

Gabarito

Estudo Dirigido de Visual Basic 2010 Express

Prezado(a) Educador(a)

O material ora apresentado caracteriza-se em ser formado pelas respostas dos exercícios de fixação do livro Estudo Dirigido de Visual Basic 2010 Express.

As respostas aqui dadas são fornecidas genericamente no sentido de atender a solução de certo problema do ponto de vista algorítmico e servirá como ponto de auxílio ao seu trabalho. Assim sendo, no sentido de homogenizar este material todas as entradas de dados serão efetuadas como o controle **TextBoxn.Text** e as saídas de dados serão efetuadas com o controle **Labeln.Text**.

Outro detalhe a ser considerado é o fato de as respostas aqui indicadas serem respostas sem a pretensão de serem as únicas ou as melhores respostas. As respostas dadas são respostas possíveis.

É pertinente salientar que esta obra deve ser utilizada em conjunto com o livro Estudo Dirigido de Algoritmos ou com o livro Algoritmos: Lógica para o Desenvolvimento de Programação de Computadores, pois alguns pontos não comentados nesta obra são encontrados nas obras sobre algoritmos, sendo esta um procedimento da base desta coleção de livros para o ensino de programação de computadores.

O conjunto de exercícios aqui apresentados é em média suficiente para a fixação dos detalhes sobre programação na mente do educando. Mas para que isso aconteça é também conveniente que o educando tenha estudado anteriormente um dos livros de algoritmos indicado.

Espero com isso estar fornecendo uma maior facilidade para o(a) colega poder ministrar a base de conhecimento sobre programação de computadores.

Atenciosamente

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Capítulo 2

Variáveis

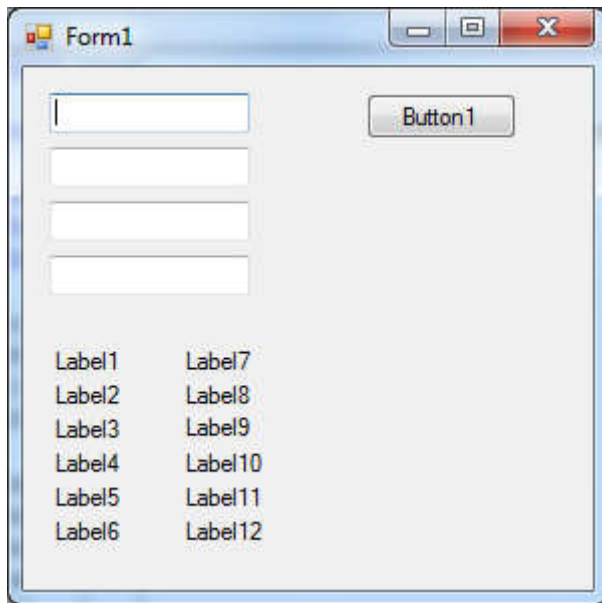
Constantes

Operadores Aritméticos

Entrada: TextBoxn.Text

Saída: Labeln.Text

Capítulo 2 – Exercício 1



```
Dim A, B, C, D As Integer
Dim A1, A2, A3, A4, A5, A6 As Integer
Dim M1, M2, M3, M4, M5, M6 As Integer
```

```
A = TextBox1.Text
B = TextBox2.Text
C = TextBox3.Text
D = TextBox4.Text
```

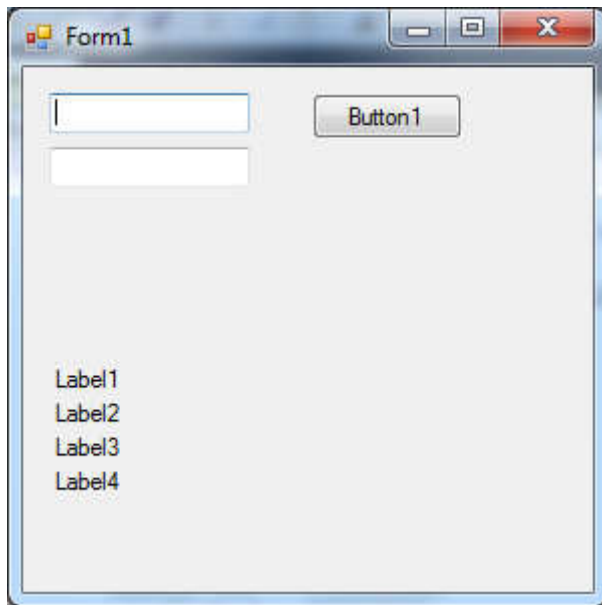
```
A1 = A + B
A2 = A + C
A3 = A + D
A4 = B + C
A5 = B + D
A6 = C + D
```

```
M1 = A * B
M2 = A * C
M3 = A * D
M4 = B * C
M5 = B * D
M6 = C * D
```

```
Label1.Text = A1
Label2.Text = A2
Label3.Text = A3
Label4.Text = A4
Label5.Text = A5
Label6.Text = A6
```

```
Label7.Text = M1
Label8.Text = M2
Label9.Text = M3
Label10.Text = M4
Label11.Text = M5
Label12.Text = M6
```

Capítulo 2 – Exercício 2



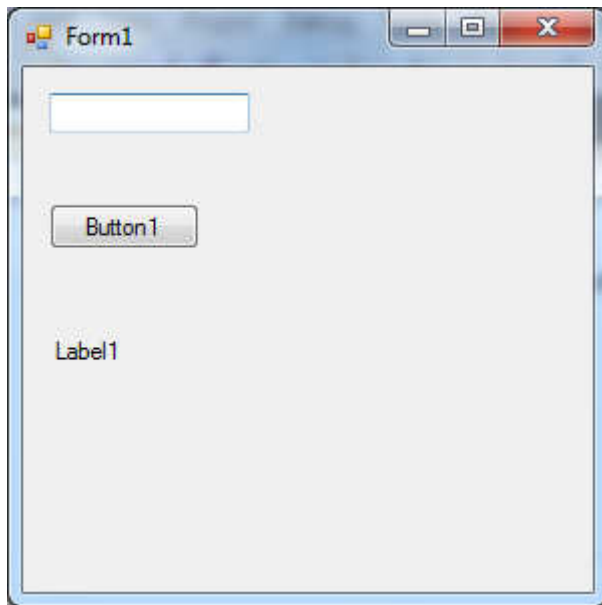
```
Dim TEMPO, VELOCIDADE, DISTANCIA, LITROS_USADOS As Single
```

```
TEMPO = TextBox1.Text  
VELOCIDADE = TextBox2.Text
```

```
DISTANCIA = TEMPO * VELOCIDADE  
LITROS_USADOS = DISTANCIA / 12
```

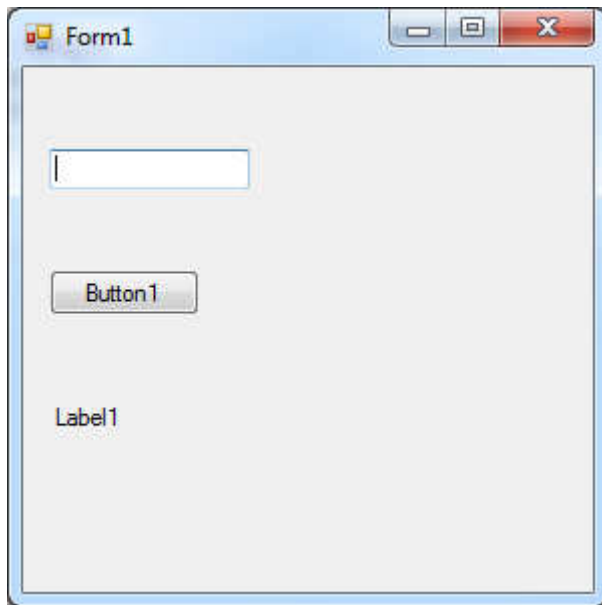
```
Label1.Text = TEMPO  
Label2.Text = VELOCIDADE  
Label3.Text = DISTANCIA  
Label4.Text = LITROS_USADOS
```

Capítulo 2 – Exercício 3

A screenshot of a Windows application window titled "Form1". The window has a standard Windows XP-style title bar with minimize, maximize, and close buttons. Inside the window, there is a text box at the top left, a button labeled "Button1" below it, and a label labeled "Label1" further down. The background of the form is a light gray.

```
Dim F, C As Single  
C = TextBox1.Text  
F = (9 * C + 160) / 5  
Label1.Text = F
```

Capítulo 2 – Exercício 4

A screenshot of a Windows application window titled "Form1". The window has a standard Windows XP-style title bar with minimize, maximize, and close buttons. The main area of the form is light gray and contains three controls: a text box at the top left, a button labeled "Button1" in the middle left, and a label labeled "Label1" at the bottom left.

```
Dim C, F As Single
F = TextBox1.Text
C = (F - 32) * (5 / 9)
Label1.Text = C
```

Capítulo 2 – Exercício 5

A screenshot of a Windows application window titled "Form1". The window has a standard Windows XP-style title bar with minimize, maximize, and close buttons. Inside the window, there are two empty text boxes stacked vertically on the left side. Below the text boxes is a button labeled "Button1". Further down and to the left is a label with the text "Label1". The rest of the window area is empty.

```
Dim VOLUME, R, ALTURA As Single
```

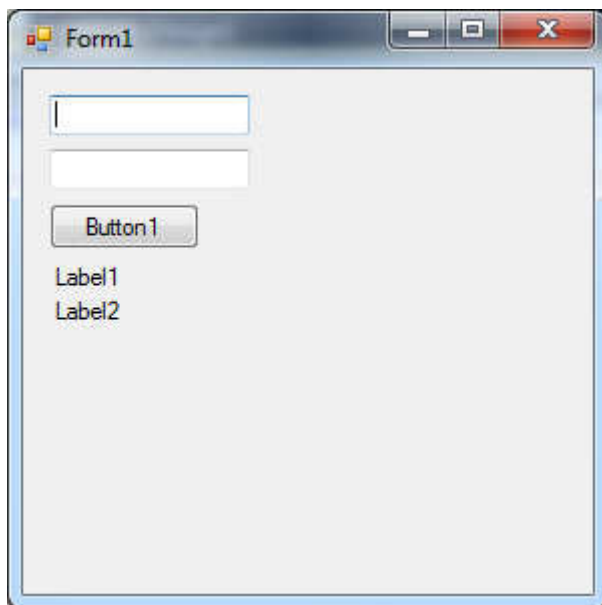
```
R = TextBox1.Text
```

```
ALTURA = TextBox2.Text
```

```
VOLUME = 3.14159 * R ^ 2 * ALTURA
```

```
Label1.Text = VOLUME
```

Capítulo 2 – Exercício 6

A screenshot of a Windows application window titled "Form1". The window has a standard Windows XP-style title bar with minimize, maximize, and close buttons. Inside the window, there are two text input boxes stacked vertically on the left side. Below these boxes is a button labeled "Button1". At the bottom left of the form, there are two labels, "Label1" and "Label2", stacked vertically.

```
Dim A, B, X As Integer
```

```
A = TextBox1.Text
```

```
B = TextBox2.Text
```

```
X = A
```

```
A = B
```

```
B = X
```

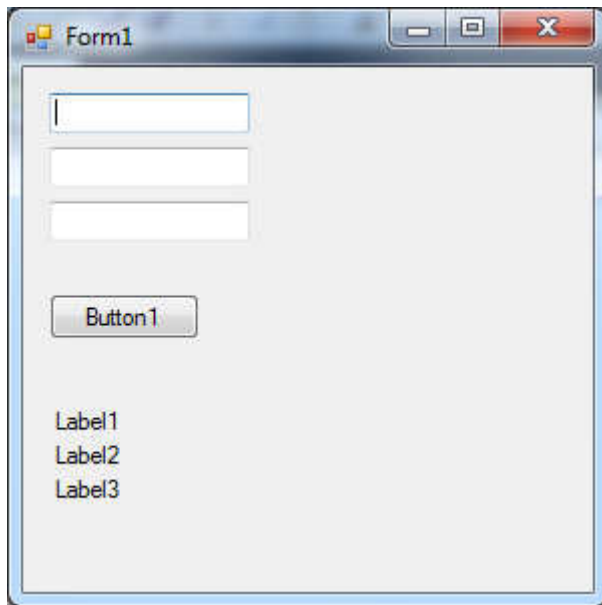
```
Label1.Text = A
```

```
Label2.Text = B
```


Capítulo 3

If ... Then / End If
If ... Then ... Else / End If
Operadores Relacionais
Operadores Lógicos

Capítulo 3 – Exercício 1



```
Dim A, B, C, X As Integer
```

```
A = TextBox1.Text
```

```
B = TextBox2.Text
```

```
C = TextBox3.Text
```

```
If (A > B) Then
```

```
    X = A
```

```
    A = B
```

```
    B = X
```

```
End If
```

```
If (A > C) Then
```

```
    X = A
```

```
    A = C
```

```
    C = X
```

```
End If
```

```
If (B > C) Then
```

```
    X = B
```

```
    B = C
```

```
    C = X
```

