Решения

Всяка секция от курса съдържа 2 задачи от тип “Пробвайте” и 1 задача от тип “Можете ли?”. Следните страници съдържат списък на всички проекти, които учениците трябва да разработят, изображения на формите, които трябва да създадат и коментиран код, който трябва да напишат. Всички файлове на проектите могат да бъдат намерени на диска с курса.

Секция: 01 Проект: Пробвайте 01 Компютрите в ежедневието

Избройте поне четири случая, в които компютрите са част от ежедневието. Не използвайте примерите от курса. Измислете ваши собствени.

Отговорете варират.

Секция: 01 Проект: Пробвайте 02 Информационни технологии

Като използвате Интернет и други ресурси определете стартовата заплата на специалистите в Информационните технологии за вашия регион. Сравнете заплатите за различните длъжности като Програмисти, Системни аналитици, Уеб разработчици и др.

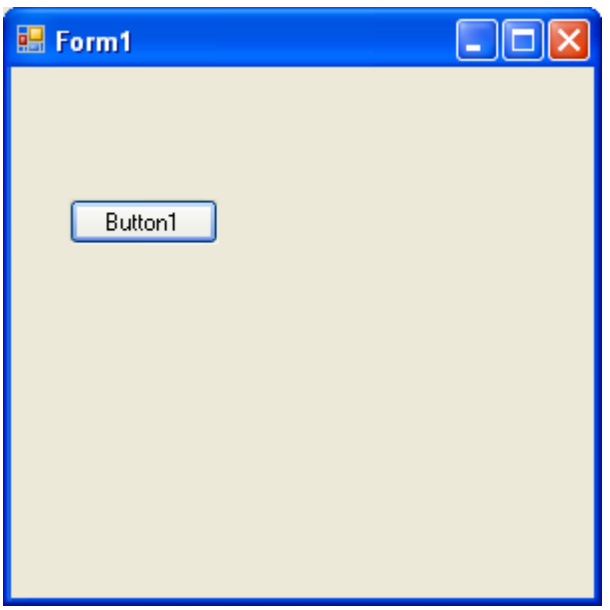
Отговорете варират.

Секция: 01 Проект: Можете ли? -

За секция 01 няма задача от този тип.

Секция: 02 Проект: Пробвайте 01 HelloWorld

Напишете програма с име HelloWorld. Дублирайте стъпките, показани в курса. Визуализирайте съобщение с текст “Hello, World”.

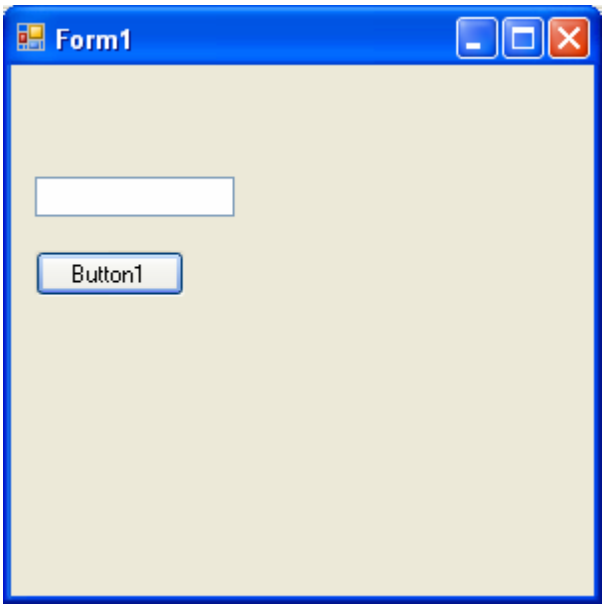


Програмен код:

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        MessageBox.Show("Hello World.")
End Sub
```

Секция: 02 Проект: Пробвайте 02 MyNameIs

Напишете програма с име MyNameIs. Тя е много подобна на програмата HelloWorld, показана в курса, но визуализира име на ученик.



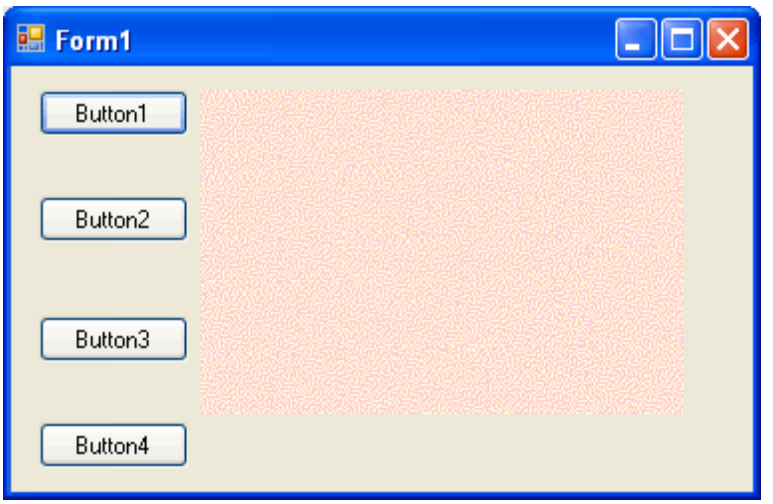
Програмен код:

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        TextBox1.Text = "My name"
End Sub
```

Секция: 02 Проект: Можете ли? Бързо хранене

Добавете 4 бутона върху формата. Останалата част от проекта е вече написана. Тя е осигурена от шаблон 02.

Ученикът трябва да направи форма подобна на показаната по-долу:



Ученикът няма да променя програмния код. Той е включен като референция. Необходимите изображения са в директорията Bin\Debug на проекта.

```
Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load
        PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"\four.gif")
End Sub

Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"\one.gif")
    End Sub

Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"\two.gif")
End Sub

Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button3.Click
        PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"\three.gif")
```

```
End Sub

Private Sub Button4_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button4.Click
        PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"\four.gif")
End Sub
```

Секция: 03 Проект: Пробвайте 01 Подготовка за пътешествие

Напишете псевдокод, за да опишете необходимите стъпки за подготовка на ваше пътешествие. Вашето решение трябва да има най-малко седем стъпки.

Отговорите варират. Ето пример:

```
If I need to take a lot of stuff
        Get a big suitcase
Else
        Get a backpack
End If

Put in clothes
Put in shoes
Put in camera
Put in laptop
Put in book Travelers' Guide to Visual Studio

If I need to shave
        Put in shaving gear
End If

If my hair is long
        Put in blow-dryer
End If

Attach name tag to bag

Close bag
```

Секция: 03 Проект: Пробвайте 02 Измиване на чинии

Напишете псевдокод, за да опишете необходимите стъпки за измиване на чинии.

Отговорите варират. Ето пример:

```
Rinse the dirty dishes
Fill the sink with fresh hot water
Add dish soap

Do while dishes remain
        Wash one dish
        Rinse one dish
        Dry one dish
Loop

Do while silverware remains
        Wash one item of silverware
        Rinse one item of silverware
        Dry one item of silverware
Loop

Clean sink
Mark task as completed on the chore list
```

Секция: 03 Проект: Можете ли? Аквариум

Копирайте всички коментари от съществуваща програма в текстово документ.

Програмата е осигурена от шаблон 03.

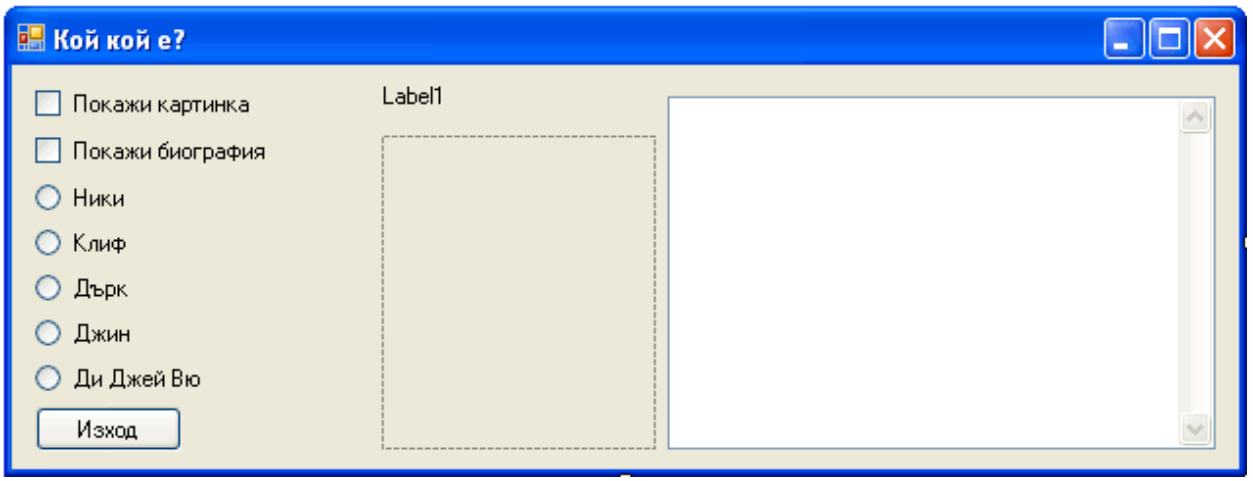
Резултатът трябва да е следният:

```
‘ create a variable to hold the count of each number of fish seen in
the aquarium

‘ place each fish count from the text box
‘ into a variable that is designed to hold numbers

‘ find the total number of fish

‘ put the fish total into the form text box

‘ calculate the percentage of red fish by dividing the number of reds
‘ by the total fish then multiply by 100

‘ format the percentage to look nice then put it in the appropriate
text box

‘ calculate the percentage of blue fish by dividing the number of blues
‘ by the total fish then multiply by 100

‘ format the percentage to look nice then put it in the appropriate
text box

‘ calculate the percentage of yellow fish by dividing the number of
yellows
‘ by the total fish then multiply by 100

‘ format the percentage to look nice then put it in the appropriate
text box

‘ calculate the percentage of green fish by dividing the number of
greens
‘ by the total fish then multiply by 100

‘ format the percentage to look nice then put it in the appropriate
text box
```

Секция: 04 Проект: Пробвайте 01 Кой кой е

Проектирайте форма и настройте свойствата на обектите върху нея спрямо осигурения код, за да научите повече за участниците в курса. Останалата част от проекта е написана и осигурена от шаблон 01 на секция 04.

Ученикът трябва да създаде форма подобна на следната:



Ученикът не трябва да променя програмния код. Той е включен като референция. Необходимите изображения са в директорията Bin на проекта.

```
  Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load

        ' To ensure some consistancy of display, properties of the
        ' Form objects are set to an easy to read font and the picture
        ' box is set to the image to fit the box

        Label1.Font = New System.Drawing.Font("Arial", 16)
        Label1.TextAlign = ContentAlignment.MiddleCenter
        Label1.Text = ""
        RadioButton1.Font = New System.Drawing.Font("Arial", 12)
        RadioButton2.Font = New System.Drawing.Font("Arial", 12)
        RadioButton3.Font = New System.Drawing.Font("Arial", 12)
        RadioButton4.Font = New System.Drawing.Font("Arial", 12)
        RadioButton5.Font = New System.Drawing.Font("Arial", 12)
        CheckBox1.Font = New System.Drawing.Font("Arial", 12)
        CheckBox2.Font = New System.Drawing.Font("Arial", 12)
        TextBox1.Font = New System.Drawing.Font("Arial", 12)
        TextBox1.Text = ""
        PictureBox1.SizeMode = PictureBoxSizeMode.StretchImage

    End Sub

    Private Sub RadioButton1_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton1.CheckedChanged
```

```
        ' when the radio button for a character changes, call the
        ' subprogram to display the image and biography

        Call ShowImage()
        Call ShowBiography()

    End Sub

    Private Sub RadioButton2_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton2.CheckedChanged

        ' when the radio button for a character changes, call the
        ' subprogram to display the image and biography

        Call ShowImage()
        Call ShowBiography()

    End Sub

    Private Sub RadioButton3_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton3.CheckedChanged

        ' when the radio button for a character changes, call the
        ' subprogram to display the image and biography

        Call ShowImage()
        Call ShowBiography()

    End Sub

    Private Sub RadioButton4_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton4.CheckedChanged

        ' when the radio button for a character changes, call the
        ' subprogram to display the image and biography

        Call ShowImage()
        Call ShowBiography()

    End Sub

    Private Sub RadioButton5_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton5.CheckedChanged

        ' when the radio button for a character changes, call the
        ' subprogram to display the image and biography

        Call ShowImage()
        Call ShowBiography()

    End Sub
```

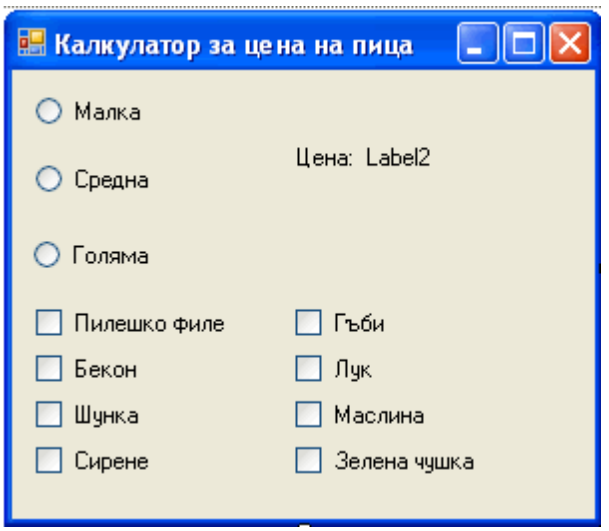
```
    Private Sub ShowImage()

        ' if the show image check box is checked,
        ' decide which image to show, otherwise show none

        If CheckBox1.Checked = True Then
            If RadioButton1.Checked = True Then
                PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"/nikki.gif")
            ElseIf RadioButton2.Checked = True Then
                PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"/cliff.gif")
            ElseIf RadioButton3.Checked = True Then
                PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"/dirk.gif")
            ElseIf RadioButton4.Checked = True Then
                PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"/jen.gif")
            ElseIf RadioButton5.Checked = True Then
                PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"/dj.gif")
            End If
        Else
            PictureBox1.Image =
Image.FromFile(System.Windows.Forms.Application.StartupPath &
"/nopicture.gif")
        End If

    End Sub

    Private Sub ShowBiography()

        ' if the show biography check box is checked,
        ' decide which biography to show, otherwise show none

        If CheckBox2.Checked = False Then
            TextBox1.Text = ""
        Else
            If RadioButton1.Checked = True Then
                Label1.Text = "Nikki"
                TextBox1.Text = "Nikki is Asian American, very
fashionable in that West Coast way. She is from San Francisco and is
smart because she knows the material. She's a tool user. She has more
gadgets than the rest and likes to use them. The camera that takes the
beginning snapshot is hers. Her mother is a physicist and her stepdad
is an industrial programmer. I'll bet she plays the piano. Nikki
attends Stanford University where she has not yet selected a major."
            ElseIf RadioButton2.Checked = True Then
                Label1.Text = "Cliff"
                TextBox1.Text = "Cliff is a 4th+ generation Irish-
American (Conan O'Brien look-alike) from Boston. He's an impulsive red-
headed clown. He's smart because he already knows the material pretty
```

```
well. He interned at a gaming company the past summer where he
contributed to the well-known game Hacker Bounty Hunter Unleashed.
Since Harvard is in the Boston area, he naturally chose to attend Yale.
"
            ElseIf RadioButton3.Checked = True Then
                Label1.Text = "Dirk"
                TextBox1.Text = "Dirk may have some familiarity with
one of the other programming languages (C#). He grew up on a farm in
North Dakota. He owns an accordion. Dirk is looking for an exciting
career that also requires air conditioned offices. He has been accepted
to Slippery Rock University in Pennsylvania."
            ElseIf RadioButton4.Checked = True Then
                Label1.Text = "Jen"
                TextBox1.Text = "She may also have some familiarity
with the other programming language that Dirk doesn't have (J#). Jen is
a senior at Lakeside School in Seattle, the same school Bill Gates
attended. This is where she acquired her interest in programming. She's
a little too fond of Seattle's Best coffee. Jen owns 27 umbrellas."
            ElseIf RadioButton5.Checked = True Then
                Label1.Text = "DJ"
                TextBox1.Text = "DJ Vu is African American with a beret
and sunglasses. He's real cool. He knows how to explain stuff in ways
that Nikki and Cliff don't, using real world concepts and props that
could be almost anything. He's a juggler, he can fix a flat on an RV,
he's super smart but in a real world way. He's the classic storytelling
chestnut, The Wise Wanderer."
            End If
        End If

    End Sub

    Private Sub CheckBox1_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox1.CheckedChanged

        ' if the show image checkbox is selected,
        ' call the subprogram to show an image

        Call ShowImage()

    End Sub

    Private Sub CheckBox2_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox2.CheckedChanged

        ' if the show biography checkbox is selected,
        ' call the subprogram to show a biography

        Call ShowBiography()

    End Sub

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        End

    End Sub
```

Секция: 04 Проект: Пробвайте 02 Калкулиране цена на пица

Проектирайте форма така, че да я свържете с вече написан код, пресмятащ цената на пица. Останалата част от проекта е написана и осигурена от шаблон 02 на секция 04.

Ученикът трябва да създаде форма подобна на следната:



Ученикът не трябва да променя програмния код. Той е включен като референция.

```
   Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load

        ' by calling the prize calculation subprogram when the form
        ' is initially loaded, and initial base price is calculated

        Call CalculatePrice()

    End Sub


    Private Sub CheckBox1_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox1.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub RadioButton1_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton1.CheckedChanged

        ' calculate a new price if any item changes
```

```
        Call CalculatePrice()

    End Sub

    Private Sub RadioButton2_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton2.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub RadioButton3_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton3.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub CheckBox2_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox2.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub CheckBox3_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox3.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub CheckBox4_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox4.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub CheckBox5_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox5.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()
```

```
    End Sub

    Private Sub CheckBox6_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox6.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub CheckBox7_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox7.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub CheckBox8_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CheckBox8.CheckedChanged

        ' calculate a new price if any item changes

        Call CalculatePrice()

    End Sub

    Private Sub CalculatePrice()

        ' initialize price
        Dim PizzaPrice As Single = 0

        ' basic charge
        PizzaPrice = 5.0

        ' ingredients are either $1.00 each
        ' or $0.50 each
        If CheckBox1.Checked = True Then
            PizzaPrice = PizzaPrice + 1
        End If
        If CheckBox2.Checked = True Then
            PizzaPrice = PizzaPrice + 1
        End If
        If CheckBox3.Checked = True Then
            PizzaPrice = PizzaPrice + 1
        End If
        If CheckBox4.Checked = True Then
            PizzaPrice = PizzaPrice + 1
        End If
        If CheckBox5.Checked = True Then
            PizzaPrice = PizzaPrice + 0.5
        End If
        If CheckBox6.Checked = True Then
            PizzaPrice = PizzaPrice + 0.5
```

```
        End If
        If CheckBox7.Checked = True Then
            PizzaPrice = PizzaPrice + 0.5
        End If
        If CheckBox8.Checked = True Then
            PizzaPrice = PizzaPrice + 0.5
        End If

        ' allow for larger pizza
        If RadioButton2.Checked = True Then
            PizzaPrice = PizzaPrice * 1.25
        End If

        ' largest pizza
        If RadioButton3.Checked = True Then
            PizzaPrice = PizzaPrice * 1.5
        End If

        ' show formated result on form
        Label2.Text = FormatCurrency(PizzaPrice)

    End Sub
```

Секция: 04 Проект: Можете ли? Морски шах

Проектирайте форма така, че да я свържете с вече написан код за игра на морски шах. Останалата част от проекта е написана и осигурена от шаблон 04.

