Module lab\_1

Sub main()

'1. Average

'Ask user to enter 3 numbers

'Display the total of all the numbers entered

'Display the average of all the numbers entered.

Dim invalid As String = "Invalid entry. Please try again."

Dim num1 As String, num2 As String, num3 As String

Dim bool As Boolean = True

While (bool)

Console.WriteLine("Please enter the first number: ")

num1 = Console.ReadLine()

Console.WriteLine("Please enter the second number: ")

num2 = Console.ReadLine()

Console.WriteLine("Please enter the third number: ")

num3 = Console.ReadLine()

If (IsNumeric(num1) And IsNumeric(num2) And IsNumeric(num3)) Then

Console.WriteLine("First number: " & num1 & " | " & " Second number: " & num2 & " | " & " Third number: " & num3)

Console.Write("Average: " & calculate\_average(num1, num2, num3))

bool = False

Else

Console.WriteLine(invalid)

End If

End While

Console.Read()

End Sub

Function calculate\_average(var1 As Double, var2 As Double, var3 As Double) As String

Dim result As Double

result = (var1 + var2 + var3) / 3

Return Math.Round(result, 2)

End Function

End Module

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Module lab\_2

Sub main()

'2. Mini Calculator

Dim bool As Boolean = True

Dim bool2 As Boolean = True

Dim var1 As String, var2 As String

Dim input2 As String

While (bool)

Console.WriteLine("Please select a letter corresponding to an operation.")

Console.WriteLine()

Console.WriteLine(menu())

Dim input As String = Console.ReadLine()

'Checks the users input option for select menu

If (input.ToLower() = "a") Then

Console.WriteLine("Please select a number: ")

var1 = Console.ReadLine()

Console.WriteLine("Please select a second number: ")

var2 = Console.ReadLine()

If (IsNumeric(var1) And IsNumeric(var2)) Then

Console.WriteLine("Chosen operation (Addition) " & var1 & " + " & var2 & " = " & add(var1, var2))

'checks if user would like to continue

Console.WriteLine("would you like to continue?")

input2 = Console.ReadLine()

If (input2.ToLower() <> "yes") Then

Console.WriteLine("This program is terminated. Goodbye!")

bool = False

End If

Else

Console.WriteLine("Invalid entry. Your choices must be a number between 0 - 99")

End If

End If

If (input.ToLower() = "s") Then

Console.WriteLine("Please select a number: ")

var1 = Console.ReadLine()

Console.WriteLine("Please select a second number: ")

var2 = Console.ReadLine()

If (IsNumeric(var1) And IsNumeric(var2)) Then

Console.WriteLine("Chosen operation (Subtraction) " & var1 & " - " & var2 & " = " & subtract(var1, var2))

Console.WriteLine()

'checks if user would like to continue

Console.WriteLine("would you like to continue?")

input2 = Console.ReadLine()

If (input2.ToLower() <> "yes") Then

Console.WriteLine("This program is terminated. Goodbye!")

bool = False

End If

Else

Console.WriteLine("Invalid entry. Your choices must be a number between 0 - 99")

End If

End If

If (input.ToLower() = "m") Then

Console.WriteLine("Please select a number: ")

var1 = Console.ReadLine()

Console.WriteLine("Please select a second number: ")

var2 = Console.ReadLine()

If (IsNumeric(var1) And IsNumeric(var2)) Then

Console.WriteLine("Chosen operation (Multiplication) " & var1 & " \* " & var2 & " = " & multiply(var1, var2))

Console.WriteLine()

'checks if user would like to continue

Console.WriteLine("would you like to continue?")

input2 = Console.ReadLine()

If (input2.ToLower() <> "yes") Then

Console.WriteLine("This program is terminated. Goodbye!")

bool = False

End If

Else

Console.WriteLine("Invalid entry. Your choices must be a number between 0 - 99")

End If

End If

If (input.ToLower() = "d") Then

Console.WriteLine("Please select a number: ")

var1 = Console.ReadLine()

Console.WriteLine("Please select a second number: ")

var2 = Console.ReadLine()

If (IsNumeric(var1) And IsNumeric(var2)) Then

Console.WriteLine("Chosen operation (Divide) " & var1 & " / " & var2 & " = " & divide(var1, var2))

Console.WriteLine()

'checks if user would like to continue

Console.WriteLine("would you like to continue?")

input2 = Console.ReadLine()

If (input2.ToLower() <> "yes") Then

Console.WriteLine("This program is terminated. Goodbye!")