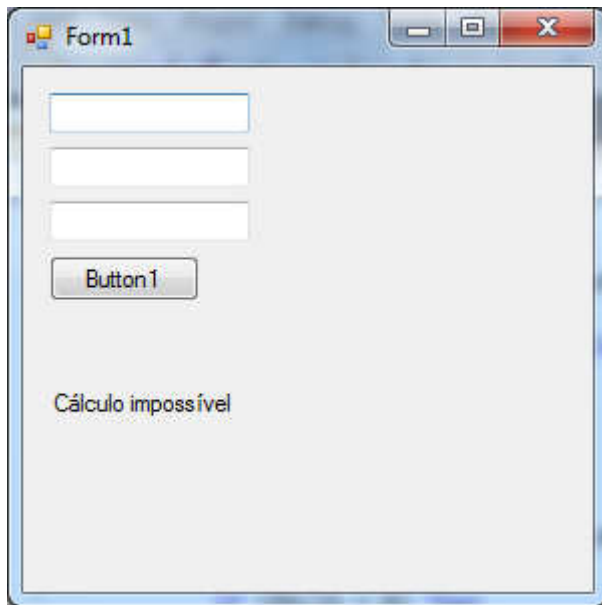
```
End If
```

```
Label1.Text = A
```

```
Label2.Text = B
```

```
Label3.Text = C
```

Capítulo 3 – Exercício 2



```
Dim A, B, C, DELTA, X1, X2 As Single
```

```
A = TextBox1.Text
```

```
B = TextBox2.Text
```

```
C = TextBox3.Text
```

```
If (A <> 0 And B <> 0 And C <> 0) Then
```

```
    DELTA = B ^ 2 - 4 * A * C
```

```
    If (DELTA = 0) Then
```

```
        X1 = -B / (2 * A)
```

```
        Label1.Text = X1
```

```
    Else
```

```
        If (DELTA > 0) Then
```

```
            X1 = (-B + DELTA ^ (1 / 2)) / (2 * A)
```

```
            X2 = (-B - DELTA ^ (1 / 2)) / (2 * A)
```

```
            Label1.Text = Str(X1) & " " & Str(X2)
```

```
        Else
```

```
            Label1.Text = "Não existem raízes"
```

```
        End If
```

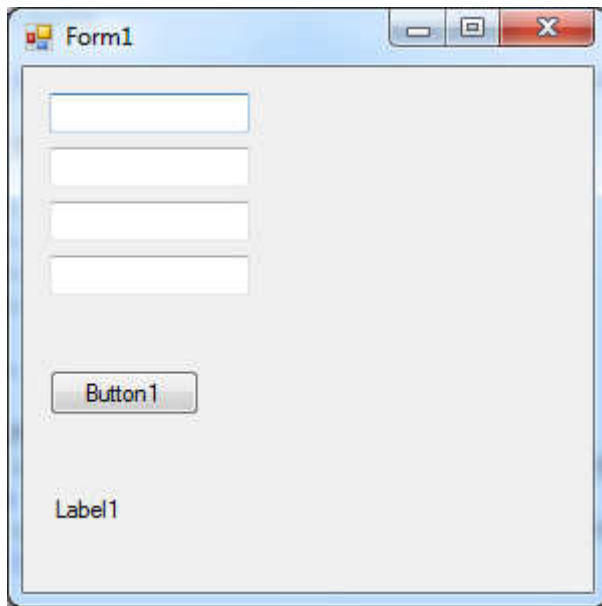
```
    End If
```

```
Else
```

```
    Label1.Text = "Cálculo impossível"
```

```
End If
```

Capítulo 3 – Exercício 3



```
Dim N1, N2, N3, N4, MD As Single
```

```
N1 = TextBox1.Text
```

```
N2 = TextBox2.Text
```

```
N3 = TextBox3.Text
```

```
N4 = TextBox4.Text
```

```
MD = (N1 + N2 + N3 + N4) / 4
```

```
If (MD >= 5) Then
```

```
    Label1.Text = "Aprovado - Média = " & Str(MD)
```

```
Else
```

```
    Label1.Text = "Reprovado - Média = " & Str(MD)
```

```
End If
```

Capítulo 3 – Exercício 4

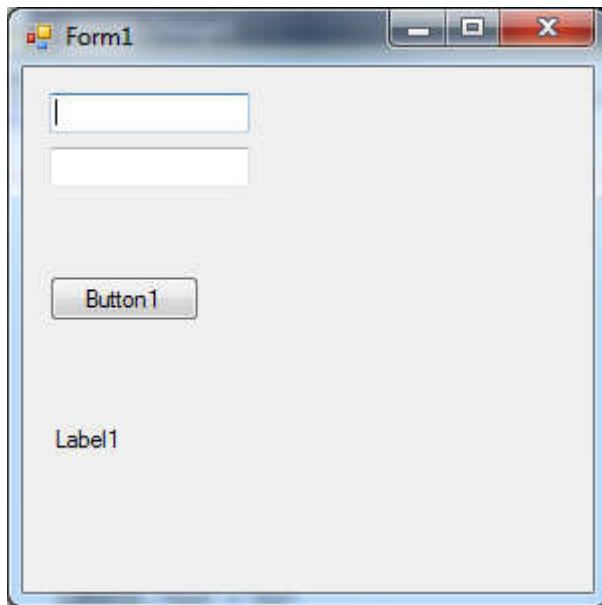
```
Dim N1, N2, N3, N4, MD1, EX, MD2 As Single

N1 = TextBox1.Text
N2 = TextBox2.Text
N3 = TextBox3.Text
N4 = TextBox4.Text

MD1 = (N1 + N2 + N3 + N4) / 4

If (MD1 >= 7) Then
    Label1.Text = "Aprovado - Média = " & Str(MD1)
Else
    EX = TextBox5.Text
    MD2 = (MD1 + EX) / 2
    If (MD2 >= 7) Then
        Label1.Text = "Aprovado em exame - Média = " & Str(MD2)
    Else
        Label1.Text = "Reprovado - Média = " & Str(MD2)
    End If
End If
```

Capítulo 3 – Exercício 5



```
Dim A, B, DIF As Integer
```

```
A = TextBox1.Text  
B = TextBox2.Text
```

```
If (A > B) Then  
    DIF = A - B  
Else  
    DIF = B - A  
End If
```

```
Label1.Text = DIF
```

Capítulo 4

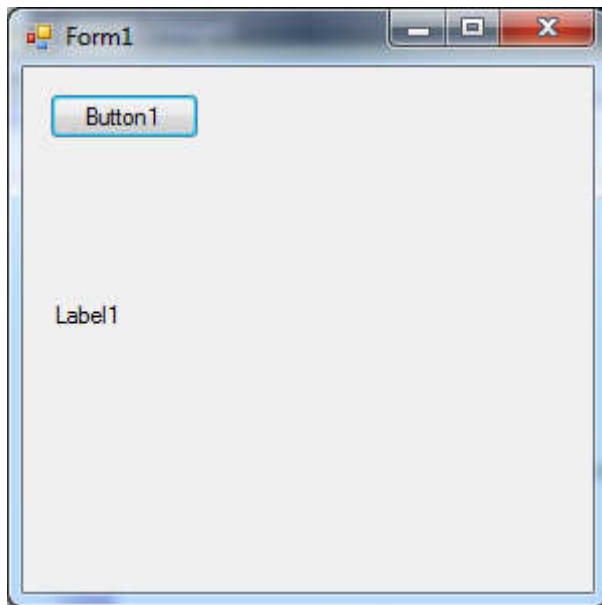
Do While / Loop
While / End While
Do Until / Loop
Do / Loop While
Do / Loop Until
Do / Loop
For...To...Step / Next

Para os exercícios que envolvem o uso de múltiplos e divisores (como é caso da verificação de valores pares ou ímpares) deve-se fazer uso do operador **Mod** para obtenção do valor do resto de uma divisão com quociente inteiro. Este operador é citado no capítulo 2, mas não é demonstrado propositalmente para que neste momento possa verificar se o aluno está realmente atento ao que está sendo apresentado.

A sequência de respostas baseia-se na seguinte ordem:

- a) **Do While / Loop**
- b) **While / End While**
- c) **Do Until / Loop**
- d) **Do / Loop While**
- e) **Do / Loop Until**
- f) **Do / Loop**
- g) **For...To...Step / Next**

Capítulo 4 – Exercício 1a – Do While /Loop



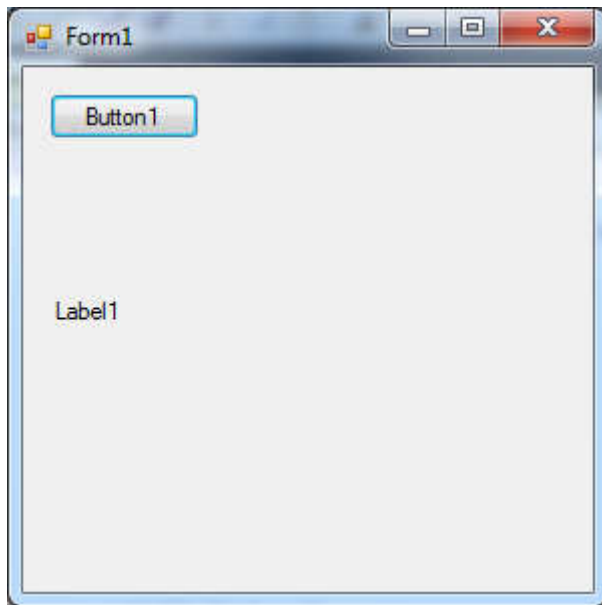
```
Dim S, I, R As Integer

S = 0

I = 0
Do While (I <= 20)
    R = I Mod 2
    If (R <> 0) Then ' Não use R = 1 como condição
        S = S + I
    End If
    I = I + 1
Loop

Label1.Text = S
```


Capítulo 4 – Exercício 2a – Do While /Loop



```
Dim S, I As Integer
```

```
S = 0
```

```
I = 1
```

```
Do While (I <= 100)
```

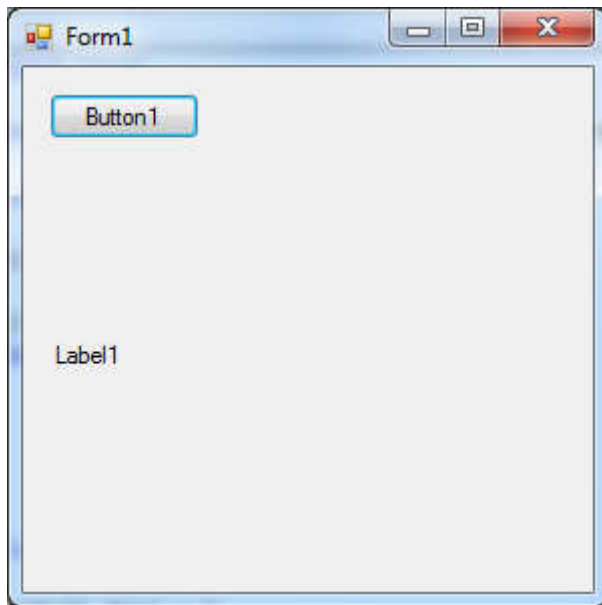
```
    S = S + I
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 3a – Do While /Loop



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 1
```

```
Do While (I < 200)
```

```
    R = I Mod 4
```

```
    If (R = 0) Then
```

```
        S = S + I
```

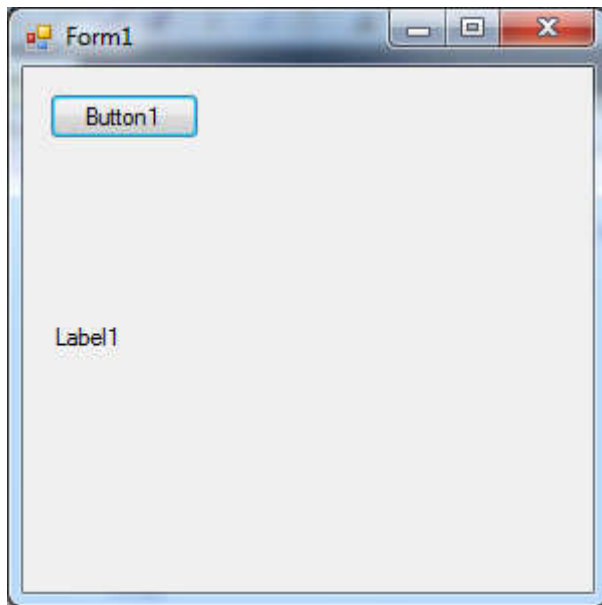
```
    End If
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 4a – Do While /Loop



```
Dim S, QUAD, I As Integer
```

```
S = 0
```

```
I = 2
```

```
Do While (I <= 5)
```

```
    QUAD = I ^ 2
```

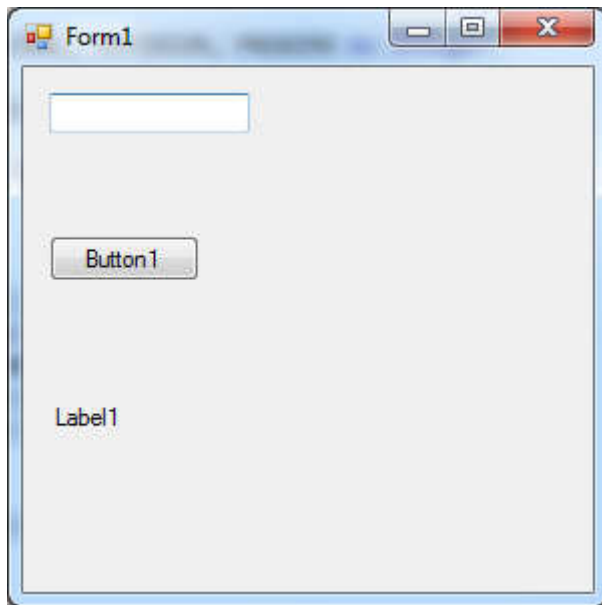
```
    S = S + QUAD
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 5a – Do While /Loop



```
Dim N, I, ATUAL, ANTERIOR, PROXIMO As Integer
```

```
N = TextBox1.Text
```

```
ANTERIOR = 0
```

```
ATUAL = 1
```

```
I = 1
```

```
Do While (I <= N)
```

```
    PROXIMO = ATUAL + ANTERIOR
```

```
    ANTERIOR = ATUAL
```

