Macro Programming

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Creating a Basic Macro + Control Structures (Loops & Conditions)

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Experiential Learning: Creating a Basic Macro

Task: Format report headers automatically.

Steps:

1. Open Excel and enable Developer tab if not already.
2. Go to Developer → **Record Macro**.
3. Name it `FormatReport`, assign shortcut (Ctrl+Shift+R).
4. Perform formatting: Bold row 1, center align, apply a fill color.
5. Stop Recording.
6. Run using the assigned shortcut.

Viewing Recorder Code

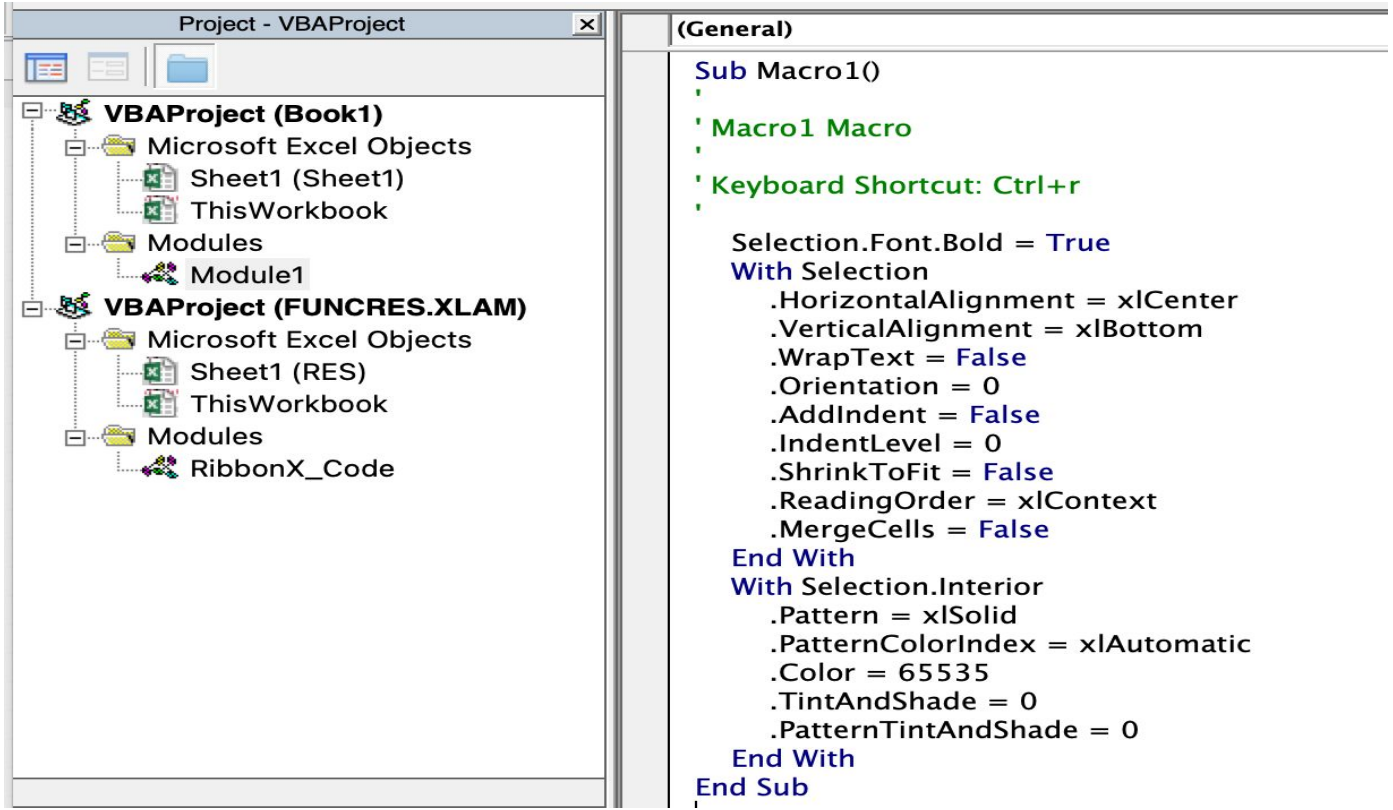
Steps:

1. Open VBE (Alt+F11).
2. Locate Module1 under your workbook.
3. Double-click Module1 to see the generated code.

Explanation: The recorder uses `.Select` and `Selection`, which can be inefficient. See how actions translate into VBA.

Macro Programming

Viewing Recorder Code



Introduction to Control Structures

- **Conditionals**: If, If…Else, Select Case.
- **Loops**: For…Next, Do While, Do Until, While Wend.
- Purpose: Add logic + repetition.
- Benefit: Makes macros smarter and adaptable.
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Explanation: Control structures are the building blocks of programming logic.

Conditional Statement: If…Then

If condition Then

' Code if condition is True

End If

Example:

```
Function SalesMessage(salesAmount As Double) As String
If salesAmount > 1000 Then
SalesMessage = "High Sales"
Else
SalesMessage = "Normal Sales"
End If
End Function
```

Conditional Statement: If…Then…Else

```
If condition Then
' Code if True
Else
' Code if False
End If
```

Conditional Statement: If…Then…Else

```
Function PerformanceCategory(score As Integer) As String
    If score >= 90 Then
        PerformanceCategory = "Excellent"
    ElseIf score >= 75 Then
        PerformanceCategory = "Good"
    ElseIf score >= 60 Then
        PerformanceCategory = "Satisfactory"
    Else
        PerformanceCategory = "Needs Improvement"
    End If
End Function
```

Conditional Statement: Select Case

Select Case inside a Function returning a value:

```
Function RegionTaxRate(regionCode As String) As Double
    Select Case UCase(regionCode)
        Case "N"
            RegionTaxRate = 0.07
        Case "S"
            RegionTaxRate = 0.06
        Case "E"
            RegionTaxRate = 0.08
        Case "W"
            RegionTaxRate = 0.055
        Case Else
            RegionTaxRate = 0.065 ' default
    End Select
End Function
```

Loops

A **loop** is a programming structure that repeats a block of code multiple times.

Useful for automating repetitive tasks like filling cells, processing lists, or summing values.

Types of loops in VBA:

1. **For…Next** – fixed number of iterations.
2. **Do While / Do Until** – run until a condition changes.
3. **While…Wend** – legacy loop still seen in older code.

Loops save time, reduce errors, and make macros more dynamic.

For…Next Loop

Repeats a block of code for a set number of times.

```
Sub FillNumbers()
    Dim i As Integer
    For i = 1 To 5
        Cells(i, 1).Value = i
    Next i
End Sub
```

Do While Loop

Repeats while the condition is TRUE.

```
Sub DoWhileExample()
    Dim i As Integer
    i = 1
    Do While i <= 5
        Cells(i, 2).Value = i * 10
        i = i + 1
    Loop
End Sub
```

While…Wend Loop

Legacy loop, repeats while condition is TRUE.

```
Sub WhileWendExample()
    Dim n As Integer
    n = 1
    While n <= 3
        Cells(n, 3).Value = "Loop " & n
        n = n + 1
    Wend
End Sub
```

THANK YOU

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