```
Option Explicit

' GLOBAL VARIABLES
Public ReportStartDate As Date
Public ReportEndDate As Date
Public ReportType As String

' ==================================
' CREATE BUTTONS (RUN ONCE)
' ==================================
Sub CreateReportButtons()
    Dim ws As Worksheet
    Dim b1 As Shape, b2 As Shape, b3 As Shape

    On Error Resume Next
    Set ws = ThisWorkbook.Sheets("Report Menu")
    If ws Is Nothing Then
        Set ws = ThisWorkbook.Sheets.Add
        ws.Name = "Report Menu"
    End If
    ws.Cells.Clear
    On Error GoTo 0

    ws.Range("A1").Value = "Select Report Type"
    ws.Range("A1").Font.Bold = True
    ws.Range("A1").Font.Size = 16

    ' Fixed size buttons (Width:120, Height:30) & placement free floating
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```
    Set b1 = ws.Shapes.AddFormControl(xlButtonControl, 20, 50, 120, 30)
    b1.TextFrame.Characters.Text = "Daily Report"
    b1.OnAction = "DailyReport"
    b1.Placement = xlFreeFloating

    Set b2 = ws.Shapes.AddFormControl(xlButtonControl, 160, 50, 120, 30)
    b2.TextFrame.Characters.Text = "Weekly Report"
    b2.OnAction = "WeeklyReport"
    b2.Placement = xlFreeFloating

    Set b3 = ws.Shapes.AddFormControl(xlButtonControl, 300, 50, 120, 30)
    b3.TextFrame.Characters.Text = "Monthly Report"
    b3.OnAction = "MonthlyReport"
    b3.Placement = xlFreeFloating

    MsgBox "Buttons created successfully!", vbInformation
End Sub

' ==================================
' REPORT BUTTONS
' ==================================
Sub DailyReport()
    ReportType = "Daily"
    Dim dt As String
    dt = InputBox("Enter Date (dd-mmm-yyyy):")
    If dt = "" Or Not IsDate(dt) Then Exit Sub
    ReportStartDate = CDate(dt)
    ReportEndDate = ReportStartDate
```

```
    GenerateECommerceDashboardReport
End Sub

Sub WeeklyReport()
    ReportType = "Weekly"
    Dim dt As String
    dt = InputBox("Enter Week Start Date (dd-mmm-yyyy):")
    If dt = "" Or Not IsDate(dt) Then Exit Sub
    ReportStartDate = CDate(dt)
    ReportEndDate = ReportStartDate + 6
    GenerateECommerceDashboardReport
End Sub

Sub MonthlyReport()
    ReportType = "Monthly"
    Dim m As String, y As String
    m = InputBox("Enter Month number (1-12):")
    y = InputBox("Enter Year (yyyy):")
    If Not IsNumeric(m) Or Not IsNumeric(y) Then Exit Sub
    ReportStartDate = DateSerial(CLng(y), CLng(m), 1)
    ReportEndDate = DateSerial(CLng(y), CLng(m) + 1, 0)
    GenerateECommerceDashboardReport
End Sub

' ==================================
' MAIN REPORT GENERATOR
' ==================================
Sub GenerateECommerceDashboardReport()
```

```
    Dim ws As Worksheet, wsData As Worksheet
    Dim lastRow As Long, r As Long
    Dim totalSales As Double, totalQuantity As Long, totalProfit As Double
    Dim totalCustomers As Object, avgDiscount As Double, discountCount As Long
    Dim dictMarket As Object, dictCity As Object
    Dim dictCustomerType As Object, dictProduct As Object
    Dim dictWorstProduct As Object, dictCategory As Object

    Set wsData = Sheets("Dataset")
    Set ws = Sheets("Report Menu")

    ' Force column B as text so $ always shows
    ws.Columns("B").NumberFormat = "@"

    ' Determine start row below buttons
    Dim startRow As Long
    If ws.Shapes.Count > 0 Then
        startRow = ws.Shapes(ws.Shapes.Count).BottomRightCell.row + 2
    Else
        startRow = 5
    End If

    ' Clear old report below buttons
    Dim lastReportRow As Long
    lastReportRow = ws.Cells(ws.Rows.Count, 1).End(xlUp).row
    If lastReportRow >= startRow Then ws.Rows(startRow & ":" &
lastReportRow).ClearContents
```

```
' Initialize dictionaries
Set totalCustomers = CreateObject("Scripting.Dictionary")
Set dictMarket = CreateObject("Scripting.Dictionary")
Set dictCity = CreateObject("Scripting.Dictionary")
Set dictCustomerType = CreateObject("Scripting.Dictionary")
Set dictProduct = CreateObject("Scripting.Dictionary")
Set dictWorstProduct = CreateObject("Scripting.Dictionary")
Set dictCategory = CreateObject("Scripting.Dictionary")

lastRow = wsData.Cells(wsData.Rows.Count, "A").End(xlUp).row

' DATA LOOP
For r = 2 To lastRow
    Dim oDate As Date
    oDate = wsData.Cells(r, 3).Value
    If oDate >= ReportStartDate And oDate <= ReportEndDate Then
        totalSales = totalSales + wsData.Cells(r, 15).Value
        totalQuantity = totalQuantity + wsData.Cells(r, 14).Value
        totalProfit = totalProfit + wsData.Cells(r, 17).Value
        avgDiscount = avgDiscount + wsData.Cells(r, 16).Value
        discountCount = discountCount + 1
        totalCustomers(wsData.Cells(r, 4).Value) = 1
        AddToDict dictMarket, wsData.Cells(r, 10).Value, wsData.Cells(r, 15).Value
        AddToDict dictCity, wsData.Cells(r, 6).Value, wsData.Cells(r, 15).Value
        AddToDict dictCustomerType, wsData.Cells(r, 5).Value, wsData.Cells(r, 15).Value
        AddToDict dictProduct, wsData.Cells(r, 13).Value, wsData.Cells(r, 15).Value
        AddToDict dictWorstProduct, wsData.Cells(r, 13).Value, wsData.Cells(r, 14).Value
        AddToDict dictCategory, wsData.Cells(r, 12).Value, wsData.Cells(r, 15).Value
```

```
    End If
  Next r

  If discountCount > 0 Then avgDiscount = avgDiscount / discountCount

  ' ====================
  ' WRITE REPORT BELOW BUTTONS
  ' ====================
  Dim row As Long
  row = startRow

  ' Main title
  ws.Cells(row, 1).Value = "E-Commerce Sales Trends"
  ws.Cells(row, 1).Font.Bold = True
  ws.Cells(row, 1).Font.Size = 18
  ws.Range(ws.Cells(row, 1), ws.Cells(row, 8)).Interior.Color = RGB(180, 200, 255)
  row = row + 2

  ' Report Type & Date
  ws.Cells(row, 1).Value = "Report Type: " & ReportType: ws.Cells(row, 1).Font.Bold = True
  row = row + 1
  ws.Cells(row, 1).Value = "Date Range: " & Format(ReportStartDate, "dd-mmm-yyyy") & " to
" & Format(ReportEndDate, "dd-mmm-yyyy")
  ws.Cells(row, 1).Font.Bold = True
  row = row + 2

  ' ======================
  ' SECTION: Sales Analysis
```

