

## 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

The screenshot shows a standard Windows application window titled 'Form1'. Inside the window, there are four empty text boxes arranged vertically on the left side. To the right of these text boxes is a single button labeled 'Button1'. Below the text boxes, the form is populated with 12 labels arranged in two columns. The left column contains labels 'Label1' through 'Label6', and the right column contains labels 'Label7' through 'Label12'.

```
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
```

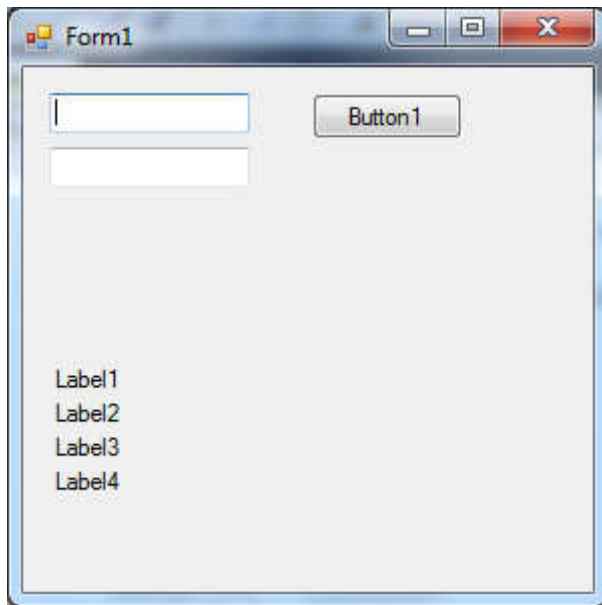
```
A1 = A + B
A2 = A + C
A3 = A + D
A4 = B + C
A5 = B + D
A6 = C + D
```

```
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

The image shows a standard Windows application window titled "Form1". Inside the window, there are two text input fields stacked vertically on the left side. To the right of these fields is a button labeled "Button1". In the bottom-left corner of the form, there are four labels stacked vertically, labeled "Label1", "Label2", "Label3", and "Label4".

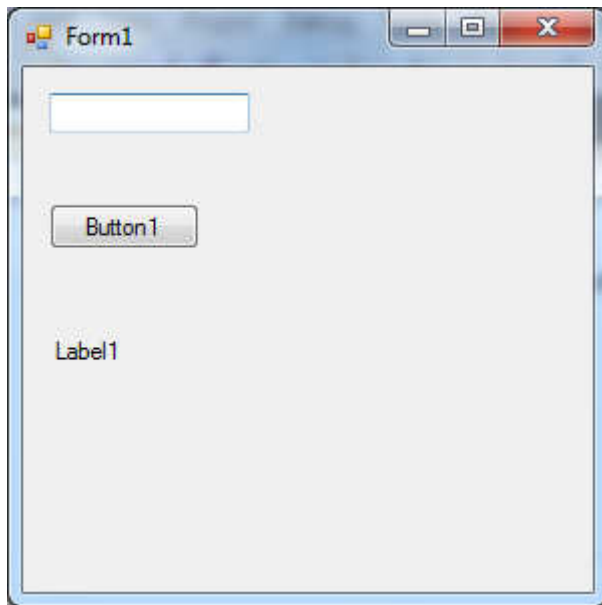
```
Dim TEMPO, VELOCIDADE, DISTANCIA, LITROS_USADOS As Single
```

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

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

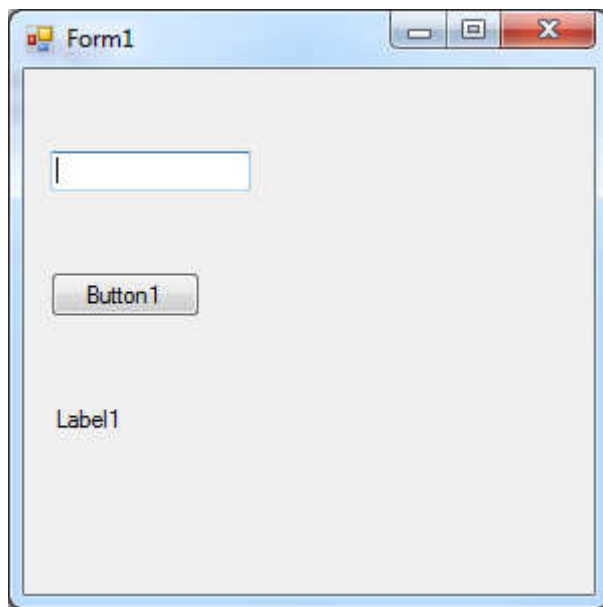
```
Label1.Text = TEMPO  
Label2.Text = VELOCIDADE  
Label3.Text = DISTANCIA  
Label4.Text = LITROS_USADOS
```

## 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" in the middle left, and a label labeled "Label1" at the bottom left.

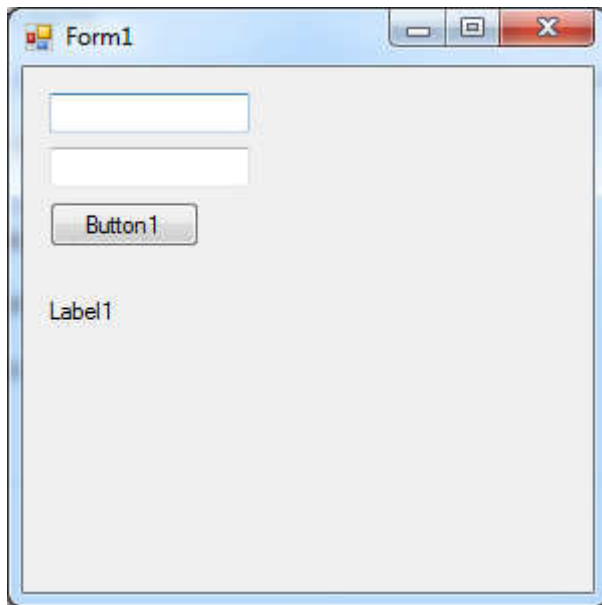
```
Dim F, C As Single  
C = TextBox1.Text  
F = (9 * C + 160) / 5  
Label1.Text = F
```

## 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
```

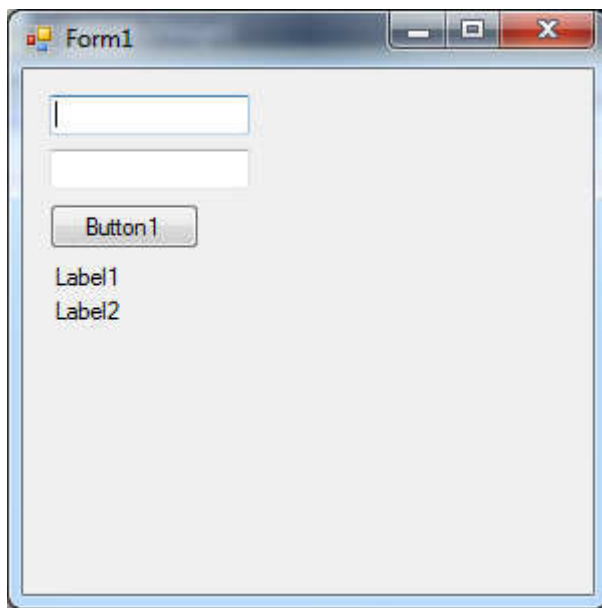
```
R = TextBox1.Text
```

```
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
```

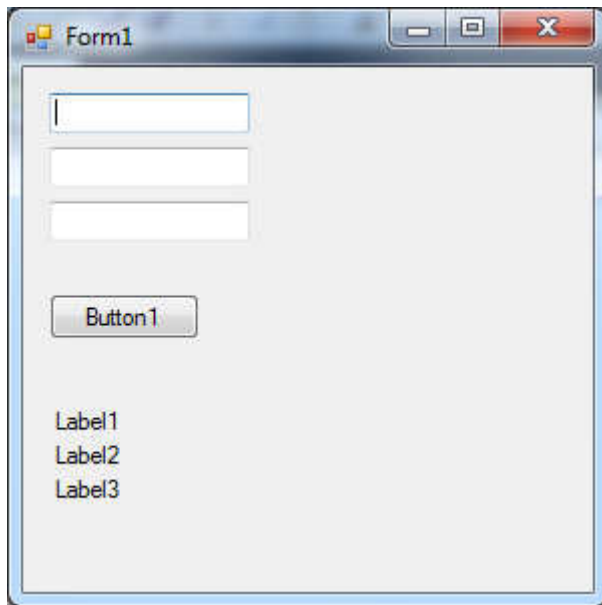
```
Label2.Text = B
```



## **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
```

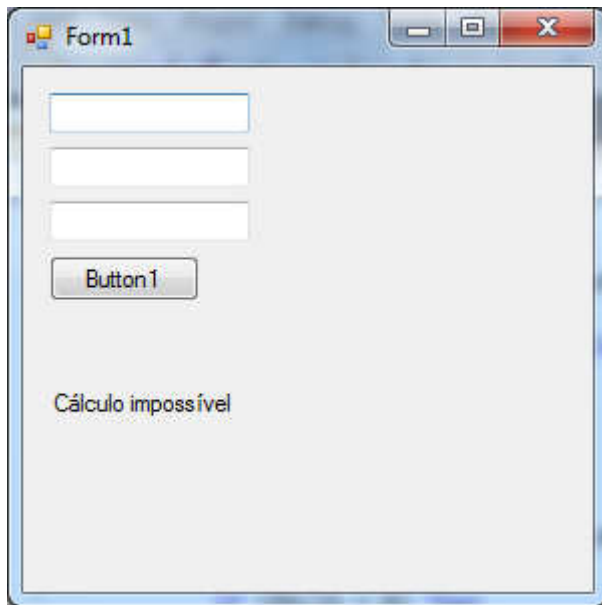
```
End If
```

```
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
```

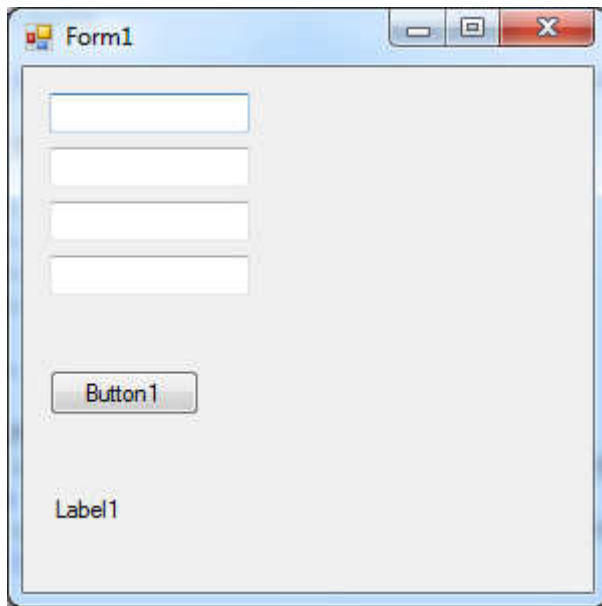
```
    End If
```

