Option Explicit

' CIVL 2308 - Mid Term Exam
' Typical Solution
' 14 March 2005

Public Sub MidTerm()
Dim CellElevation As Range
Dim ProposedElevation As Single
Dim Fill As Single
Dim Cut As Single
Dim CutTotal As Single
Dim FillTotal As Single
Dim CellCount As Integer
Dim MaxFill As Single
Dim MaxCut As Single
Dim MaterialToMove As Single
Dim ElevationTotal As Single

ProposedElevation = InputBox("Enter the proposed elevation.")

CutTotal = 0#
FillTotal = 0#
CellCount = 0
ElevationTotal = 0#
MaxFill = 0#
MaxCut = 0#

For Each CellElevation In Selection
    If CellElevation.Value <> "" Then
        If CellElevation.Value > ProposedElevation Then
            CutTotal = CutTotal + (CellElevation.Value - ProposedElevation)
            CellElevation.Font.Color = vbRed
            If (CellElevation.Value - ProposedElevation) > MaxCut Then
                MaxCut = CellElevation.Value - ProposedElevation
            End If
        Else
            FillTotal = FillTotal + (ProposedElevation - CellElevation.Value)
            CellElevation.Font.Color = vbBlue
            If (ProposedElevation - CellElevation.Value) > MaxFill Then
                MaxFill = (ProposedElevation - CellElevation.Value)
            End If
        End If
        ElevationTotal = ElevationTotal + CellElevation.Value
        CellCount = CellCount + 1
    End If
Next CellElevation

Range("Sheet2!A1").Value = MaxFill * 10000
Range("Sheet2!A2").Value = MaxCut * 10000
Range("Sheet2!A3").Value = (FillTotal + CutTotal) * 10000
MaterialToMove = FillTotal - CutTotal
Range("Sheet2!A4").Value = Abs(MaterialToMove) * 10000

If MaterialToMove > 0 Then
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    Range("Sheet2!B4").Value = "Added"
Else
    Range("Sheet2!B4").Value = "Removed"
End If

MsgBox ("Average Elevation: " & ElevationTotal / CellCount)

End Sub

' Development of histogram categories with arrays

Public Sub ArrayExample2()

    Dim Table() As Integer
    Dim TableSize As Integer
    Dim MaxVal As Single
    Dim MinVal As Single
    Dim Cells As Range
    Dim IntervalSize As Single
    Dim CellIndex As Integer

    MaxVal = -9999999#
    MinVal = 999999#

    TableSize = InputBox("How many categories?")
    ReDim Table(1 To TableSize)

    For Each Cells In Selection
        If Cells.Value <> "" Then
            If Cells.Value > MaxVal Then
                MaxVal = Cells.Value
            End If

            If Cells.Value < MinVal Then
                MinVal = Cells.Value
            End If
        End If
    Next Cells

    IntervalSize = (MaxVal - MinVal) / TableSize

    For Each Cells In Selection
        If Cells.Value <> "" Then
            CellIndex = Int((Cells.Value - MinVal) / IntervalSize) + 1
            Table(CellIndex) = Table(CellIndex) + 1
        End If
    Next Cells

    For CellIndex = 1 To TableSize
        Range("Sheet2!A1").Offset(CellIndex - 1, 0).Value = Table(CellIndex)
    Next CellIndex

End Sub