

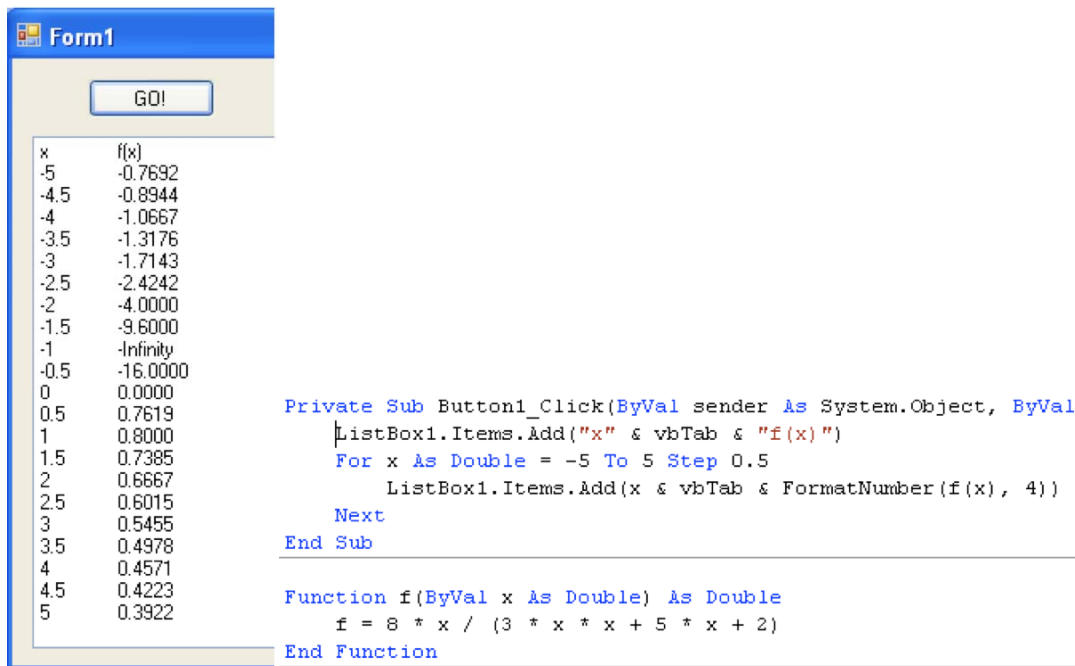
## CE311K – McKinney Homework 6

### Functions

**Problem 1.** Given the rational function

$$f(x) = \frac{8x}{3x^2 + 5x + 2}$$

write a Visual Basic program that computes the values of  $f(x)$  when  $x$  varies between  $-5$  and  $5$  with an increment of  $0.5$ . Your program should **use a “function”** subprocedure to compute  $f(x)$ . Display  $x$  and the corresponding  $f(x)$  values in a table within a picture box or a list box. Be sure to include screenshots of your VB code and your program output in your solution.



x	f(x)
-5	-0.7692
-4.5	-0.8944
-4	-1.0667
-3.5	-1.3176
-3	-1.7143
-2.5	-2.4242
-2	-4.0000
-1.5	-9.6000
-1	-Infinity
-0.5	-16.0000
0	0.0000
0.5	0.7619
1	0.8000
1.5	0.7385
2	0.6667
2.5	0.6015
3	0.5455
3.5	0.4978
4	0.4571
4.5	0.4223
5	0.3922

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal  
    ListBox1.Items.Add("x" & vbTab & "f(x) ")  
    For x As Double = -5 To 5 Step 0.5  
        ListBox1.Items.Add(x & vbTab & FormatNumber(f(x), 4))  
    Next  
End Sub  
  