bool = False

End If

Else

Console.WriteLine("Invalid entry. Your choices must be a number between 0 - 99")

End If

End If

If (input.ToLower() = "mod") Then

Console.WriteLine("Please select a number: ")

var1 = Console.ReadLine()

Console.WriteLine("Please select a second number: ")

var2 = Console.ReadLine()

If (IsNumeric(var1) And IsNumeric(var2)) Then

Console.WriteLine("Chosen operation (Modulo) " & var1 & " modulo " & var2 & " = " & modulo(var1, var2))

Console.WriteLine()

'checks if user would like to continue

Console.WriteLine("would you like to continue?")

input2 = Console.ReadLine()

If (input2.ToLower() <> "yes") Then

Console.WriteLine("This program is terminated. Goodbye!")

bool = False

End If

Else

Console.WriteLine("Invalid entry. Your choices must be a number between 0 - 99")

End If

End If

If (input.ToLower() = "ex") Then

Console.WriteLine("Please select a number: ")

var1 = Console.ReadLine()

Console.WriteLine("Please select a second number: ")

var2 = Console.ReadLine()

If (IsNumeric(var1) And IsNumeric(var2)) Then

Console.WriteLine("Chosen operation (Exponent) " & var1 & " ^ " & var2 & " = " & exponent(var1, var2))

Console.WriteLine()

'checks if user would like to continue

Console.WriteLine("would you like to continue?")

input2 = Console.ReadLine()

If (input2.ToLower() <> "yes") Then

Console.WriteLine("This program is terminated. Goodbye!")

bool = False

End If

Else

Console.WriteLine("Invalid entry. Your choices must be a number between 0 - 99")

End If

End If

If (input.ToLower() = "e") Then

Console.WriteLine("You have exited my crappy program. Goodbye!")

bool = False

End If

'validates if the user entered a letter thats does not match the menu provided

If (input.ToLower() <> "a" And input.ToLower() <> "s" And input.ToLower() <> "m" And input.ToLower() <> "d" And input.ToLower() <> "ex" And input.ToLower() <> "mod" And input.ToLower() <> "e") Then

Console.WriteLine("Clearly you're an incompetent moron who cannot read between the lines. Go away...")

bool = False

End If

End While

Console.Read()

End Sub

Function menu() As String

Dim menu\_operators As String

menu\_operators = "Add | A " & vbCrLf & "Subtract | S " & vbCrLf & "Multiply | M " & vbCrLf & "Divide | D " & vbCrLf & "Modulos | Mod " & vbCrLf & "Exponent | ex " & vbCrLf & "Exit | E"

Return menu\_operators

End Function

Function add(num1 As Double, num2 As Double) As Double

Dim result As Double

result = num1 + num2

Return result

End Function

Function subtract(num1 As Double, num2 As Double) As Double

Dim result As Double

result = num1 - num2

Return result

End Function

Function multiply(num1 As Double, num2 As Double) As Double

Dim result As Double

result = num1 \* num2

Return result

End Function

Function divide(num1 As Double, num2 As Double) As Double

Dim result As Double

result = num1 / num2

Return result

End Function

Function modulo(num1 As Double, num2 As Double) As Double

Dim result As Double

result = num1 Mod num2

Return result

End Function

Function exponent(num1 As Double, num2 As Double) As Double

Dim result As Double

result = num1 ^ num2

Return result

End Function

End Module

Module lab\_3

Sub main()

'declaring variables

Dim input\_item As String, input\_quantity As String, result As String

Dim bool As Boolean = True

While (bool)

Console.WriteLine("Please select any of the following items below. ex: 1, 2, 3 etc...")

Console.WriteLine(menu\_items())

input\_item = Console.ReadLine()

'check if item selected is a number

If (IsNumeric(input\_item)) Then

If (input\_item = 1) Then

input\_item = 10.99

'ask the user for the quantity

Console.WriteLine("Please select a quantity.")

input\_quantity = Console.ReadLine()

'check if item quantity is an number

If (IsNumeric(input\_quantity)) Then

If (IsNumeric(input\_quantity) And input\_quantity >= 1 And input\_quantity <= 15) Then

result = input\_item \* input\_quantity

Console.WriteLine("item 1: " & "$" & input\_item & " | " & "quantity: " & input\_quantity & " | " & "Total: " & "$" & result)

Console.WriteLine()

'ask user if he/she would like to continue

Console.WriteLine("Would you like to select a new item? y/n")

Dim answer As String = Console.ReadLine()

If (answer.ToLower() = "y") Then

ElseIf (answer.ToLower() = "n") Then

Console.WriteLine("Porgram terminated. Goodbye!")

bool = False

Else

Console.WriteLine()

Console.WriteLine("Invalid entry. Porgram restarting...")