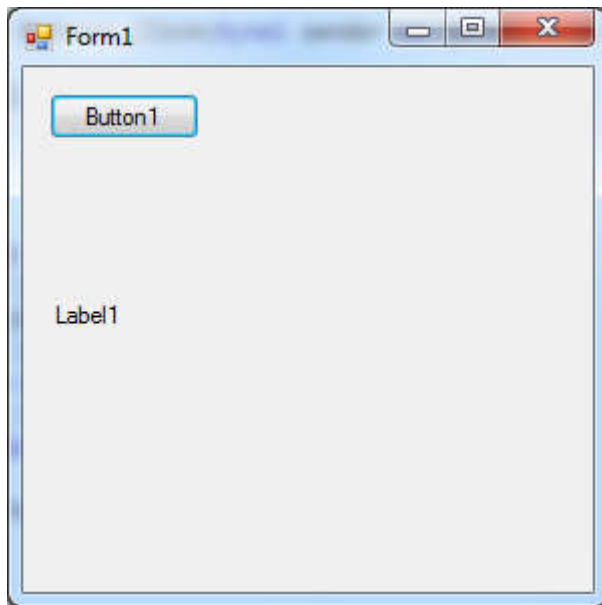
```
    ATUAL = PROXIMO
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = ANTERIOR
```

Capítulo 4 – Exercício 1b – While /End While



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 0
```

```
While (I <= 20)
```

```
    R = I Mod 2
```

```
    If (R <> 0) Then
```

```
        S = S + I
```

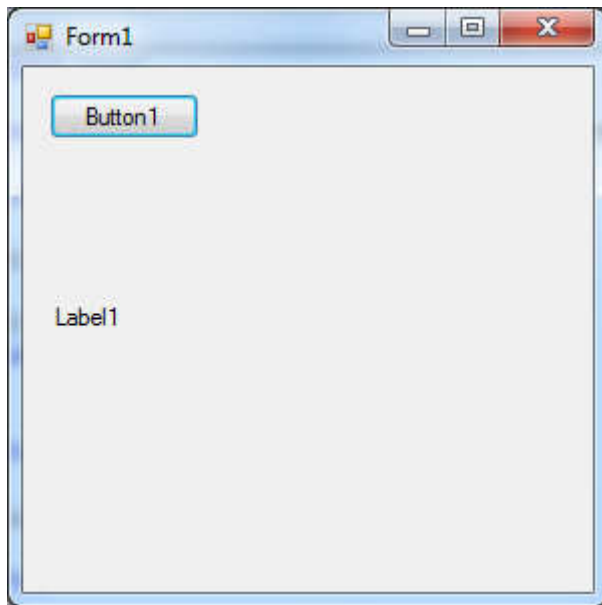
```
    End If
```

```
    I = I + 1
```

```
End While
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 2b – While /End While



```
Dim S, I As Integer
```

```
S = 0
```

```
I = 1
```

```
While (I <= 100)
```

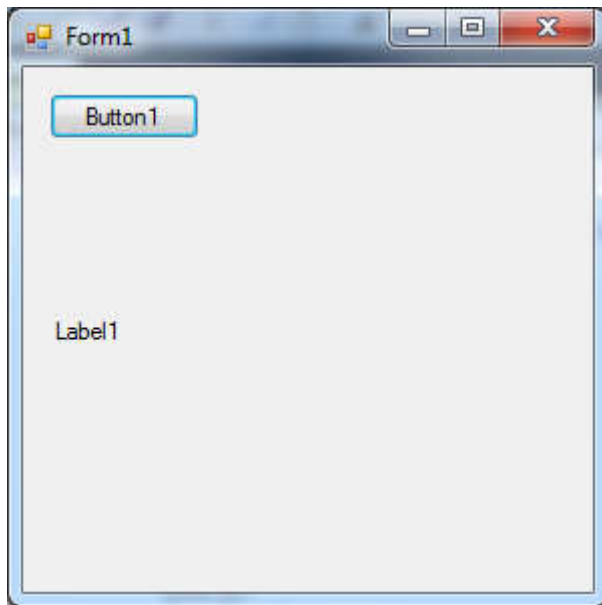
```
    S = S + I
```

```
    I = I + 1
```

```
End While
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 3b – While /End While



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 1
```

```
While (I < 200)
```

```
    R = I Mod 4
```

```
    If (R = 0) Then
```

```
        S = S + I
```

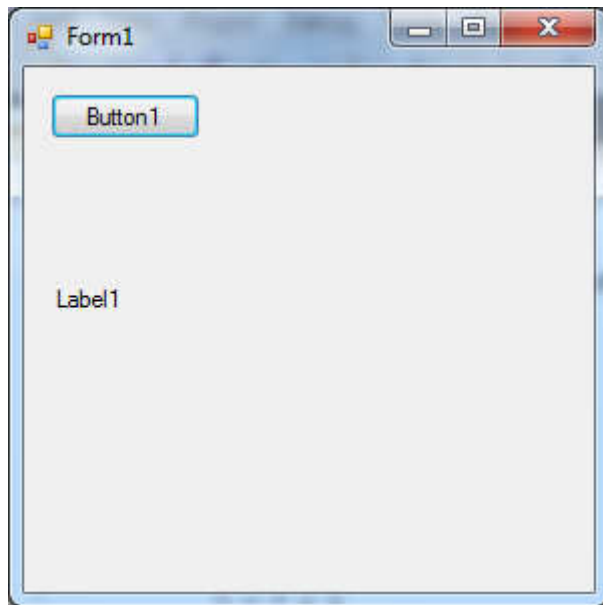
```
    End If
```

```
    I = I + 1
```

```
End While
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 4b – While /End While



```
Dim S, QUAD, I As Integer
```

```
S = 0
```

```
I = 2
```

```
While (I <= 5)
```

```
    QUAD = I ^ 2
```

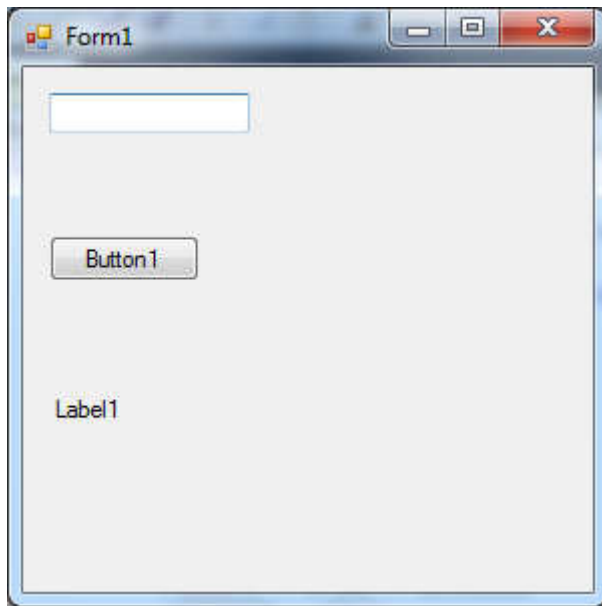
```
    S = S + QUAD
```

```
    I = I + 1
```

```
End While
```

```
Label1.Text = S
```


Capítulo 4 – Exercício 5b – While /End While



```
Dim N, I, ATUAL, ANTERIOR, PROXIMO As Integer
```

```
N = TextBox1.Text
```

```
ANTERIOR = 0
```

```
ATUAL = 1
```

```
I = 1
```

```
While (I <= N)
```

```
    PROXIMO = ATUAL + ANTERIOR
```

```
    ANTERIOR = ATUAL
```

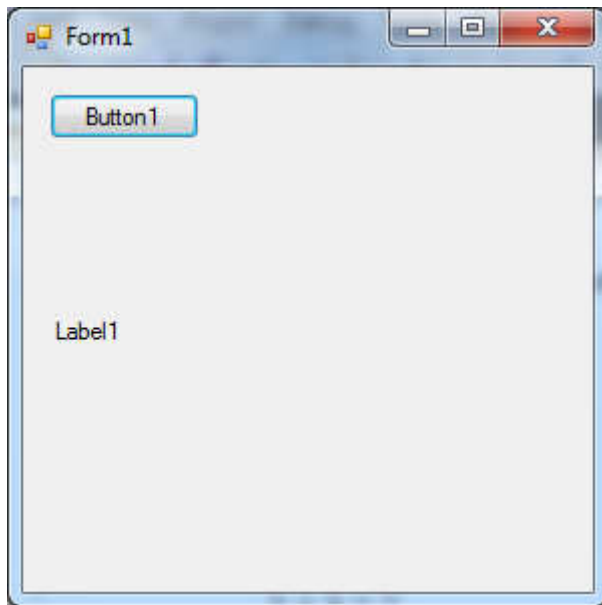
```
    ATUAL = PROXIMO
```

```
    I = I + 1
```

```
End While
```

```
Label1.Text = ANTERIOR
```

Capítulo 4 – Exercício 1c – Do Until / Loop



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 0
```

```
Do Until (I > 20)
```

```
    R = I Mod 2
```

```
    If (R <> 0) Then
```

```
        S = S + I
```

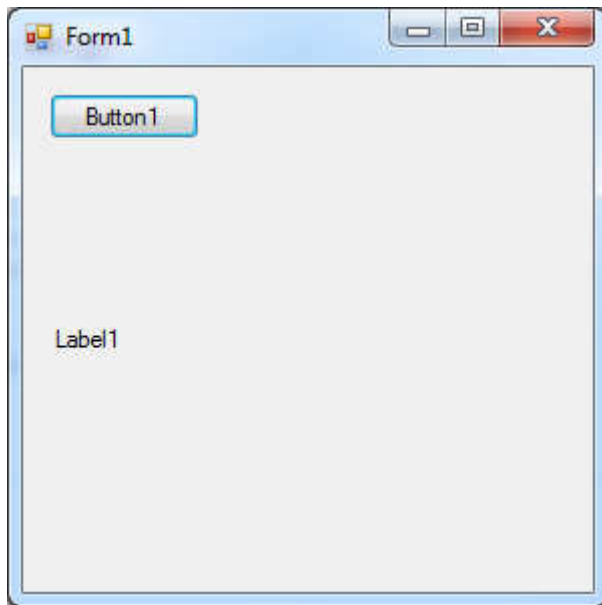
```
    End If
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 2c – Do Until / Loop



```
Dim S, I As Integer
```

```
S = 0
```

```
I = 1
```

```
Do Until (I > 100)
```

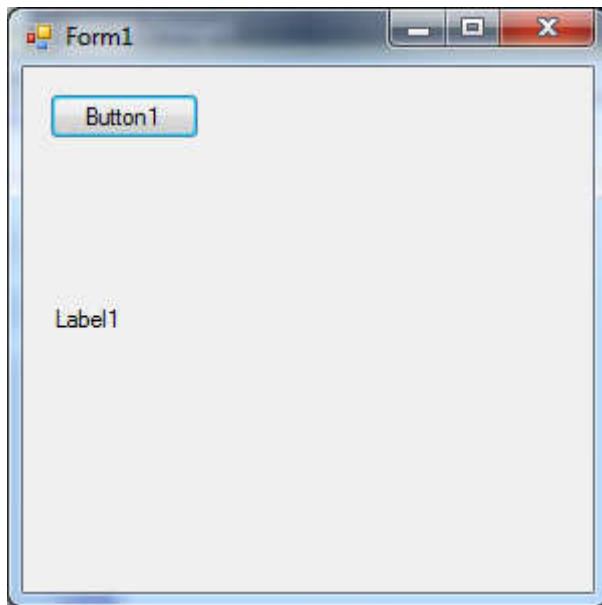
```
    S = S + I
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 3c – Do Until / Loop



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 1
```

```
Do Until (I > 199)
```

```
    R = I Mod 4
```

```
    If (R = 0) Then
```

```
        S = S + I
```

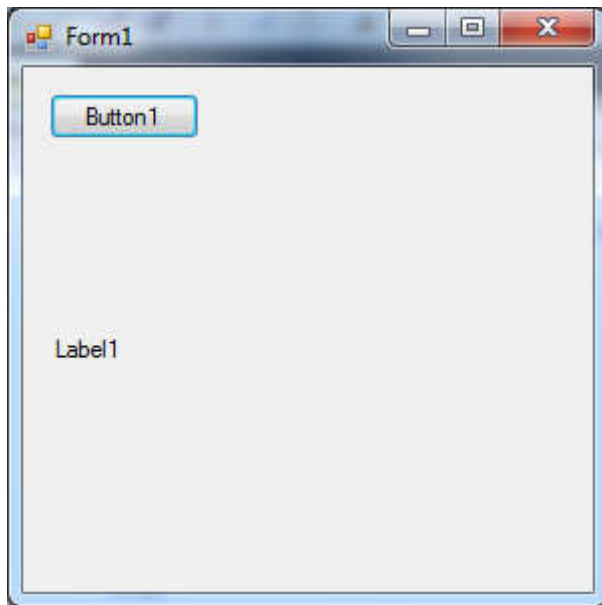
```
    End If
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 4c – Do Until / Loop



```
Dim S, QUAD, I As Integer
```

```
S = 0
```

```
I = 2
```

```
Do Until (I > 5)
```

```
    QUAD = I ^ 2
```