Function f(ByVal x As Double) As Double  
    f = 8 * x / (3 * x * x + 5 * x + 2)  
End Function
```

**Problem 2.** Text, page 213, Sec. 5.3, Problem 2

You can park about 500 cars.

**Problem 3.** Text, page 214, Sec. 5.3, Problem 4

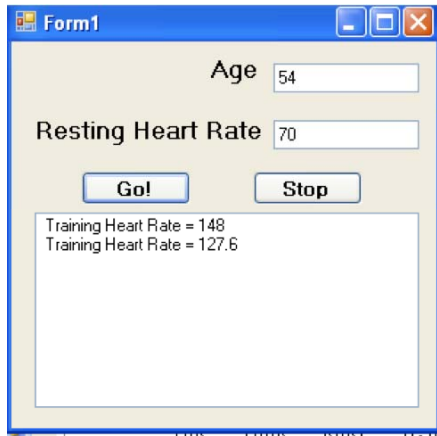
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**Problem 4.** Text, page 214, Sec. 5.3, Problem 8

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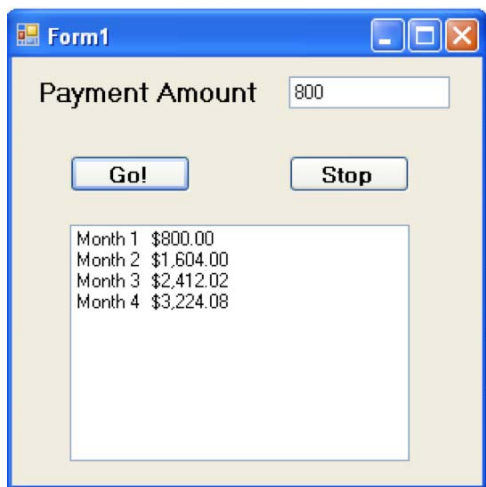
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**Problem 5.** Text, page 217, Sec. 5.3, Problem 16



```
Private Sub Button1_Click(ByVal sender As System.Object, I
    Dim age, RHR, MHR, THR As Double
    age = Cdbl(TextBox1.Text)
    RHR = Cdbl(TextBox2.Text)
    MHR = 220 - age
    THR = (MHR - RHR) * 0.6 + RHR
    ListBox1.Items.Add(" Training Heart Rate = " & THR)
End Sub
```

**Problem 6.** Text, page 218, Sec. 5.3, Problem 20



```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.Eve
    Dim New_Bal, Prev_Bal, Payment As Double
    Payment = Cdbl(TextBox1.Text)
    For i As Integer = 1 To 4
        New_Bal = (1.005 * Prev_Bal) + Payment
        ListBox1.Items.Add("Month " & i & vbTab & FormatCurrency(New_Bal, 2))
        Prev_Bal = New_Bal
    Next
End Sub
```

**Loops**

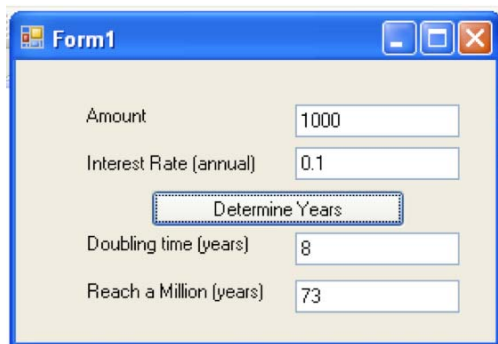
**Problem 7.** Text, page 244, Sec. 6.1, Problem 2

```
0 1000
1 1100
2
```

**Problem 8.** Text, page 246, Sec. 6.1, Problem 16

```
While balance < 100
```

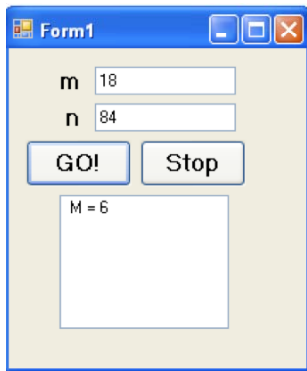
**Problem 9.** Text, page 249, Sec. 6.1, Problem 36



```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
    Dim amt, r, total As Double
    Dim i As Integer
    amt = CDb1(TextBox1.Text)
    r = CDb1(TextBox2.Text)
    total = amt
    i = 0
    Do Until total > (2 * amt)
        total = (1 + r) * total
        i = i + 1
    Loop
    TextBox3.Text = i

    total = amt
    i = 0
    Do Until total > 1000000.0
        total = (1 + r) * total
        i = i + 1
    Loop
    TextBox4.Text = i
End Sub
```

**Problem 10.** Text, page 249, Sec. 6.1, Problem 39



```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
    Dim n, m, T As Integer
    m = CDb1(TextBox1.Text)
    n = CDb1(TextBox2.Text)
    Do While n <> 0
        T = n
        n = m Mod n
        m = T
    Loop
    ListBox1.Items.Add(" M = " & m)
End Sub
```