Ученикът трябва да създаде форма подобна на следната:

Ученикът не трябва да променя програмния код. Той е включен като референция.

```
    ' define program variables
    Dim XWins As Integer = 0    ' number of wins by X
    Dim OWins As Integer = 0    ' number of wins by Y
    Dim Ties As Integer = 0     ' number of ties
    Dim Turn As String = "X"    ' whose turn is it?

    Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load

        ' when the form is loaded, initialize a new game
        Call NewGame()
        TextBox1.Text = "0"
        TextBox2.Text = "0"
        TextBox3.Text = "0"
    End Sub

    Private Sub NewGame()

        ' reset game board
        Label1.Text = ""
        Label2.Text = ""
        Label3.Text = ""
        Label4.Text = ""
        Label5.Text = ""
        Label6.Text = ""
```

```
        Label7.Text = ""
        Label8.Text = ""
        Label9.Text = ""
        Label10.Text = ""

        'reset board background color as red was used
        ' to mark the winning path
        Label1.BackColor = System.Drawing.Color.Aqua
        Label2.BackColor = System.Drawing.Color.Aqua
        Label3.BackColor = System.Drawing.Color.Aqua
        Label4.BackColor = System.Drawing.Color.Aqua
        Label5.BackColor = System.Drawing.Color.Aqua
        Label6.BackColor = System.Drawing.Color.Aqua
        Label7.BackColor = System.Drawing.Color.Aqua
        Label8.BackColor = System.Drawing.Color.Aqua
        Label9.BackColor = System.Drawing.Color.Aqua

    End Sub

    Private Sub WinnerFound(ByVal LabelText As String)

        'a winner was found - who was it?
        If LabelText = "X" Then
            Label10.Text = "X Wins"
            XWins = XWins + 1
            TextBox1.Text = XWins
        Else
            Label10.Text = "O Wins"
            OWins = OWins + 1
            TextBox2.Text = OWins
        End If

    End Sub

    Private Sub tieFound()

        ' record a tie
        Label10.Text = "Tie"
        Ties = Ties + 1
        TextBox3.Text = Ties

    End Sub

    Private Sub CheckForWinner()

        ' check for all 8 ways a player can win

        If Label1.Text = Label2.Text And Label2.Text = Label3.Text And
Label1.Text <> "" Then
            Label1.BackColor = System.Drawing.Color.Red
            Label2.BackColor = System.Drawing.Color.Red
            Label3.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label1.Text)
        ElseIf Label4.Text = Label5.Text And Label5.Text = Label6.Text
And Label4.Text <> "" Then
            Label4.BackColor = System.Drawing.Color.Red
            Label5.BackColor = System.Drawing.Color.Red
```

```
            Label6.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label4.Text)
        ElseIf Label7.Text = Label8.Text And Label8.Text = Label9.Text
And Label7.Text <> "" Then
            Label7.BackColor = System.Drawing.Color.Red
            Label8.BackColor = System.Drawing.Color.Red
            Label9.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label7.Text)
        ElseIf Label1.Text = Label4.Text And Label4.Text = Label7.Text
And Label1.Text <> "" Then
            Label1.BackColor = System.Drawing.Color.Red
            Label4.BackColor = System.Drawing.Color.Red
            Label7.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label1.Text)
        ElseIf Label2.Text = Label5.Text And Label5.Text = Label8.Text
And Label2.Text <> "" Then
            Label2.BackColor = System.Drawing.Color.Red
            Label5.BackColor = System.Drawing.Color.Red
            Label8.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label2.Text)
        ElseIf Label3.Text = Label6.Text And Label6.Text = Label9.Text
And Label3.Text <> "" Then
            Label3.BackColor = System.Drawing.Color.Red
            Label6.BackColor = System.Drawing.Color.Red
            Label9.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label3.Text)
        ElseIf Label1.Text = Label5.Text And Label5.Text = Label9.Text
And Label1.Text <> "" Then
            Label1.BackColor = System.Drawing.Color.Red
            Label5.BackColor = System.Drawing.Color.Red
            Label9.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label1.Text)
        ElseIf Label3.Text = Label5.Text And Label5.Text = Label7.Text
And Label3.Text <> "" Then
            Label3.BackColor = System.Drawing.Color.Red
            Label5.BackColor = System.Drawing.Color.Red
            Label7.BackColor = System.Drawing.Color.Red
            Call WinnerFound(Label3.Text)
        ElseIf Label1.Text <> "" And _
               Label2.Text <> "" And _
               Label3.Text <> "" And _
               Label4.Text <> "" And _
               Label5.Text <> "" And _
               Label6.Text <> "" And _
               Label7.Text <> "" And _
               Label8.Text <> "" And _
               Label9.Text <> "" Then
            ' if there is no winner but all 9 boxes are
            ' full then it is a tie
            Call tieFound()
        End If

    End Sub

    Private Sub Label1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label1.Click
```

```
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label1.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label1.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()
    End Sub

    Private Sub Label2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label2.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label2.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label2.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()
    End Sub

    Private Sub Label3_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label3.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label3.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label3.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()
```

```
    End Sub

    Private Sub Label4_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label4.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label4.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label4.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()

    End Sub

    Private Sub Label5_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label5.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label5.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label5.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()

    End Sub

    Private Sub Label6_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label6.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label6.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label6.Text = Turn

        If Turn = "X" Then
            Turn = "O"
```

```
        Else
            Turn = "X"
        End If

        Call CheckForWinner()

    End Sub

    Private Sub Label7_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label7.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label7.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label7.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()

    End Sub

    Private Sub Label8_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label8.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label8.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
        End If

        Label8.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()

    End Sub

    Private Sub Label9_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Label9.Click
        ' If the label has something in it
        ' or if the win label is full because the game ended,
        ' then do nothing
        If Label9.Text <> "" Or Label10.Text <> "" Then
            Exit Sub
```

```
        End If

        Label9.Text = Turn

        If Turn = "X" Then
            Turn = "O"
        Else
            Turn = "X"
        End If

        Call CheckForWinner()

    End Sub

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' start a new game if the player chooses
        Call NewGame()

    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click

        End

    End Sub
```

Секция: 05 Проект: Пробвайте 01 Дъга

Променете свойствата на обектите върху формата като използвате код на Visual Basic.NET, а не прозореца Properties. Нарисувайте дъга върху формата. По-голямата част от кода е осигурена от шаблон 01 на секция 05.

Ученикът трябва да създаде форма подобна на следната:

Ученикът трябва да промени кода от шаблона по следния начин:

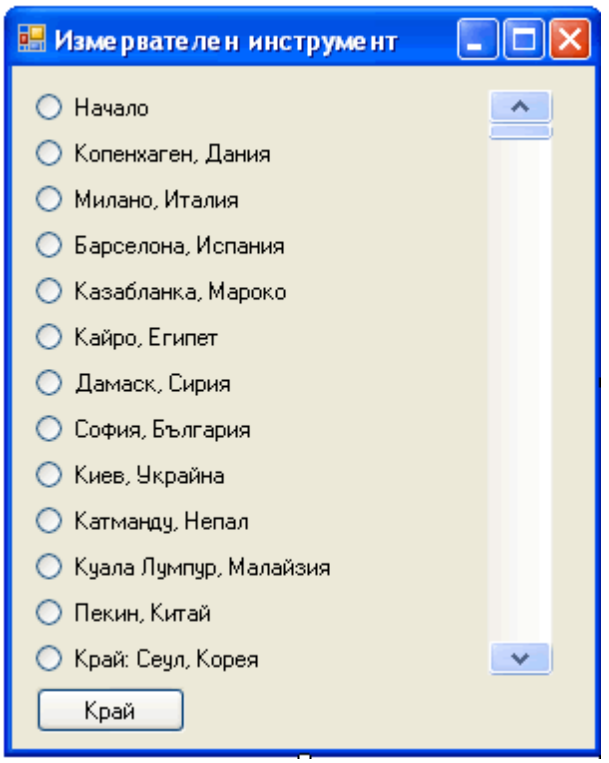
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' define a pen for writing
        Dim MyPen As New Pen(Color.Black)
        ' define where to write
        Dim g As Graphics = PictureBox1.CreateGraphics
        ' erase any previous picture then refresh the picture box
        PictureBox1.ForeColor = System.Drawing.Color.Gray
        PictureBox1.Refresh()
        ' set size of pen
        MyPen.Width = 8
        ' draw 7 rainbow colors - first choose a color then
        ' draw an arc using that color
        ' the supplied template has all colors set to black
        ' the student should make exactly these choices for button1
        MyPen.Color = System.Drawing.Color.Red
        g.DrawArc(MyPen, 30, 10, 200, 140, 180, 180)
        MyPen.Color = System.Drawing.Color.Orange
        g.DrawArc(MyPen, 30, 18, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Yellow
        g.DrawArc(MyPen, 30, 26, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Green
```

```
        g.DrawArc(MyPen, 30, 34, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Blue
        g.DrawArc(MyPen, 30, 42, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Indigo
        g.DrawArc(MyPen, 30, 50, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Violet
        g.DrawArc(MyPen, 30, 58, 200, 150, 180, 180)

    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click

        ' define a pen for writing
        Dim MyPen As New Pen(Color.Black)
        ' define a place to draw (the picture box)
        Dim g As Graphics = PictureBox1.CreateGraphics
        ' erase any previous picture then refresh the picture box
        PictureBox1.ForeColor = System.Drawing.Color.Gray
        PictureBox1.Refresh()
        ' set size of pen
        MyPen.Width = 8
        ' draw 7 rainbow colors - first choose a color then
        ' draw an arc using that color
        ' the supplied template has all colors set to black
        ' the student may choose any for button2
        ' the student may change the drawarc numbers to make
        ' a design instead of a rainbow
        MyPen.Color = System.Drawing.Color.PapayaWhip
        g.DrawArc(MyPen, 30, 10, 200, 140, 180, 180)
        MyPen.Color = System.Drawing.Color.Violet
        g.DrawArc(MyPen, 30, 18, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Tomato
        g.DrawArc(MyPen, 30, 26, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Azure
        g.DrawArc(MyPen, 30, 34, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.Chocolate
        g.DrawArc(MyPen, 30, 42, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.ForestGreen
        g.DrawArc(MyPen, 30, 50, 200, 150, 180, 180)
        MyPen.Color = System.Drawing.Color.GreenYellow
        g.DrawArc(MyPen, 30, 58, 200, 150, 180, 180)

    End Sub
```

Секция: 05 Проект: Пробвайте 02 Измервателен инструмент

Напишете програма, която показва каква част от пътуването е измината при достигане на всеки един от градовете.

Ученикът трябва да създаде форма подобна на следната:



Ученикът трябва да промени кода от шаблона по следния начин:

```
    ' Each radio button is 83 out of 1000 units from the
    ' previous one. The stuednt assigns an appropriate
    ' number to show the distance from the start at point 0

    Private Sub RadioButton1_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton1.CheckedChanged
        VScrollBar1.Value = 0
    End Sub

    Private Sub RadioButton2_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton2.CheckedChanged
        VScrollBar1.Value = 83
    End Sub

    Private Sub RadioButton3_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton3.CheckedChanged
```

```
        VScrollBar1.Value = 166
    End Sub

    Private Sub RadioButton4_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton4.CheckedChanged
        VScrollBar1.Value = 250
    End Sub

    Private Sub RadioButton5_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton5.CheckedChanged
        VScrollBar1.Value = 333
    End Sub

    Private Sub RadioButton6_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton6.CheckedChanged
        VScrollBar1.Value = 416
    End Sub

    Private Sub RadioButton7_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton7.CheckedChanged
        VScrollBar1.Value = 500
    End Sub

    Private Sub RadioButton8_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton8.CheckedChanged
        VScrollBar1.Value = 583
    End Sub

    Private Sub RadioButton9_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton9.CheckedChanged
        VScrollBar1.Value = 666
    End Sub

    Private Sub RadioButton10_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton10.CheckedChanged
        VScrollBar1.Value = 750
    End Sub

    Private Sub RadioButton11_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton11.CheckedChanged
        VScrollBar1.Value = 833
    End Sub

    Private Sub RadioButton12_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton12.CheckedChanged
        VScrollBar1.Value = 916
    End Sub
```

```
    Private Sub RadioButton13_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton13.CheckedChanged
        VScrollBar1.Value = 1000
    End Sub

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        End
    End Sub
```

Секция: 05 Проект: Можете ли? Цветя

Използвайте събитията, генерирани при преминаването на мишката върху обект, за да покажете или скриете изображения на цветя.

Ученикът трябва да създаде форма подобна на следната:

Ученикът трябва да промени кода от шаблона по следния начин:

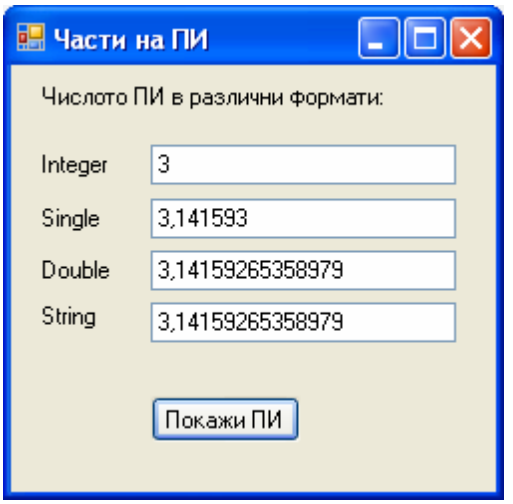
```
    Private Sub Label1_MouseHover(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Label1.MouseHover

        ' set the visible property of the picture to True
        ' when the mouse curser is on the name of the flower.
        ' Make the rest invisable.

        PictureBox1.Visible = True
        PictureBox2.Visible = False
        PictureBox3.Visible = False
        PictureBox4.Visible = False
    End Sub


    Private Sub Label2_MouseHover(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Label2.MouseHover

        ' set the visible property of the picture to True
        ' when the mouse curser is on the name of the flower.
        ' Make the rest invisable.

        PictureBox1.Visible = False
        PictureBox2.Visible = True
        PictureBox3.Visible = False
        PictureBox4.Visible = False
    End Sub

    Private Sub Label3_MouseHover(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Label3.MouseHover
```

```
        ' set the visible property of the picture to True
        ' when the mouse curser is on the name of the flower.
        ' Make the rest invisable.

        PictureBox1.Visible = False
        PictureBox2.Visible = False
        PictureBox3.Visible = True
        PictureBox4.Visible = False
    End Sub

    Private Sub Label4_MouseHover(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Label4.MouseHover

        ' set the visible property of the picture to True
        ' when the mouse curser is on the name of the flower.
        ' Make the rest invisable.

        PictureBox1.Visible = False
        PictureBox2.Visible = False
        PictureBox3.Visible = False
        PictureBox4.Visible = True
    End Sub
```

Секция: 06 Проект: Пробвайте 01 Части на Пи

Покажете числото Пи в различни формати.

Ученикът трябва да създаде форма подобна на следната:



Ученикът трябва да напише код, подобен на този:

```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        Dim myInteger As Integer
        Dim mySingle As Single
        Dim myDouble As Double
        Dim myString As String

        myInteger = Math.PI
        TextBox1.Text = myInteger
        mySingle = Math.PI
        TextBox2.Text = mySingle
        myDouble = Math.PI
        TextBox3.Text = myDouble
        myString = Math.PI
        TextBox4.Text = myString

    End Sub
```

Секция: 06 Проект: Пробвайте 02 Скачаща жаба

Използвайте изрази за присвояване, за да промените съдържанието на текстовите полета.

Ученикът трябва да създаде форма подобна на следната:

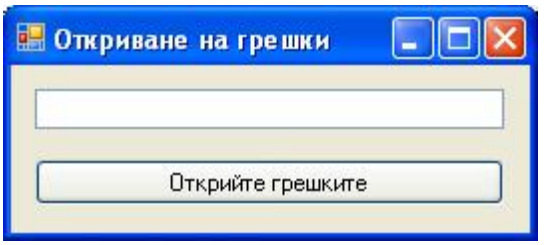
Ученикът трябва да напише код, подобен на този:

```
    ' each click event copies the content of a box to a new
    ' box then empties the old box

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        TextBox3.Text = TextBox1.Text
        TextBox1.Text = ""
    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        TextBox4.Text = TextBox2.Text
        TextBox2.Text = ""
    End Sub

    Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button3.Click
        TextBox5.Text = TextBox3.Text
        TextBox3.Text = ""
    End Sub

    Private Sub Button4_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button4.Click
        TextBox1.Text = TextBox4.Text
        TextBox4.Text = ""
    End Sub

    Private Sub Button5_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button5.Click
        TextBox2.Text = TextBox5.Text
        TextBox5.Text = ""
    End Sub
```

Секция: 06 Проект: Можете ли? Откриване на грешки

Открийте бъговете(грешките) в написана програма. Използвайте шаблон 06.

Шаблонът изглежда по следния начин:



Ученикът трябва да промени кода от шаблона по следния начин:

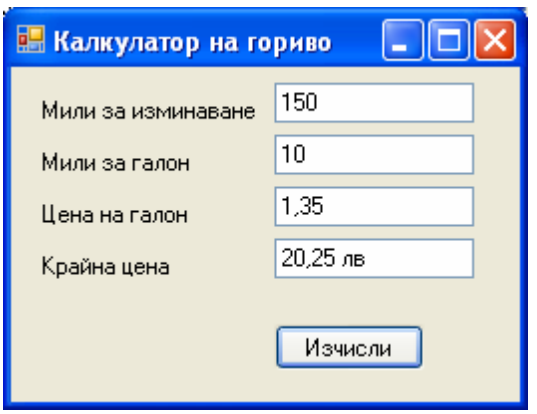
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' the line in error has been turned into a comment
        ' the correct line is below

        'Dim myString As Strin
        Dim myString As String

        'Dim myInteger As Intger
        Dim myInteger As Integer

        'Dim mySingle As Sinle
        Dim mySingle As Single

        'Dim myBoolean As Bulean
        Dim myBoolean As Boolean

        ' the following line is correct
        Dim MyColor As System.Drawing.Color

        'MyClr = System.Drawing.Color.Blue
        MyColor = System.Drawing.Color.Blue

        'TextBox1.Text = John Smith
        TextBox1.Text = "John Smith"

        'TextBox1.Text = TextBox1.ForeColor
        TextBox1.Text = "The text property must be a string"

        'myInteger = "ABC"
        myInteger = 123

        'myBoolean = 27
        myBoolean = True

        'MsgBox.Show("The Splat program is working.")
```

```
        MessageBox.Show("The Splat program is working.")
    End Sub
```

Секция: 07 Проект: Пробвайте 01 Цена на бензин

Пресметнете цената на бензина.