```
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
```

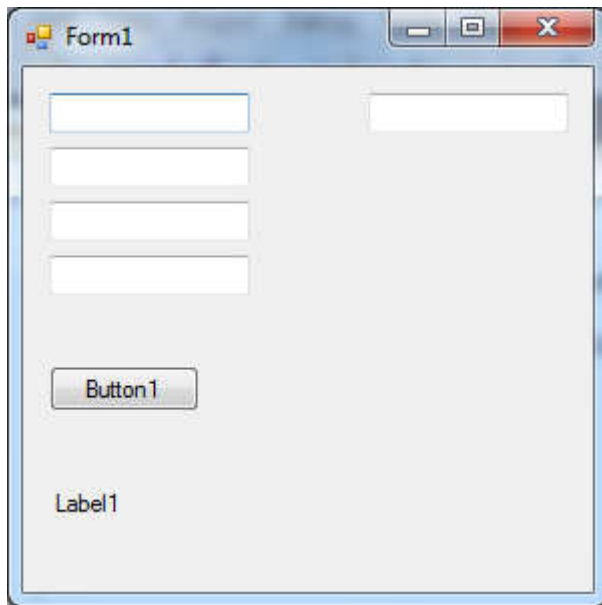
```
    Label1.Text = "Aprovado - Média = " & Str(MD)
```

```
Else
```

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

```
End If
```

### Capítulo 3 – Exercício 4



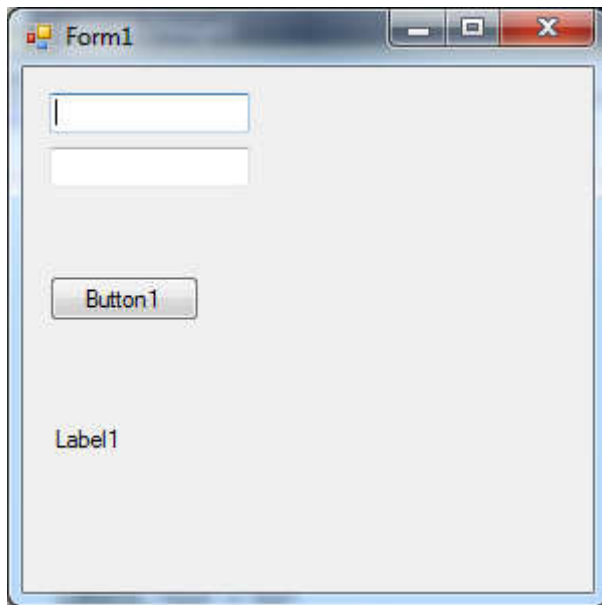
```
Dim N1, N2, N3, N4, MD1, EX, MD2 As Single

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

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 is a label with the text "Label1".

```
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

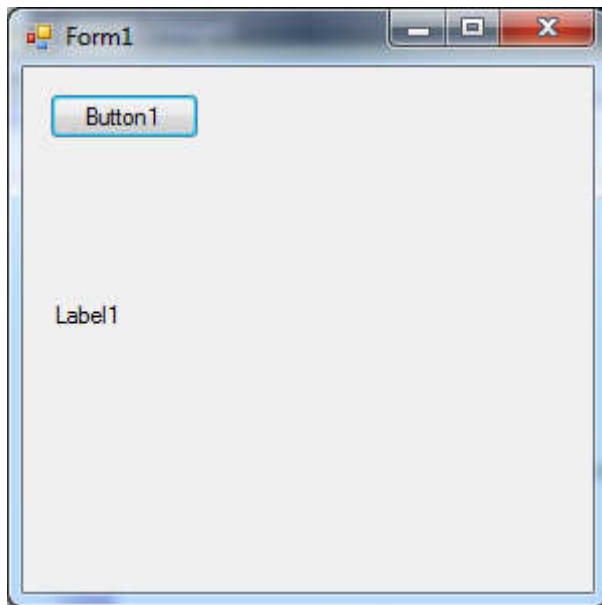
**Do While / Loop**  
**While / End While**  
**Do Until / Loop**  
**Do / Loop While**  
**Do / Loop Until**  
**Do / Loop**  
**For...To...Step / Next**

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

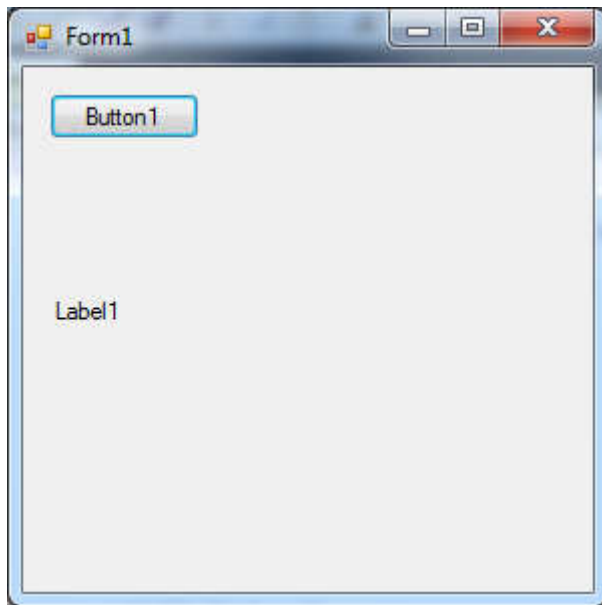
S = 0

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)
```

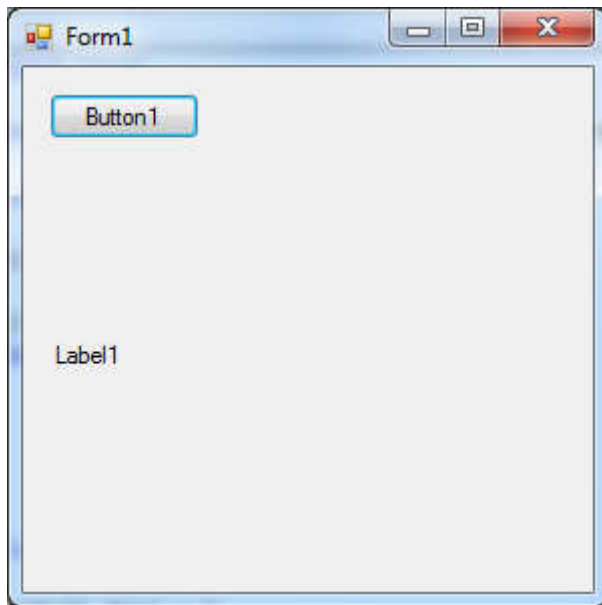
```
    S = S + I
```

```
    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
```

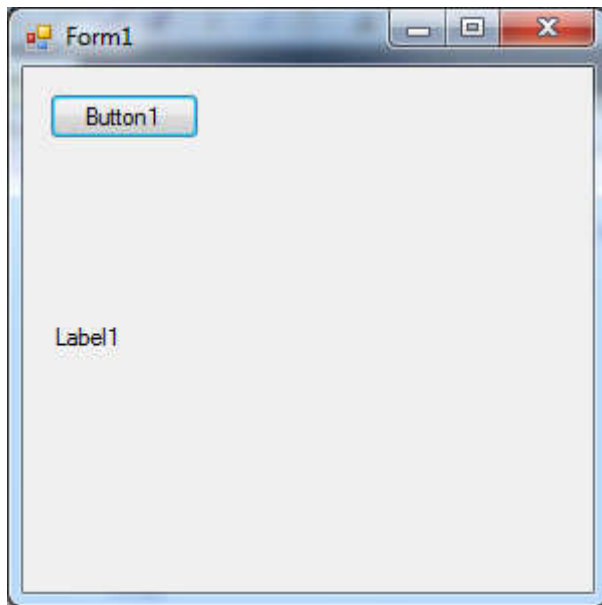
```
    End If
```

```
    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
```

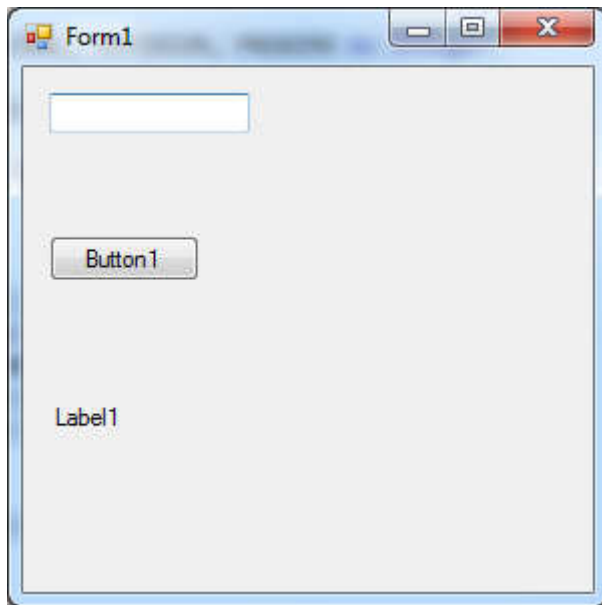
```
    S = S + QUAD
```

```
    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
```

