code is developed using Visual Basics and includes three Forms.

Form 1

It includes one panel having image of world Map , four buttons and a combobox and another panel for clock to appear in that.
MouseDown is used to calculate the location of clicked position :

```vb
Private Sub Panel1_MouseDown(sender As Object, e As MouseEventArgs) Handles Panel1.MouseDown
    Panel2.Controls.Clear()
    Rect.Location = e.Location
    Rect.Size = New Size(5, 5)
    Panel1.Invalidate()
```

Whenever a part in world map is clicked then the location of that point is stored and in the code of panel according to that location we define a new varible which contains the delay time of that location from GMT.That variable is transferred to Form 2 and then from Form 2 clock is created using the current time from personal computer and then according to the delay the clock takes the input and the time of the clock changes and it appears in the second panel of Form 1.

```vb
If e.Location.X > 201 AndAlso e.Location.X <= 219 AndAlso e.Location.Y >= 48 AndAlso e.Location.Y <= 492 Then
    Panel2.Controls.Clear()
    Dim theSecondForm As New Form2(-6, 0)
    theSecondForm.TopLevel = False
    Me.Panel2.Controls.Add(theSecondForm)
    theSecondForm.Show()
End If
```

Combobox have a drop down menu which includes the names of all the countries. Whenever a country is selected from it then a new variable which contains the delay time of that country time from GMT is tranferred into Form 2. And the clock operates on that variable and generates an analog clock.Combobox also have option of search in it.

```
Private Sub box_SelectedIndexChanged(sender As Object, e As EventArgs) Handles box.SelectedIndexChanged
    Dim flag As Boolean
    flag = False
    If box.SelectedItem = "Algeria" Then
        Dim theSecondForm As New Form2(1, 0)
        theSecondForm.TopLevel = False
        Me.Panel2.Controls.Add(theSecondForm)
        theSecondForm.Show()
        flag = True
    End If
```

Quiz contains a set of 5 questions all in different forms. Each have three options
in checkbox and there is a Next—> button to go to the next question.whenever
the Next—> button is clicked it checks the checkbox of right answer and compare
it with the choosen one.Then a dialogue box appears stating the right or wrong
answer.If user chooses more than one option then again dialouge box appears to
state that "choose one option" and it again transfers to the same form.

```
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
    Button1.Invalidate()
    Me.Visible = False
    If CheckBox2.Checked AndAlso CheckBox1.CheckState = 0 AndAlso CheckBox3.CheckState = 0 Then
        Dim Form1 As New Q2
        MsgBox("Right Answer !")

        Form1.Show()
```

GMT button displays time of GMT.whenever this button is clicked the delay which
is (0,0) from GMT is given to Form 2 on which the clock operates and generates
analog clock.

```
Private Sub Button2_Click(sender As Object, e As EventArgs) Handles Button2.Click
    Dim theSecondForm As New Form2(0, 0)
    Me.Visible = True
    theSecondForm.ShowDialog()
End Sub
```

Local Time button displays time of India.whenever this button is clicked the delay
which is (5,30)from GMT is given to Form 2 on which the clock operates and
generates analog clock.

```
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
    Dim theSecondForm As New Form2(5, 30)
    Me.Visible = True
    theSecondForm.ShowDialog()
End Sub
```

Help button - whenever this button is clicked then Form 3 is generated which includes the guidelines of how this application should be used.

```
Private Sub Button3_Click(sender As Object, e As EventArgs) Handles Button3.Click
    Me.Visible = True
    Form3.Show()
End Sub
```

Panel 2 in Form 1 is just created to provide space to analog clock to appear.

Form 2

In this form the analog clock is being designed and the input is given into it according to the delay time.

Firstly,the analog clock is designed. Different variables are used to define constant for calculating angle, define radius for each hand, define variables for setting angle for each hand, define inital values for secants.

```
'define constant for calculating angle
Const Convert As Double = Math.PI / 180

'define radius for each hand
Const SecRadius As Double = 92
```

The positions of the no. of clock(1,2,3,...,12) has been assigned the coordinates and also the dividors between them are assigned with coordinates.And different colurs and fonts are provided to hands and numbers.

```
Dim StartPoint(60) As PointF
Dim EndPoint(60) As PointF
Dim NumberPoint() As PointF = {New PointF(143, 25), New PointF(175, 57), New PointF(188, 102),
                              New PointF(175, 145), New PointF(143, 175), New PointF(103, 183),
                              New PointF(63, 175), New PointF(30, 145), New PointF(19, 102),
                              New PointF(28, 60), New PointF(56, 30), New PointF(98, 18)}
```

A Bitmap is created to draw the clock face and function is formed for getting variable from Form 1. Function DrawClockFace is defined to draw Clock Background, Increments around cicumferance, Draw Name ,Digital Clock Background .

```
'Create the Bitmap to draw the clock face
Dim ClockFace As New Bitmap(222, 222)
Dim gr As Graphics = Graphics.FromImage(ClockFace)
Private _p1 As Integer
Private _p2 As Integer

'function for getting variables from form1
Sub New(p1 As Integer, p2 As Integer)
    ' TODO: Complete member initialization
    InitializeComponent()
    _p1 = p1
    _p2 = p2
End Sub
```

It takes the delay time from Form 1 and then according to the current time of the personal computer it calculates the time of that clicked position.The variables from Form 1 are stored in p1 and p2. The current time of the clicked position can be calculated as follows :

hour equals p1 plus now.hours plus minus 5

minute equals p2 plus now.minutes minus 30

second equals now.seconds

```vbnet
Private Sub tmrClock_Tick(sender As System.Object, e As System.EventArgs) Handles tmrClock.Tick
    Dim hour As Integer
    Dim min As Integer
    Dim sec As Integer
    hour = Now.Hour + _p1 - 5
    min = Now.Minute + _p2 - 30
    sec = Now.Second
```

5 : 30 is been minused as India has a delay time of this amount from GMT. And if the range of time goes out from 00:00:00 to 24:00:00 then appropriate calculation is done to ensure that.And finally the Angle of the Second, Minute and Hour hand are calculated according to the time and also calculated the X,Y co-ordinates of the end point of each hand.

```vbnet
'Set The Angle of the Second, Minute and Hour hand according to the time
SecAngle = (Now.Second * 6)
MinAngle = ((Now.Minute + Now.Second / 60) + _p2 - 30) * 6
HrAngle = ((Now.Hour + Now.Minute / 60) + _p1 - 5) * 30

'Get the X,Y co-ordinates of the end point of each hand
SecX = CInt(SecRadius * Math.Cos((90 - SecAngle) * Convert)) + 110
SecY = 110 - CInt(SecRadius * Math.Sin((90 - SecAngle) * Convert))
```

Form 3

It's just a simple form which includes one textbox and and six richtextbox having text in it about how to use this application.Whenever button help is clicked in Form 1 this form appear.

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