

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

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        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
```