Ученикът трябва да създаде форма подобна на следната:



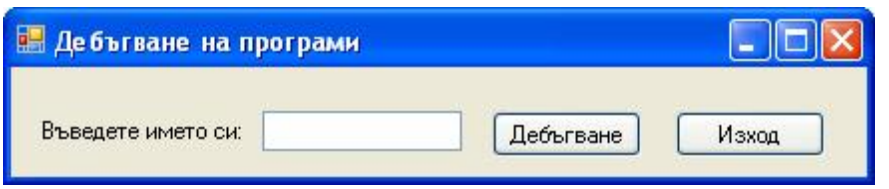
Ученикът трябва да напише код, подобен на този:

```
    Private Sub button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles button1.Click

        Dim MTG As Single    ' miles to go
        Dim MPG As Single    ' miles per gallon
        Dim CPG As Single    ' cost per gallon
        Dim TC As Single     ' total cost

        ' retrieve values from form

        MTG = TextBox1.Text
        MPG = TextBox2.Text
        CPG = TextBox3.Text

        ' calculate total cost

        TC = (MTG / MPG) * CPG

        ' format total cost for display

        TextBox4.Text = TC
        TextBox4.Text = FormatCurrency(TextBox4.Text)

    End Sub
```

Секция: 07 Проект: Пробвайте 02 Дебъгване на програма

Използвайте средствата на Visual Studio.NET за дебъгване. Шаблон 02 от секция 07 съдържа написана програма.

Шаблонът притежава форма, подобна на следната:



Правилните отговори са:

Ученикът трябва да отговори на 3 въпроса.

1. Каква стойност попълнихте в текстовото поле на формата?

   Името на ученика.

2. Каква е последната стойност на променливата AnswerOne?

   hello

3. Каква е последната стойност на променливата AnswerTwo?

   Името на ученика – записано в обратен ред.

   Например: Ако ученикът въведе в текстовото поле John (въпрос1), то отговорът на въпрос 3 е: nhoJ

Кодът за дебъгване умишлено е неясен, което ще накара ученика да използва средствата за дебъгване, вместо да търси отговор на въпросите, прочитайки кода. Кодът изглежда по следния начин:

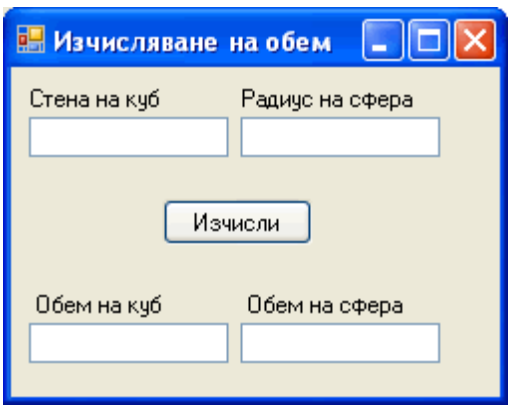
```
    Dim AnswerOne As String = "This line of code has net yet run."
    Dim AnswerTwo As String = "This line of code has net yet run."
    Dim Int1 As Integer = 1
    Dim Int2 As Integer = 2
    Dim Int3 As Integer = 3
    Dim Work1 As String = "the quick brown fox jumped over the lazy
dog"
    Dim Work2 As String = ""
    Dim Work3 As String = ""
    Dim Work4 As String = ""
```

```
    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        End
    End Sub

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' You are expected to use the debugging techniques
        ' you learned in Unit 8 to identify the FINAL values
        ' contained in the variables called AnswerOne and AnswerTwo
        ' The code is intentionally obscure so that you will
        ' use the debugging tools instead of trying to answer
        ' the questions by following the code

        AnswerOne = Mid(Work1, 2, 2) & Mid(Work1, Int3 * 11 + 4, 1) &
Mid(Work1, Int3 ^ 3 + Int2 * 5, 1) & Mid(Work1, Int2 * 6 + Int1, Int1)
        TextBox1.Text = Trim(TextBox1.Text)
        Work3 = ""
        For Int3 = TextBox1.Text.Length To Int1 Step -1
            Work3 = Work3 & Mid(TextBox1.Text, Int3, 1)
        Next
        Work3 = Work3 & Work2 & Work1
        Work4 = Mid(Work3, Int2 - Int1, TextBox1.Text.Length)
        AnswerTwo = Work4

        ' write down the value you entered in the text box.
        ' write down the value of AnswerOne
        ' write down the value of AnswerTwo

    End Sub
```

Секция: 07 Проект: Можете ли? Калкулатор за изчисляване на обем

Калкулатор за изчисляване на обем на куб и сфера.

Формата изглежда като тази:



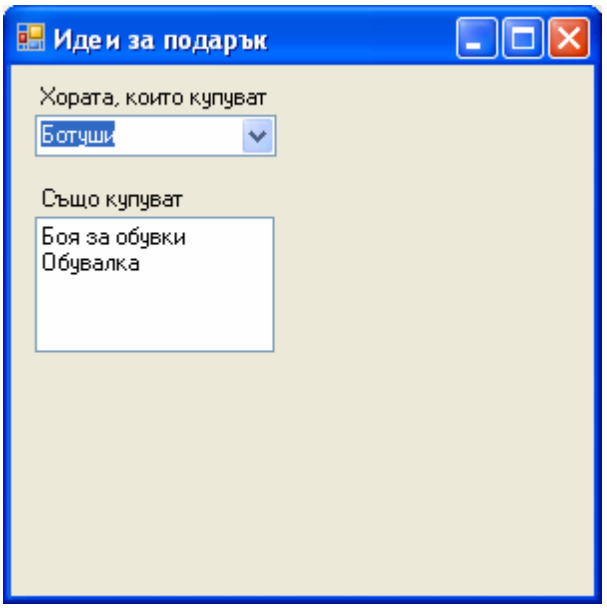
Ученикът трябва ад напише код като този:

```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        CubeSide = Val(TextBox1.Text)
        ' calculate the cube volue
        TextBox3.Text = CubeSide * CubeSide * CubeSide
        ' alternative way to calcluate
        TextBox3.Text = CubeSide ^ 3

        SphereRadius = Val(TextBox2.Text)
        ' calculate the sphere volue
        TextBox4.Text = (4 / 3) * 3.14 * SphereRadius * SphereRadius *
SphereRadius
        ' alternative way to calcluate
        TextBox4.Text = (4 / 3) * 3.14 * SphereRadius ^ 3

    End Sub
```

Секция: 08 Проект: Пробвайте 01 Идеи за подарък

Предложете идеи за подаръци на купувачите.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

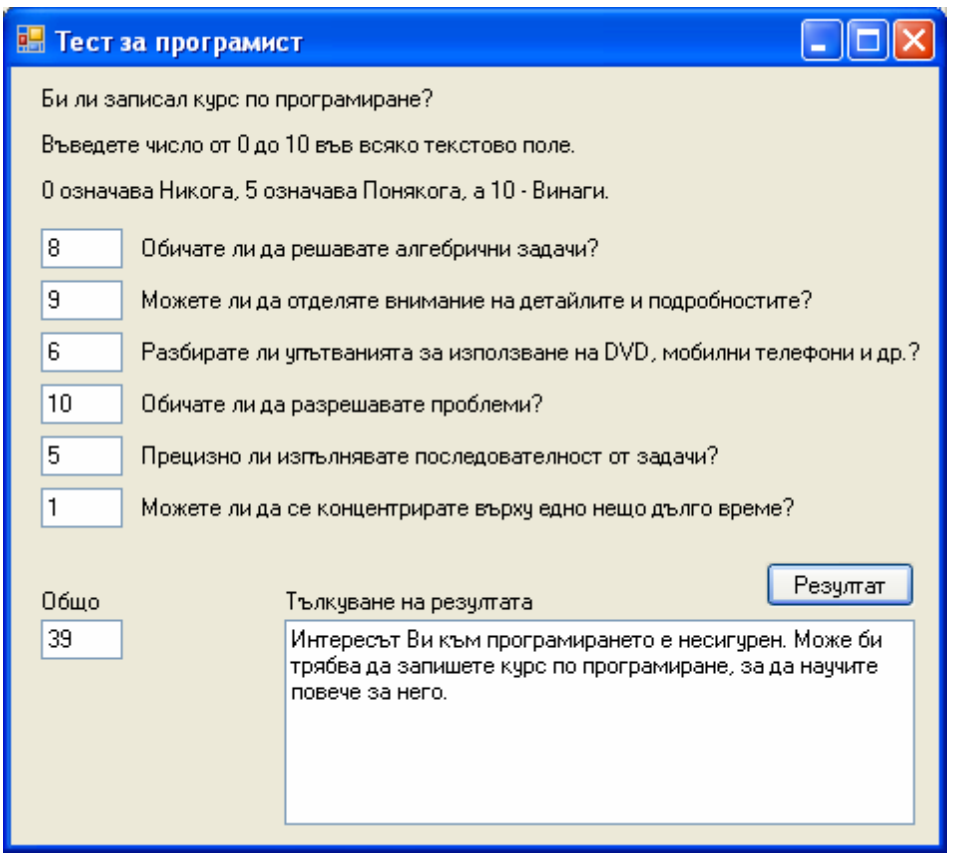
```
    Private Sub ComboBox1_SelectedIndexChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
ComboBox1.SelectedIndexChanged

        TextBox1.Text = ""

        'technique 1 - recommended
        ' provide alternatives based on the index
        ' number of the item selected

        If ComboBox1.SelectedIndex = 0 Then
            TextBox1.Text = "Snakeskin Hat Band" & vbNewLine & "Bolero
Tie"
        End If
        If ComboBox1.SelectedIndex = 1 Then
            TextBox1.Text = "Armadillo Hide Boot Polish" & vbNewLine &
"Easy Off Boot Jack"
        End If
        If ComboBox1.SelectedIndex = 2 Then
            TextBox1.Text = "Secret Gold Mine Map" & vbNewLine &
"Genuine Gold Ore"
        End If
        If ComboBox1.SelectedIndex = 3 Then
            TextBox1.Text = "Engraved Pencil" & vbNewLine & "Big as
Texas T-Shirt"
        End If
```

```
        If ComboBox1.SelectedIndex = 4 Then
            TextBox1.Text = "Panhandle Chili" & vbNewLine & "Tornado
Hot Sauce"
        End If


        'technique 2 - not as good because it requires
        ' accurate spelling

        If ComboBox1.SelectedItem = "Ten Gallon Hat" Then
            TextBox1.Text = "Snakeskin Hat Band" & vbNewLine & "Bolero
Tie"
        End If
        If ComboBox1.SelectedItem = "Boots" Then
            TextBox1.Text = "Armadillo Hide Boot Polish" & vbNewLine &
"Easy Off Boot Jack"
        End If
        If ComboBox1.SelectedItem = "Stuffed Jackalope" Then
            TextBox1.Text = "Secret Gold Mine Map" & vbNewLine &
"Genuine Gold Ore"
        End If
        If ComboBox1.SelectedItem = "Post Cards" Then
            TextBox1.Text = "Engraved Pencil" & vbNewLine & "Big as
Texas T-Shirt"
        End If
        If ComboBox1.SelectedItem = "Chili Peppers" Then
            TextBox1.Text = "Panhandle Chili" & vbNewLine & "Tornado
Hot Sauce"
        End If

    End Sub
```

Секция: 08 Проект: Пробвайте 02 Мотивационна програма

Напишете обзорна програма, за да подпомогнете други ученици във взимането на решение за изучаване на курса по програмиране.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

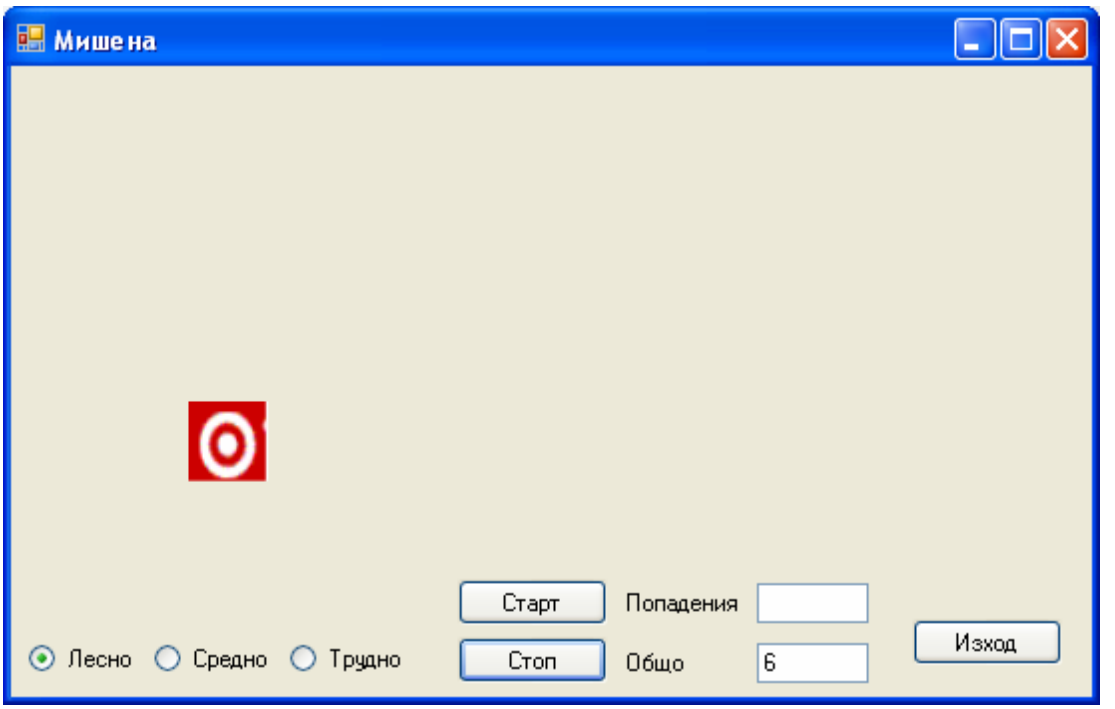
```
    Dim TotalPoints As Integer = 0

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' add the points entered for all questions

        TotalPoints = Val(TextBox1.Text) + Val(TextBox2.Text) +
Val(TextBox3.Text) + Val(TextBox4.Text) + Val(TextBox5.Text) +
Val(TextBox6.Text)
        TextBox7.Text = TotalPoints

        ' choose a response based on the totalpoints

        If TotalPoints > 40 Then
```

```
            TextBox8.Text = "You are an excellent candidate for a
career in programming. We recommend that you take a programming
course."
        End If
        If TotalPoints > 19 And TotalPoints < 40 Then
            TextBox8.Text = "Your aptitude for programming is
uncertain. Perhaps you should take a programming course to learn more
about programming."
        End If
        If TotalPoints < 20 Then
            TextBox8.Text = "You should consider a different career
path. Programming may not be for you. Perhaps a business, history, or
political science course would be a better match."
        End If

    End Sub
```

Секция: 08 Проект: Можете ли? Мишена

Напишете игра, в която трябва да се уцели подвижен обект чрез щракване върху него.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

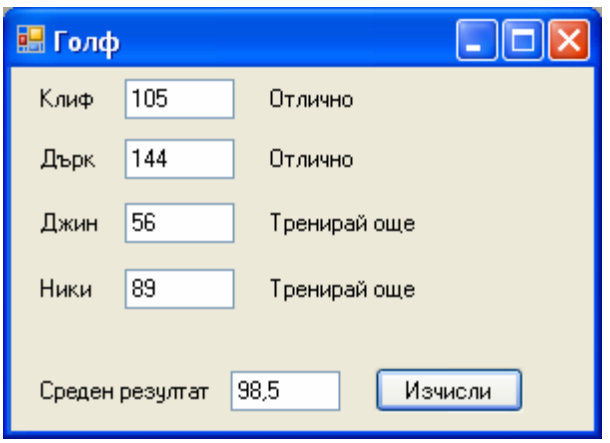
```
    Dim Hits As Integer = 0    ' total successful hits
    Dim Total As Integer = 0   ' total attempts

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' set speed and size to an easy level
        If RadioButton1.Checked = True Then
            Timer1.Interval = 900
            PictureBox1.Width = 40
            PictureBox1.Height = 40
        End If

        ' set speed and size to a medium level
        If RadioButton2.Checked = True Then
            Timer1.Interval = 850
            PictureBox1.Width = 35
            PictureBox1.Height = 35
        End If

        ' set speed and size to a hard level
```

```
        If RadioButton3.Checked = True Then
            Timer1.Interval = 800
            PictureBox1.Width = 30
            PictureBox1.Height = 30
        End If

        ' initialize counter
        Hits = 0
        Total = 0

        'start the timer for the game
        Timer1.Enabled = True
    End Sub

    Private Sub Timer1_Tick(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Timer1.Tick

        ' generate a random target location
        ' (X and Y coordinates)
        Dim MyRandomGenerator As System.Random
        MyRandomGenerator = New System.Random
        Dim RandomX As Integer
        Dim RandomY As Integer
        RandomX = MyRandomGenerator.Next(1, 550)
        RandomY = MyRandomGenerator.Next(1, 250)
        PictureBox1.SetBounds(RandomX, RandomY, Me.Width, Me.Height,
System.Windows.Forms.BoundsSpecified.Location)

        ' add 1 to the attempts
        Total = Total + 1
        TextBox2.Text = Total

    End Sub

    Private Sub PictureBox1_Click(ByVal sender As System.Object, ByVal
e As System.EventArgs) Handles PictureBox1.Click

        ' when the picture box with the target is clicked,
        ' update the count of successes
        Hits = Hits + 1
        TextBox1.Text = Hits

    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click

        ' stop the game by turning off the timer
        Timer1.Enabled = False
    End Sub

    Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button3.Click

        End

    End Sub
```

Секция: 09 Проект: Пробвайте 01 Резултати от игра на голф

Изчислете резултата от игра на голф за 4 играчи.