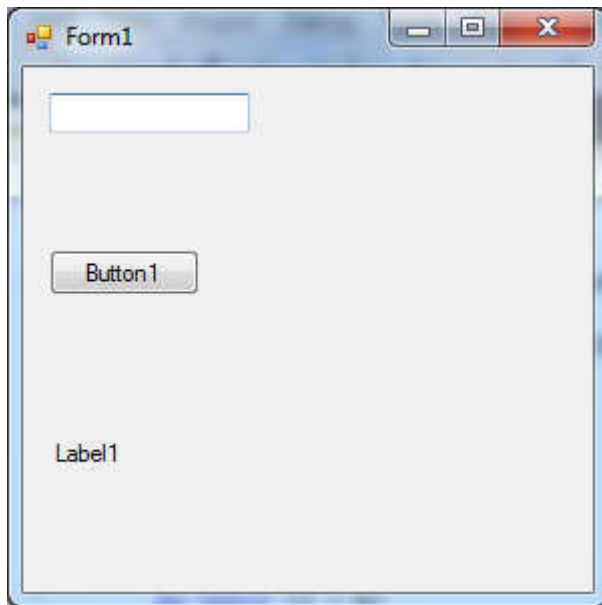
```
    S = S + QUAD
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 5c – Do Until / Loop



```
Dim N, I, ATUAL, ANTERIOR, PROXIMO As Integer
```

```
N = TextBox1.Text
```

```
ANTERIOR = 0
```

```
ATUAL = 1
```

```
I = 1
```

```
Do Until (I > N)
```

```
    PROXIMO = ATUAL + ANTERIOR
```

```
    ANTERIOR = ATUAL
```

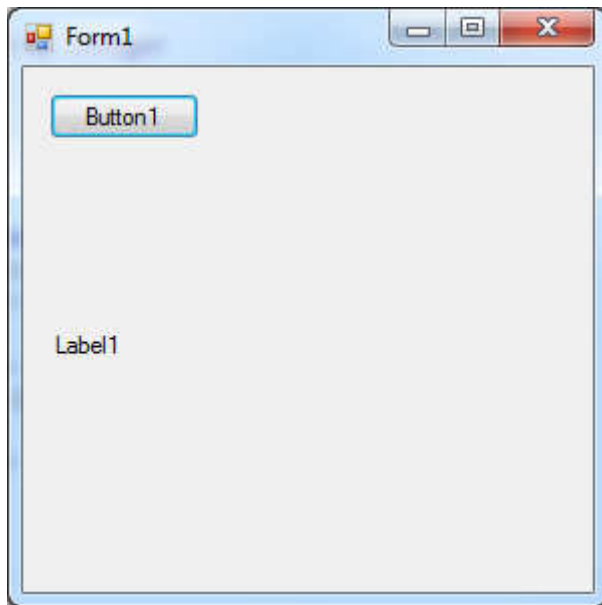
```
    ATUAL = PROXIMO
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = ANTERIOR
```

Capítulo 4 – Exercício 1d – Do / Loop While



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 0
```

```
Do
```

```
    R = I Mod 2
```

```
    If (R <> 0) Then
```

```
        S = S + I
```

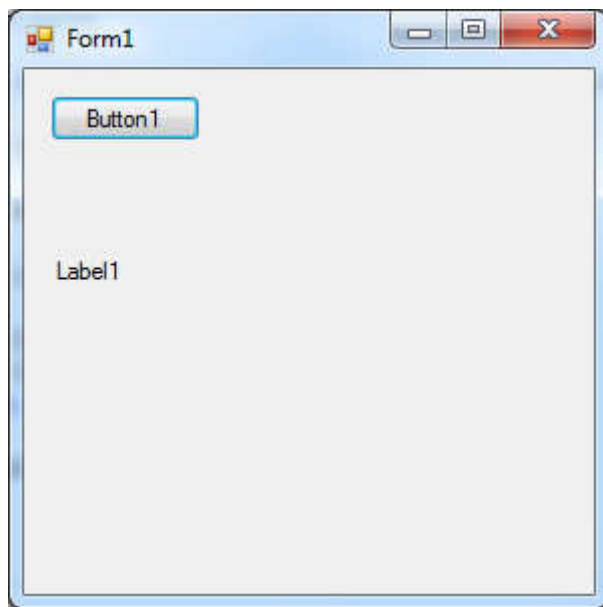
```
    End If
```

```
    I = I + 1
```

```
Loop While (I <= 20)
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 2d – Do / Loop While



```
Dim S, I As Integer
```

```
S = 0
```

```
I = 1
```

```
Do
```

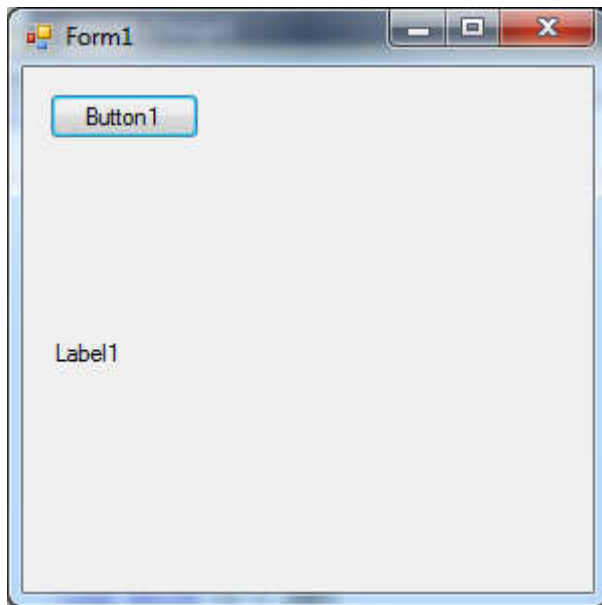
```
    S = S + I
```

```
    I = I + 1
```

```
Loop While (I <= 100)
```

```
Label1.Text = S
```


Capítulo 4 – Exercício 3d – Do / Loop While



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 1
```

```
Do
```

```
    R = I Mod 4
```

```
    If (R = 0) Then
```

```
        S = S + I
```

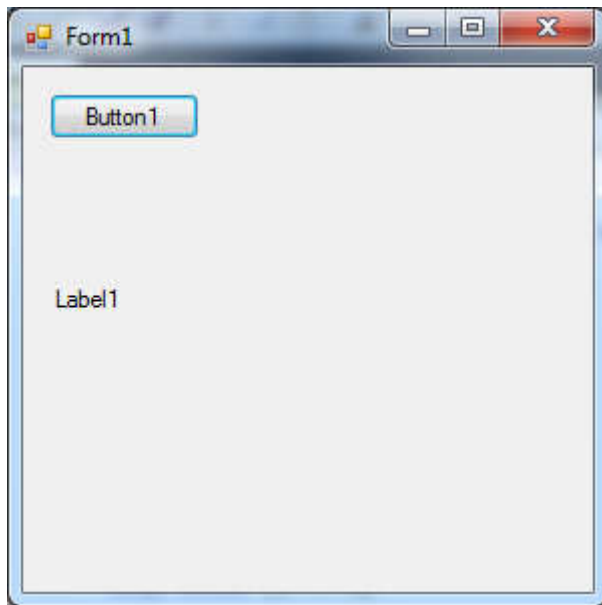
```
    End If
```

```
    I = I + 1
```

```
Loop While (I < 200)
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 4d – Do / Loop While



```
Dim S, QUAD, I As Integer
```

```
S = 0
```

```
I = 2
```

```
Do
```

```
    QUAD = I ^ 2
```

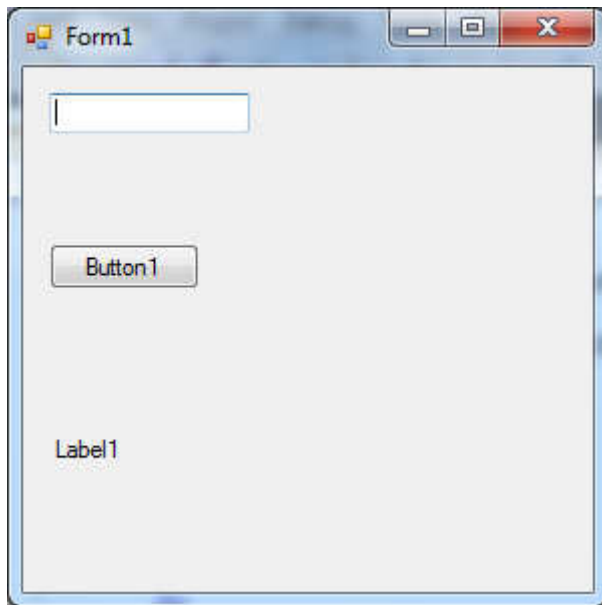
```
    S = S + QUAD
```

```
    I = I + 1
```

```
Loop While (I <= 5)
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 5d – Do / Loop While



```
Dim N, I, ATUAL, ANTERIOR, PROXIMO As Integer
```

```
N = TextBox1.Text
```

```
ANTERIOR = 0
```

```
ATUAL = 1
```

```
I = 1
```

```
Do
```

```
    PROXIMO = ATUAL + ANTERIOR
```

```
    ANTERIOR = ATUAL
```

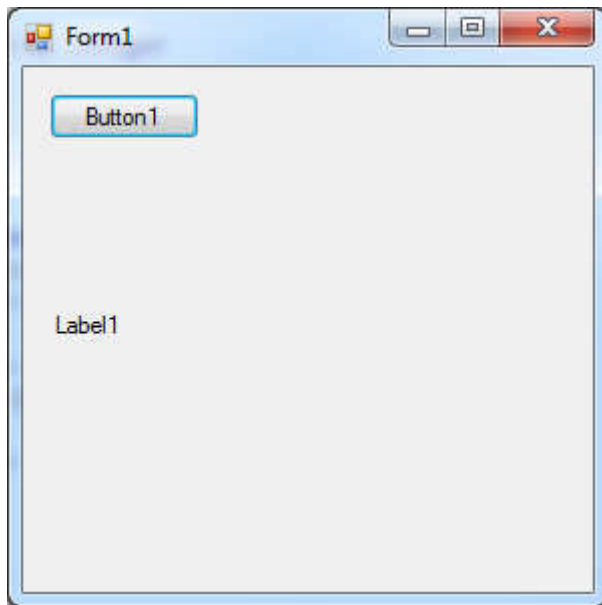
```
    ATUAL = PROXIMO
```

```
    I = I + 1
```

```
Loop While (I <= N)
```

```
Label1.Text = ANTERIOR
```

Capítulo 4 – Exercício 1e – Do / Loop Until



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 0
```

```
Do
```

```
    R = I Mod 2
```

```
    If (R <> 0) Then
```

```
        S = S + I
```

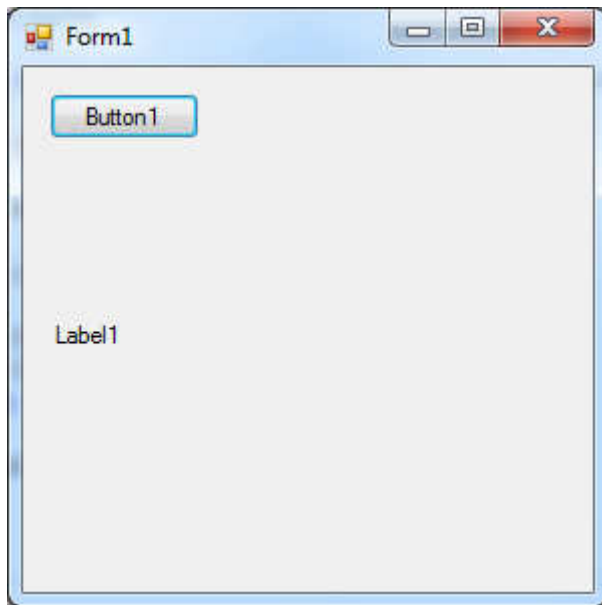
```
    End If
```

```
    I = I + 1
```

```
Loop Until (I > 20)
```

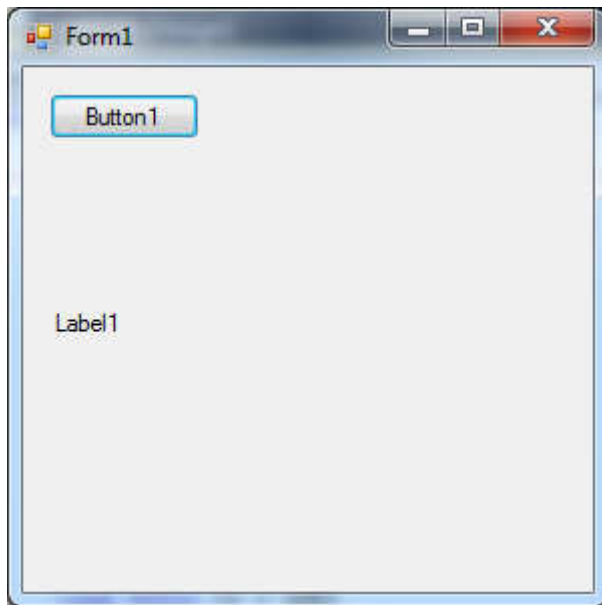
```
Label1.Text = S
```

Capítulo 4 – Exercício 2e – Do / Loop Until