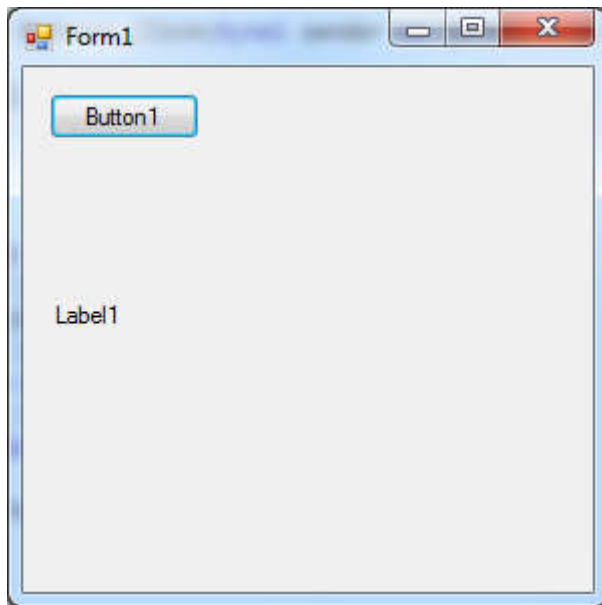
```
    ATUAL = PROXIMO
```

```
    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
```

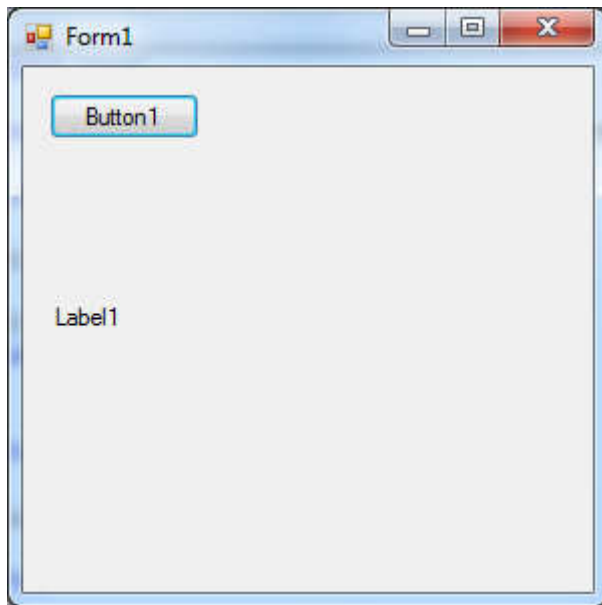
```
    End If
```

```
    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)
```

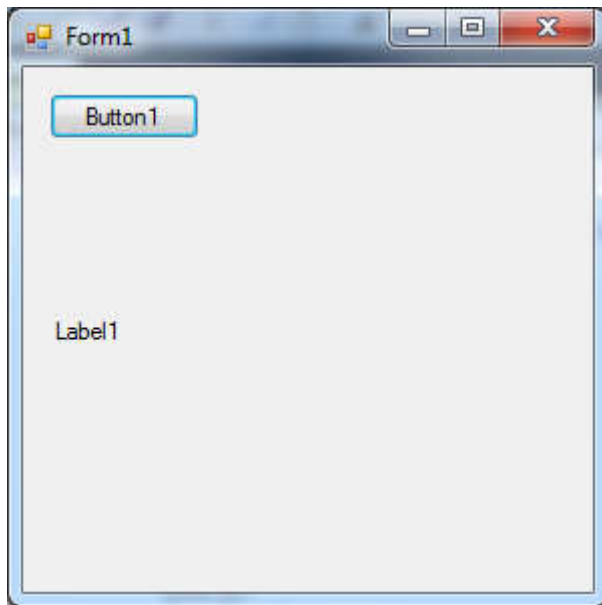
```
    S = S + I
```

```
    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
```

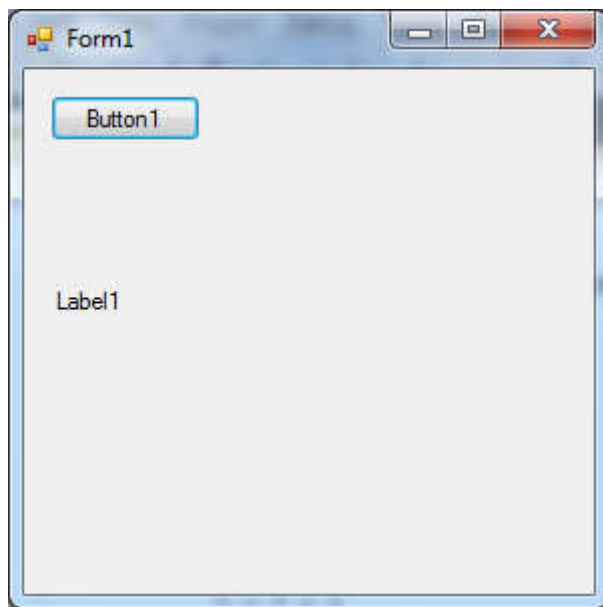
```
    End If
```

```
    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
```

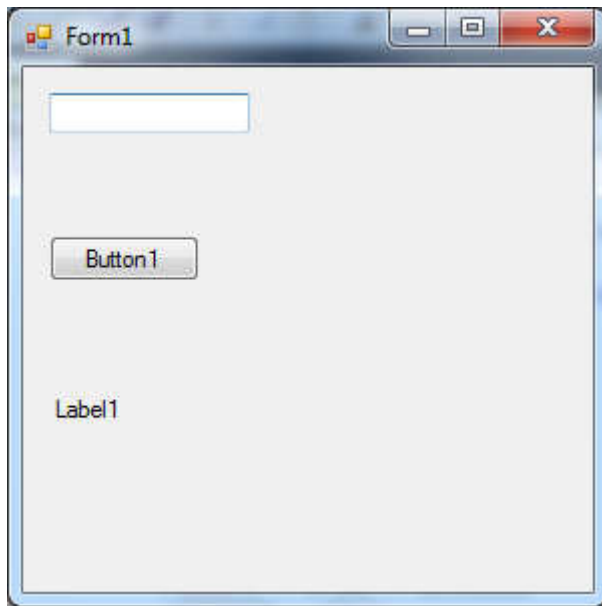
```
    I = I + 1
```

```
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
```

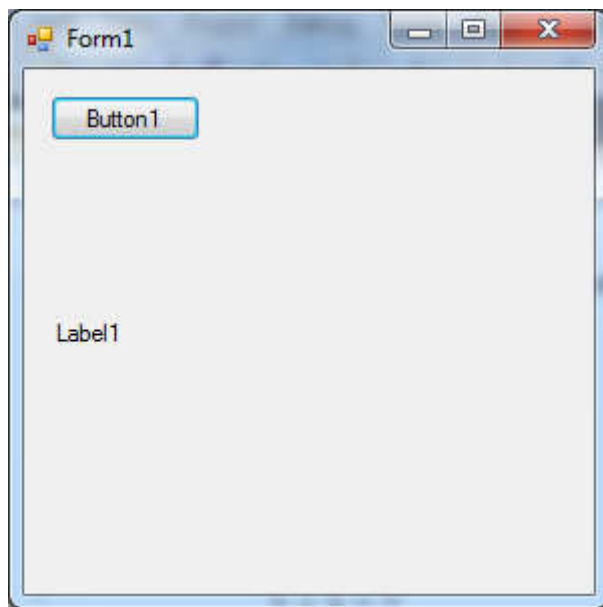
```
    ATUAL = PROXIMO
```

```
    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
```

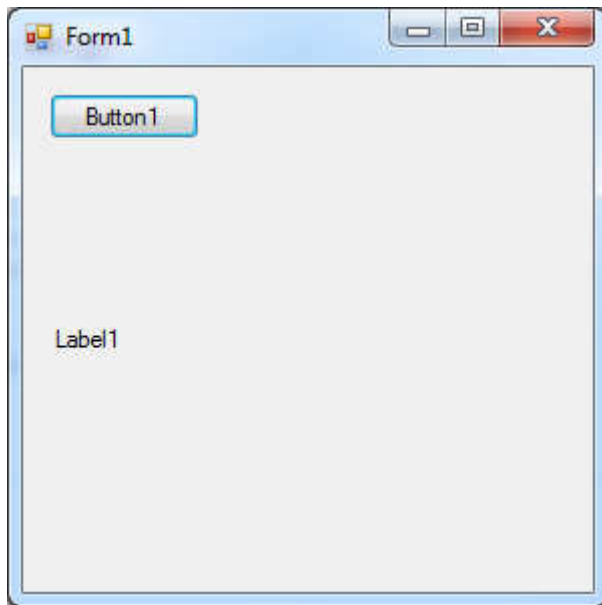
```
    End If
```

```
    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)
```

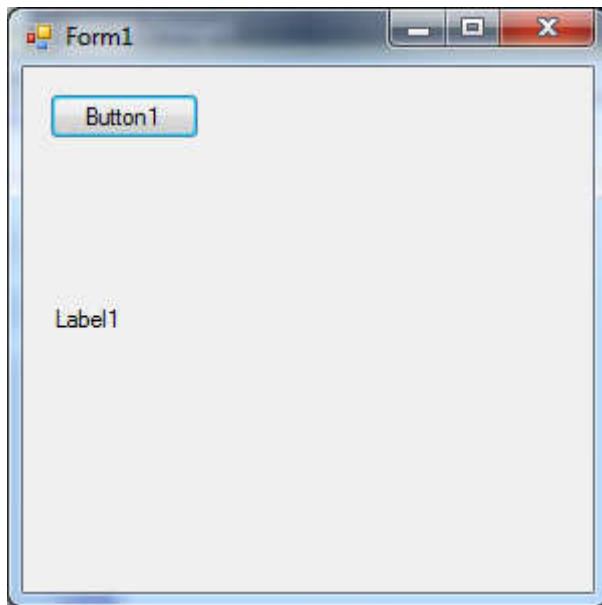
```
    S = S + I
```

```
    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
```

