Functions

CE 311 K - Introduction to Computer Methods

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Introduction

• Functions
• Named Constants
• Structured Programming
Functions

- A block of statements (with a name) located between Function and End Function statements
- Executed (called) when name appears in a program along with arguments

Program

```
Program:
  ...  var = Name( Argument list )
End Program
```

Function

```
Function Name( Arguments ) As Type
  ... statements
  ... Return expression
End Function
```

Example – FtoC

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
  Dim degF, degC As Double
  degF = CDbl(TextBox1.Text)
degC = FtoC(degF)
  TextBox1.Text = CStr(degC)
End Sub

Function FtoC(ByVal T_F As Double) As Double
  Dim T_C As Double
  T_C = (degF - 32) * (9 / 5)
  Return T_C
End Function
```

Call Function

Return Value
Example – Bank Account

\[ F = P \left(1 + \frac{r}{c}\right)^{cn} \]

Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
    Dim p, c, n As Double
    InputData(p, c, n)
    DisplayBalance(p, c, n)
End Sub

Sub InputData(ByVal p As Double, ByVal c As Double, ByVal n As Double)
    p = Cbl1.TextBox1.Text
    c = Cbl1.TextBox2.Text
    n = Cbl1.TextBox3.Text
End Sub

Sub DisplayBalance(ByVal p As Double, ByVal c As Double, ByVal n As Double)
    Dim balance As Double
    balance = FVal(p, c, n)
    TextBox5.Text = FormatCurrency(balance)
End Sub

Function FVal(ByVal p As Double, ByVal c As Double, ByVal n As Double)
    Dim i, m As Double
    i = c / c
    m = c * a
    Return p * (1 + 1) ^ m
End Function

Example – Bank Account

Deposit: 50000
Annual interest rate: 3.04
Number of times interest compounded per year: 105
Number of Years: 5
Future value of balance: $23,263.35
Named Constants

• We often need to use constants, like PI in our computations.

    Const Constant_Name As Data_Type = value

• Example:
    Const PI As Double = 3.14159

Structured Programming

• Sequence

• Selection

• Repetition
Structured Programming

Start

Get Some Input

Make Some Calculations

Print Some Output

Stop

Input Subprogram

Calculation Subprogram

Output Subprogram

Summary

• Functions
• Named Constants
• Structured Programming