VBA - Visual Basic for Application

Bahasa pemrograman untuk aplikasi Windows

Bagian 5

Mengendalikan alur program

Apa yang akan dibahas?

- Pengendalian alur program
- If...Then
- If...Then...Else
- Membuat keputusan ganda
- Fungsi yang mengambil keputusan
- Loops
- Do...Loop
- For...Next
- For Each...Next
- Exit

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Pengendalian alur program

- Alur program dikendalikan dengan logika pengambilan keputusan (True atau False)
- If..Then
  - Langsung/sebaris
    If *condition* Then *statement*
  - Dengan blok
    If *condition* Then
       [*statements*]
    End If

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Pengendalian alur program

- ◆ If…Then…Else
  - • Sintaks
    If *condition* Then
      [*TrueStatements*]
    Else
      [*FalseStatements*]
    End If
  Contoh:
  Function FutureValue(Rate, Nper, Pmt, Frequency)
    If Frequency = "Monthly" Then
      FutureValue = FV(Rate / 12, Nper * 12, Pmt / 12)   ' freq monthly
    Else
      FutureValue = FV(Rate / 4, NPer * 4, Pmt / 4) ' freq quarterly
    End If
  End Function

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Keputusan ganda

◆ Penggunaan operator And dan Or
   If *condition1* And *condition2* Then
       [*TrueStatements*]
   Else
       [*FalseStatements*]
   End If
Contoh:
Function FutureValue2(Rate, Nper, Pmt, Frequency)
   If Frequency <> "Monthly" And Frequency <> "Quarterly" Then
      MsgBox "The Frequeny argument must be either " & """Monthly""
   or_
              """Quarterly""!"
      Exit Function
   End If
   If Frequency = "Monthly" Then
      FutureValue2 = FV(Rate / 12, Nper * 12, Pmt / 12)   ' freq monthly
   Else
      FutureValue2 = FV(Rate / 4, NPer * 4, Pmt / 4)   ' freq quarterly
   End If
 End Function

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Keputusan ganda

◆ Penggunaan statement multi If…Then…Else

    If *condition1* Then
        [*condition1 TrueStatements*]
    ElseIf *condition2*
        [*condition2 TrueStatements*]
    <etc.>
    Else
        [*FalseStatements*]
    End If

Contoh:
```
Function FutureValue3(Rate, Nper, Pmt, Frequency)
    If Frequency = "Monthly" Then
        FutureValue3 = FV(Rate / 12, Nper * 12, Pmt / 12)    ' freq monthly
    ElseIf Frequency = "Quarterly" Then
        FutureValue3 = FV(Rate / 4, NPer * 4, Pmt / 4)         ' freq quarterly
    Else
        MsgBox "The Frequency argument must be either " & _
                """Monthly"" or ""Quarterly""!"
    End If
End Function
```

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Keputusan ganda

◆ Penggunaan Select Case

    Select Case *TestExpression*
        Case *FirstCaseList*
          [*FirstStatements*]
        Case *SecondCaseList*
          [*SecondStatements*]
        <etc.>
        Case *Else*
          [*ElseStatements*]
    End Select

Contoh:
Function FutureValue4(Rate, Nper, Pmt, Frequency)
    Select Case Frequency
        Case "Monthly"
                FutureValue4 = FV(Rate / 12, Nper * 12, Pmt / 12) ' freq
monthly
        Case "Quarterly"
                FutureValue3 = FV(Rate / 4, NPer * 4, Pmt / 4)   ' freq
quarterly
        Case Else
                MsgBox "The Frequency argument must be either " & _
                """"Monthly"""" or """"Quarterly""""!"
    End Select
End Function

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Keputusan ganda

◆   Contoh lain: mengubah nilai angka ke huruf

```
Function nilHuruf(nilAngka As Integer) As String
    Select Case nilAngka
        Case Is < 0
            nilHuruf = "Salah data nilai kurang dari 0!"
        Case Is < 50
            nilHuruf = "F"
        Case Is < 60
            nilHuruf = "D"
        Case Is < 70
            nilHuruf = "C"
        Case Is < 80
            nilHuruf = "B"
        Case Is <= 100
            nilHuruf = "A"
        Case Else
            nilHuruf = "Salah! Nilai lebih dari 100!"
    End Select
End Function
```