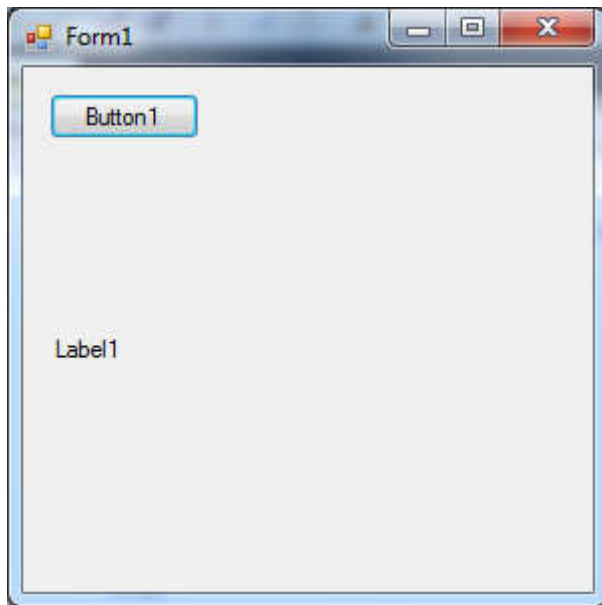
```
    End If
```

```
    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
```

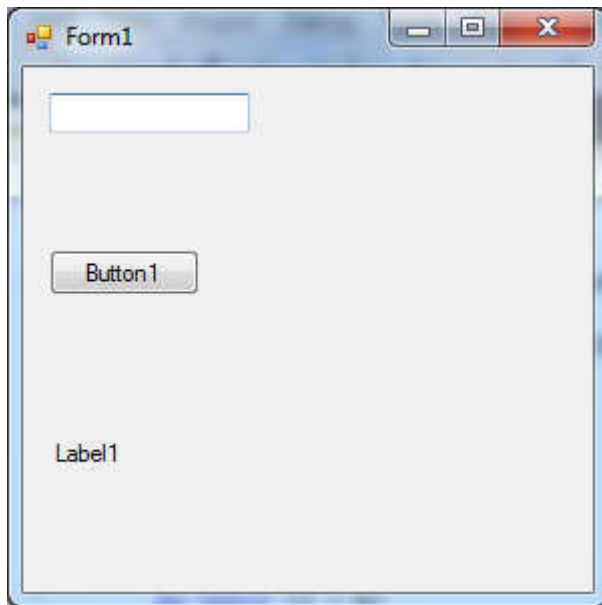
```
    S = S + QUAD
```

```
    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
```

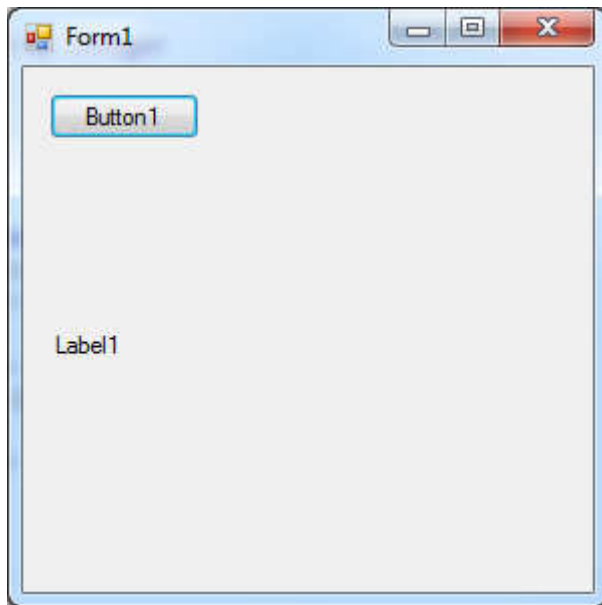
```
    ATUAL = PROXIMO
```

```
    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
```

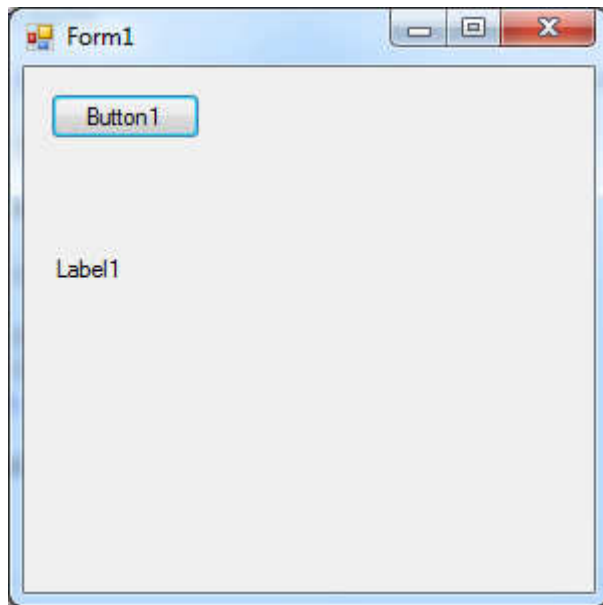
```
    End If
```

```
    I = I + 1
```

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

```
Label1.Text = S
```

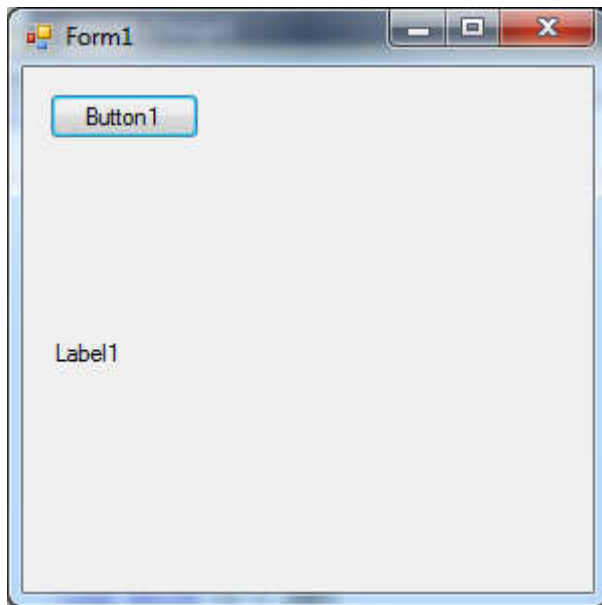
## Capítulo 4 – Exercício 2d – Do / Loop While



```
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
```

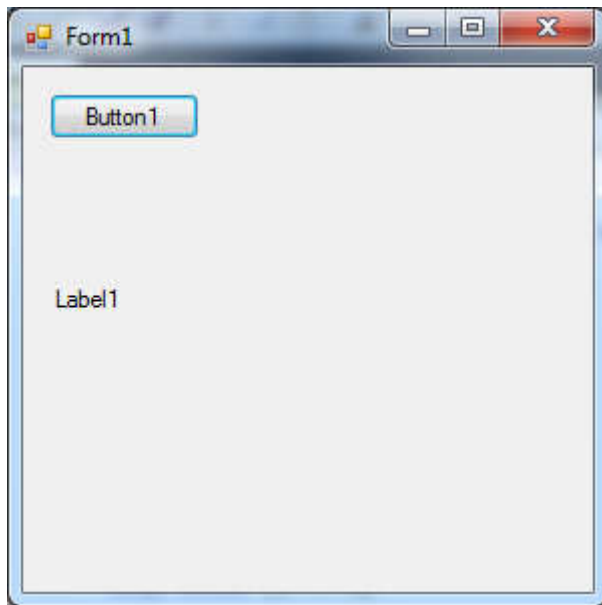
```
    End If
```

```
    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
```

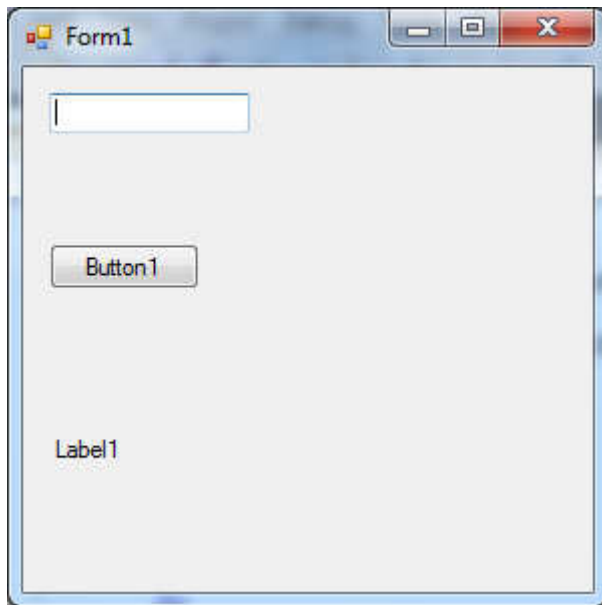
```
    S = S + QUAD
```

```
    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
```

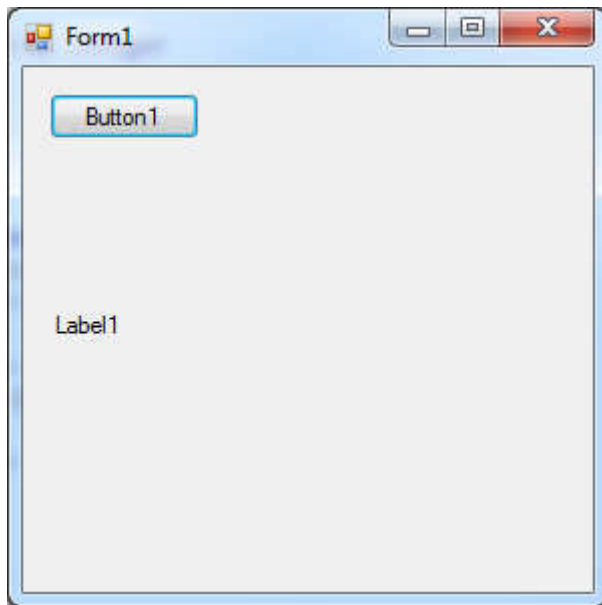
```
    ATUAL = PROXIMO
```

```
    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
```