Ученикът трябва да проектира форма, която изглежда като тази:



Ученикът трябва да напише код като този:

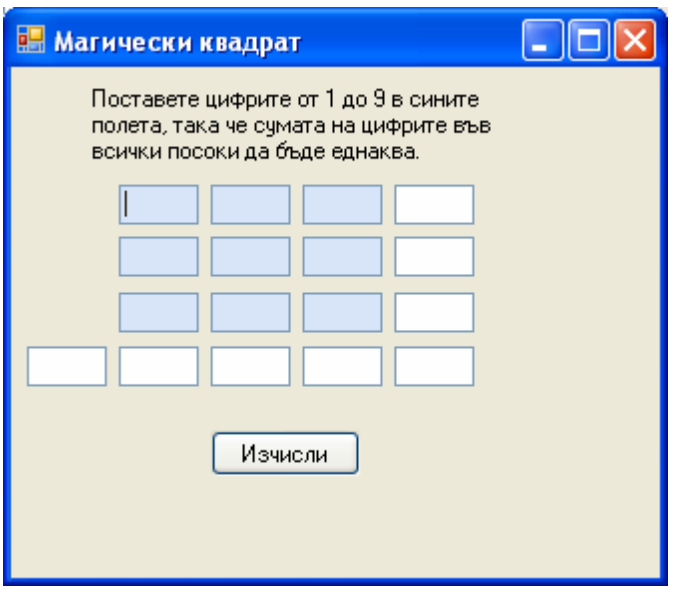
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim Average As Single

        ' calculate the average of the 4 golf scores
        Average = (Val(TextBox1.Text) + Val(TextBox2.Text) +
Val(TextBox3.Text) + Val(TextBox4.Text)) / 4
        TextBox5.Text = Average

        ' compare each golfer's score to the average.
        ' write one message for scoring below average
        ' and another for being over average
        If Val(TextBox1.Text) < Average Then
            Label6.Text = "Well done"
        Else
            Label6.Text = "Keep Practicing"
        End If

        If Val(TextBox2.Text) < Average Then
            Label7.Text = "Well done"
        Else
            Label7.Text = "Keep Practicing"
        End If

        If Val(TextBox3.Text) < Average Then
            Label8.Text = "Well done"
        Else
            Label8.Text = "Keep Practicing"
        End If

        If Val(TextBox4.Text) < Average Then
```

```
            Label9.Text = "Well done"
        Else
            Label9.Text = "Keep Practicing"
        End If
    End Sub
```

Секция: 09 Проект: Пробвайте 02 Магически квадрат

Създайте магически квадрат с размер 3 x 3.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

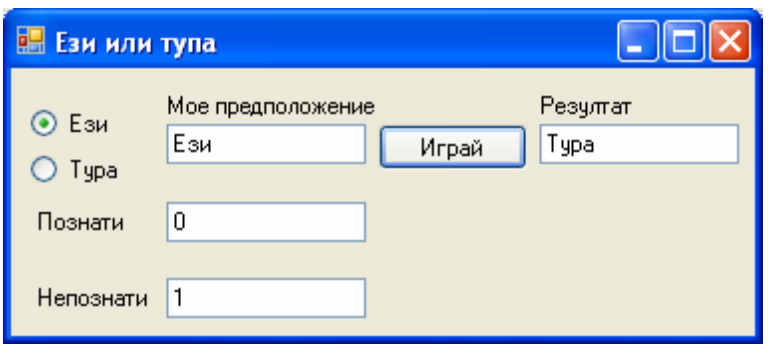
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' sum each row, column, and diagonal
        ' place the total in the corresponding box
        TextBox10.Text = Val(TextBox3.Text) + Val(TextBox5.Text) +
Val(TextBox7.Text)
        TextBox11.Text = Val(TextBox1.Text) + Val(TextBox4.Text) +
Val(TextBox7.Text)
        TextBox12.Text = Val(TextBox2.Text) + Val(TextBox5.Text) +
Val(TextBox8.Text)
        TextBox13.Text = Val(TextBox3.Text) + Val(TextBox6.Text) +
Val(TextBox9.Text)
        TextBox14.Text = Val(TextBox1.Text) + Val(TextBox5.Text) +
Val(TextBox9.Text)
        TextBox15.Text = Val(TextBox7.Text) + Val(TextBox8.Text) +
Val(TextBox9.Text)
        TextBox16.Text = Val(TextBox4.Text) + Val(TextBox5.Text) +
Val(TextBox6.Text)
        TextBox17.Text = Val(TextBox1.Text) + Val(TextBox2.Text) +
Val(TextBox3.Text)

        ' check to see if all rows, columns, and
        ' diagonals are exactly 15
        ' if yes, declare a winner
        ' if no then see if the total is more than 45
        ' because if it is then a number larger than 9 was entered.
```

```
        If (Val(TextBox10.Text) = 15 And _
            Val(TextBox11.Text) = 15 And _
            Val(TextBox12.Text) = 15 And _
            Val(TextBox13.Text) = 15 And _
            Val(TextBox14.Text) = 15 And _
            Val(TextBox15.Text) = 15 And _
            Val(TextBox16.Text) = 15 And _
            Val(TextBox17.Text) = 15) Then
            Label2.Text = "You win!!!!"
        ElseIf (Val(TextBox11.Text) + Val(TextBox12.Text) +
Val(TextBox13.Text) <> 45) Then
            Label2.Text = "Only the numbers 1 - 9 may be used only once
each."
        Else
            Label2.Text = "Try again."
        End If

    End Sub
```

Секция: 09 Проект: Можете ли? Ези или тура

Компютърът подхвърля монета.

Формата изглежда като тази:



Ученикът трябва ад напише код като този:

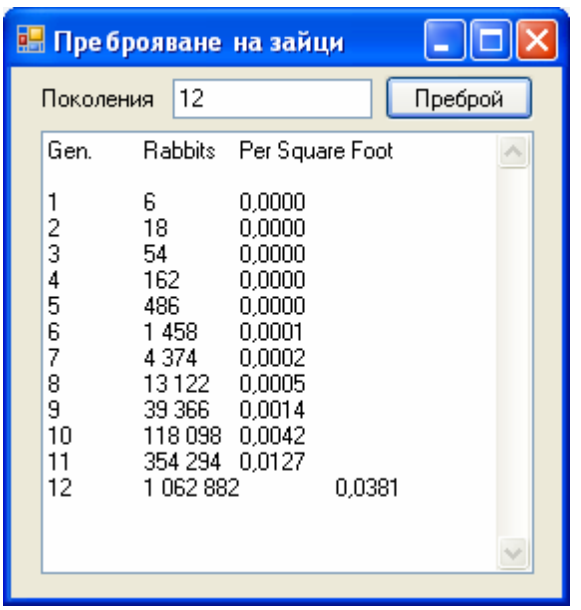
```
    Dim RanNum As Integer = 0  ' stores generated random number
    Dim Wins As Integer = 0    ' counts wins
    Dim Losses As Integer = 0  ' counts losses

    Private Sub RadioButton1_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton1.CheckedChanged

        ' sets players choice to Heads
        If RadioButton1.Checked = True Then
            TextBox1.Text = "Heads"
        End If

    End Sub

    Private Sub RadioButton2_CheckedChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
RadioButton2.CheckedChanged

        ' sets players choice to Tails
        If RadioButton2.Checked = True Then
            TextBox1.Text = "Tails"
        End If

    End Sub

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        Dim MyRandomGenerator As System.Random
        MyRandomGenerator = New System.Random
        Dim RanNum As Integer

        ' Generate random integer value between 0 and 2,
```

```
        ' - not including end point of 2.
        RanNum = MyRandomGenerator.Next(0, 2)

        ' 0 is Heads for computer, 1 is tails
        If RanNum = 0 Then
            TextBox2.Text = "Heads"
        ElseIf RanNum = 1 Then
            TextBox2.Text = "Tails"
        End If

        ' compare - a match is a win
        If TextBox1.Text = TextBox2.Text Then
            Wins = Wins + 1
        Else
            Losses = Losses + 1
        End If

        ' report wins and losses
        TextBox3.Text = Wins
        TextBox4.Text = Losses

    End Sub
```

Секция: 10 Проект: Пробвайте 01 Преброяване на зайци

Как ще нараства популацията на зайците с всяко поколение?

Ученикът трябва да проектира форма подобна на тази:



Ученикът трябва да напише код като този:

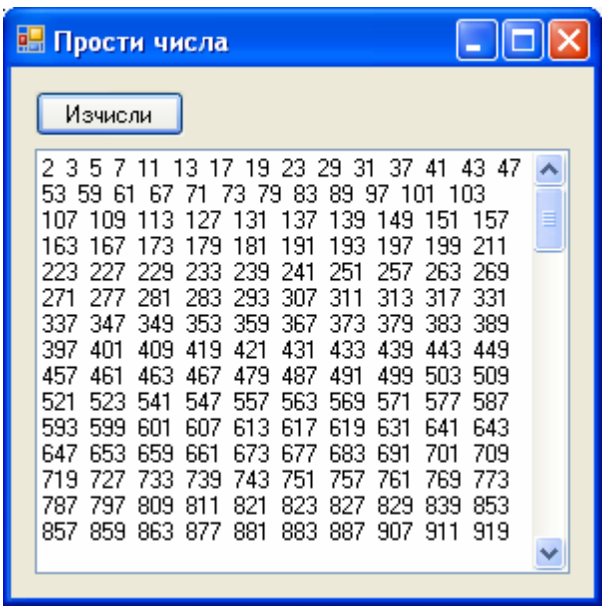
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        Dim Gens As Integer = 0       ' counts generations of rabbits
        Dim Rabbits As Double = 0     ' number of rabbits
        Dim SqFt As Int64 = 0         ' square feet of rabbit territory
        Dim RabbitsPerFoot As Single ' rabbits per square foot
        Dim k As Integer = 0          ' loop counter
        Dim EndLoop As Integer        ' how many times to loop

        ' the rabbit territory is defined as 1 square mile
        ' calculated how many square feet in 1 square mile
        SqFt = 5280 * 5280
        EndLoop = Val(TextBox1.Text)

        ' put titles in the text box
        TextBox2.Text = "Gen." & vbTab & "Rabbits" & vbTab & "Per
Square Foot" & vbNewLine & vbNewLine

        ' start with two rabbits
        Rabbits = 2


' (continued on next page)
```

```
        For k = 1 To EndLoop
            ' add a new generation of rabbits to those
            ' already on hand
            Rabbits = Rabbits + (Rabbits * 2)
            RabbitsPerFoot = Rabbits / SqFt
            TextBox2.Text = TextBox2.Text & k & vbTab & Format(Rabbits,
"###,###,###,###,###,###,##0") & vbTab & Format(RabbitsPerFoot,
"###,##0.0000") & vbNewLine
        Next

    End Sub
```

Секция: 10 Проект: Пробвайте 02 Прости числа

Изчислете простите числа.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

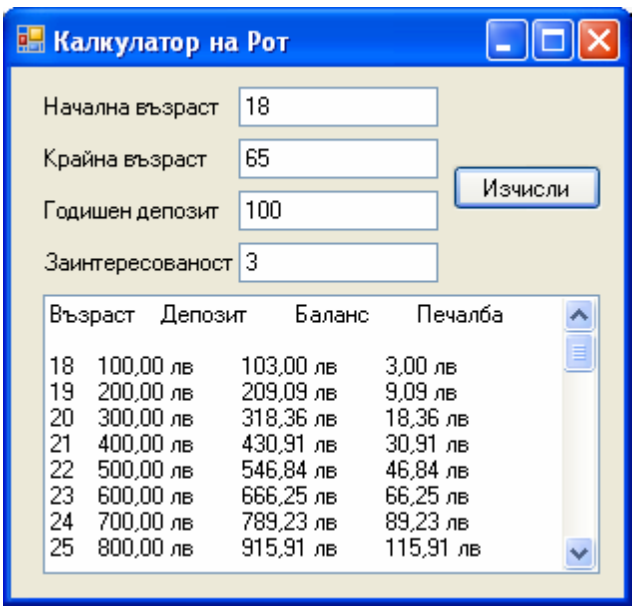
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim PNum As Integer           ' prime number
        Dim DivNum As Integer         ' number divided into prime
        Dim Remainder As Single       ' remainder of the division
        Dim PrimeFlag As String = "Y" ' Y until the number is
        '                               proven to not be prime

        ' outside loop variable is the number being checkd
        For PNum = 2 To 5000
            ' flag to keep track of status of number being checked
            ' assume prime until proven otherwise
            PrimeFlag = "Y"
            ' inside loop to divide number being checked by every
possible divisor
            ' do not divide potential prime by itself
            For DivNum = 2 To PNum - 1
                Remainder = PNum Mod DivNum
                ' if remainder is zero then the number divided evenly
                If Remainder = 0 Then
                    PrimeFlag = "N"
                End If
            Next
            ' add prime to list
            If PrimeFlag = "Y" Then
                TextBox1.Text = TextBox1.Text & PNum & "  "
```

```
            End If
        Next

    End Sub
```

Секция: 10 Проект: Можете ли? Калкулатор на Рот

Напишете калкулатор на Рот.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

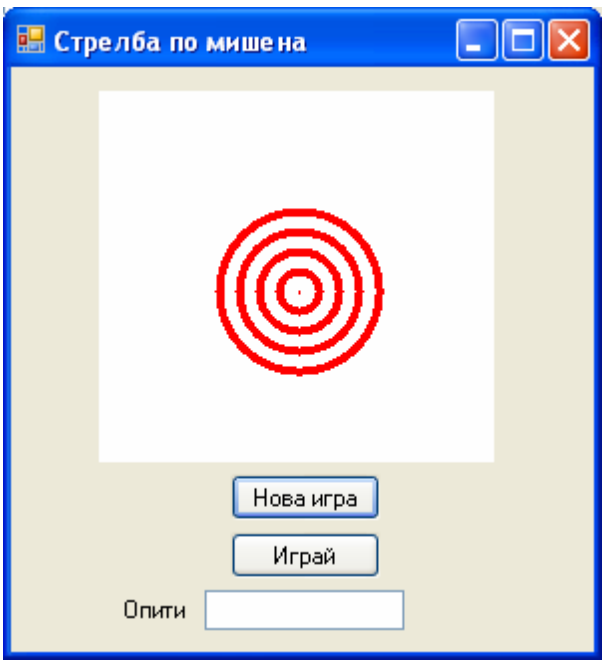
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' define and initialize all variables
        Dim k As Integer = 0            ' loop counter variable
        Dim LoopStart As Integer = 0
        Dim LoopStop As Integer = 0
        Dim TotalDeposits As Single = 0 ' total of all deposits w/o
interest
        Dim AnnualDeposit As Single = 0 ' amount deposited in one year
        Dim InterestRate As Single = 0  ' entered without a decimal
        Dim IRAAccount As Single = 0    ' total money including
deposits and interest
        Dim Profit As Single = 0        ' total minus deposits

        ' create titles in text box
        TextBox5.Text = "Age" & "    " & "Deposits" & "    " & "    " &
"IRA Balance" & "    " & "    " & "Profit" & vbNewLine & vbNewLine

        ' set variables to input values
        LoopStart = Val(TextBox1.Text)
        LoopStop = Val(TextBox2.Text)
        AnnualDeposit = Val(TextBox3.Text)
        ' convert interest rate to decimal form
        InterestRate = Val(TextBox4.Text) / 100
```

```
        ' loop from the age when saving starts to the
        ' age when saving stops
        For k = LoopStart To LoopStop
            ' add the annual deposit to total deposits
            TotalDeposits = TotalDeposits + AnnualDeposit
            ' add the annual deposit to the account
            IRAAccount = IRAAccount + AnnualDeposit
            ' add interest on the entire account
            IRAAccount = IRAAccount * (1 + InterestRate)
            'calculate profit as total minus deposits
            Profit = IRAAccount - TotalDeposits
            TextBox5.Text = TextBox5.Text & k & "    " &
FormatCurrency(TotalDeposits) & "    " & "    " &
FormatCurrency(IRAAccount) & "    " & "    " & FormatCurrency(Profit) &
vbNewLine
        Next

    End Sub
```

Секция: 11 Проект: Пробвайте 01 Стрелба по мишена

Опитай да уцелиш мишената.

Ученикът трябва да проектира форма като тази:



Ученикът трябва да напише код като този:

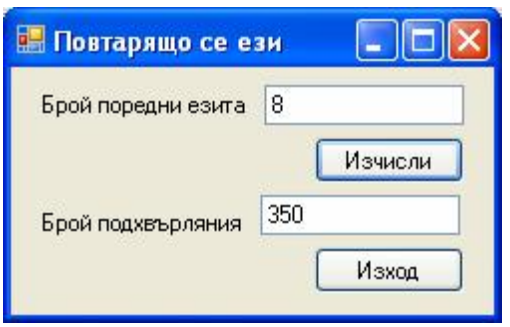
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' play the game

        Dim g As Graphics = PictureBox1.CreateGraphics  ' variable to
hold instance of creategraphics
        Dim X As Integer = 0       ' X coordiate of hit attempt
        Dim Y As Integer = 0       ' Y coordiate of hit attempt
        Dim Count As Integer       ' number of attempts
        Dim MyPen As New Pen(Color.Black)  ' color of pen used to draw
the hit attempt
        Dim RanNum As Integer      ' store random generated number
        Dim MyRandomGenerator As System.Random  ' variable to hold
instance of random number generator
        MyRandomGenerator = New System.Random   ' instance of random
number generator

        Count = 0
        ' keep looping until the coordinates of the hit attempt
        ' match the coordinates of the center point of the target
        ' at 100 by 100 in the picture box.
        Do Until X = 100 And Y = 100
            Count = Count + 1
```

```
            ' generate the X coordinate of the hit attempt
            X = MyRandomGenerator.Next(0, 200)
            ' generate the Y coordinate of the hit attempt
            Y = MyRandomGenerator.Next(0, 200)
            ' a circle 1 pixel in size at the X, Y location
            g.DrawEllipse(MyPen, New Rectangle(X, Y, 1, 1))
        Loop

        TextBox1.Text = Count

    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click

        ' redway the game board for a new game

        Dim g As Graphics = PictureBox1.CreateGraphics ' variable to
hold instance of creategraphics
        Dim MyPen As New Pen(Color.Red) ' the pen is red to start
        Dim X As Integer ' X coordinate
        Dim Y As Integer ' Y coordinate

        MyPen.Width = 1  ' set pin to 1 pixel in width
        MyPen.Color = Color.White ' set pen to white to paint the
entire game board

        ' draw a 1 pixel white dot at every location on the board
        For X = 0 To 200
            For Y = 0 To 200
                g.DrawEllipse(MyPen, New Rectangle(X, Y, 1, 1))
            Next
        Next

        MyPen.Width = 4 ' make the pen wider
        MyPen.Color = Color.Red ' make the pen red

        ' draw 4 concentric red circles for the target
        g.DrawEllipse(MyPen, New Rectangle(90, 90, 20, 20))
        g.DrawEllipse(MyPen, New Rectangle(80, 80, 40, 40))
        g.DrawEllipse(MyPen, New Rectangle(70, 70, 60, 60))
        g.DrawEllipse(MyPen, New Rectangle(60, 60, 80, 80))

        MyPen.Width = 1 ' make pen black

        ' draw a tiny black circle in the center of the target
        g.DrawEllipse(MyPen, New Rectangle(100, 100, 1, 1))

        TextBox1.Text = ""

    End Sub
```

Секция: 11 Проект: Пробвайте 02 Повтарящо се ези

Пребройте последователните еднакви хвърляния на монета.