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Fungsi pengambil keputusan

◆ Statement IIf (Inline If)

- Sintaks: IIf (*condition*, *TrueResult*, *FalseResult*)

Function ProsesorCacat() As Boolean

ProsesorCacat = IIf((4195835 – (4195835/3145727) * 3145727), True, False)

End Function

◆ Fungsi Choose

- Sintaks: Choose(index, value1, value2, …)

Function NamaHari(noHari As Integer) As String

NamaHari = Choose(noHari, "Ahad", "Senin", "Selasa", "Rabu", "Kamis", "Jumat",_ "Sabtu")

End Function

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Fungsi pengambil keputusan

◆ **Fungsi Switch**

- Sintaks: Switch(*expr1, value1, value2, …*)

Function NilHuruf2(nilAngka As Integer) As String

NilHuruf2 = Switch(nilAngka < 0 "Error <0",_

   nilAngka < 50, "F",_

   nilAngka < 60, "D",_

   nilAngka < 70, "C",_

   nilAngka < 80, "B",_

   nilAngka <= 100, "A",_

   nilAngka > 100, "Error > 100")

End Function

Pengulangan - loop

◆ **Struktur Do…Loop**

◆ **Sintaks:**

- Do While *condition*   ' *check dulu baru loop*
  [statement]   ' *dilakukan selama kondisi T*
  Loop

- Do   ' *lakukan dulu baru check*
  [statement]
  Loop While *condition*   ' *diulang bila kondisi T*

- Do Until *condition*   ' *check dulu baru loop*
  [statemnt]   ' *dilakukan selama kondisi F*
  Loop

- Do   ' *dilakukan dulu baru check*
  [statement]
  Loop Until *condition*   ' *diulang bila kondisi masih F*

Pengulangan - loop

◆ Contoh

```vba
Sub BigNumbers()
    Dim rowNum As Integer, colNum As Integer, currCell As Range
    rowNum = ActiveCell.Row
    colNum = ActiveCell.Column
    Set currCell = ActiveSheet.Cells(rowNum, ColNum)
    Do While currCell.Value <> ""
        If IsNumeric(currCell.Value) Then
            If currCell.Value >= 1000 Then
                currCell.Font.Color = VBAColor("magenta")
            End If
        rowNum = rowNum + 1
        Set currCell = ActiveSheet.Cells(rowNum, colNum)
    Loop
End Sub
```

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For … Next

- Loop dengan For … Next
- Sintaks: For *counter = start* To *end [inkremen]*
        [statement]
        Next [*counter*]

```
Sub LoopTest()
    Dim counter As Integer
    For counter = 1 To 10
        Application.StatusBar = "Counter value: " &
counter
        Application.Wait Now +
TimeValue("00:00:01")
    Next counter
    Application.StatusBar = False
End Sub
```

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For Each … Next

- Loop dengan For Each … Next
- Sintaks: For Each *element* In *group*
          [statement]
     Next [*element*]

```
Sub convertProper()
    Dim cellObject As Object
    For Each cellObject In Selection
        cellObject.Formula =
        Application.Proper(cellObject)
    Next
End Sub
```

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Penggunaan Exit For atau Exit Do

◆ Kadang kita perlu keluar dari Loop
◆ Caranya: gunakan Exit For atau Exit Do

```
Sub BigNumbers2()
    Dim rowNum As Integer, colNum As Integer, currCell As Range
    rowNum = ActiveCell.Row
    colNum = ActiveCell.Column
    Set currCell = ActiveSheet.Cells(rowNum, ColNum)
    Do While currCell.Value <> " "
      If IsNumeric(currCell.Value) Then
        If currCell.Value >= 1000 Then
            currCell.Font.Color = VBAColor("magenta")
        End If
      Else
        Exit Do                          ` bila bukan angka keluar dari
    Do loop
      End If
      rowNum = rowNum + 1
      Set currCell = ActiveSheet.Cells(rowNum, colNum)
    Loop
End Sub
```

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