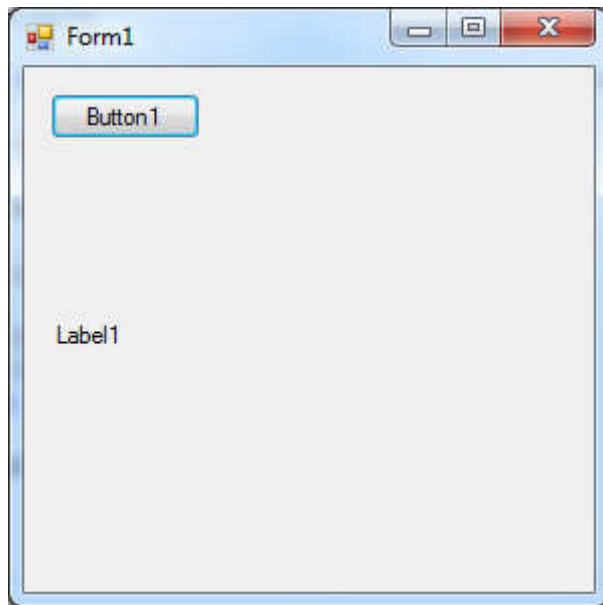
```
    End If
```

```
    I = I + 1
```

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

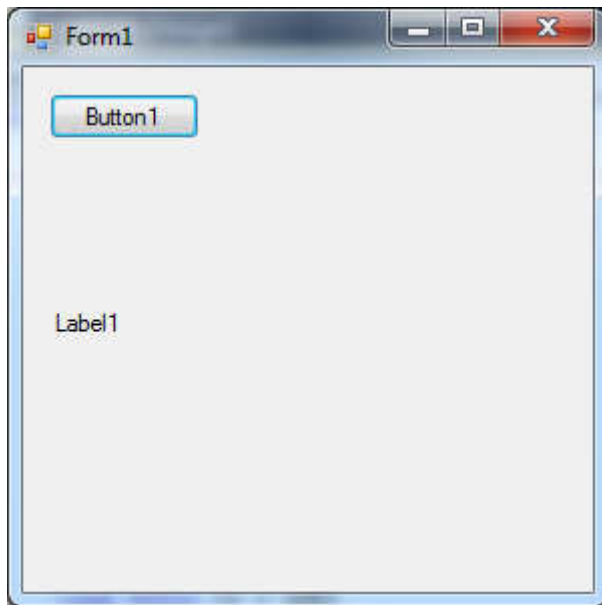
```
Label1.Text = S
```

## 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
```

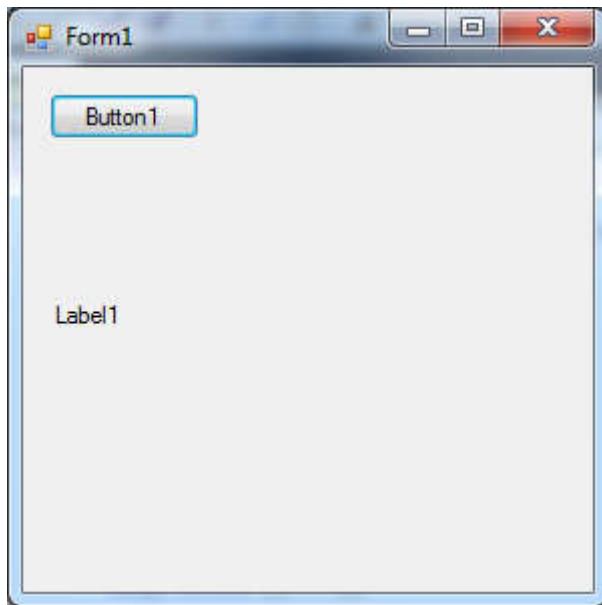
```
    End If
```

```
    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
```

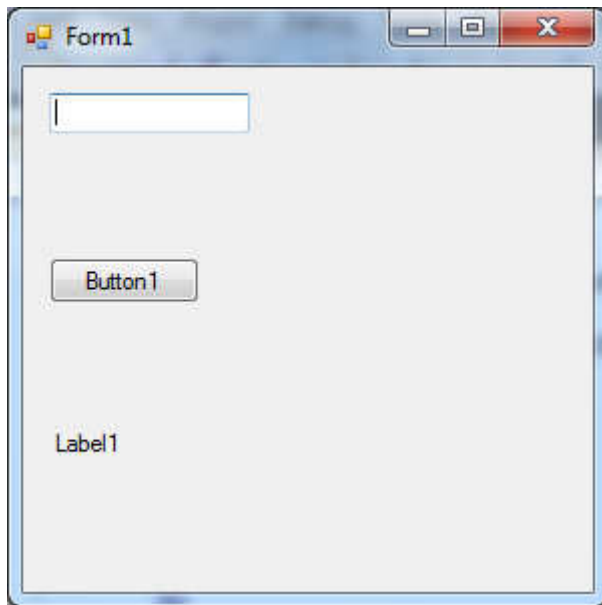
```
    S = S + QUAD
```

```
    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
```

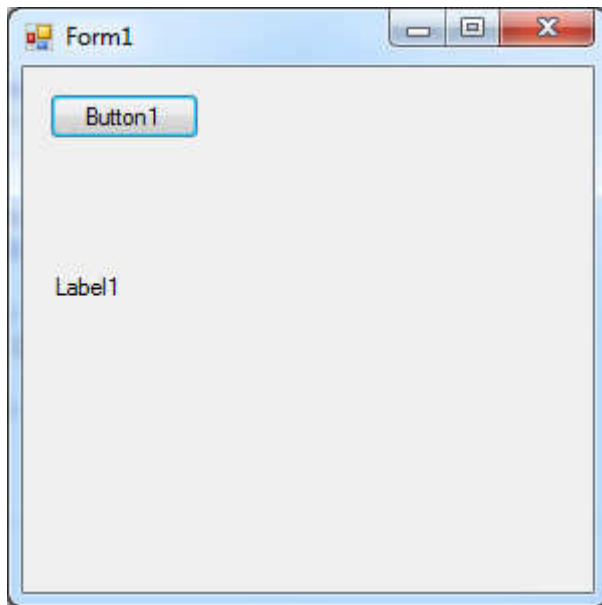
```
    I = I + 1
```

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

```
Label1.Text = ANTERIOR
```



## Capítulo 4 – Exercício 1f – Do / Loop



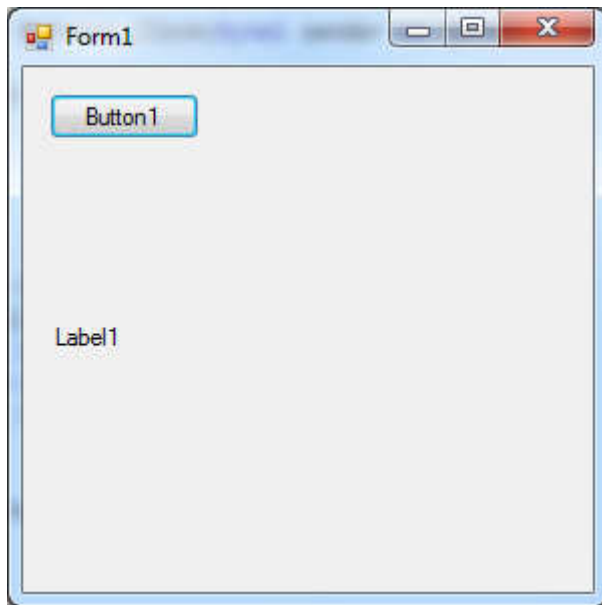
```
Dim S, I, R As Integer

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



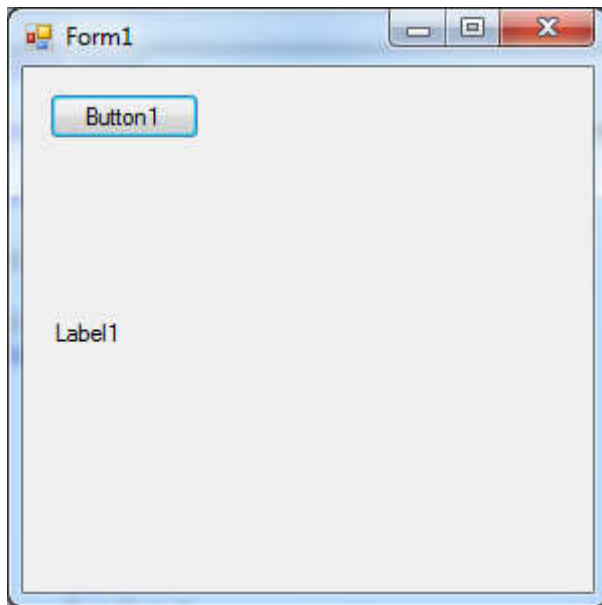
```
Dim S, I As Integer

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
```

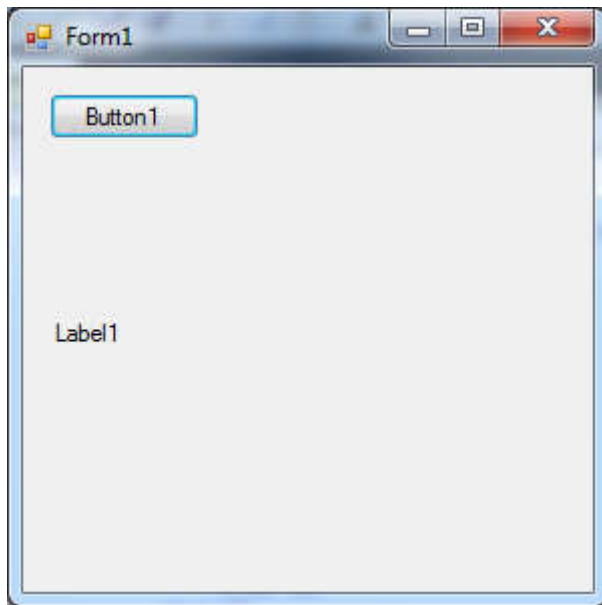
```
    End If
```

```
    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
```