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    ' ======================
    ws.Cells(row, 1).Value = "Sales Analysis"
    ws.Cells(row, 1).Font.Bold = True
    ws.Cells(row, 1).Font.Size = 14
    ws.Range(ws.Cells(row, 1), ws.Cells(row, 8)).Interior.Color = RGB(200, 230, 255)
    row = row + 1

    Dim startCol As Long
    startCol = 1

    ws.Cells(row, startCol).Value = "Total Sales": ws.Cells(row, startCol).Font.Bold = True
    ws.Cells(row, startCol + 1).Value = "$" & Format(totalSales, "#,##0.00")

    ws.Cells(row, startCol + 3).Value = "Total Quantity": ws.Cells(row, startCol + 3).Font.Bold =
True
    ws.Cells(row, startCol + 4).Value = totalQuantity

    ws.Cells(row, startCol + 6).Value = "Total Customers": ws.Cells(row, startCol + 6).Font.Bold
= True
    ws.Cells(row, startCol + 7).Value = totalCustomers.Count
    row = row + 1

    ws.Cells(row, startCol).Value = "Average Discount": ws.Cells(row, startCol).Font.Bold = True
    ws.Cells(row, startCol + 1).Value = Format(avgDiscount, "0.00%")

    ws.Cells(row, startCol + 3).Value = "Total Profit": ws.Cells(row, startCol + 3).Font.Bold =
True
    ws.Cells(row, startCol + 4).Value = "$" & Format(totalProfit, "#,##0.00")
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    ws.Cells(row, startCol + 6).Value = "Profit Margin": ws.Cells(row, startCol + 6).Font.Bold = True
    If totalSales <> 0 Then ws.Cells(row, startCol + 7).Value = Format(totalProfit / totalSales, "0.00%") Else ws.Cells(row, startCol + 7).Value = "0.00%"
    row = row + 2

