'Mastermind

'Gaw

Public Class Form1

Const NUM\_PEGS As Integer = 3

Private Sub btnCheckGuess\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles btnCheckGuess.Click

Static peg1Color As Integer, peg2Color As Integer, peg3Color As Integer

Dim peg1Guess As Integer, peg2Guess As Integer, peg3Guess As Integer

Dim numPegsCorrect As Integer, numColorsCorrect As Integer

'Determine peg color assignments

If peg1Color = 0 Then

Call ChooseColors(peg1Color, peg2Color, peg3Color)

End If

Dim duplicateGuesses As Boolean = False 'assume no duplicate color entries

Call GetGuess(peg1Guess, peg2Guess, peg3Guess, duplicateGuesses)

If Not duplicateGuesses Then

numPegsCorrect = CorrectPegs(peg1Guess, peg2Guess, peg3Guess, \_

peg1Color, peg2Color, peg3Color)

numColorsCorrect = CorrectColors(peg1Guess, peg2Guess, peg3Guess, \_

peg1Color, peg2Color, peg3Color)

Me.lblResults.Text = Me.lblResults.Text & "Pegs correct: " & \_

numPegsCorrect & Space(5) & "Colors correct: " & numColorsCorrect & vbCrLf

End If

If (numPegsCorrect = NUM\_PEGS And numColorsCorrect = NUM\_PEGS) Then

MessageBox.Show("You Win!")

End If

End Sub

'Generates unique numbers to represent the colors for the secret arrangement of

'the colored pegs.

'

'post: A unique number 1 through 5 has been assigned to peg1Color,

'peg2Color, and peg3Color to represent the colors of the pegs.

'

Sub ChooseColors(ByRef peg1Color As Integer, ByRef peg2Color As Integer, ByRef peg3Color As Integer)

Do

peg1Color = RndInt(1, 5)

peg2Color = RndInt(1, 5)

peg3Color = RndInt(1, 5)

Loop While (HasDuplicates(peg1Color, peg2Color, peg3Color))

End Sub

'Calculates a random number between intLowNum and intHighNum.

'

'post: a number between intLowNum and intHighNum has been returned.

'

Function RndInt(ByVal intLowNum As Integer, ByVal intHighNum As Integer) As Integer

Randomize()

Return Int((intHighNum - intLowNum + 1) \* Rnd() + intLowNum)

End Function

'Returns True if any of the peg colors is a duplicate with any other peg color.

'

'post: True has been returned if peg1Color = peg2Color Or peg1Color = peg3Color

'Or peg2Color = peg3Color, otherwise False has been returned.

'

Function HasDuplicates(ByVal peg1Color As Integer, ByVal peg2Color As Integer, ByVal peg3Color As Integer) As Boolean

If peg1Color = peg2Color Or peg1Color = peg3Color \_

Or peg2Color = peg3Color Then

Return True

Else

Return False

End If

End Function

'Gets the unique guesses of the three peg colors from the user.

'

'post: peg1Guess, peg2Guess, and peg3Guess equal the unique peg

'color guesses from the user.

'

Sub GetGuess(ByRef peg1Guess As Integer, ByRef peg2Guess As Integer, ByRef peg3Guess As Integer, ByRef duplicateGuesses As Boolean)

'Get guess of peg 1

If Me.radPeg1Yellow.Checked Then

peg1Guess = 1

ElseIf Me.radPeg1Blue.Checked Then

peg1Guess = 2

ElseIf Me.radPeg1Red.Checked Then

peg1Guess = 3

ElseIf Me.radPeg1Green.Checked Then

peg1Guess = 4

ElseIf Me.radPeg1White.Checked Then

peg1Guess = 5

End If

'Get guess of peg 2

If Me.radPeg2Yellow.Checked Then

peg2Guess = 1

ElseIf Me.radPeg2Blue.Checked Then

peg2Guess = 2

ElseIf Me.radPeg2Red.Checked Then

peg2Guess = 3

ElseIf Me.radPeg2Green.Checked Then

peg2Guess = 4

ElseIf Me.radPeg2White.Checked Then

peg2Guess = 5

End If

'Get guess of peg 3

If Me.radPeg3Yellow.Checked Then

peg3Guess = 1

ElseIf Me.radPeg3Blue.Checked Then

peg3Guess = 2

ElseIf Me.radPeg3Red.Checked Then

peg3Guess = 3

ElseIf Me.radPeg3Green.Checked Then

peg3Guess = 4

ElseIf Me.radPeg3White.Checked Then

peg3Guess = 5

End If

If HasDuplicates(peg1Guess, peg2Guess, peg3Guess) Then

MessageBox.Show("Each guess must be unique. Please guess 3 different peg colors.")

duplicateGuesses = True

End If

End Sub

'Calculates the number of correct pegs chosen by the user.

'

'post: The number of correct pegs has been returned.

'

Function CorrectPegs(ByVal peg1Guess As Integer, ByVal peg2Guess As Integer, ByVal peg3Guess As Integer, ByVal peg1Color As Integer, ByVal peg2Color As Integer, ByVal peg3Color As Integer) As Integer

Dim numCorrect As Integer = 0

If (peg1Guess = peg1Color) Then

numCorrect += 1

End If

If (peg2Guess = peg2Color) Then

numCorrect += 1

End If

If (peg3Guess = peg3Color) Then

numCorrect += 1

End If

Return numCorrect

End Function

'Calculates the number of correct colors chosen by the user.

'

'post: The number of correct colors has been returned.

'

Function CorrectColors(ByVal peg1Guess As Integer, ByVal peg2Guess As Integer, ByVal peg3Guess As Integer, ByVal peg1Color As Integer, ByVal peg2Color As Integer, ByVal peg3Color As Integer) As Integer

Dim numCorrect As Integer = 0

If (peg1Guess = peg1Color Or peg1Guess = peg2Color Or \_

peg1Guess = peg3Color) Then

numCorrect += 1

End If

If (peg2Guess = peg2Color Or peg2Guess = peg1Color Or \_

peg2Guess = peg3Color) Then

numCorrect += 1

End If

If (peg3Guess = peg3Color Or peg3Guess = peg2Color Or \_

peg3Guess = peg1Color) Then

numCorrect += 1

End If

Return numCorrect

End Function

Private Sub Form1\_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load

End Sub

Private Sub lblResults\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles lblResults.Click

End Sub

End Class