```
Dim S, I As Integer  
  
S = 0  
  
I = 1  
Do  
    S = S + I  
    I = I + 1  
Loop Until (I > 100)  
  
Label1.Text = S
```

Capítulo 4 – Exercício 3e – Do / Loop Until



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 1
```

```
Do
```

```
    R = I Mod 4
```

```
    If (R = 0) Then
```

```
        S = S + I
```

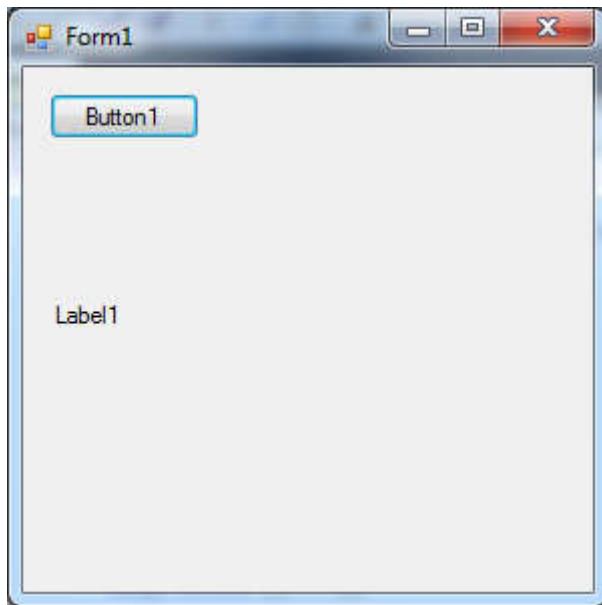
```
    End If
```

```
    I = I + 1
```

```
Loop Until (I > 199)
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 4e – Do / Loop Until



```
Dim S, QUAD, I As Integer
```

```
S = 0
```

```
I = 2
```

```
Do
```

```
    QUAD = I ^ 2
```

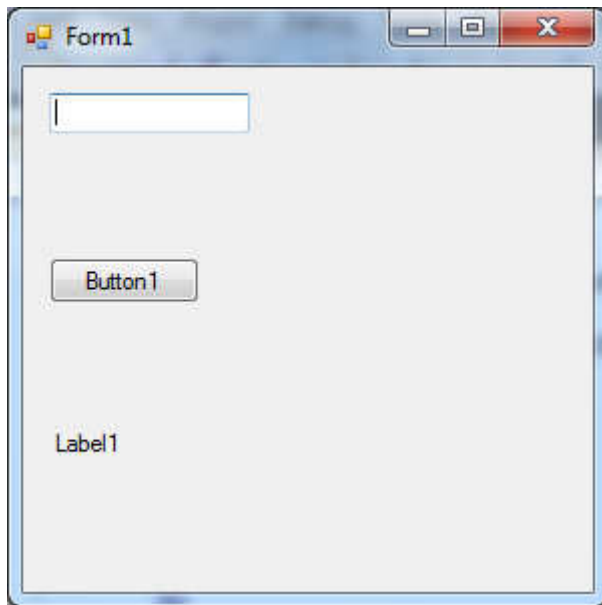
```
    S = S + QUAD
```

```
    I = I + 1
```

```
Loop Until (I > 5)
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 5e – Do / Loop Until



```
Dim N, I, ATUAL, ANTERIOR, PROXIMO As Integer
```

```
N = TextBox1.Text
```

```
ANTERIOR = 0
```

```
ATUAL = 1
```

```
I = 1
```

```
Do
```

```
    PROXIMO = ATUAL + ANTERIOR
```

```
    ANTERIOR = ATUAL
```

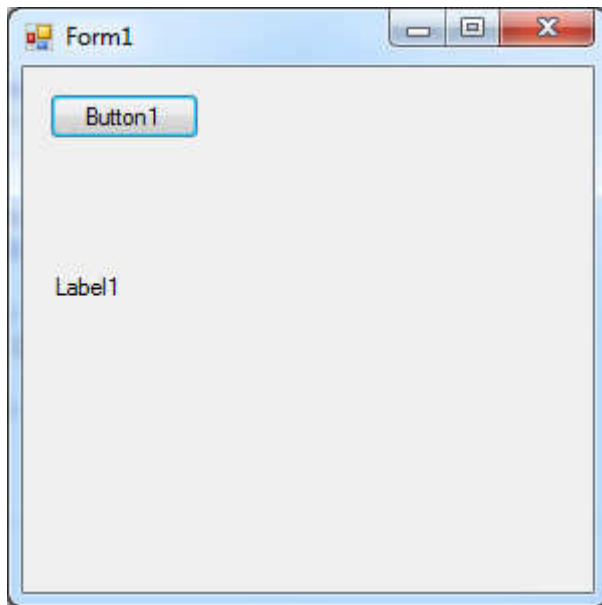
```
    ATUAL = PROXIMO
```

```
    I = I + 1
```

```
Loop Until (I > N)
```

```
Label1.Text = ANTERIOR
```


Capítulo 4 – Exercício 1f – Do / Loop



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 0
```

```
Do
```

```
    R = I Mod 2
```

```
    If (R <> 0) Then
```

```
        S = S + I
```

```
    End If
```

```
    If (I >= 20) Then
```

```
        Exit Do
```

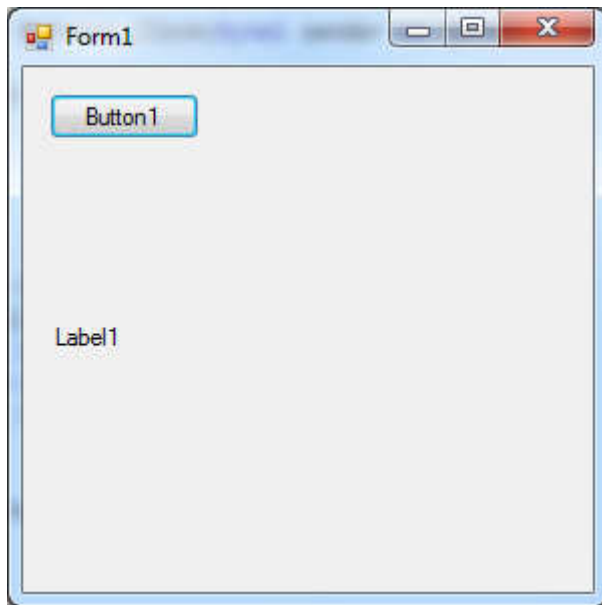
```
    End If
```

```
    I = I + 1
```

```
Loop Until (I > 20)
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 2f – Do / Loop



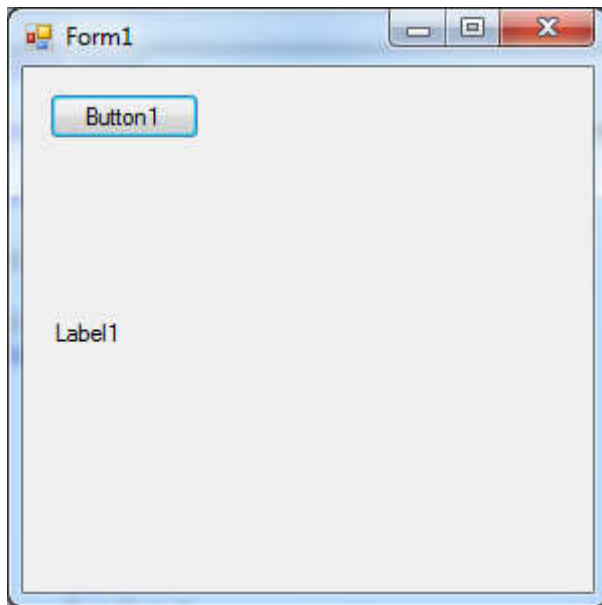
```
Dim S, I As Integer

S = 0

I = 1
Do
    S = S + I
    If (I >= 100) Then
        Exit Do
    End If
    I = I + 1
Loop

Label1.Text = S
```

Capítulo 4 – Exercício 3f – Do / Loop



```
Dim S, I, R As Integer
```

```
S = 0
```

```
I = 1
```

```
Do
```

```
    R = I Mod 4
```

```
    If (R = 0) Then
```

```
        S = S + I
```

```
    End If
```

```
    If (I >= 199) Then
```

```
        Exit Do
```

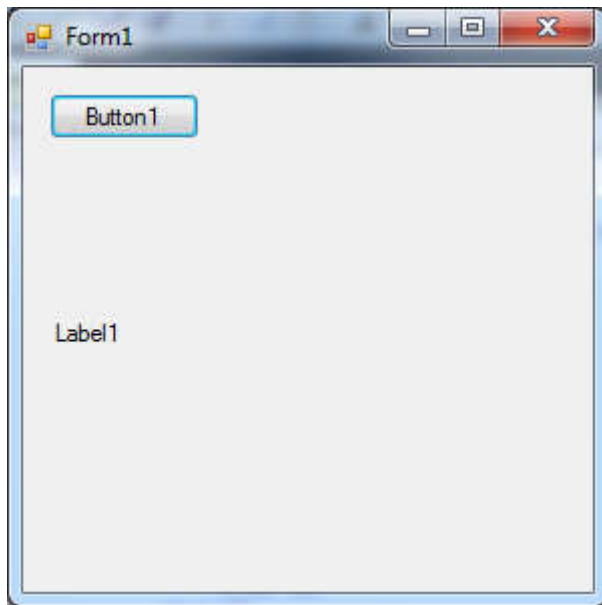
```
    End If
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 4f – Do / Loop



```
Dim S, QUAD, I As Integer
```

```
S = 0
```

```
I = 2
```

```
Do
```

```
    QUAD = I ^ 2
```

```
    S = S + QUAD
```

```
    If (I >= 5) Then
```

```
        Exit Do
```

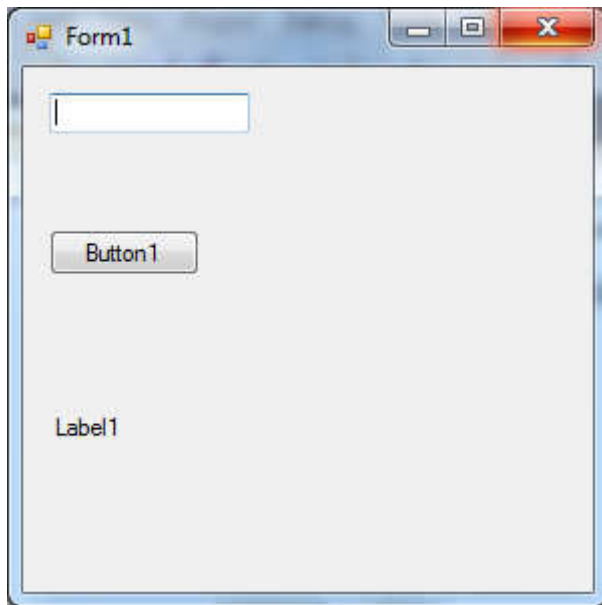
```
    End If
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 5f – Do / Loop



```
Dim N, I, ATUAL, ANTERIOR, PROXIMO As Integer
```

```
N = TextBox1.Text
```

```
ANTERIOR = 0
```

```
ATUAL = 1
```

```
I = 1
```

```
Do
```

```
    PROXIMO = ATUAL + ANTERIOR
```

```
    ANTERIOR = ATUAL
```

```
    ATUAL = PROXIMO
```

```
    If (I >= N) Then
```

```
        Exit Do
```

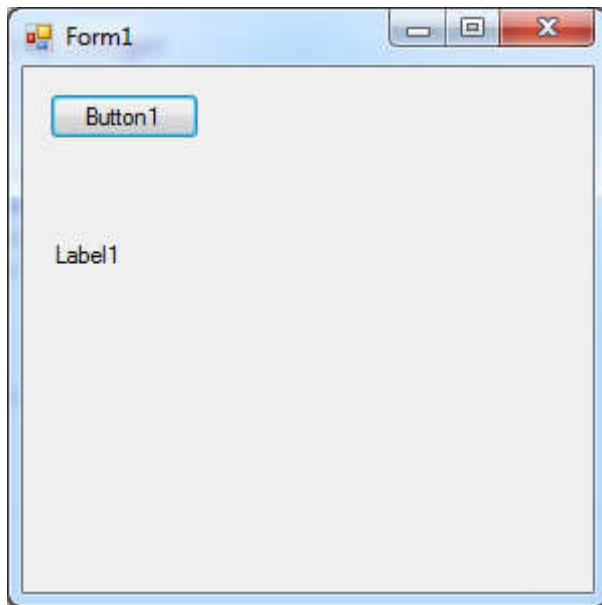
```
    End If
```

```
    I = I + 1
```

```
Loop
```

```
Label1.Text = ANTERIOR
```

Capítulo 4 – Exercício 1g – For ... To ... Step / Next



```
Dim S, I, R As Integer
```

```
S = 0
```

```
For I = 0 To 20 Step 1
```

```
    R = I Mod 2
```

```
    If (R <> 0) Then
```