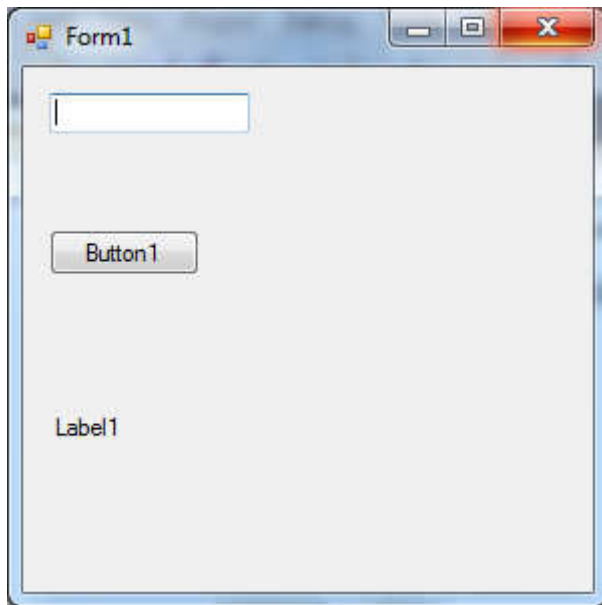
```
    End If
```

```
    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
```

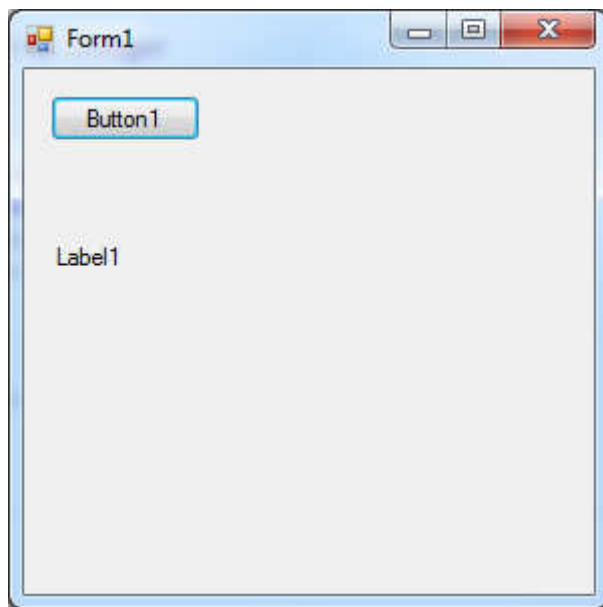
```
    End If
```

```
    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
```

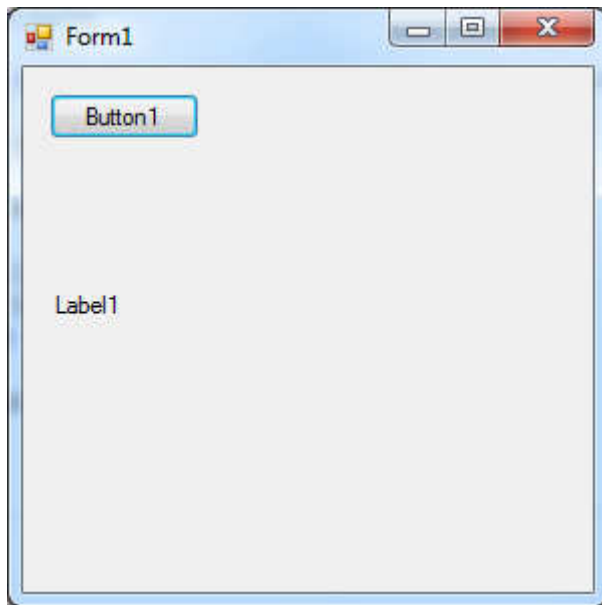
```
        S = S + I
```

```
    End If
```

```
Next
```

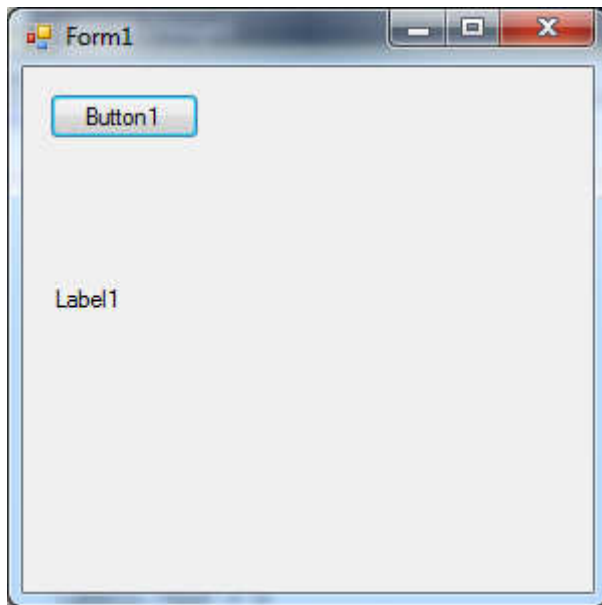
```
Label1.Text = S
```

## 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

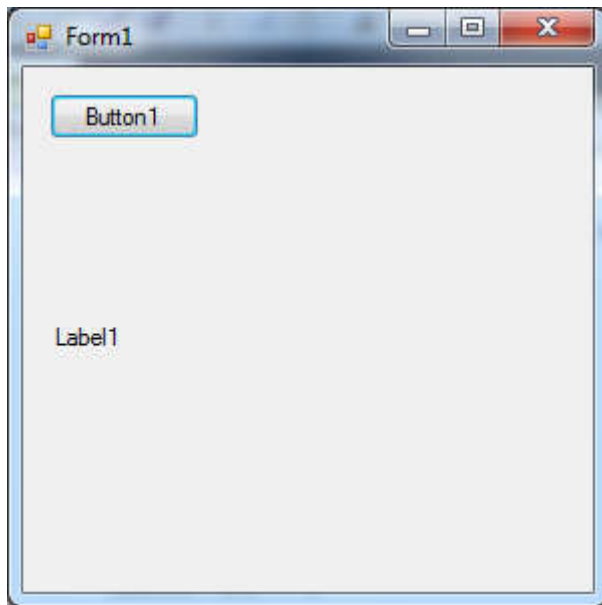
S = 0

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
```

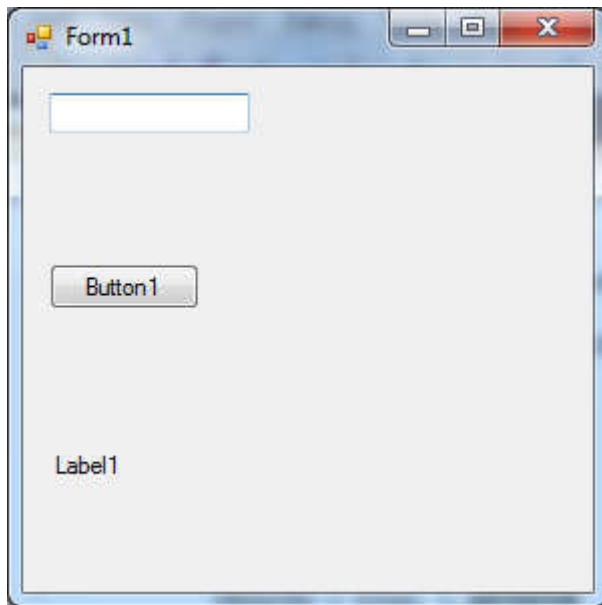
```
    QUAD = I ^ 2
```

```
    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
```

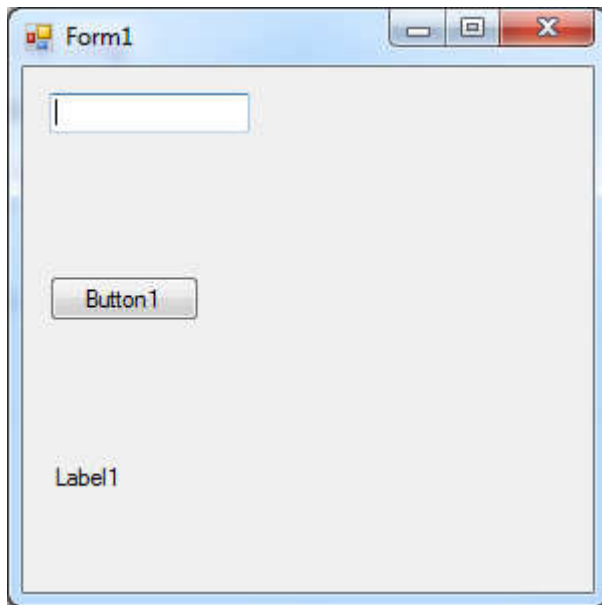
## **Capítulo 5**

### **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

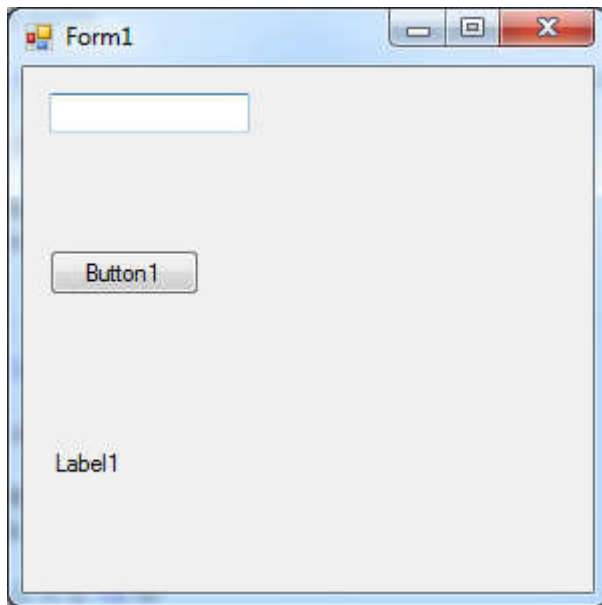
        ENTRADA = TextBox1.Text
        Somatorio(ENTRADA)

    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

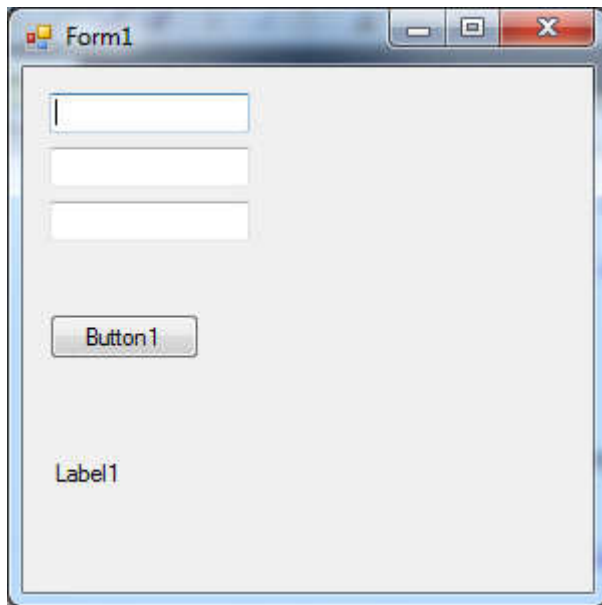
        For I = 1 To N
            PROXIMO = ATUAL + ANTERIOR
            ANTERIOR = ATUAL
            ATUAL = PROXIMO
        Next

        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
```