End If

Else

Console.WriteLine("Invalid entry for quantity. Please try again.")

Console.WriteLine()

End If

End If

End If

If (input\_item = 2) Then

input\_item = 5.66

'ask the user for the quantity

Console.WriteLine("Please select a quantity.")

input\_quantity = Console.ReadLine()

'check if the item quantity is a number

If (IsNumeric(input\_quantity)) Then

If (IsNumeric(input\_quantity) And input\_quantity >= 1 And input\_quantity <= 15) Then

result = input\_item \* input\_quantity

Console.WriteLine("item 2: " & "$" & input\_item & " | " & "quantity: " & input\_quantity & " | " & "Total: " & "$" & result)

Console.WriteLine()

'ask user if he/she would like to continue

Console.WriteLine("Would you like to select a new item? y/n")

Dim answer As String = Console.ReadLine()

If (answer.ToLower() = "y") Then

ElseIf (answer.ToLower() = "n") Then

Console.WriteLine("Porgram terminated. Goodbye!")

bool = False

Else

Console.WriteLine()

Console.WriteLine("Invalid entry. Porgram restarting...")

End If

Else

Console.WriteLine("Invalid entry for quantity. Please try again.")

Console.WriteLine()

End If

End If

End If

If (input\_item = 3) Then

input\_item = 7.65

'ask the user for the quantity

Console.WriteLine("Please select a quantity.")

input\_quantity = Console.ReadLine()

'check if item quantity is an number

If (IsNumeric(input\_quantity)) Then

If (IsNumeric(input\_quantity) And input\_quantity >= 1 And input\_quantity <= 15) Then

result = input\_item \* input\_quantity

Console.WriteLine("item 3: " & "$" & input\_item & " | " & "quantity: " & input\_quantity & " | " & "Total: " & "$" & result)

Console.WriteLine()

'ask user if he/she would like to continue

Console.WriteLine("Would you like to select a new item? y/n")

Dim answer As String = Console.ReadLine()

If (answer.ToLower() = "y") Then

ElseIf (answer.ToLower() = "n") Then

Console.WriteLine("Porgram terminated. Goodbye!")

bool = False

Else

Console.WriteLine()

Console.WriteLine("Invalid entry. Porgram restarting...")

End If

Else

Console.WriteLine("Invalid entry for quantity. Please try again.")

End If

End If

End If

If (input\_item = 4) Then

input\_item = 8.64

'ask the user for the quantity

Console.WriteLine("Please select a quantity.")

input\_quantity = Console.ReadLine()

'check if item quantity is an number

If (IsNumeric(input\_quantity)) Then

If (IsNumeric(input\_quantity) And input\_quantity >= 1 And input\_quantity <= 15) Then

result = input\_item \* input\_quantity

Console.WriteLine("item 4: " & "$" & input\_item & " | " & "quantity: " & input\_quantity & " | " & "Total: " & "$" & result)

Console.WriteLine()

'ask user if he/she would like to continue

Console.WriteLine("Would you like to select a new item? y/n")

Dim answer As String = Console.ReadLine()

If (answer.ToLower() = "y") Then

ElseIf (answer.ToLower() = "n") Then

Console.WriteLine("Porgram terminated. Goodbye!")

bool = False

Else

Console.WriteLine()

Console.WriteLine("Invalid entry. Porgram restarting...")

End If

Else

Console.WriteLine("Invalid entry for quantity. Please try again.")

Console.WriteLine()

End If

End If

End If

If (input\_item = 5) Then

input\_item = 5.0

'ask the user for the quantity

Console.WriteLine("Please select a quantity.")

input\_quantity = Console.ReadLine()

'check if item quantity is an number

If (IsNumeric(input\_quantity)) Then

If (IsNumeric(input\_quantity) And input\_quantity >= 1 And input\_quantity <= 15) Then

result = input\_item \* input\_quantity

Console.WriteLine("item 5: " & "$" & input\_item & " | " & "quantity: " & input\_quantity & " | " & "Total: " & "$" & result)

Console.WriteLine()

'ask user if he/she would like to continue

Console.WriteLine("Would you like to select a new item? y/n")

Dim answer As String = Console.ReadLine()

If (answer.ToLower() = "y") Then

ElseIf (answer.ToLower() = "n") Then

Console.WriteLine("Porgram terminated. Goodbye!")

bool = False

Else

Console.WriteLine()

Console.WriteLine("Invalid entry. Porgram restarting...")