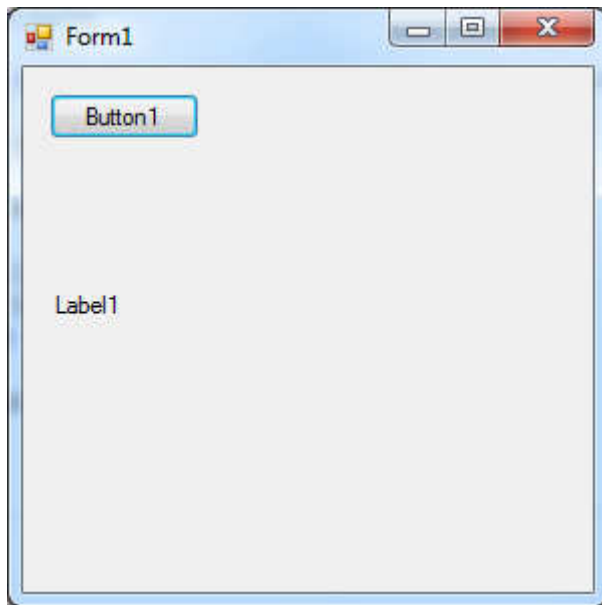
```
        S = S + I
```

```
    End If
```

```
Next
```

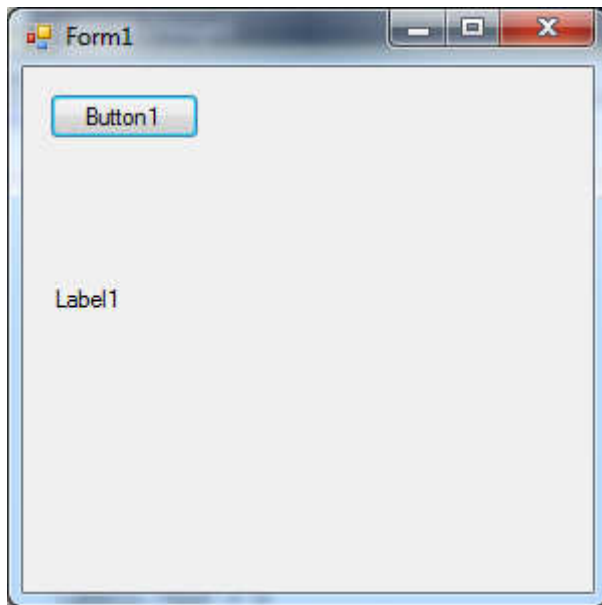
```
Label1.Text = S
```

Capítulo 4 – Exercício 2g – For ... To ... Step / Next



```
Dim S, I As Integer  
  
S = 0  
  
For I = 1 To 100 Step 1  
    S = S + I  
Next  
  
Label1.Text = S
```

Capítulo 4 – Exercício 3g – For ... To ... Step / Next



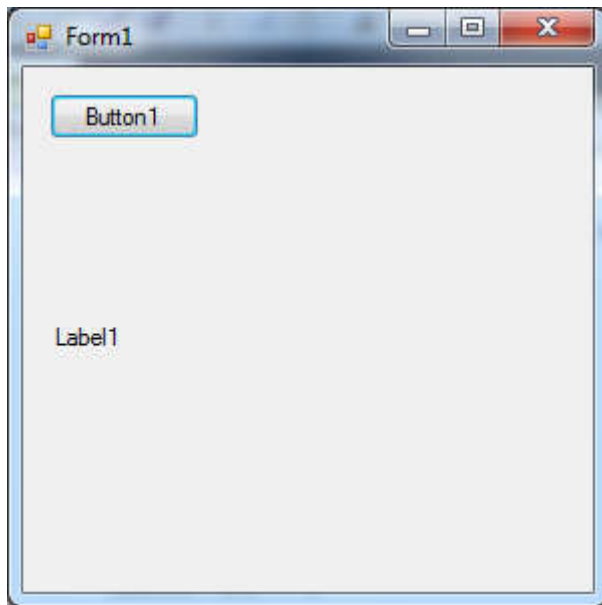
```
Dim S, I, R As Integer

S = 0

For I = 1 To 199 Step 1
    R = I Mod 4
    If (R = 0) Then
        S = S + I
    End If
Next

Label1.Text = S
```


Capítulo 4 – Exercício 4g – For ... To ... Step / Next



```
Dim S, QUAD, I As Integer
```

```
S = 0
```

```
For I = 2 To 5 Step 1
```

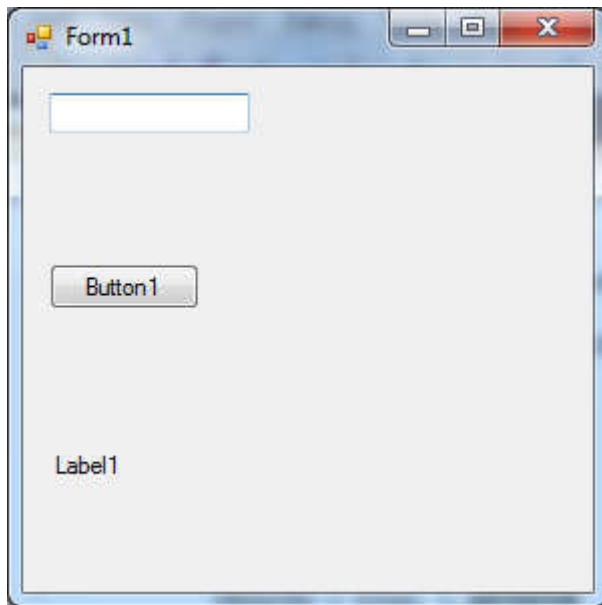
```
    QUAD = I ^ 2
```

```
    S = S + QUAD
```

```
Next
```

```
Label1.Text = S
```

Capítulo 4 – Exercício 5g – For ... To ... Step / Next



```
Dim N, I, ATUAL, ANTERIOR, PROXIMO As Integer
```

```
N = TextBox1.Text
```

```
ANTERIOR = 0
```

```
ATUAL = 1
```

```
For I = 1 To N Step 1
```

```
    PROXIMO = ATUAL + ANTERIOR
```

```
    ANTERIOR = ATUAL
```

```
    ATUAL = PROXIMO
```

```
Next
```

```
Label1.Text = ANTERIOR
```

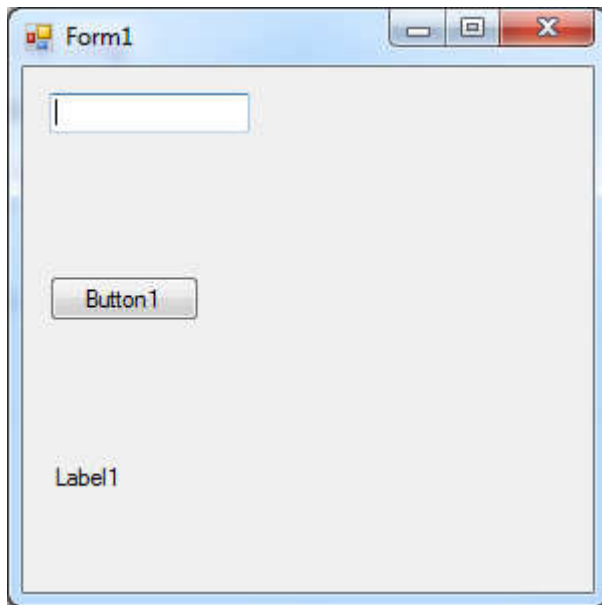
Capítulo 5

Sub / End Sub Function / End Function

A sequência de respostas baseia-se na seguinte ordem:

- a) Sub com passagem de parâmetro por valor
- b) Sub com passagem de parâmetro por referência
- c) Function com passagem de parâmetro por valor

Capítulo 5 – Exercício 1a – Sub com passagem de parâmetro por valor



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim ENTRADA As Integer

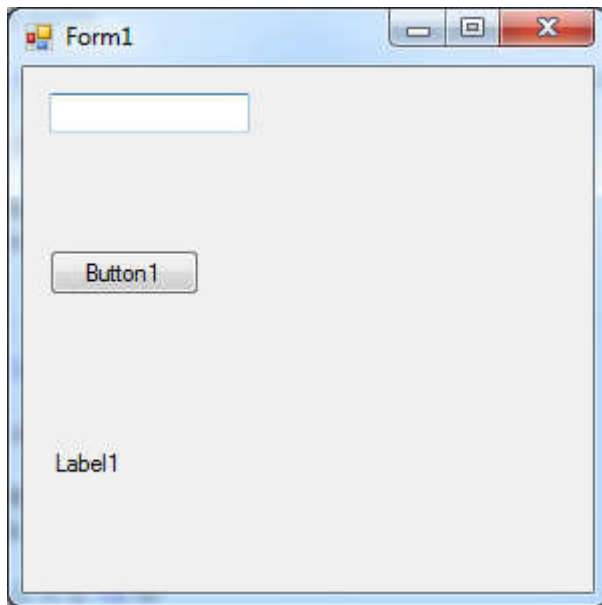
        ENTRADA = TextBox1.Text
        Somatorio(ENTRADA)

    End Sub

    Public Sub Somatorio(ByVal N As Integer)
        Dim I, S As Integer
        For I = 1 To N
            S = S + I
        Next
        Label1.Text = S
    End Sub

End Class
```

Capítulo 5 – Exercício 2a – Sub com passagem de parâmetro por valor



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim ENTRADA As Integer

        ENTRADA = TextBox1.Text
        Fibonacci(ENTRADA)

    End Sub

    Private Sub Fibonacci(ByVal N As Integer)

        Dim ANTERIOR, ATUAL, PROXIMO As Integer

        ANTERIOR = 0
        ATUAL = 1

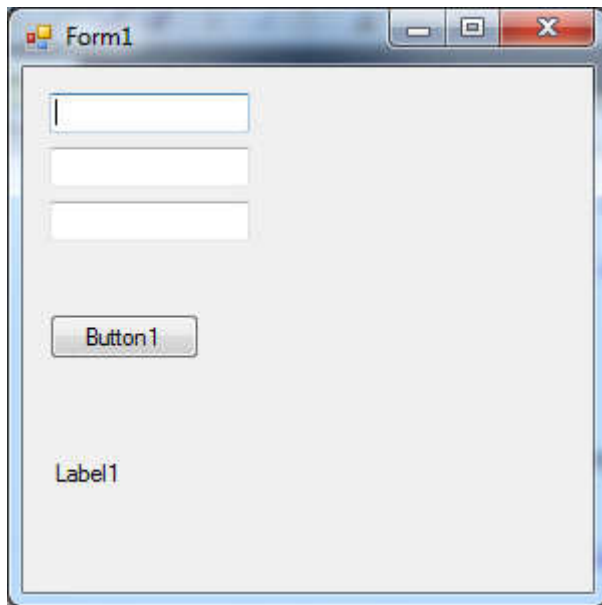
        For I = 1 To N
            PROXIMO = ATUAL + ANTERIOR
            ANTERIOR = ATUAL
            ATUAL = PROXIMO
        Next

        Label1.Text = ANTERIOR

    End Sub

End Class
```

Capítulo 5 – Exercício 3a – Sub com passagem de parâmetro por valor



```
Public Class Form1
```

```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...
```

```
        Dim VALOR_ENT, TAXA_ENT, TEMPO_ENT As Single
```

```
        VALOR_ENT = TextBox1.Text
```

```
        TAXA_ENT = TextBox2.Text
```

```
        TEMPO_ENT = TextBox3.Text
```

```
        Prestacao(VALOR_ENT, TAXA_ENT, TEMPO_ENT)
```

```
    End Sub
```

```
    Private Sub Prestacao(ByVal VALOR As Single, ByVal TAXA As Single, _  
                           ByVal TEMPO As Single)
```

```
        Dim X As Single
```

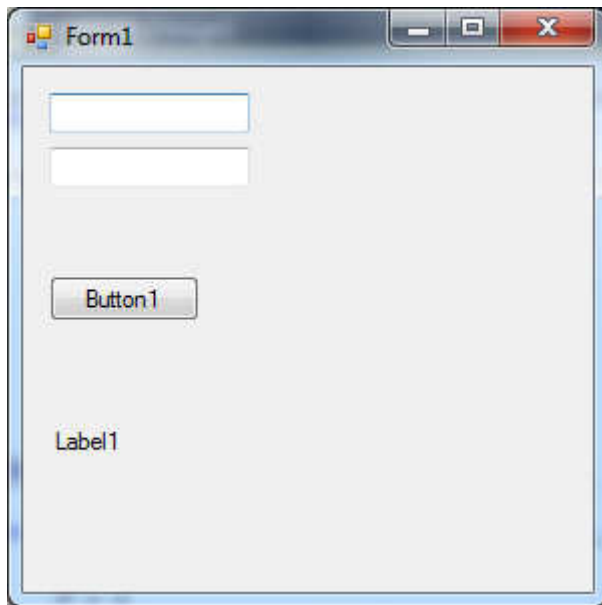
```
        X = VALOR + (VALOR * (TAXA / 100) * TEMPO)
```

```
        Label1.Text = X
```

```
    End Sub
```

```
End Class
```

Capítulo 5 – Exercício 4a – Sub com passagem de parâmetro por valor



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim BASE_ENT, EXP_ENT As Integer