    ' ======================
    ' OTHER SECTIONS
    ' ======================
    Dim sections As Variant
    sections = Array("Market Sales Distribution", "Top Cities by Sales", "Sales by Customer Type", "Product Performance")
    Dim sec As Variant
    For Each sec In sections
        ws.Cells(row, 1).Value = sec
        ws.Cells(row, 1).Font.Bold = True
        ws.Range(ws.Cells(row, 1), ws.Cells(row, 8)).Interior.Color = RGB(220, 230, 250)
        row = row + 1
        Select Case sec
            Case "Market Sales Distribution": WriteTop3 ws, dictMarket, row
            Case "Top Cities by Sales": WriteTop3 ws, dictCity, row
            Case "Sales by Customer Type": WriteTop3 ws, dictCustomerType, row
            Case "Product Performance"
                ws.Cells(row, 1).Value = "Top-Selling Products": ws.Cells(row, 1).Font.Bold = True: row = row + 1
                WriteTop3 ws, dictProduct, row: row = row + 1
                ws.Cells(row, 1).Value = "Worst-Selling Products": ws.Cells(row, 1).Font.Bold = True: row = row + 1
                WriteBottom3 ws, dictWorstProduct, row: row = row + 1
```

```
            ws.Cells(row, 1).Value = "Top Product Categories": ws.Cells(row, 1).Font.Bold = True: row = row + 1
            WriteTop3 ws, dictCategory, row
        End Select
        row = row + 1
    Next sec

    ws.Columns("A:H").AutoFit
    MsgBox "Report Generated Successfully!", vbInformation
End Sub

' -------------------------
' DICTIONARY HELPERS
' -------------------------
Sub AddToDict(dict As Object, key As String, val As Double)
    If dict.Exists(key) Then dict(key) = dict(key) + val Else dict.Add key, val
End Sub

Sub WriteTop3(ws As Worksheet, dict As Object, ByRef row As Long)
    Dim k As Variant, arr(), i As Long, j As Long
    If dict.Count = 0 Then Exit Sub
    ReDim arr(1 To dict.Count, 1 To 2)
    i = 1
    For Each k In dict.Keys
        arr(i, 1) = k: arr(i, 2) = dict(k)
        i = i + 1
    Next
    For i = 1 To UBound(arr)
```

```
        For j = i + 1 To UBound(arr)
            If arr(j, 2) > arr(i, 2) Then
                Dim t1, t2
                t1 = arr(i, 1): t2 = arr(i, 2)
                arr(i, 1) = arr(j, 1): arr(i, 2) = arr(j, 2)
                arr(j, 1) = t1: arr(j, 2) = t2
            End If
        Next
    Next
    Dim limit As Long: limit = WorksheetFunction.Min(3, dict.Count)
    For i = 1 To limit
        ws.Cells(row, 1).Value = i & ". " & arr(i, 1)
        ws.Cells(row, 2).Value = "$" & Format(arr(i, 2), "#,##0.00")
        If row Mod 2 = 0 Then ws.Range(ws.Cells(row, 1), ws.Cells(row, 8)).Interior.Color =
RGB(240, 245, 255)
        row = row + 1
    Next
End Sub

Sub WriteBottom3(ws As Worksheet, dict As Object, ByRef row As Long)
    Dim k As Variant, arr(), i As Long, j As Long
    If dict.Count = 0 Then Exit Sub
    ReDim arr(1 To dict.Count, 1 To 2)
    i = 1
    For Each k In dict.Keys
        arr(i, 1) = k: arr(i, 2) = dict(k)
        i = i + 1
    Next
```

```
    For i = 1 To UBound(arr)
        For j = i + 1 To UBound(arr)
            If arr(j, 2) < arr(i, 2) Then
                Dim t1, t2
                t1 = arr(i, 1): t2 = arr(i, 2)
                arr(i, 1) = arr(j, 1): arr(i, 2) = arr(j, 2)
                arr(j, 1) = t1: arr(j, 2) = t2
            End If
        Next
    Next
    Dim limit As Long: limit = WorksheetFunction.Min(3, dict.Count)
    For i = 1 To limit
        ws.Cells(row, 1).Value = i & ". " & arr(i, 1)
        ws.Cells(row, 2).Value = "$" & Format(arr(i, 2), "#,##0.00")
        If row Mod 2 = 0 Then ws.Range(ws.Cells(row, 1), ws.Cells(row, 8)).Interior.Color =
RGB(240, 245, 255)
        row = row + 1
    Next
End Sub
```