End If

Else

Console.WriteLine("Invalid entry for quantity. Please try again.")

Console.WriteLine()

End If

End If

End If

If (input\_item = 6) Then

input\_item = 7.2

'ask the user for the quantity

Console.WriteLine("Please select a quantity.")

input\_quantity = Console.ReadLine()

'check if item quantity is an number

If (IsNumeric(input\_quantity)) Then

If (IsNumeric(input\_quantity) And input\_quantity >= 1 And input\_quantity <= 15) Then

result = input\_item \* input\_quantity

Console.WriteLine("item 6: " & "$" & input\_item & " | " & "quantity: " & input\_quantity & " | " & "Total: " & "$" & result)

Console.WriteLine()

'ask user if he/she would like to continue

Console.WriteLine("Would you like to select a new item? y/n")

Dim answer As String = Console.ReadLine()

If (answer.ToLower() = "y") Then

ElseIf (answer.ToLower() = "n") Then

Console.WriteLine("Porgram terminated. Goodbye!")

bool = False

Else

Console.WriteLine()

Console.WriteLine("Invalid entry. Porgram restarting...")

End If

Else

Console.WriteLine("Invalid entry for quantity. Please try again.")

Console.WriteLine()

End If

End If

End If

If (input\_item = 7) Then

input\_item = 10.0

'ask the user for the quantity

Console.WriteLine("Please select a quantity.")

input\_quantity = Console.ReadLine()

'check if item quantity is an number

If (IsNumeric(input\_quantity)) Then

If (IsNumeric(input\_quantity) And input\_quantity >= 1 And input\_quantity <= 15) Then

result = input\_item \* input\_quantity

Console.WriteLine("item 7: " & "$" & input\_item & " | " & "quantity: " & input\_quantity & " | " & "Total: " & "$" & result)

Console.WriteLine()

'ask user if he/she would like to continue

Console.WriteLine("Would you like to select a new item? y/n")

Dim answer As String = Console.ReadLine()

If (answer.ToLower() = "y") Then

ElseIf (answer.ToLower() = "n") Then

Console.WriteLine("Porgram terminated. Goodbye!")

bool = False

Else

Console.WriteLine()

Console.WriteLine("Invalid entry. Porgram restarting...")

End If

Else

Console.WriteLine("Invalid entry for quantity. Please try again.")

Console.WriteLine()

End If

End If

End If

Else

Console.WriteLine("invalid entry. Please try again (be sure to select a number).")

Console.WriteLine()

End If

End While

Console.Read()

End Sub

Function menu\_items() As String

Dim items As String

items = "item 1 : 10.99 " & vbCrLf & "item 2 : 5.66 " & vbCrLf & "item 3 : 7.65 " & vbCrLf & "item 4 : 8.64 " & vbCrLf & "item 5 : 5.00 " & vbCrLf & "items 6 : 7.20 " & vbCrLf & "items 7 : 10.00"

Return items

End Function

End Module

Module lab\_4

Sub main()

'4. (a,b) Christmas Tree

Dim bool As Boolean = True

Dim user\_input As String

Dim row As Integer = 0

Dim tmp As Integer = 1

Dim count As Integer = 1

Dim num\_stars As Integer

Dim total As Integer

'constant validation for an integer

While (bool)

Console.WriteLine("Please enter a number :")

user\_input = Console.ReadLine()

If IsNumeric(user\_input) Then

num\_stars = user\_input

'size of tree depends on number given by the user

Do While total + tmp < num\_stars

total = total + tmp

tmp = tmp + 2

row = row + 1

Loop

'loop # 1

For i = 1 To row

'loop # 2

For y = row - i To 0 Step -1

Console.Write(" ")

Next

'loop # 3

For j = 1 To count

Console.Write("\*")

Next

Console.WriteLine()

count = count + 2

Next

Console.WriteLine(" HAPPY HANUKKAH!!! ")

bool = False

Else

Console.WriteLine("Invalid entry.")

End If

End While

Console.Read()

End Sub

Function right\_side() As String

'Right side of the christmas tree

For i = 10 To 0 Step -1

Console.WriteLine("\*")

For j = 10 To i Step -1

Console.Write("\*")

If (j = 0) Then

Console.Write("\*")

End If

Next

Next

End Function 'Right side of the christmas tree

End Module