Формата изглежда като тази:



The student will write code like this:

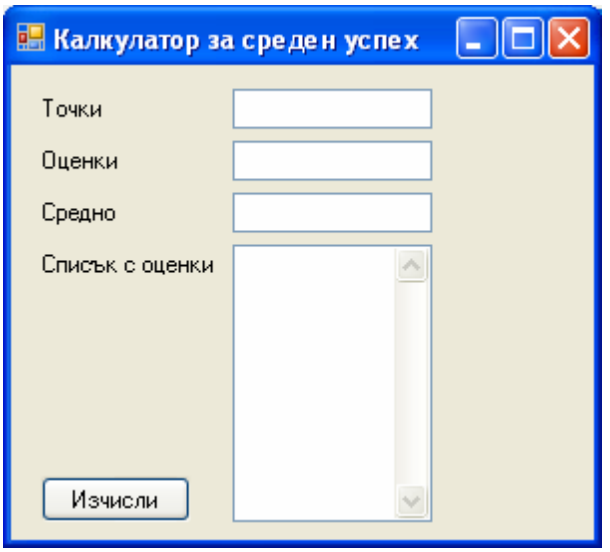
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        Dim InaRow As Integer = 0       ' how many in a row have been
found
        Dim Count As Integer = 0        ' attempts
        Dim RanNum As Integer = 0       ' hold random number
        Dim MyRandomGenerator As System.Random  ' hold an instance of
the random number generator
        MyRandomGenerator = New System.Random   ' create an instance of
the random number generator

        Count = 0
        InaRow = 0
        TextBox2.Text = ""

        ' loop until the number in a row equals the number desired
        Do Until InaRow = Val(TextBox1.Text)
            ' Generate random integer between 0 and 2
            ' not including 2.
            RanNum = MyRandomGenerator.Next(0, 2)

            ' increment attempts
            Count = Count + 1

            ' a random number of 1 is assumed to be heads
            ' so it adds to the number in a row
            If RanNum = 1 Then
                InaRow = InaRow + 1
            Else    ' else start over
                InaRow = 0
            End If

            ' to prevent a run-away program, stop after
            ' a half-million attempts
```

```
            If Count > 500000 Then
                MessageBox.Show("possible loop - 500,000 random numbers
processed - program is ending")
                Exit Sub
            End If
        Loop

        ' report how many tries it took
        TextBox2.Text = Count

    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click

        End

    End Sub
```

Секция: 11 Проект: Можете ли? Калкулатор за среден успех

Изчислете средния успех.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

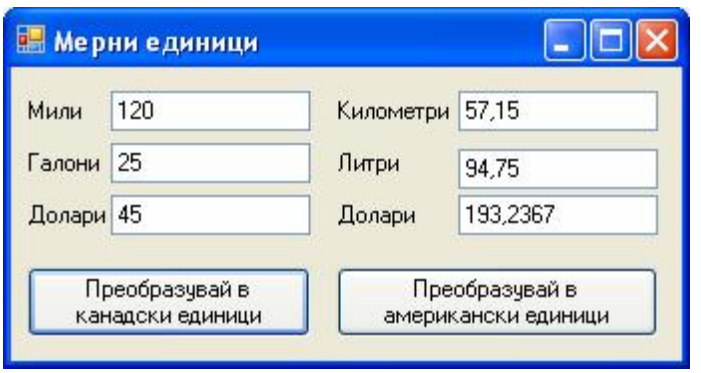
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        Dim GradeIn As String = "None Entered"  'one grade entered
        Dim GradePoints As Integer = 0  ' sums grade points (A = 4)
        Dim Grades As Integer = 0       ' counts how many grades
entered
        Dim GPA As Single = 0           ' grade point average

        ' loop until no grade is entered
        Do Until GradeIn = ""

            ' get one grade with an InputBox control
            GradeIn = InputBox("Enter A, B, C, D, or F", "Enter letter
grade", "")

            ' if the grade is empty then exit from the loop
            If GradeIn = "" Then
                Exit Do
            End If

            ' add the grade to the list
            TextBox4.Text = TextBox4.Text & GradeIn & "   "

            ' chaeck to see which grade
            ' assume they may be upper or lower case
            ' add the appropriate number of points to the total points
            ' add 1 to the count of grades
```

```
            If GradeIn = "A" Or GradeIn = "a" Then
                GradePoints = GradePoints + 4
                Grades = Grades + 1
            End If
            If GradeIn = "B" Or GradeIn = "b" Then
                GradePoints = GradePoints + 3
                Grades = Grades + 1
            End If
            If GradeIn = "C" Or GradeIn = "c" Then
                GradePoints = GradePoints + 2
                Grades = Grades + 1
            End If
            If GradeIn = "D" Or GradeIn = "d" Then
                GradePoints = GradePoints + 1
                Grades = Grades + 1
            End If
            If GradeIn = "F" Or GradeIn = "f" Then
                Grades = Grades + 1
            End If
        Loop

        ' have any grades been entered?
        ' if yes, calculate the numeric gradepoint
        If Grades = 0 Then
            MessageBox.Show("Enter at least one grade")
        Else
            TextBox1.Text = GradePoints
            TextBox2.Text = Grades
            TextBox3.Text = GradePoints / Grades
        End If

    End Sub
```

Секция: 12 Проект: Пробвайте 01 Мерни единици

Преобразувайте от и в канадски мерни единици.

Ученикът трябва да проектира форма като тази:



Ученикът трябва да напише код като този:

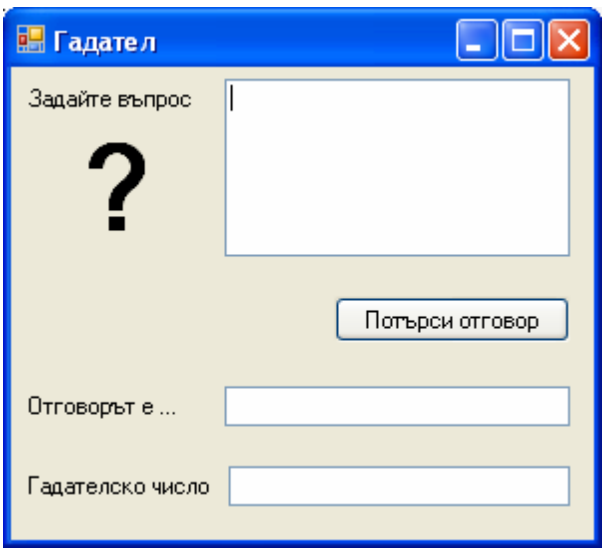
```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' call appropriate function to convert US to Canadian
        TextBox4.Text = MilesToKilometers(Val(TextBox1.Text))
        TextBox5.Text = GallonsToLiters(Val(TextBox2.Text))
        TextBox6.Text = DollarsToCanadianDollars(Val(TextBox3.Text))

    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click

        ' call appropriate function to convert Canadian to US
        TextBox1.Text = KilometersToMiles(Val(TextBox4.Text))
        TextBox2.Text = LitersToGallons(Val(TextBox5.Text))
        TextBox3.Text = CanadianDollarsToDollars(Val(TextBox6.Text))

    End Sub

    Private Function MilesToKilometers(ByVal Miles As Single)

        ' convert miles into kilos then return the resultng number
        Dim Kilos As Single
        Kilos = Miles / 0.621
        Return Kilos

    End Function

    Private Function GallonsToLiters(ByVal Gallons As Single)

        ' convert gallons into liters then return the resultng number
        Dim Liters As Single
        Liters = Gallons * 3.79
```

```
        Return Liters

    End Function

    Private Function DollarsToCanadianDollars(ByVal Dollars As Single)

        ' convert US dollars into Canadian dollars then return the
resultng number
        Dim CanadianDollars As Single
        CanadianDollars = Dollars * 1.27
        Return CanadianDollars

    End Function

    Private Function KilometersToMiles(ByVal Kilometers As Single)

        ' convert kilometers into miles then return the resultng number
        Dim Miles As Single
        Miles = Kilometers * 0.621
        Return Miles

    End Function

    Private Function LitersToGallons(ByVal Liters As Single)

        ' convert liters into gallons then return the resultng number
        Dim Gallons As Single
        Gallons = Liters / 3.79
        Return Gallons

    End Function

    Private Function CanadianDollarsToDollars(ByVal CanadianDollars As
Single)

        ' convert Canadian dolloars into US dollars then return the
resultng number
        Dim Dollars As Single
        Dollars = CanadianDollars / 1.27
        Return Dollars

    End Function
```

Секция: 12 Проект: Пробвайте 02 Гадател

Имайки предвид броя на гласните във въпроса, генерирайте отговор по случаен начин.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

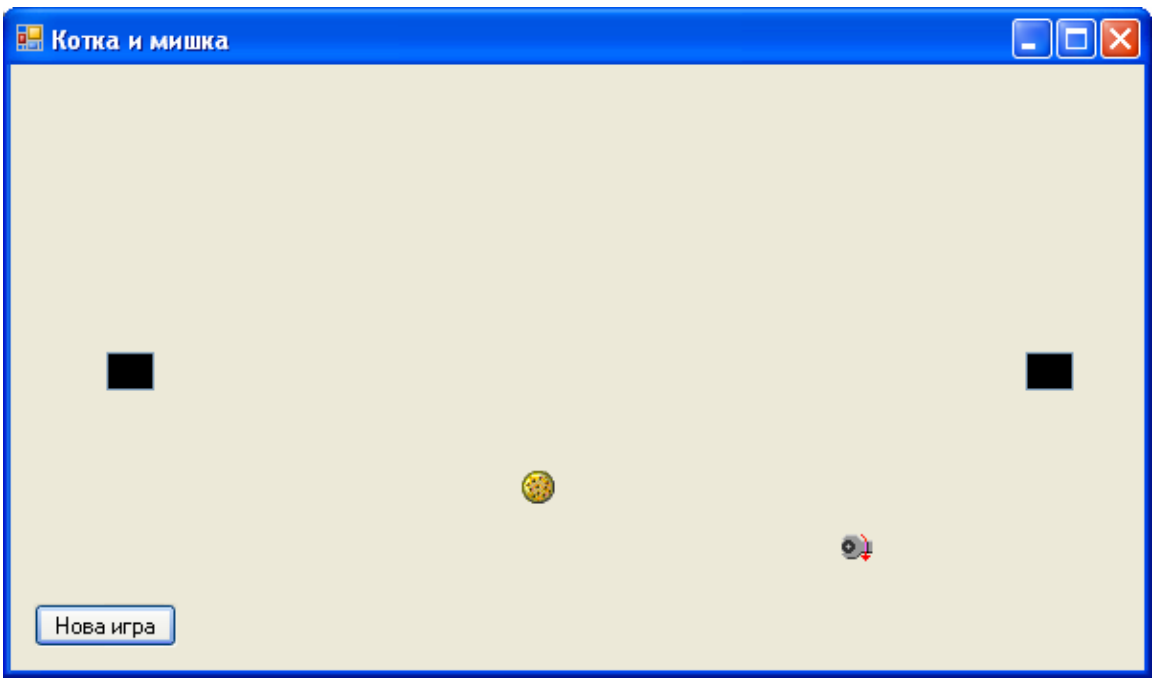
```
    Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load

        ' at form load, set the time to 2/3
        ' of one second then start it
        Timer1.Interval = 667
        Timer1.Start()

    End Sub

    Private Sub Timer1_Tick(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Timer1.Tick

        ' alternate the visable property of the label containing
        ' the question mark so it will blink on the form
        If Label1.Visible = True Then
            Label1.Visible = False
        Else
            Label1.Visible = True
        End If

    End Sub

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
```

```
        Dim TheQuestion As String = ""  ' holds the question being
asked
        Dim k As Integer = 0      ' loop counter variable
        Dim Count As Integer = 0  ' holds the count of the number of
vowals

        ' convert the question to all
        ' upper case to make counting easier
        ' eliminate leading and trailing blanks
        TheQuestion = TextBox1.Text
        TheQuestion = TheQuestion.ToUpper
        TheQuestion = TheQuestion.Trim


        ' loop until each letter has been chacked
        ' note that the first letter is in position zero
        ' so the loop goes from zero to the number of
        ' letters minus 1
        For k = 0 To TheQuestion.Length - 1
            If (TheQuestion.Substring(k, 1) = "A" _
                Or TheQuestion.Substring(k, 1) = "E" _
                Or TheQuestion.Substring(k, 1) = "I" _
                Or TheQuestion.Substring(k, 1) = "O" _
                Or TheQuestion.Substring(k, 1) = "U") Then
                Count = Count + 1
            End If
        Next

        'student answers will vary in number and
        ' details of selestion
        ' here are ange of counts generates the same answer
        If TheQuestion.Length = 0 Then
            TextBox2.Text = "What is your question?"
        ElseIf Count < 4 Then
            TextBox2.Text = "Sorry, the answer is NO"
        ElseIf Count >= 4 And Count < 8 Then
            TextBox2.Text = "Not very likely"
        ElseIf Count >= 8 And Count < 11 Then
            TextBox2.Text = "YES, it will happen"
        ElseIf Count >= 12 And Count < 15 Then
            TextBox2.Text = "Sorry, the answer is NO"
        ElseIf Count >= 16 And Count < 19 Then
            TextBox2.Text = "It is very likely to happen"
        ElseIf Count > 20 Then
            TextBox2.Text = "Your question is too long"
        End If

        ' show the count as if it is the ID of the
        ' fortune teller
        ' actually it helps in debugging
        TextBox3.Text = Count

    End Sub
```

Секция: 12 Проект: Можете ли? Котка и мишка

Котка гони мишка, докато мишката избяга..

Формата изглежда като тази:



Ученикът трябва да напише код като този:

```
    ' define variables here to make them visible
    ' to all sub programs
    Dim X As Integer = 0           ' X coordinate
    Dim Y As Integer = 0           ' Y coordinate
    Dim MouseXChg As Integer = 0   ' distance to move the mouse
    Dim MouseYChg As Integer = 0   ' distance to move the mouse
    Dim CatXChg As Integer = 0     ' distance to move the cat
    Dim CatYChg As Integer = 0     ' distance to move the cat

    Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load

        ' cat and mouse move based on code in a timer
        ' set an initial interval of 25 / 1000 second
        Timer1.Interval = 25

    End Sub

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

        ' set up a new game
```

```
        Dim MyRandomGenerator As System.Random ' hold an instance of
the random number generator
        MyRandomGenerator = New System.Random  ' create instance of the
random number generator

        ' Generate random value between 50 and 500
        ' for initial horizontal cat location
        X = MyRandomGenerator.Next(50, 500)
        ' Generate random value between 50 and 250
        ' for initial vertical cat location
        Y = MyRandomGenerator.Next(50, 250)
        ' place the picture of the cat onto the form
        Cat.Location = New Point(X, Y)

        ' set cat change values using the change function we created
        CatXChg = NewChg()
        CatYChg = NewChg()

        ' Generate random value between 50 and 500 for initial
horizontal mouse location
        X = MyRandomGenerator.Next(50, 500)
        ' Generate random value between 50 and 250 for initial vertical
mouse location

        Y = MyRandomGenerator.Next(50, 250)
        Mouse.Location = New Point(X, Y)

        ' set initial mouse change values
        MouseXChg = NewChg()
        MouseYChg = NewChg()

        'clear previous label text
        Label1.Text = ""

        'start timer
        Timer1.Start()

    End Sub

    Private Sub Timer1_Tick(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Timer1.Tick

        ' whenever the timer code is executed, move the critters

        ' first, set up for random number generation
        Dim MyRandomGenerator As System.Random
        MyRandomGenerator = New System.Random
        Dim Distance As Integer = 0

        ' change cat location
        X = Cat.Location.X + CatXChg
        Y = Cat.Location.Y + CatYChg
        Cat.Location = New Point(X, Y)

        ' change mouse location
        X = Mouse.Location.X + MouseXChg
        Y = Mouse.Location.Y + MouseYChg
```

```
        Mouse.Location = New Point(X, Y)

        'check for escape # 1 (left hole)
        ' the HowFar function, which the student must write,
        ' calculates the distance between two points
        Distance = HowFar(50, 150, Mouse.Location.X, Mouse.Location.Y)
        If Distance < 20 Then
            Timer1.Stop()
            Label1.Text = "Mouse escaped!"
        End If

        'check for escape # 2 (right hole)
        Distance = HowFar(530, 150, Mouse.Location.X, Mouse.Location.Y)
        If Distance < 20 Then
            Timer1.Stop()
            Label1.Text = "Mouse escaped!"
        End If

        'is mouse too close to cat? Then reverse mouse direction
        Distance = HowFar(Cat.Location.X, Cat.Location.Y,
Mouse.Location.X, Mouse.Location.Y)
        If Distance < 40 Then
            MouseXChg = 0 - MouseXChg
            MouseYChg = 0 - MouseYChg
        End If

        'check for cat catches mouse
        Distance = HowFar(Cat.Location.X, Cat.Location.Y,
Mouse.Location.X, Mouse.Location.Y)
        If Distance < 20 Then
            Timer1.Stop()
            Label1.Text = "Mouse caught!"
        End If

        'check for cat near left edge
        Distance = HowFar(0, Cat.Location.Y, Cat.Location.X,
Cat.Location.Y)
        If Distance < 20 Then
            CatXChg = 0 - CatXChg
            CatYChg = NewChg()
        End If

        'check for cat near right edge
        Distance = HowFar(600, Cat.Location.Y, Cat.Location.X,
Cat.Location.Y)
        If Distance < 20 Then
            CatXChg = 0 - CatXChg
            CatYChg = NewChg()
        End If

        'check for cat near top edge
        Distance = HowFar(Cat.Location.X, 0, Cat.Location.X,
Cat.Location.Y)
        If Distance < 20 Then
            CatYChg = 0 - CatYChg
            CatXChg = NewChg()
        End If
```