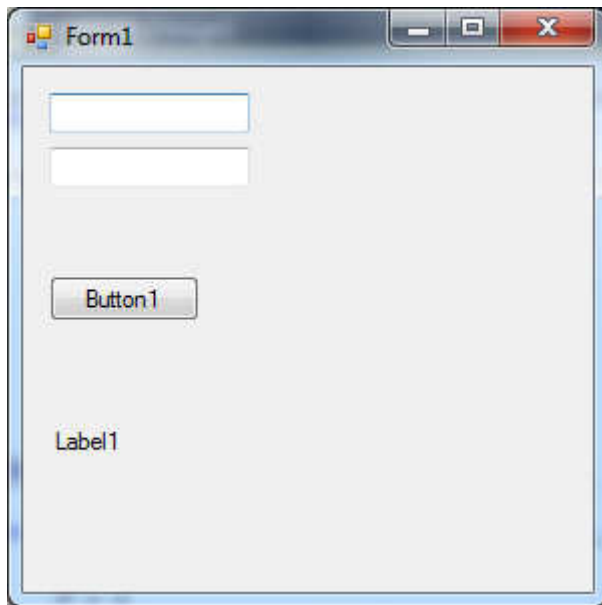
```
        X = VALOR + (VALOR * (TAXA / 100) * TEMPO)
```

```
        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

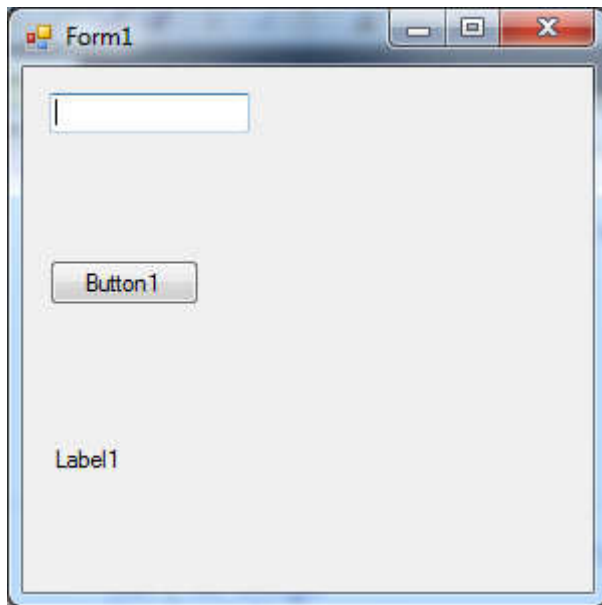
        Potencia(BASE_ENT, EXP_ENT)

    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

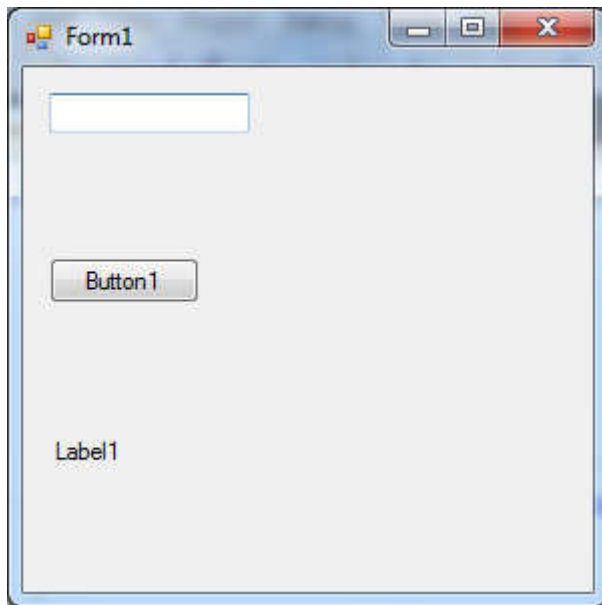
    End Sub

    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

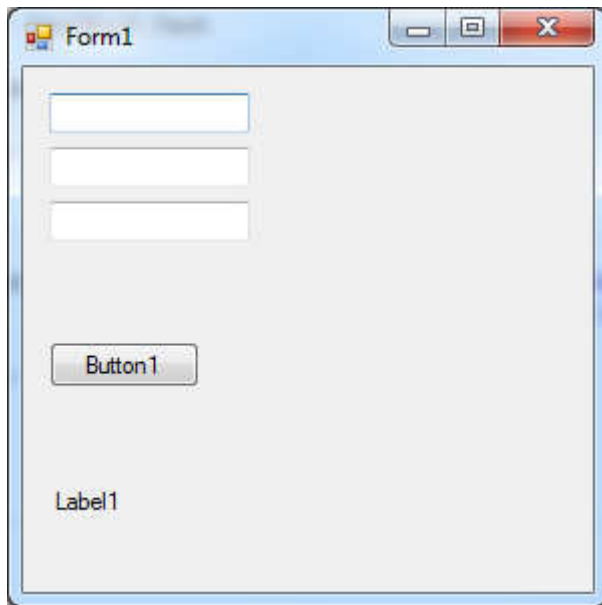
        ANTERIOR = 0
        ATUAL = 1

        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
```

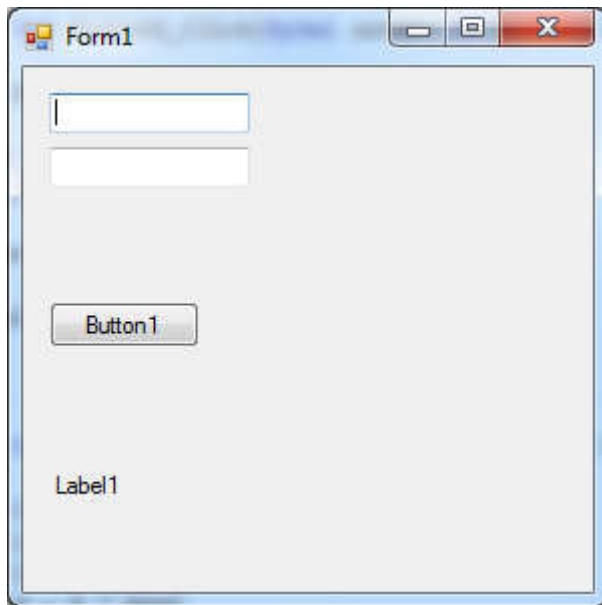
```
    Private Sub Prestacao(ByVal VALOR As Single, ByVal TAXA As Single, _  
                          ByVal TEMPO As Single, ByRef PRESTACAO As Single)
```

```
        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
```

