

1 DATA INGESTION (Data lana)

-> Excel open, Sheet ka name Raw_Data. Open VBA :

Left side me **VBAProject**

Right-click → Insert → **Module**

Write This:

```
Sub LoadData()

Dim wb As Workbook      ' external file ka reference
Dim sourcePath As String ' file ka path

sourcePath = "D:\Excel VBA & Macros\Practice.xlsx"

' Open external workbook
Set wb = Workbooks.Open(sourcePath)

' Clear old data first
ThisWorkbook.Sheets("Raw_Data").Cells.Clear

' Copy data from Sheet1
wb.Sheets(1).UsedRange.Copy _
    ThisWorkbook.Sheets("Raw_Data").Range("A1")

' Close external workbook without saving
wb.Close SaveChanges:=False

End Sub
```

2- DATA Cleaning:

```
Sub CleanData()
    With Sheets("Raw_Data")
        .UsedRange.RemoveDuplicates Columns:=Array(1, 2), Header:=xlYes 'Duplicate check sirf
        Column 1 aur Column 2 ke basis par
        .UsedRange.Columns.AutoFit 'Columns ki width automatically adjust
        .UsedRange.Replace " ", " ", xlPart 'Cell ke andar kahin bhi ho to replace karo
    End With
End Sub
```

3- Data Transformation:

```
Sub TransformData()

    Dim ws As Worksheet
    Dim lastRow As Long

    Set ws = Sheets("Raw_Data")

    ' Find last row with data
    lastRow = ws.Cells(ws.Rows.Count, "A").End(xlUp).Row

    ' Add headers
    ws.Range("I1").Value = "Join_Year"
    ws.Range("J1").Value = "Join_Month"
    ws.Range("K1").Value = "Total_Compensation"

    ' Joining Year
    ws.Range("I2:I" & lastRow).Formula = "=YEAR(VALUE(F2))"

    ' Joining Month (name)
    ws.Range("J2:J" & lastRow).Formula = "=TEXT(VALUE(F2),""mmmm"""

    ' Salary + Bonus
    ws.Range("K2:K" & lastRow).Formula = "=D2+G2"

    ' Auto fit new columns
    ws.Range("I:K").Columns.AutoFit

End Sub
```

4- Data Analysis:

```
Sub DetectOutliers_SelectedColumn()

    Dim rng As Range
    Dim cell As Range
    Dim mean As Double
    Dim stdev As Double
    Dim dataRng As Range

    'Ensure single column is selected
    If Selection.Columns.Count > 1 Then
```

```

    MsgBox "Please select ONLY one numeric column.", vbExclamation
    Exit Sub
End If

'Exclude header (start from row 2)
Set dataRng = Selection.Offset(1, 0) _
    .Resize(Selection.Rows.Count - 1, 1)

'Calculate mean & standard deviation (numeric only)
mean = Application.WorksheetFunction.Average(dataRng)
stdev = Application.WorksheetFunction.stdev(dataRng)

'Highlight outliers
For Each cell In dataRng
    If IsNumeric(cell.Value) Then
        If Abs(cell.Value - mean) > (2 * stdev) Then
            cell.Interior.Color = RGB(255, 199, 206)
        End If
    End If
Next cell

MsgBox "Outliers highlighted successfully.", vbInformation

End Sub

```

5- Reporting Automation:

```

Sub FormatAndExportReport()

    Dim ws As Worksheet

    Set ws = ActiveSheet

    ws.Rows("1:1").Font.Bold = True

    ws.Cells.EntireColumn.AutoFit

    ActiveSheet.ExportAsFixedFormat Type:=xlTypePDF, Filename:="D:\Excel VBA &
Macros\Practice.pdf", Quality:=xlQualityStandard

End Sub

```

6- Data Visualization :

```
Sub CreateBarChart()
```

```
Dim ws As Worksheet  
  
Set ws = ActiveSheet  
  
Dim chartObj As ChartObject  
  
Set chartObj = ws.ChartObjects.Add(Left:=100, Width:=300, Top:=50, Height:=200)  
  
chartObj.Chart.SetSourceData Source:=ws.Range("A1:B10")  
  
chartObj.Chart.ChartType = xlColumnClustered  
  
End Sub
```