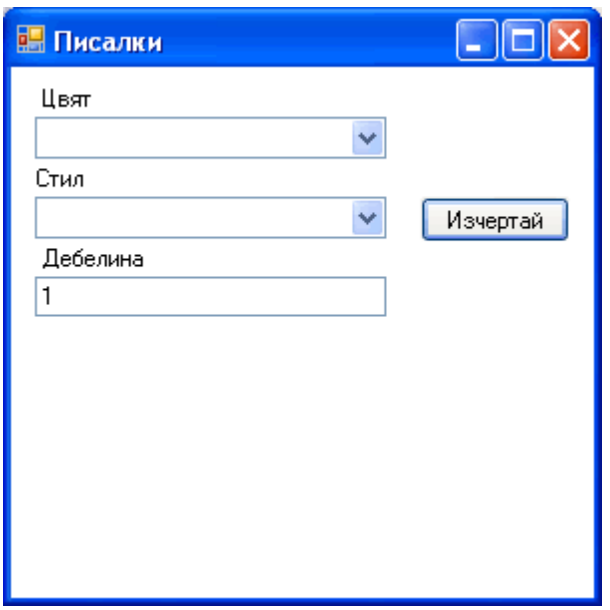
```
        'check for cat near bottom edge
        Distance = HowFar(Cat.Location.X, 300, Cat.Location.X,
Cat.Location.Y)
        If Distance < 20 Then
            CatYChg = 0 - CatYChg
            CatXChg = NewChg()
        End If

        'check for mouse near left edge
        Distance = HowFar(0, Mouse.Location.Y, Mouse.Location.X,
Mouse.Location.Y)
        If Distance < 20 Then
            MouseXChg = 0 - MouseXChg
            MouseYChg = NewChg()
        End If

        'check for mouse near right edge
        Distance = HowFar(600, Mouse.Location.Y, Mouse.Location.X,
Mouse.Location.Y)
        If Distance < 20 Then
            MouseXChg = 0 - MouseXChg
            MouseYChg = NewChg()
        End If

        'check for mouse near top edge
        Distance = HowFar(Mouse.Location.X, 0, Mouse.Location.X,
Mouse.Location.Y)
        If Distance < 20 Then
            MouseYChg = 0 - MouseYChg
            MouseXChg = NewChg()
        End If

        'check for mouse near bottom edge
        Distance = HowFar(Mouse.Location.X, 300, Mouse.Location.X,
Mouse.Location.Y)
        If Distance < 20 Then
            MouseYChg = 0 - MouseYChg
            MouseXChg = NewChg()
        End If

    End Sub

    Private Function HowFar(ByVal FirstX As Integer, ByVal FirstY As
Integer, ByVal SecondX As Integer, ByVal SecondY As Integer)

        ' the HowFar function
        ' calculates the distance between two points

        Dim DistanceBetween As Integer = 0

        ' calculate distance using the formula for
        ' the hypotenuse of a right triangle
        DistanceBetween = Math.Sqrt(((FirstX - SecondX) ^ 2) + ((FirstY
- SecondY) ^ 2))
        Return DistanceBetween
```

```
End Function

Private Function NewChg()

    ' randomly calculates the direction of change,
    ' assigning 1 of 4 possible values

    Dim Change As Integer
    Dim MyRandomGenerator As System.Random
    MyRandomGenerator = New System.Random
    Dim RanNum As Integer = 0

    RanNum = MyRandomGenerator.Next(0, 4)

    If RanNum = 0 Then
        Change = -7
    ElseIf RanNum = 1 Then
        Change = -4
    ElseIf RanNum = 2 Then
        Change = 7
    Else
        Change = 4
    End If

    Return Change

End Function
```

Секция: 13 Проект: Пробвайте 01 Писалки

Създайте програма, която ще ви покаже различните характеристики на писалките.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

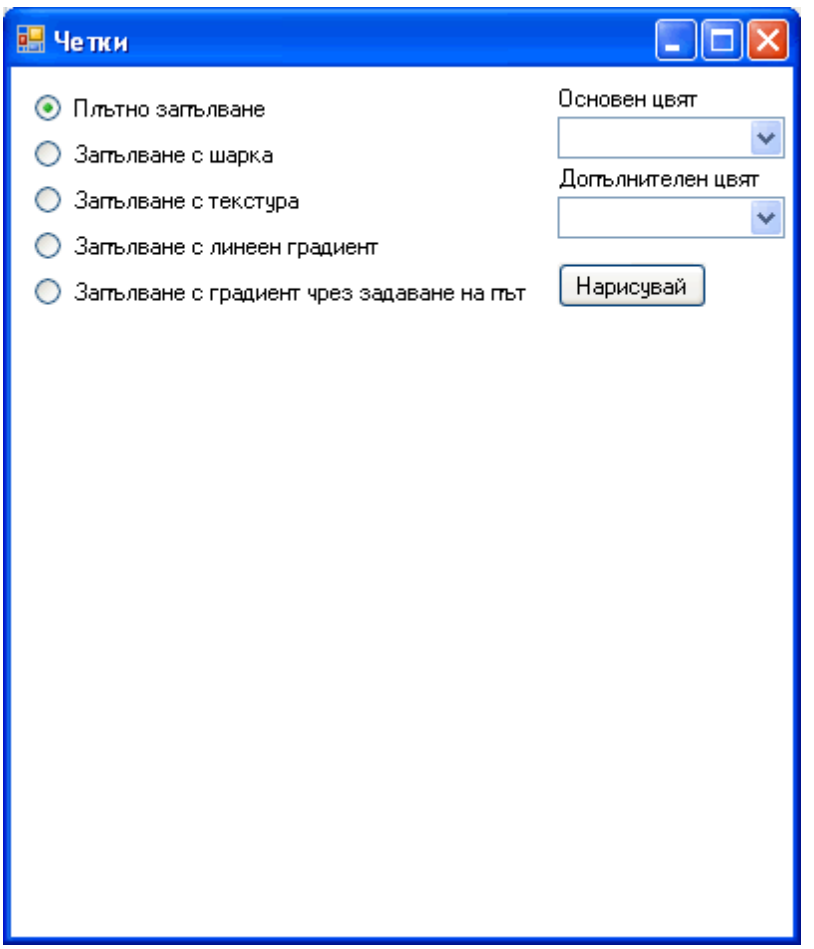
```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim g As Graphics
        g = Me.CreateGraphics
        g.Clear(Drawing.Color.White)
        Dim Color As System.Drawing.Color
        Select Case ComboBox1.SelectedIndex
            Case 0
                Color = Drawing.Color.Blue
            Case 1
                Color = Drawing.Color.Red
            Case 2
                Color = Drawing.Color.Green
            Case 3
                Color = Drawing.Color.Cyan
            Case 4
                Color = Drawing.Color.Magenta
            Case 5
                Color = Drawing.Color.Yellow
            Case 6
                Color = Drawing.Color.Purple
            Case 7
                Color = Drawing.Color.Brown
            Case Else
                Color = Drawing.Color.Black
        End Select
```

```
    Dim pen As New Drawing.Pen(Color, Val(TextBox1.Text))
    If ComboBox2.SelectedIndex = -1 Then
        pen.DashStyle = 0
    Else
        pen.DashStyle = ComboBox2.SelectedIndex
    End If
    g.DrawLine(pen, 50, 180, 250, 180)
End Sub
```

Секция: 13 Проект: Пробвайте 02 Четки

Създайте програма, която ще ви покаже различните характеристики на четките.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

```
Dim SelectRadioButton As Integer = 1

Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim g As Graphics
        g = Me.CreateGraphics
        g.Clear(Drawing.Color.White)

        Dim ColorA As System.Drawing.Color
        Select Case ComboBox1.SelectedIndex
            Case 0
                ColorA = Drawing.Color.Blue
            Case 1
                ColorA = Drawing.Color.Red
            Case 2
```

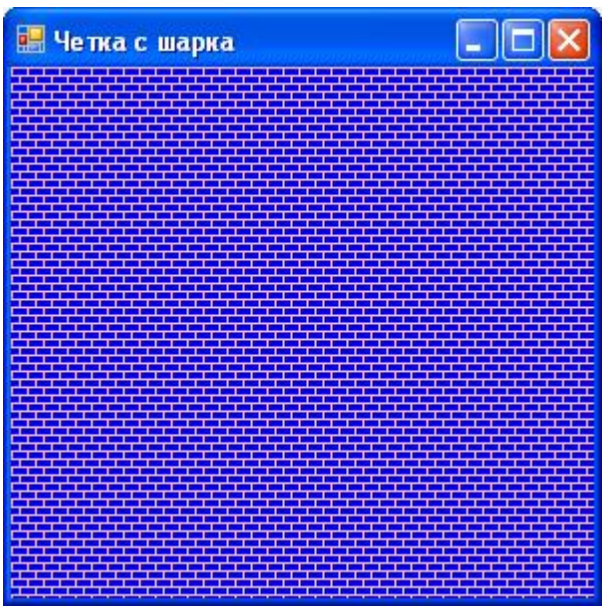
```
                ColorA = Drawing.Color.Green
            Case 3
                ColorA = Drawing.Color.Cyan
            Case 4
                ColorA = Drawing.Color.Magenta
            Case 5
                ColorA = Drawing.Color.Yellow
            Case 6
                ColorA = Drawing.Color.Purple
            Case 7
                ColorA = Drawing.Color.Brown
            Case Else
                ColorA = Drawing.Color.Black
        End Select

        Dim ColorB As System.Drawing.Color
        Select Case ComboBox2.SelectedIndex
            Case 0
                ColorB = Drawing.Color.Blue
            Case 1
                ColorB = Drawing.Color.Red
            Case 2
                ColorB = Drawing.Color.Green
            Case 3
                ColorB = Drawing.Color.Cyan
            Case 4
                ColorB = Drawing.Color.Magenta
            Case 5
                ColorB = Drawing.Color.Yellow
            Case 6
                ColorB = Drawing.Color.Purple
            Case 7
                ColorB = Drawing.Color.Brown
            Case Else
                ColorB = Drawing.Color.Black
        End Select

        Select Case SelectRadioButton
            Case 1
                Dim SolidBrush As New SolidBrush(ColorA)
                g.FillRectangle(SolidBrush, 10, 160, 260, 260)
            Case 2
                Dim HatchBrush As New HatchBrush(4, ColorA, ColorB)
                g.FillRectangle(HatchBrush, 10, 160, 260, 260)
            Case 3
                Dim MyImage As Image = Image.FromFile("email.gif")
                Dim TextureBrush As New TextureBrush(MyImage)
                g.FillRectangle(TextureBrush, 10, 160, 260, 260)
            Case 4
                Dim LinearGradientBrush As New LinearGradientBrush(New
Point(10, 10), New Point(40, 40), ColorA, ColorB)
                g.FillRectangle(LinearGradientBrush, 10, 160, 260, 260)
            Case 5
                Dim points() As Point = {New Point(10, 160), New
Point(10, 260), New Point(260, 260)}
                Dim PathGradientBrush As New PathGradientBrush(points)
                g.FillRectangle(PathGradientBrush, 10, 160, 260, 260)
```

```
        End Select
End Sub

Private Sub RadioButton1_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles RadioButton1.CheckedChanged
        If RadioButton1.Checked Then
            SelectRadioButton = 1
        End If
End Sub

Private Sub RadioButton2_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles RadioButton2.CheckedChanged
        If RadioButton2.Checked Then
            SelectRadioButton = 2
        End If
End Sub

Private Sub RadioButton3_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles RadioButton3.CheckedChanged
        If RadioButton3.Checked Then
            SelectRadioButton = 3
        End If
End Sub

Private Sub RadioButton4_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles RadioButton4.CheckedChanged
        If RadioButton4.Checked Then
            SelectRadioButton = 4
        End If
End Sub

Private Sub RadioButton5_CheckedChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles RadioButton5.CheckedChanged
        If RadioButton5.Checked Then
            SelectRadioButton = 5
        End If
End Sub
```

Секция: 13 Проект: Можете ли? Четката с шарка

При всяко щракване с левия бутон на мишката върху формата я запълвайте с четка, чийто стил се генерира по случаен начин.

Формата изглежда като тази:



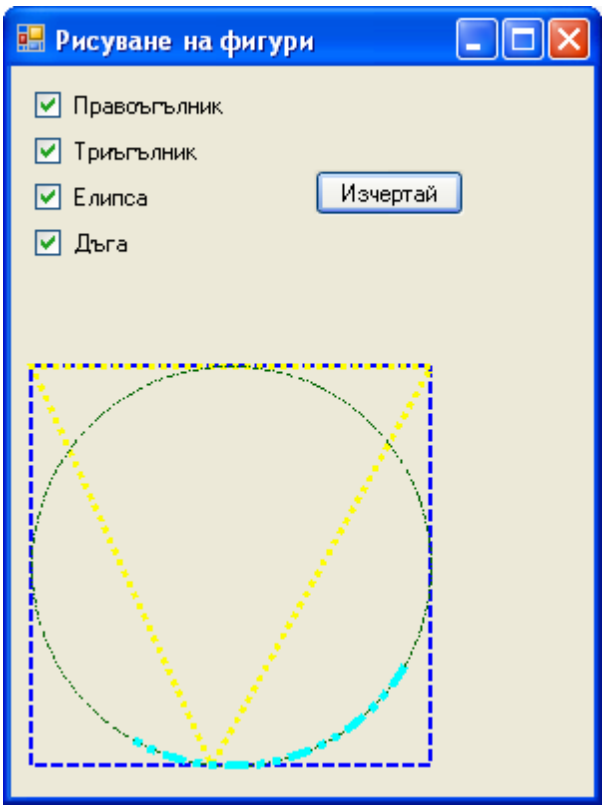
Ученикът трябва да напише код като този:

```
Private Sub Form1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Click
        Dim MyRandomGenerator As System.Random
        MyRandomGenerator = New System.Random
        Dim RanNum As Integer
        RanNum = MyRandomGenerator.Next(0, 53)

        Dim g As Graphics
        g = Me.CreateGraphics
        g.Clear(Drawing.Color.FromName("Control"))

        Dim brush As New HatchBrush(RanNum, Color.Pink, Color.Blue)
        g.FillRectangle(brush, 0, 0, 300, 300)
End Sub
```

Секция: 14 Проект: Пробвайте 01 Рисуване на фигури

Създайте програма, която изчертава елипса, правоъгълник, триъгълник и дъга. Задължително условие е да сменяте стила, дебелината и цвета на използваната писалка.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

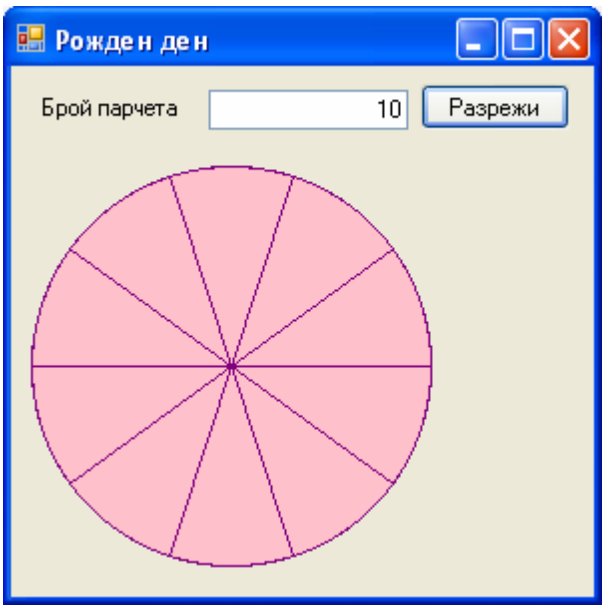
```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim g As Graphics
        g = Me.CreateGraphics
        g.Clear(Drawing.Color.FromName("Control"))
        Dim pen As New Drawing.Pen(Color.Coral)
        If CheckBox1.Checked Then
            pen.Color = Color.Blue
            pen.Width = 2
            pen.DashStyle = 1
            g.DrawRectangle(pen, 10, 150, 200, 200)
        End If
        If CheckBox2.Checked Then
            pen.Color = Color.Yellow
            pen.Width = 3
            pen.DashStyle = 2
```

```
            Dim points() As Point = {New Point(10, 150), New Point(100,
350), New Point(210, 150)}
            g.DrawPolygon(pen, points)
        End If
        If CheckBox3.Checked Then
            pen.Color = Color.DarkGreen
            pen.Width = 1
            pen.DashStyle = 3
            g.DrawEllipse(pen, 10, 150, 200, 200)
        End If
        If CheckBox4.Checked Then
            pen.Color = Color.Cyan
            pen.Width = 4
            pen.DashStyle = 4
            g.DrawArc(pen, 10, 150, 200, 200, 30, 90)
        End If
End Sub
```

Секция: 14 Проект: Пробвайте 02 Рожден ден

Използвайте методите DrawPie и FillPie, за да получите подходящо разделяне на кръг части. Броя на частите взимайте от текстово поле. Можете да запълвате всяка част с различен цвят за по-добър визуален ефект.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

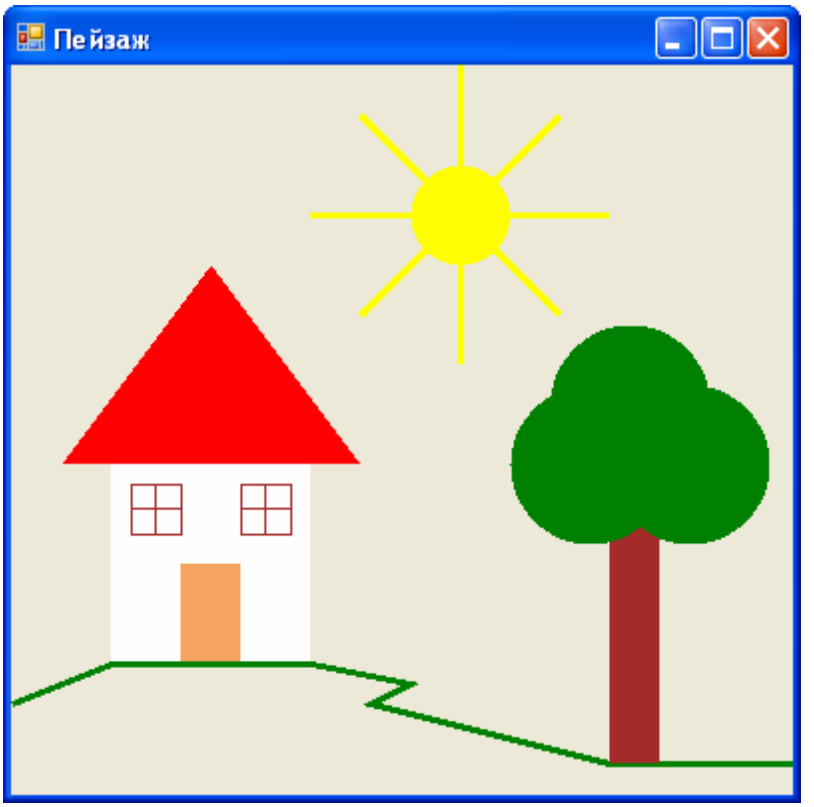
```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim g As Graphics
        g = Me.CreateGraphics
        g.Clear(Drawing.Color.FromName("Control"))
        Dim StartPoint, EndPoint, Pie As Integer
        StartPoint = 0
        If TextBox1.Text <> "" Then
            Pie = CInt(360 / Val(TextBox1.Text))
            EndPoint = Pie
            For i As Integer = 0 To Val(TextBox1.Text)
                g.FillPie(Brushes.Pink, 10, 50, 200, 200,
CInt(StartPoint), CInt(EndPoint))
                StartPoint = EndPoint
                EndPoint += Pie
            Next
            For i As Integer = 0 To Val(TextBox1.Text)
                g.DrawPie(Pens.Purple, 10, 50, 200, 200,
CInt(StartPoint), CInt(EndPoint))
                StartPoint = EndPoint
                EndPoint += Pie
            Next
        End If
```

```
End Sub
```

Секция: 14 Проект: Можете ли? Пейзаж

Изрисувайте картина подобна на показаната по-долу.:

Формата изглежда като тази:



Ученикът трябва да напише код като този:

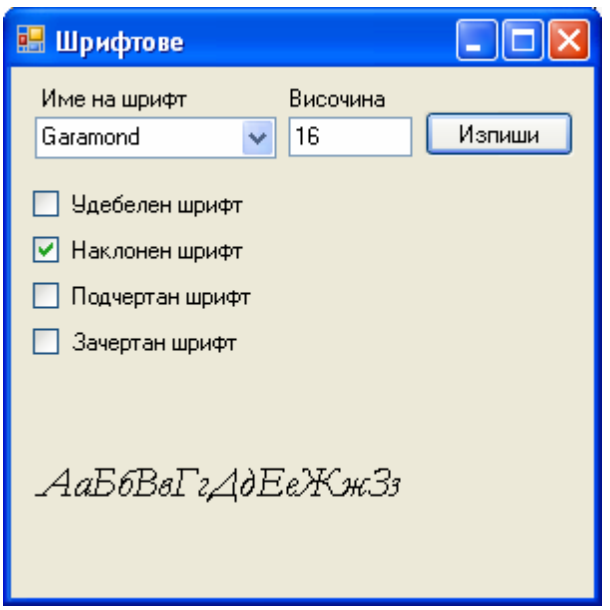
```
Private Sub Form1_Paint(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.PaintEventArgs) Handles MyBase.Paint
        Dim pen As New Pen(Color.Yellow, 3)
        e.Graphics.FillEllipse(Brushes.Yellow, 200, 50, 50, 50)
        e.Graphics.DrawLine(pen, 175, 25, 275, 125)
        e.Graphics.DrawLine(pen, 275, 25, 175, 125)
        e.Graphics.DrawLine(pen, 150, 75, 300, 75)
        e.Graphics.DrawLine(pen, 225, 0, 225, 150)
        e.Graphics.FillRectangle(Brushes.White, 50, 200, 100, 100)
        Dim pointsHouse() As Point = {New Point(25, 200), New
Point(100, 100), New Point(175, 200)}
        e.Graphics.FillPolygon(Brushes.Red, pointsHouse)
        e.Graphics.DrawRectangle(Pens.Brown, 60, 210, 25, 25)
        e.Graphics.DrawLine(Pens.Brown, 72, 210, 72, 235)
        e.Graphics.DrawLine(Pens.Brown, 60, 222, 85, 222)
        e.Graphics.DrawRectangle(Pens.Brown, 115, 210, 25, 25)
        e.Graphics.DrawLine(Pens.Brown, 127, 210, 127, 235)
        e.Graphics.DrawLine(Pens.Brown, 115, 222, 140, 222)
        e.Graphics.FillRectangle(Brushes.SandyBrown, 85, 250, 30, 50)
```

```
        Dim pointsGrass() As Point = {New Point(0, 320), New Point(50,
300), New Point(150, 300), New Point(150, 300), New Point(200, 310),
New Point(180, 320), New Point(300, 350), New Point(400, 350)}
        pen.Color = Color.Green
        e.Graphics.DrawLines(pen, pointsGrass)
        e.Graphics.FillRectangle(Brushes.Brown, 300, 190, 25, 160)
        e.Graphics.FillEllipse(Brushes.Green, 270, 130, 80, 80)
        e.Graphics.FillEllipse(Brushes.Green, 250, 160, 80, 80)
        e.Graphics.FillEllipse(Brushes.Green, 300, 160, 80, 80)

End Sub
```

Секция: 15 Проект: Пробвайте 01 Настройки на шрифт

Задачата ви е да променяте характеристиките на шрифта на етикет с програмен код.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

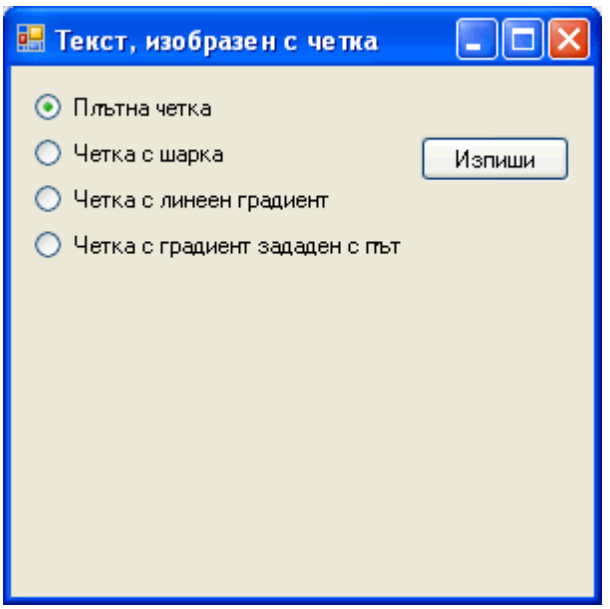
```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim FontName As String
        Dim FontStyle As System.Drawing.FontStyle =
Drawing.FontStyle.Regular
        Dim FontSize As Integer = Val(TextBox1.Text)

        If CheckBox1.Checked Then
            FontStyle = Drawing.FontStyle.Bold
        End If
        If CheckBox2.Checked Then
            FontStyle = Drawing.FontStyle.Italic
        End If
        If CheckBox3.Checked Then
            FontStyle = Drawing.FontStyle.Underline
        End If
        If CheckBox4.Checked Then
            FontStyle = Drawing.FontStyle.Strikeout
        End If
        Select Case ComboBox1.SelectedIndex
            Case 0
                FontName = "Arial"
            Case 1
                FontName = "Arial Black"
            Case 2
                FontName = "Courier"
```

```
            Case 3
                FontName = "Garamond"
            Case 4
                FontName = "Tahoma"
            Case 5
                FontName = "Times New Roman"
            Case 6
                FontName = "Verdana"
        End Select

        Dim MyFont As New Drawing.Font(FontName, FontSize, FontStyle)
        Label3.Font = MyFont
End Sub
```

Секция: 15 Проект: Пробвайте 02 Текст, изобразен с четка

Изпишете текст във формата като избирате различни стилове четки. Колкото по-ефектни са четките, които създавате, толкова по-красив ще бъде и изписвания текст.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Invalidate()
    End Sub

    Private Sub Form1_Paint(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.PaintEventArgs) Handles MyBase.Paint
        Dim font As New Font("Arial", 36, FontStyle.Bold)
        If RadioButton1.Checked Then
            Dim SolidBrush As New SolidBrush(Color.DeepPink)
            e.Graphics.DrawString("ТЕКСТ", font, SolidBrush, 50, 200)
        End If

        If RadioButton2.Checked Then
            Dim HatchBrush As New
HatchBrush(HatchStyle.HorizontalBrick, Color.Pink, Color.Blue)
            e.Graphics.DrawString("ТЕКСТ", font, HatchBrush, 50, 200)
        End If

        If RadioButton3.Checked Then
            Dim Rect As New Rectangle(50, 200, 160, 100)
            Dim LinearGradientBrush As New LinearGradientBrush(Rect,
Color.Pink, Color.Blue, LinearGradientMode.ForwardDiagonal)
```

```
            e.Graphics.DrawString("TEKCT", font, LinearGradientBrush,
50, 200)
        End If

        If RadioButton4.Checked Then
            Dim points() As Point = {New Point(50, 200), New Point(50,
300), New Point(300, 300), New Point(300, 200)}
            Dim PathGradientBrush As New PathGradientBrush(points)
            e.Graphics.DrawString("TEKCT", font, PathGradientBrush, 50,
200)
        End If
End Sub
```

Секция: 15 Проект: Можете ли? Забавление с текст

Изпишете четири текста по начин, показан на формата по-долу.

Формата изглежда като тази:

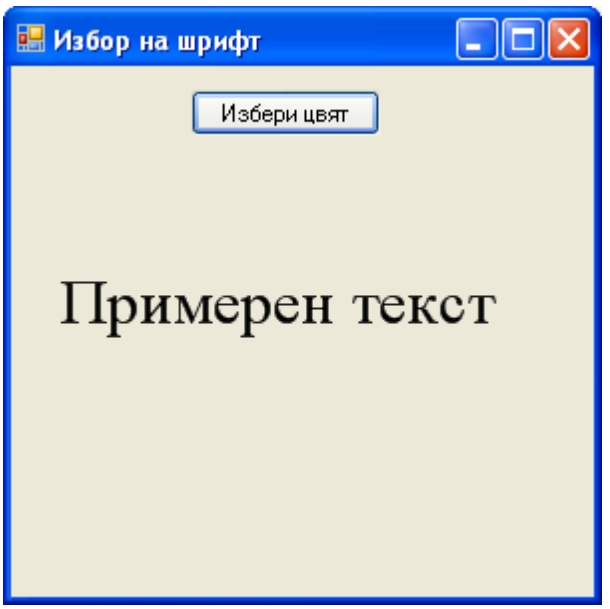
Ученикът трябва да напише код като този:

```
Private Sub Form1_Paint(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.PaintEventArgs) Handles MyBase.Paint
        e.Graphics.Clear(Color.White)
        Dim font As New Font("Times New Roman", 36)
        e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.Gray, 10, 10)
        e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.Black, 6, 6)

        e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.Gray, 10, 85)
        e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.White, 11, 86)

        For i As Integer = 0 To 15
            e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.Black, 10 +
i, 180 - i)
        Next
        e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.Gold, 26, 164)

        e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.Gray, 10, 260)
        e.Graphics.DrawString("ЕФЕКТНО", font, Brushes.White, 9, 259)
End Sub
```

Секция: 16 Проект: Пробвайте 01 Избор на шрифт

Използвайте стандартния диалогов прозорец за избор на шрифт, за да изпишете текст по ваш избор във формата. Нека диалоговият прозорец позволява избор и на цвят.

Формата изглежда като тази:



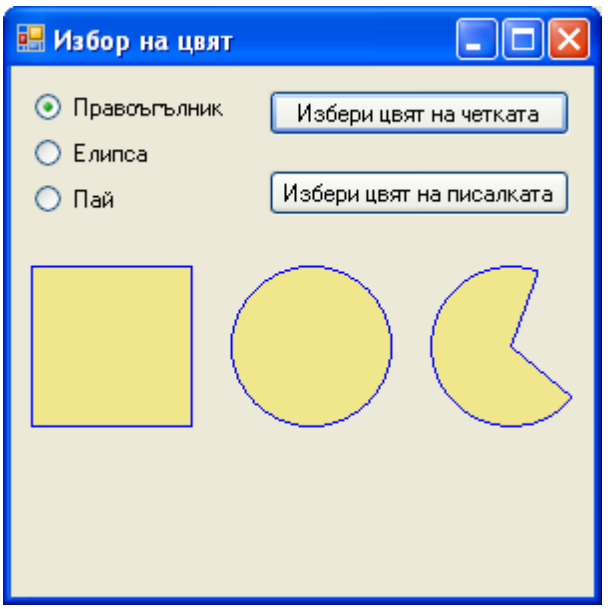
Ученикът трябва да напише код като този:

```
Dim MyFont As New Font("Times New Roman", 24)
    Dim MyBrush As New SolidBrush(Color.Black)
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim FontDlg As New FontDialog
        FontDlg.ShowColor = True
        FontDlg.ShowApply = True
        If (FontDlg.ShowDialog = Windows.Forms.DialogResult.OK) Then
            MyFont = FontDlg.Font
            MyBrush.Color = FontDlg.Color
            Invalidate()
        End If
    End Sub

    Private Sub Form1_Paint(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.PaintEventArgs) Handles MyBase.Paint
        e.Graphics.DrawString("Примерен текст", MyFont, MyBrush, 20,
100)
End Sub
```

Секция: 16 Проект: Пробвайте 02 Избор на цвят

Изрисувайте три геометрични фигури по ваш избор във формата. Нека цвета на контура и запълването на всяка една от тях да се избират от стандартен диалогов прозорец за избор на цвят.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

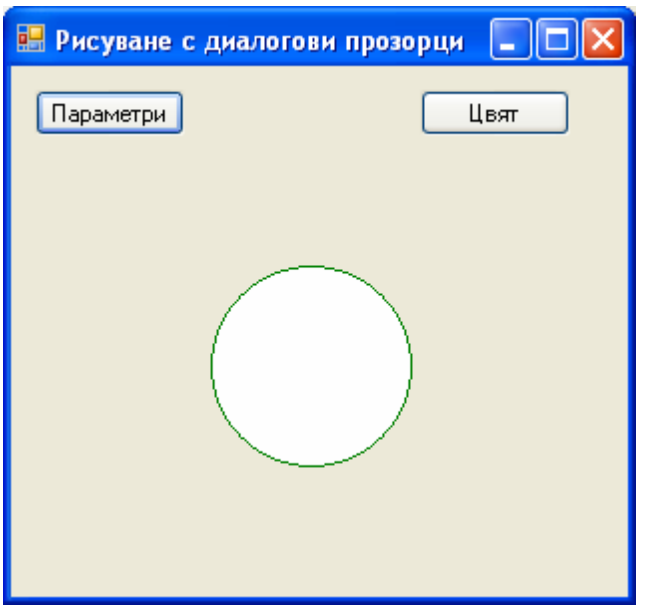
```
Dim MyBrush As New SolidBrush(Color.Khaki)
    Dim MyPen As New Pen(Color.Blue)
    Private Sub Form1_Paint(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.PaintEventArgs) Handles MyBase.Paint
        e.Graphics.FillRectangle(MyBrush, 10, 100, 80, 80)
        e.Graphics.DrawRectangle(MyPen, 10, 100, 80, 80)
        e.Graphics.FillEllipse(MyBrush, 110, 100, 80, 80)
        e.Graphics.DrawEllipse(MyPen, 110, 100, 80, 80)
        e.Graphics.FillPie(MyBrush, 210, 100, 80, 80, 40, 250)
        e.Graphics.DrawPie(MyPen, 210, 100, 80, 80, 40, 250)
End Sub

Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim ColorDlg As New ColorDialog
        If (ColorDlg.ShowDialog = Windows.Forms.DialogResult.OK) Then
            MyBrush.Color = ColorDlg.Color
        End If
        If RadioButton1.Checked Then
            Dim Rect As New Rectangle(10, 100, 80, 80)
            Invalidate(Rect)
        End If
```

```
        If RadioButton2.Checked Then
            Dim Rect As New Rectangle(110, 100, 80, 80)
            Invalidate(Rect)
        End If

        If RadioButton3.Checked Then
            Dim Rect As New Rectangle(210, 100, 80, 80)
            Invalidate(Rect)
        End If
End Sub

Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        Dim ColorDlg As New ColorDialog
        If (ColorDlg.ShowDialog = Windows.Forms.DialogResult.OK) Then
            MyPen.Color = ColorDlg.Color
        End If
        If RadioButton1.Checked Then
            Dim Rect As New Rectangle(10, 100, 90, 90)
            Invalidate(Rect)
        End If

        If RadioButton2.Checked Then
            Dim Rect As New Rectangle(110, 100, 90, 90)
            Invalidate(Rect)
        End If

        If RadioButton3.Checked Then
            Dim Rect As New Rectangle(210, 100, 90, 90)
            Invalidate(Rect)
        End If
End Sub
```

Секция: 16 Проект: Можете ли? Рисуване с диалогови прозорци

Вашата задача е да създадете програма, която изчертава избрана от вас геометрична фигура. Позицията, ширината на писалката и големината на фигурата да се променят от диалогов прозорец. Цвета на запълване да се избира от стандартен диалогов прозорец за избор на цвят.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

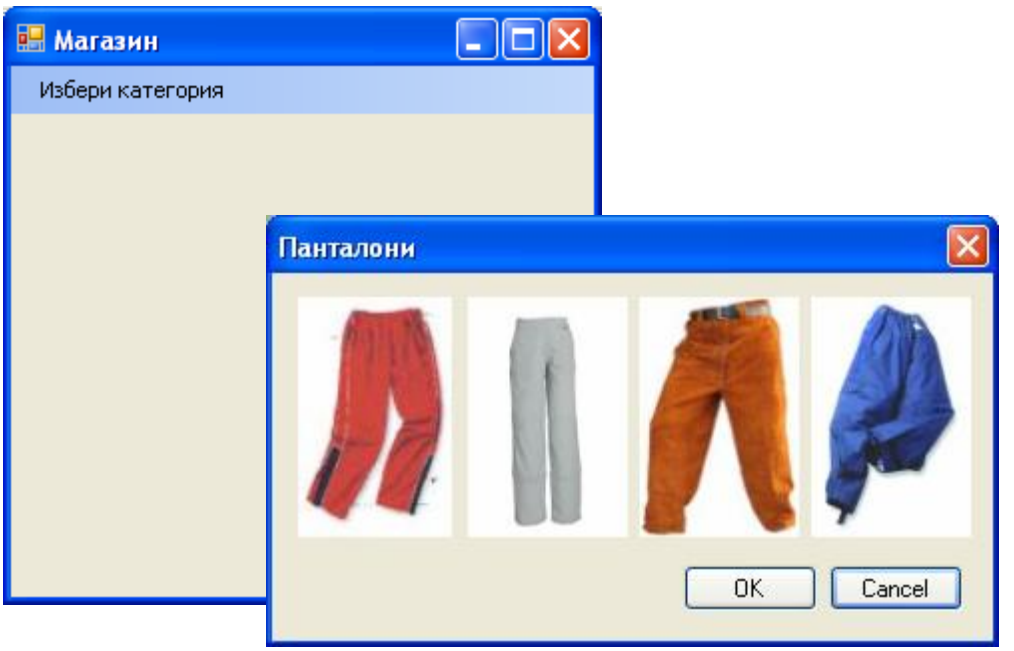
```
Dim x As Integer = 100
    Dim y As Integer = 100
    Dim FigureWidth As Integer = 100
    Dim FigureHeight As Integer = 100
    Dim Brush As New SolidBrush(Color.White)
    Dim Pen As New Pen(Color.Green)
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dialog1.TextBox1.Text = Pen.Width.ToString
        Dialog1.TextBox2.Text = x.ToString
        Dialog1.TextBox3.Text = y.ToString
        Dialog1.TextBox4.Text = FigureWidth.ToString
        Dialog1.TextBox5.Text = FigureHeight.ToString
        If (Dialog1.ShowDialog = Windows.Forms.DialogResult.OK) Then
            Pen.Width = Val(Dialog1.TextBox1.Text)
            x = Val(Dialog1.TextBox2.Text)
            y = Val(Dialog1.TextBox3.Text)
            FigureWidth = Val(Dialog1.TextBox4.Text)
            FigureHeight = Val(Dialog1.TextBox5.Text)
            Invalidate()
        End If
End Sub
```

```
Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        Dim ColorDlg As New ColorDialog
        If ColorDlg.ShowDialog = Windows.Forms.DialogResult.OK Then
            Brush.Color = ColorDlg.Color
            Invalidate()
        End If
    End Sub

    Private Sub Form1_Paint(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.PaintEventArgs) Handles MyBase.Paint
        e.Graphics.FillEllipse(Brush, x, y, FigureWidth, FigureHeight)
        e.Graphics.DrawEllipse(Pen, x, y, FigureWidth, FigureHeight)
End Sub
```

Секция: 17 Проект: Пробвайте 01 Магазин

Вашата задача е да създадете програма с меню, от което да се показват диалогови прозорци с картинки на четири категории дрехи – Панталони, Джинси, Блузи и Пуловери.

Формата и примерен диалогов прозорец изглеждат така:



Ученикът трябва да напише код за формата като този:

```
Private Sub ПанталониToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
ПанталониToolStripMenuItem.Click
        Dialog1.ShowDialog()
End Sub

Private Sub ДжинсиToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
ДжинсиToolStripMenuItem.Click
        Dialog2.ShowDialog()
End Sub