        BASE_ENT = TextBox1.Text
        EXP_ENT = TextBox2.Text

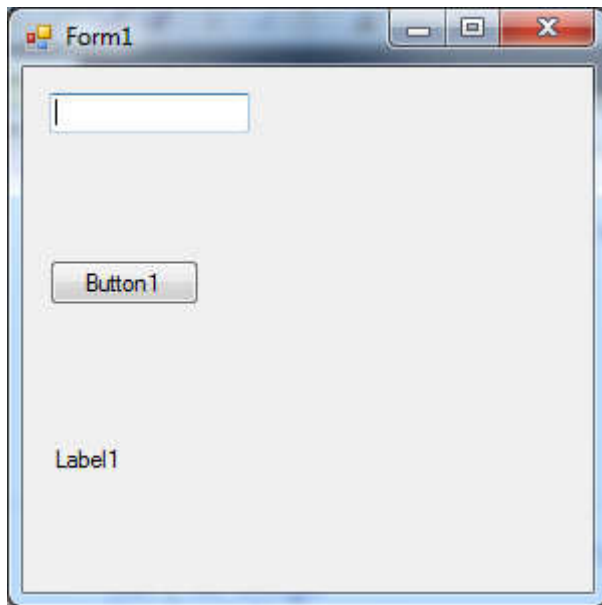
        Potencia(BASE_ENT, EXP_ENT)

    End Sub

    Private Sub Potencia(ByVal BASE As Integer, ByVal EXP As Integer)
        Dim P, I As Integer
        P = 1
        For I = 1 To EXP
            P = P * BASE
        Next
        Label1.Text = P
    End Sub

End Class
```

Capítulo 5 – Exercício 1b – Sub com passagem de parâmetro por referência



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim ENTRADA, SAIDA As Integer

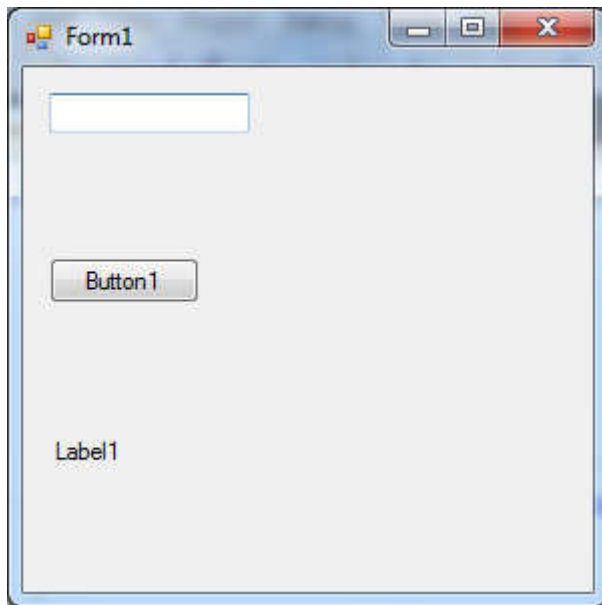
        ENTRADA = TextBox1.Text
        Somatorio(ENTRADA, SAIDA)
        Label1.Text = SAIDA

    End Sub

    Public Sub Somatorio(ByVal N As Integer, ByRef S As Integer)
        Dim I As Integer
        For I = 1 To N
            S = S + I
        Next
    End Sub

End Class
```


Capítulo 5 – Exercício 2b – Sub com passagem de parâmetro por referência



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim ENTRADA, SAIDA As Integer

        ENTRADA = TextBox1.Text
        Fibonacci(ENTRADA, SAIDA)
        Label1.Text = SAIDA

    End Sub

    Private Sub Fibonacci(ByVal N As Integer, ByRef ANTERIOR As Integer)

        Dim ATUAL, PROXIMO As Integer

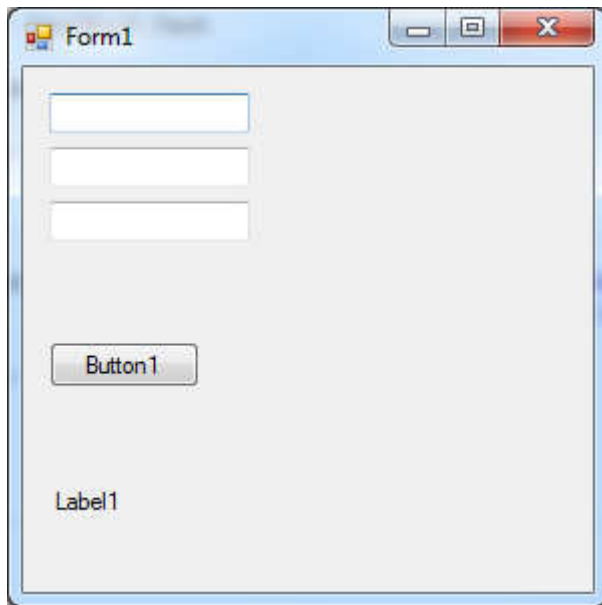
        ANTERIOR = 0
        ATUAL = 1

        For I = 1 To N
            PROXIMO = ATUAL + ANTERIOR
            ANTERIOR = ATUAL
            ATUAL = PROXIMO
        Next

    End Sub

End Class
```

Capítulo 5 – Exercício 3b – Sub com passagem de parâmetro por referência



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim VALOR_ENT, TAXA_ENT, TEMPO_ENT, PREST_SAI As Single

        VALOR_ENT = TextBox1.Text
        TAXA_ENT = TextBox2.Text
        TEMPO_ENT = TextBox3.Text

        Prestacao(VALOR_ENT, TAXA_ENT, TEMPO_ENT, PREST_SAI)

        Label1.Text = PREST_SAI

    End Sub

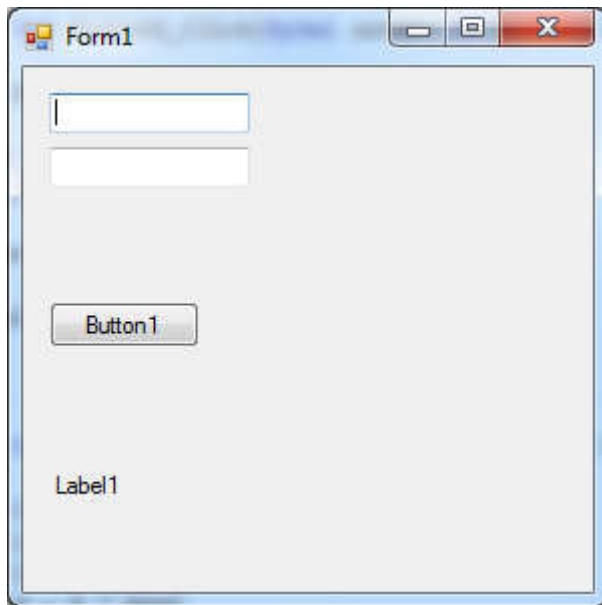
    Private Sub Prestacao(ByVal VALOR As Single, ByVal TAXA As Single, _
        ByVal TEMPO As Single, ByRef PRESTACAO As Single)

        PRESTACAO = VALOR + (VALOR * (TAXA / 100) * TEMPO)

    End Sub

End Class
```

Capítulo 5 – Exercício 4b – Sub com passagem de parâmetro por referência



```
Public Class Form1
```

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

```
        Dim BASE_ENT, EXP_ENT, POTENC_SAI As Integer
```

```
        BASE_ENT = TextBox1.Text
```

```
        EXP_ENT = TextBox2.Text
```

```
        Potencia(BASE_ENT, EXP_ENT, POTENC_SAI)
```

```
        Label1.Text = POTENC_SAI
```

```
    End Sub
```

```
    Private Sub Potencia(ByVal BASE As Integer, ByVal EXP As Integer, _  
ByRef P As Integer)
```

```
        Dim I As Integer
```

```
        P = 1
```

```
        For I = 1 To EXP
```

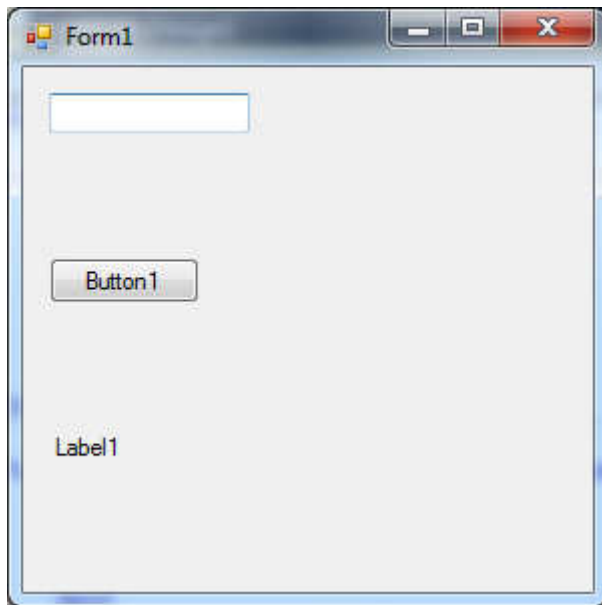
```
            P = P * BASE
```

```
        Next
```

```
    End Sub
```

```
End Class
```

Capítulo 5 – Exercício 1c – Function com passagem de parâmetro por valor



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim ENTRADA As Integer

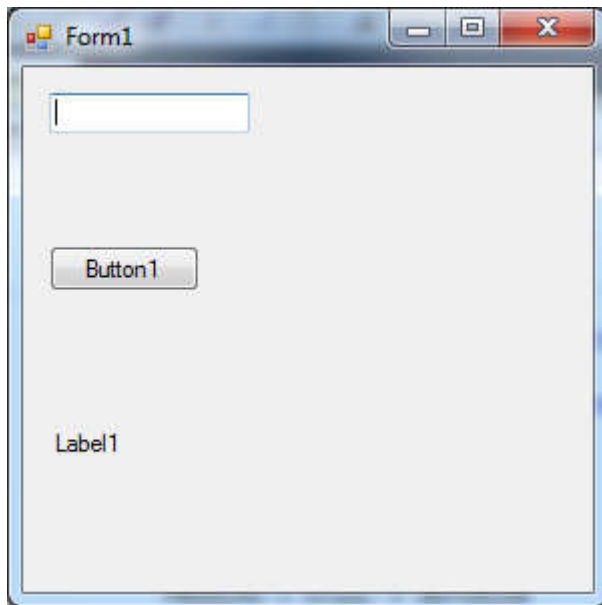
        ENTRADA = TextBox1.Text
        Label1.Text = Somatorio(ENTRADA)

    End Sub

    Public Function Somatorio(ByVal N As Integer)
        Dim I, S As Integer
        For I = 1 To N
            S = S + I
        Next
        Somatorio = S
    End Function

End Class
```

Capítulo 5 – Exercício 2c – Function com passagem de parâmetro por valor



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim ENTRADA As Integer

        ENTRADA = TextBox1.Text
        Label1.Text = Fibonacci(ENTRADA)

    End Sub

    Private Function Fibonacci(ByVal N As Integer)

        Dim ANTERIOR, ATUAL, PROXIMO As Integer

        ANTERIOR = 0
        ATUAL = 1

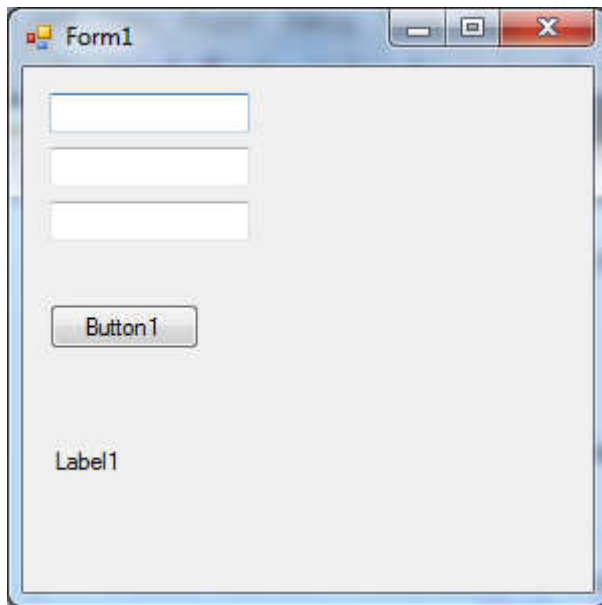
        For I = 1 To N
            PROXIMO = ATUAL + ANTERIOR
            ANTERIOR = ATUAL
            ATUAL = PROXIMO
        Next

        Fibonacci = ANTERIOR

    End Function

End Class
```

Capítulo 5 – Exercício 3c – Function com passagem de parâmetro por valor



```
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...

        Dim VALOR_ENT, TAXA_ENT, TEMPO_ENT As Single

        VALOR_ENT = TextBox1.Text
        TAXA_ENT = TextBox2.Text
        TEMPO_ENT = TextBox3.Text

        Label1.Text = Prestacao(VALOR_ENT, TAXA_ENT, TEMPO_ENT)

    End Sub

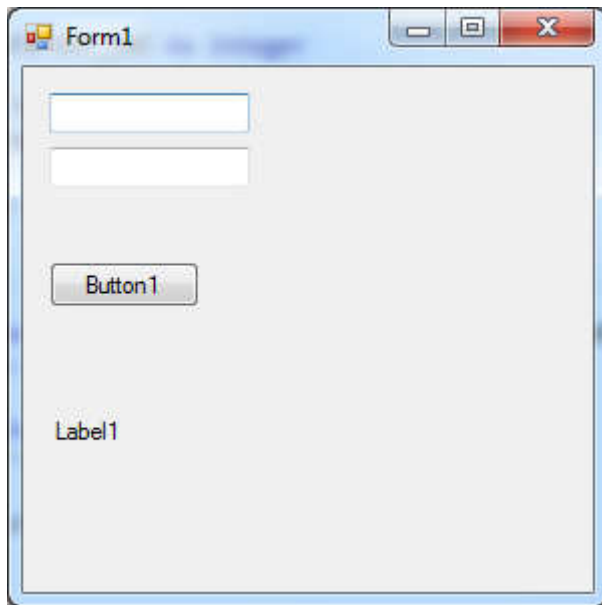
    Private Function Prestacao(ByVal VALOR As Single, ByVal TAXA As _
                                Single, ByVal TEMPO As Single)

        Prestacao = VALOR + (VALOR * (TAXA / 100) * TEMPO)

    End Function

End Class
```