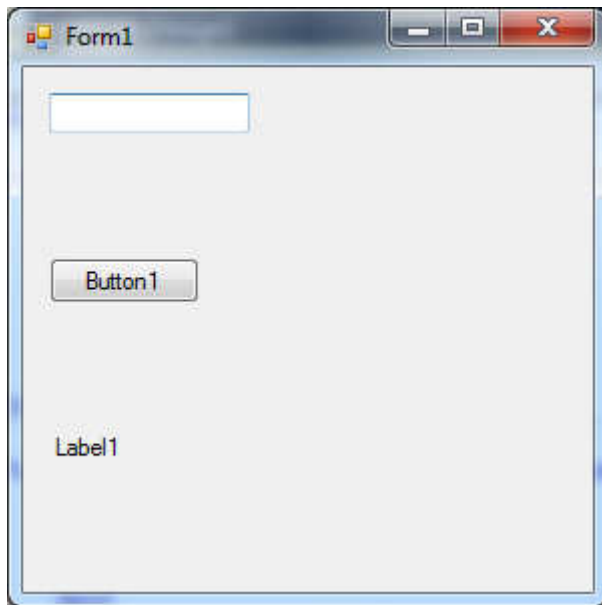
```
            P = P * BASE
```

```
        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

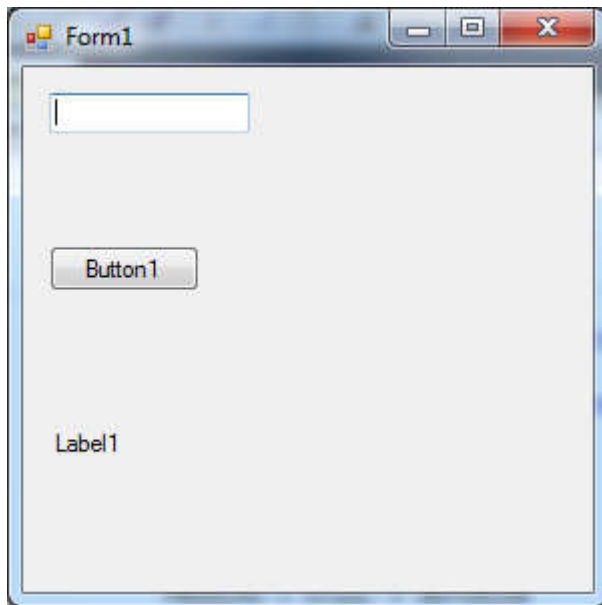
        ENTRADA = TextBox1.Text
        Label1.Text = Somatorio(ENTRADA)

    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

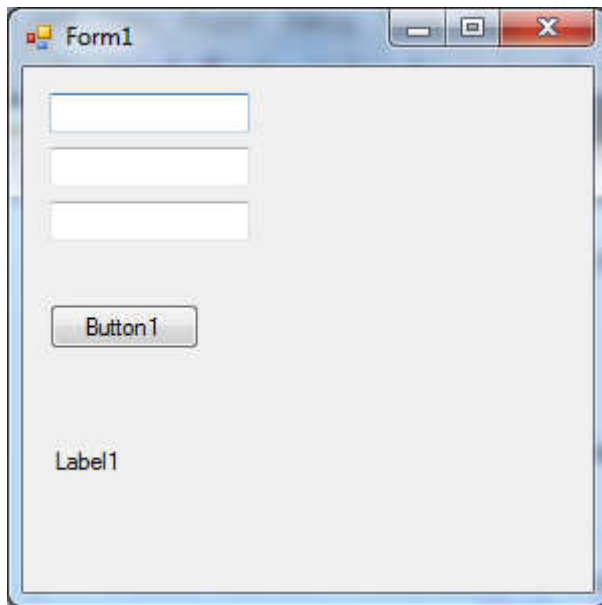
        For I = 1 To N
            PROXIMO = ATUAL + ANTERIOR
            ANTERIOR = ATUAL
            ATUAL = PROXIMO
        Next

        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

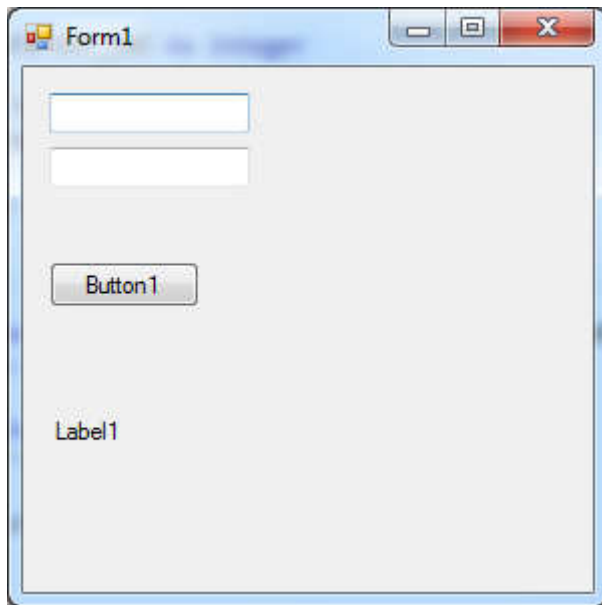
    Private Function Prestacao(ByVal VALOR As Single, ByVal TAXA As _
        Single, ByVal TEMPO As Single)

        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

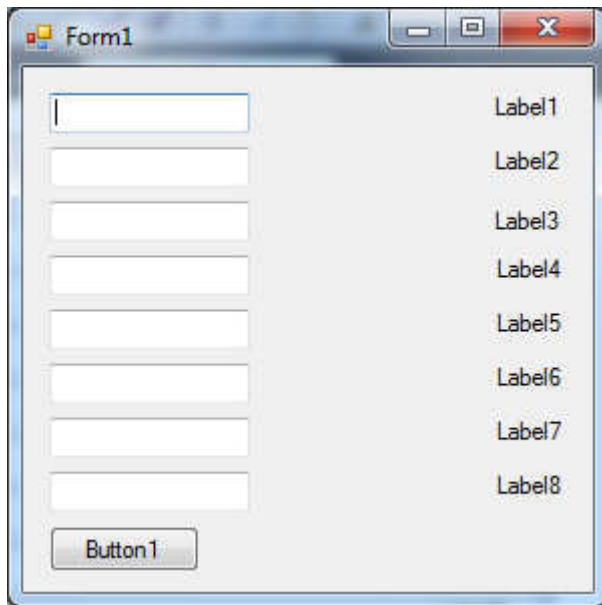
End Class
```

# Capítulo 6

## Matrizes



## Capítulo 6 – Exercício 1



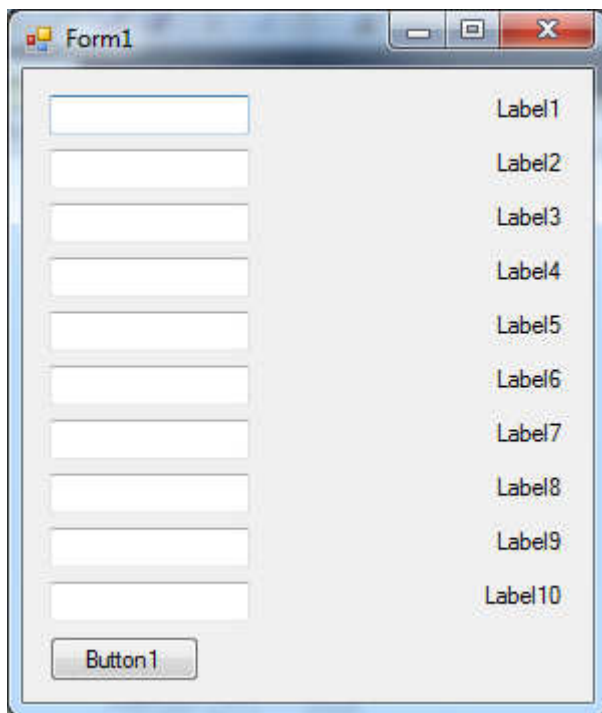
```
Dim I As Integer
Dim A(8), B(8) As Integer
```

```
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 groups of text boxes. The first group, labeled 'Matriz A', consists of 9 text boxes arranged vertically. The second group, labeled 'Matriz B', also consists of 9 text boxes arranged vertically. To the right of these two groups, there are 9 labels, labeled 'Label1' through 'Label9', arranged vertically. At the bottom left of the window, there is a button labeled 'Button1'.

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

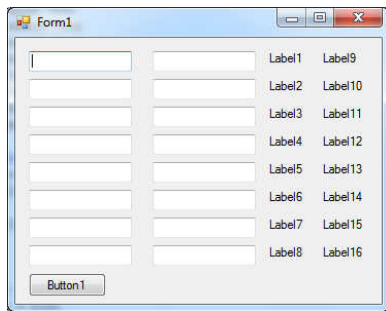
```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
A(9) = TextBox9.Text
```

```
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
```

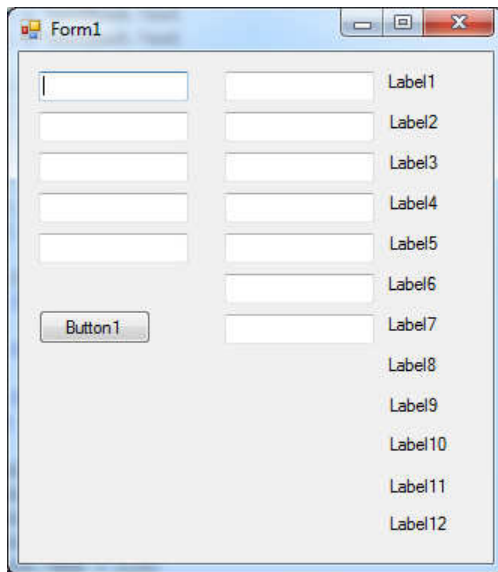
```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
A(6) = TextBox6.Text
A(7) = TextBox7.Text
A(8) = TextBox8.Text
```

```
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
```

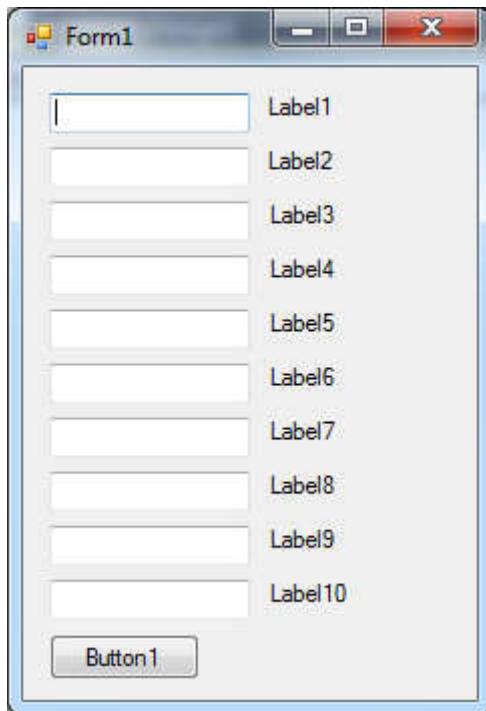
```
A(1) = TextBox1.Text
A(2) = TextBox2.Text
A(3) = TextBox3.Text
A(4) = TextBox4.Text
A(5) = TextBox5.Text
```

```
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



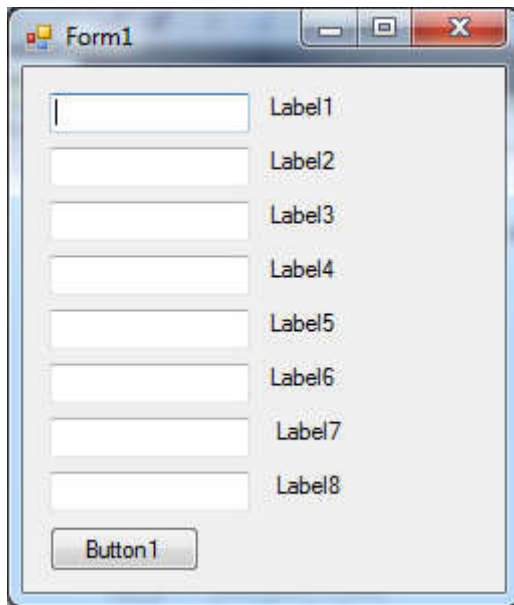
```
Dim I As Integer
Dim A(10), B(10) As Integer
```

```
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)
```