Private Sub БлузиToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles БлузиToolStripMenuItem.Click
        Dialog3.ShowDialog()
End Sub

Private Sub ПуловериToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
ПуловериToolStripMenuItem.Click
        Dialog4.ShowDialog()
End Sub
```

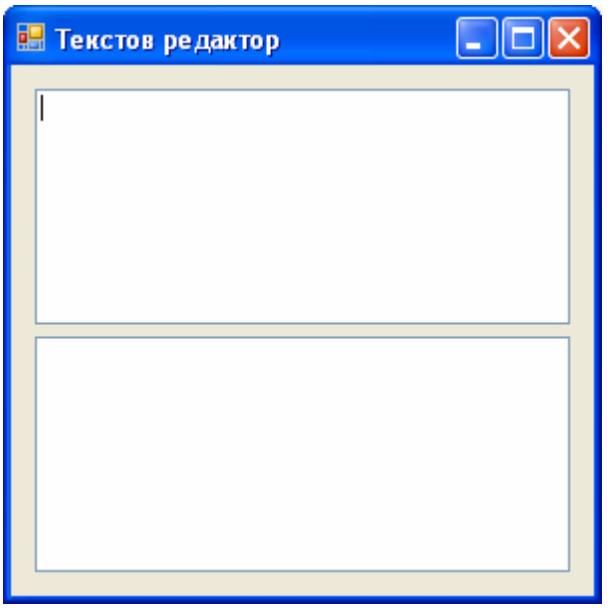
Ученикът трябва да напише код за всеки един от диалоговите прозорци като този:

```
Private Sub OK_Button_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles OK_Button.Click
        Me.DialogResult = System.Windows.Forms.DialogResult.OK
        Me.Close()
End Sub

    Private Sub Cancel_Button_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles Cancel_Button.Click
        Me.DialogResult = System.Windows.Forms.DialogResult.Cancel
        Me.Close()
End Sub
```

Секция: 17 Проект: Пробвайте 02 Текстов редактор

Създайте елементарен текстов редактор с използване на контекстно меню.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

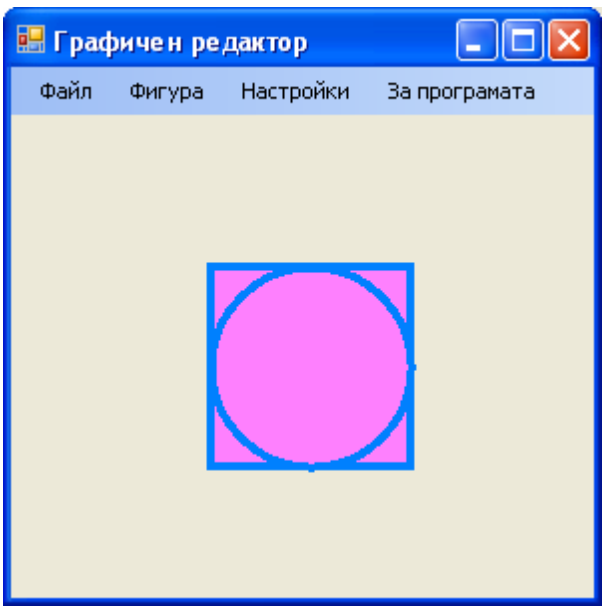
```
Private Sub CutToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CutToolStripMenuItem.Click
        TextBox1.Cut()
End Sub

Private Sub PasteToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles PasteToolStripMenuItem.Click
        TextBox1.Paste()
End Sub

Private Sub CopyToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles CopyToolStripMenuItem.Click
        TextBox1.Copy()
End Sub

Private Sub SelectToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
SelectToolStripMenuItem.Click
        TextBox1.SelectAll()
End Sub

Private Sub Cut_ToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles Cut_ToolStripMenuItem.Click
        TextBox2.Cut()
End Sub
```

```
Private Sub Paste_ToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
Paste_ToolStripMenuItem.Click
        TextBox2.Paste()
End Sub

Private Sub Copy_ToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles Copy_ToolStripMenuItem.Click
        TextBox2.Copy()
End Sub

Private Sub Select_ВсичкоToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
Select_ВсичкоToolStripMenuItem.Click
        TextBox2.SelectAll()
End Sub
```

Секция: 17 Проект: Можете ли? Графичен редактор

Вашата задача е да създадете елементарен графичен редактор, който позволява изчертаване на три геометрични фигури – правоъгълник, елипса и пай. Всяка една от фигурите, която се изчертава, както и настройките за цвят на контура, цвят на запълването, позицията на фигурата и дебелината на писалката се избират от меню. Менюто трябва да притежава и команда за извикване на диалогов прозорец About Box с информация за възможностите на програмата.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

```
Dim x As Integer = 100
Dim y As Integer = 100
Dim Brush As New SolidBrush(Color.White)
Dim Pen As New Pen(Color.Green)

Private Sub ИзходToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ExitToolStripMenuItem.Click
        Me.Close()
End Sub

Private Sub PositionToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
PositionToolStripMenuItem.Click
        Dialog1.TextBox1.Text = x.ToString
        Dialog1.TextBox2.Text = y.ToString
        If (Dialog1.ShowDialog = Windows.Forms.DialogResult.OK) Then
            x = Val(Dialog1.TextBox1.Text)
            y = Val(Dialog1.TextBox2.Text)
            Invalidate()
        End If
```

```
End Sub

Private Sub Form1_Paint(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.PaintEventArgs) Handles MyBase.Paint
        If RectToolStripMenuItem.Checked Then
            e.Graphics.FillRectangle(Brush, x, y, 100, 100)
            e.Graphics.DrawRectangle(Pen, x, y, 100, 100)
        End If
        If EllipseToolStripMenuItem.Checked Then
            e.Graphics.FillEllipse(Brush, x, y, 100, 100)
            e.Graphics.DrawEllipse(Pen, x, y, 100, 100)
        End If
        If PieToolStripMenuItem.Checked Then
            e.Graphics.FillPie(Brush, x, y, 100, 100, 40, 150)
            e.Graphics.DrawPie(Pen, x, y, 100, 100, 40, 150)
        End If
End Sub

Private Sub RectToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles RectToolStripMenuItem.Click
        Invalidate()
End Sub

Private Sub EllipseToolStripMenuItem_Click(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
EllipseToolStripMenuItem.Click
        Invalidate()
End Sub

Private Sub PieToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles PieToolStripMenuItem.Click
        Invalidate()
End Sub

Private Sub BrushToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles BrushToolStripMenuItem.Click
        If (ColorDialog1.ShowDialog = Windows.Forms.DialogResult.OK)
Then
            Brush.Color = ColorDialog1.Color
            Invalidate()
        End If
End Sub

Private Sub ColorToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ColorToolStripMenuItem.Click
        If (ColorDialog1.ShowDialog = Windows.Forms.DialogResult.OK)
Then
            Pen.Color = ColorDialog1.Color
            Invalidate()
        End If
End Sub

Private Sub AboutToolStripMenuItem_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles AboutToolStripMenuItem.Click
        AboutBox1.ShowDialog()
End Sub
```

```
Private Sub ToolStripMenuItem2_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ToolStripMenuItem2.Click
        If ToolStripMenuItem2.Checked = True Then
            Pen.Width = 1
            Invalidate()
            ToolStripMenuItem3.Checked = False
            ToolStripMenuItem4.Checked = False
            ToolStripMenuItem5.Checked = False
            ToolStripMenuItem6.Checked = False
            ToolStripMenuItem7.Checked = False
        End If
End Sub

Private Sub ToolStripMenuItem3_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ToolStripMenuItem3.Click
        If ToolStripMenuItem3.Checked = True Then
            Pen.Width = 2
            Invalidate()
            ToolStripMenuItem2.Checked = False
            ToolStripMenuItem4.Checked = False
            ToolStripMenuItem5.Checked = False
            ToolStripMenuItem6.Checked = False
            ToolStripMenuItem7.Checked = False
        End If
End Sub

Private Sub ToolStripMenuItem4_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ToolStripMenuItem4.Click
        If ToolStripMenuItem4.Checked = True Then
            Pen.Width = 4
            Invalidate()
            ToolStripMenuItem3.Checked = False
            ToolStripMenuItem2.Checked = False
            ToolStripMenuItem5.Checked = False
            ToolStripMenuItem6.Checked = False
            ToolStripMenuItem7.Checked = False
        End If
End Sub

Private Sub ToolStripMenuItem5_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ToolStripMenuItem5.Click
        If ToolStripMenuItem5.Checked = True Then
            Pen.Width = 6
            Invalidate()
            ToolStripMenuItem3.Checked = False
            ToolStripMenuItem4.Checked = False
            ToolStripMenuItem2.Checked = False
            ToolStripMenuItem6.Checked = False
            ToolStripMenuItem7.Checked = False
        End If
End Sub

Private Sub ToolStripMenuItem6_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ToolStripMenuItem6.Click
        If ToolStripMenuItem6.Checked = True Then
            Pen.Width = 8
```

```
            Invalidate()
            ToolStripMenuItem3.Checked = False
            ToolStripMenuItem4.Checked = False
            ToolStripMenuItem5.Checked = False
            ToolStripMenuItem2.Checked = False
            ToolStripMenuItem7.Checked = False
        End If
End Sub

Private Sub ToolStripMenuItem7_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles ToolStripMenuItem7.Click
        If ToolStripMenuItem7.Checked = True Then
            Pen.Width = 10
            Invalidate()
            ToolStripMenuItem3.Checked = False
            ToolStripMenuItem4.Checked = False
            ToolStripMenuItem5.Checked = False
            ToolStripMenuItem6.Checked = False
            ToolStripMenuItem2.Checked = False
        End If
End Sub
```

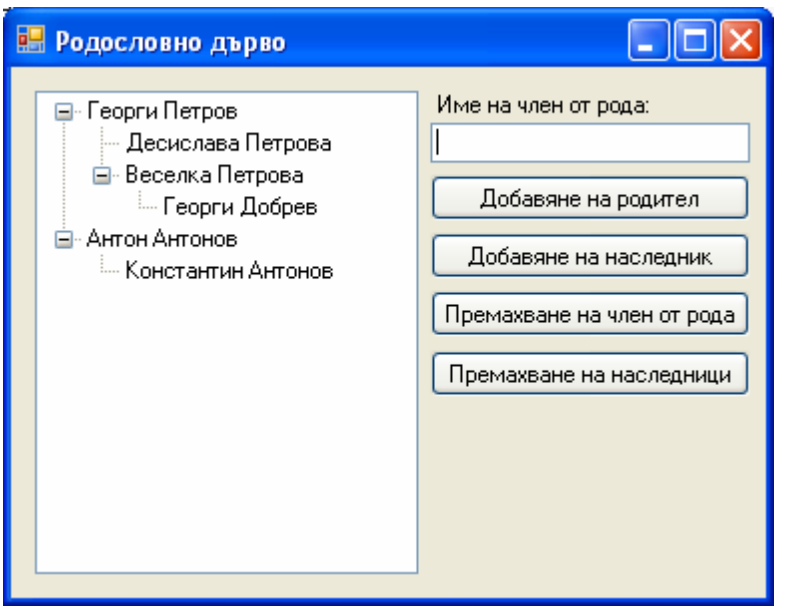
Ученикът трябва да напише код за диалоговия прозорец като този:

```
Private Sub OK_Button_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles OK_Button.Click
        Me.DialogResult = System.Windows.Forms.DialogResult.OK
        Me.Close()
End Sub

Private Sub Cancel_Button_Click(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles Cancel_Button.Click
        Me.DialogResult = System.Windows.Forms.DialogResult.Cancel
        Me.Close()
End Sub
```

Секция: 18 Проект: Пробвайте 01 Родословно дърво

Създайте програма за построяване на родословно дърво.

Формата изглежда като тази:



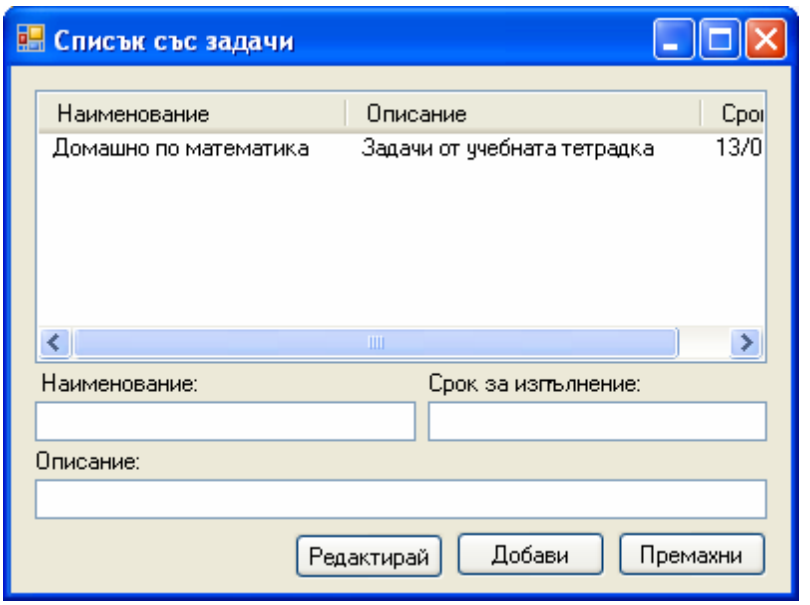
Ученикът трябва да напише код като този:

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        TreeView1.Nodes.Add(TextBox1.Text)
End Sub

Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        TreeView1.SelectedNode.Nodes.Add(TextBox1.Text)
End Sub

Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button3.Click
        TreeView1.SelectedNode.Remove()
End Sub

Private Sub Button4_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button4.Click
        TreeView1.SelectedNode.Nodes.Clear()
End Sub
```

Секция: 18 Проект: Пробвайте 02 Списък със задачи

Създайте програма, която позволява да създавате списък със задачи, които имате да изпълните. Нека всяка една задача се описва с наименование, описание и срок за изпълнение.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

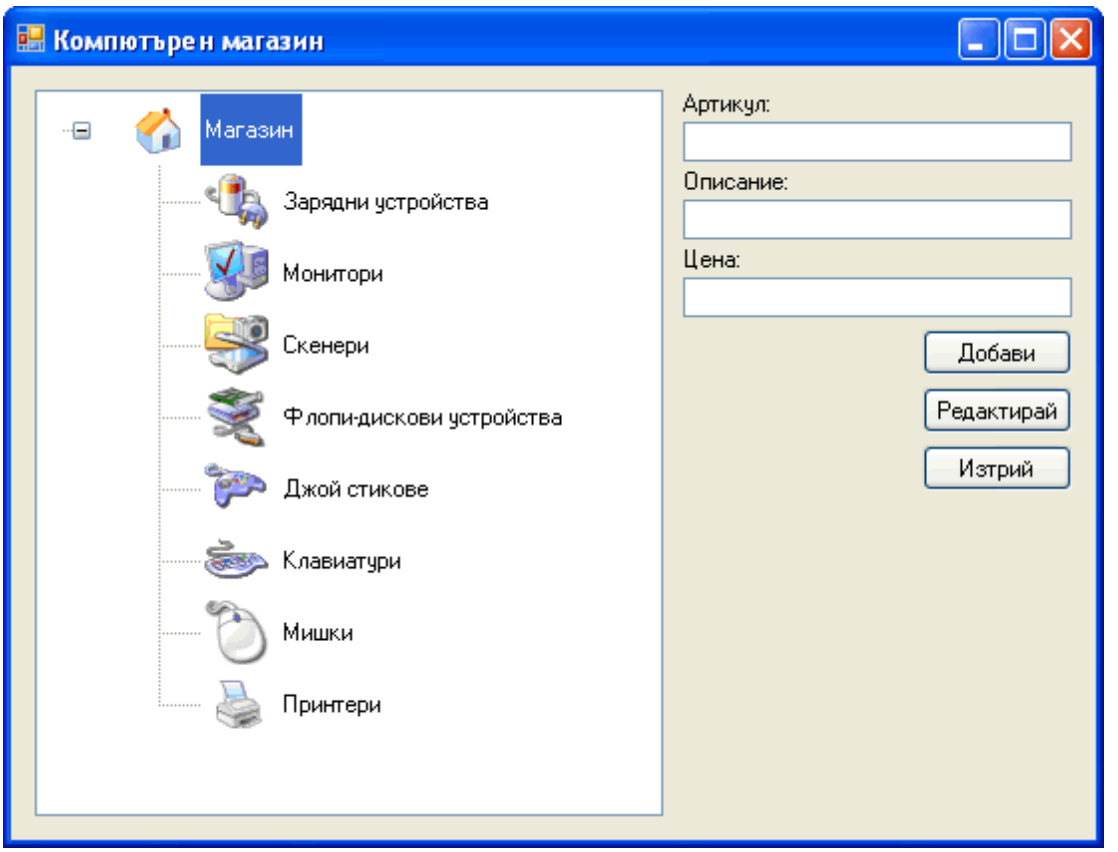
```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim ListViewItem As ListViewItem =
ListView1.Items.Add(TextBox1.Text)
        ListViewItem.SubItems.Add(TextBox2.Text)
        ListViewItem.SubItems.Add(TextBox3.Text)
        TextBox1.Text = ""
        TextBox2.Text = ""
        TextBox3.Text = ""
End Sub

Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        ListView1.SelectedItems.Item(0).Remove()
End Sub

Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button3.Click
        ListView1.SelectedItems.Item(0).SubItems(0).Text =
TextBox1.Text
        ListView1.SelectedItems.Item(0).SubItems(1).Text =
TextBox2.Text
        ListView1.SelectedItems.Item(0).SubItems(2).Text =
TextBox3.Text
```

```
        TextBox1.Text = ""
        TextBox2.Text = ""
        TextBox3.Text = ""
End Sub
```

Секция: 18 Проект: Можете ли? Компютърен магазин

Използвайте компонента TreeView, за да създадете списък с артикули в компютърен магазин, като осигурите начин за добавяне, редактиране и изтриване на артикули.

Формата изглежда като тази:



Ученикът трябва да напише код като този:

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
        Dim Node As TreeNode =
TreeView1.SelectedNode.Nodes.Add(TextBox1.Text)
        Node.ImageIndex = 9
        Node.SelectedImageIndex = 9
        Dim SubNode As TreeNode
        SubNode = Node.Nodes.Add("Описание: " & TextBox2.Text)
        SubNode.SelectedImageIndex = TreeView1.SelectedNode.Index
        SubNode.ImageIndex = TreeView1.SelectedNode.Index
        SubNode = Node.Nodes.Add("Цена: " & TextBox3.Text)
        SubNode.SelectedImageIndex = TreeView1.SelectedNode.Index
        SubNode.ImageIndex = TreeView1.SelectedNode.Index
End Sub
```

```
Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button2.Click
        Dim Node As TreeNode = TreeView1.SelectedNode
        Node.Text = TextBox1.Text
        Node.Nodes(0).Text = "Описание: " & TextBox2.Text
        Node.Nodes(1).Text = "Цена: " & TextBox3.Text
End Sub

Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button3.Click
        TreeView1.SelectedNode.Remove()
End Sub
```