Capítulo 5 – Exercício 4c – Function com passagem de parâmetro por valor



```
Public Class Form1
```

```
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal ...
```

```
        Dim BASE_ENT, EXP_ENT As Integer
```

```
        BASE_ENT = TextBox1.Text
```

```
        EXP_ENT = TextBox2.Text
```

```
        Label1.Text = Potencia(BASE_ENT, EXP_ENT)
```

```
    End Sub
```

```
    Private Function Potencia(ByVal BASE As Integer, ByVal EXP As Integer)
```

```
        Dim P, I As Integer
```

```
        P = 1
```

```
        For I = 1 To EXP
```

```
            P = P * BASE
```

```
        Next
```

```
        Potencia = P
```

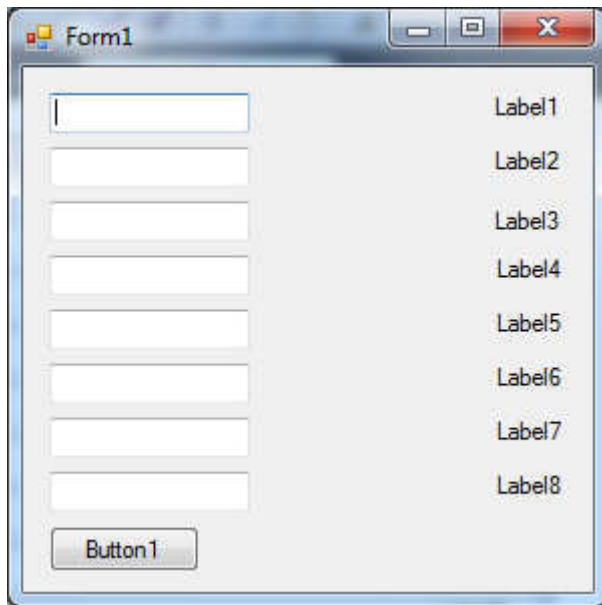
```
    End Function
```

```
End Class
```

Capítulo 6

Matrizes

Capítulo 6 – Exercício 1



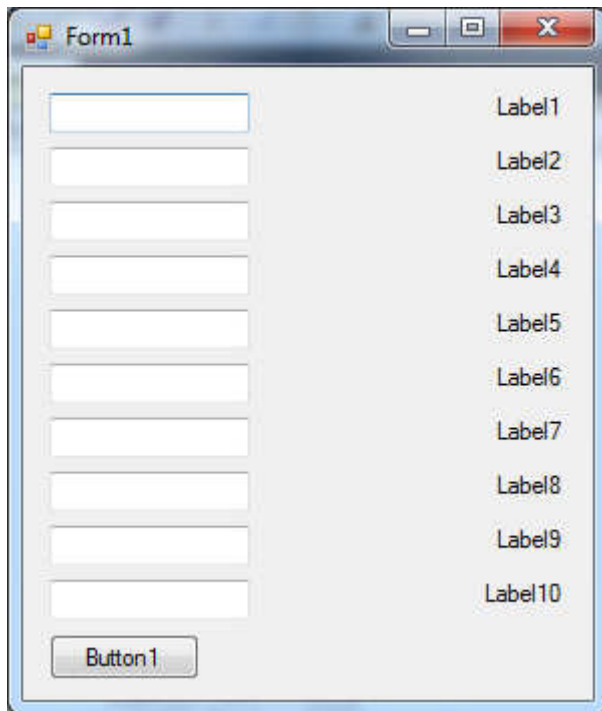
```
Dim I As Integer
Dim A(8), B(8) As Integer
```

```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
```

```
For I = 1 To 8
    B(I) = A(I) * 3
Next
```

```
Label1.Text = B(1)
Label2.Text = B(2)
Label3.Text = B(3)
Label4.Text = B(4)
Label5.Text = B(5)
Label6.Text = B(6)
Label7.Text = B(7)
Label8.Text = B(8)
```

Capítulo 6 – Exercício 2



```
Dim I, J As Integer
Dim A(10), B(10) As Integer
```

```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
A(9) = TextBox9.Text
A(10) = TextBox10.Text
```

```
For I = 1 To 10
    B(I) = 1
    For J = 1 To A(I)
        B(I) = B(I) * J
    Next
Next
```

```
Label1.Text = B(1)
Label2.Text = B(2)
Label3.Text = B(3)
Label4.Text = B(4)
Label5.Text = B(5)
Label6.Text = B(6)
Label7.Text = B(7)
Label8.Text = B(8)
Label9.Text = B(9)
Label10.Text = B(10)
```

Capítulo 6 – Exercício 3

The screenshot shows a Windows application window titled 'Form1'. Inside the window, there are two vertical columns of text input fields. The left column is titled 'Matriz A' and contains 9 empty text boxes. The right column is titled 'Matriz B' and also contains 9 empty text boxes. To the right of these columns, there is a vertical list of 9 labels, labeled 'Label1' through 'Label9'. At the bottom left of the form, there is a button labeled 'Button1'.

```
Dim I As Integer
Dim A(9), B(9), C(9) As Integer
```

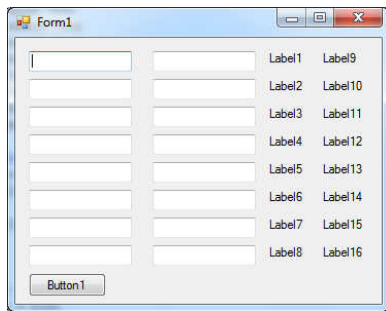
```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
A(9) = TextBox9.Text
```

```
B(1) = TextBox10.Text
B(2) = TextBox11.Text
B(3) = TextBox12.Text
B(4) = TextBox13.Text
B(5) = TextBox14.Text
B(6) = TextBox15.Text
B(7) = TextBox16.Text
B(8) = TextBox17.Text
B(9) = TextBox18.Text
```

```
For I = 1 To 9
    C(I) = A(I) - B(I)
Next
```

```
Label11.Text = C(1)
Label12.Text = C(2)
Label13.Text = C(3)
Label14.Text = C(4)
Label15.Text = C(5)
Label16.Text = C(6)
Label17.Text = C(7)
Label18.Text = C(8)
Label19.Text = C(9)
```

Capítulo 6 – Exercício 4



```
Dim I As Integer
Dim A(8), B(8), C(16) As Integer
```

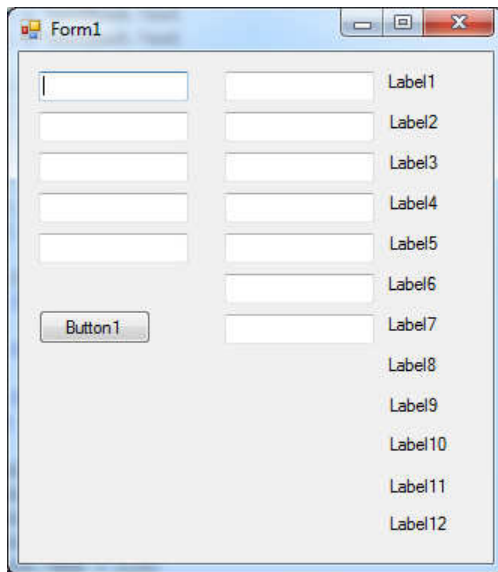
```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
```

```
B(1) = TextBox9.Text
B(2) = TextBox10.Text
B(3) = TextBox11.Text
B(4) = TextBox12.Text
B(5) = TextBox13.Text
B(6) = TextBox14.Text
B(7) = TextBox15.Text
B(8) = TextBox16.Text
```

```
For I = 1 To 16
    If (I <= 8) Then
        C(I) = A(I)
    Else
        C(I) = B(I - 8)
    End If
Next
```

```
Label11.Text = C(1)
Label12.Text = C(2)
Label13.Text = C(3)
Label14.Text = C(4)
Label15.Text = C(5)
Label16.Text = C(6)
Label17.Text = C(7)
Label18.Text = C(8)
Label19.Text = C(9)
Label110.Text = C(10)
Label111.Text = C(11)
Label112.Text = C(12)
Label113.Text = C(13)
Label114.Text = C(14)
Label115.Text = C(15)
Label116.Text = C(16)
```

Capítulo 6 – Exercício 5



```
Dim I As Integer
Dim A(8), B(8), C(16) As Integer
```

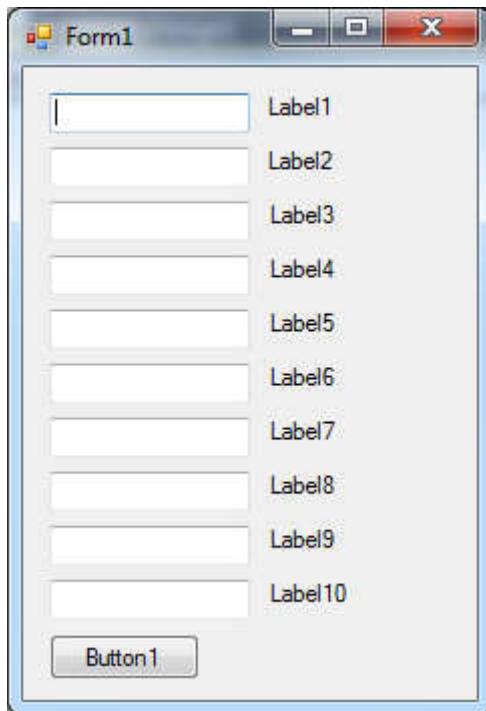
```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
```

```
B(1) = TextBox6.Text
B(2) = TextBox7.Text
B(3) = TextBox8.Text
B(4) = TextBox9.Text
B(5) = TextBox10.Text
B(6) = TextBox11.Text
B(7) = TextBox12.Text
```

```
For I = 1 To 12
    If (I <= 5) Then
        C(I) = A(I)
    Else
        C(I) = B(I - 5)
    End If
Next
```

```
Label1.Text = C(1)
Label2.Text = C(2)
Label3.Text = C(3)
Label4.Text = C(4)
Label5.Text = C(5)
Label6.Text = C(6)
Label7.Text = C(7)
Label8.Text = C(8)
Label9.Text = C(9)
Label10.Text = C(10)
Label11.Text = C(11)
Label12.Text = C(12)
```

Capítulo 6 – Exercício 6

A screenshot of a Windows application window titled "Form1". The window has a standard Windows XP-style title bar with minimize, maximize, and close buttons. Inside the window, there are ten text input boxes stacked vertically. To the right of each text box is a label: "Label1", "Label2", "Label3", "Label4", "Label5", "Label6", "Label7", "Label8", "Label9", and "Label10". At the bottom left of the form, there is a button labeled "Button1".

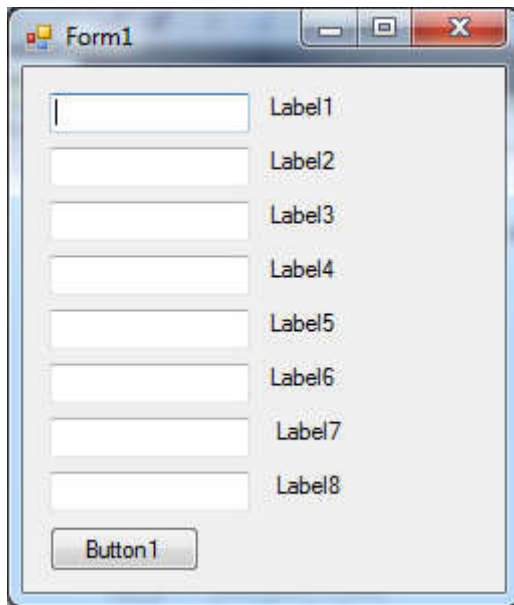
```
Dim I As Integer
Dim A(10), B(10) As Integer
```

```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
A(9) = TextBox9.Text
A(10) = TextBox10.Text
```

```
For I = 1 To 10
    B(I) = A(I) ^ 2
Next
```

```
Label11.Text = B(1)
Label12.Text = B(2)
Label13.Text = B(3)
Label14.Text = B(4)
Label15.Text = B(5)
Label16.Text = B(6)
Label17.Text = B(7)
Label18.Text = B(8)
Label19.Text = B(9)
Label110.Text = B(10)
```

Capítulo 6 – Exercício 7

The image shows a standard Windows application window titled "Form1". Inside the window, there are eight text input fields stacked vertically. To the right of each text box is a label, from "Label1" at the top to "Label8" at the bottom. At the bottom left of the form, there is a button labeled "Button1".

```
Dim I As Integer
Dim A(8), B(8) As Integer
```

```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
```

```
For I = 1 To 8
    B(I) = A(9 - I)
Next
```

```
Label1.Text = B(1)
Label2.Text = B(2)
Label3.Text = B(3)
Label4.Text = B(4)
Label5.Text = B(5)
Label6.Text = B(6)
Label7.Text = B(7)
Label8.Text = B(8)
```