

```
Private Sub Workbook_Open()
```

```
End Sub
```

```
Private Sub Workbook_PivotTableCloseConnection(ByVal Target As PivotTable)
```

```
End Sub
```

```
Private Sub Workbook_PivotTableOpenConnection(ByVal Target As PivotTable)
```

```
End Sub
```

```
Private Sub Workbook_SheetBeforeDelete(ByVal Sh As Object)
```

```
End Sub
```

```
Private Sub Workbook_SheetBeforeDoubleClick(ByVal Sh As Object, ByVal Target As Range, Cancel As Boolean)
```

```
End Sub
```

```
Private Sub Workbook_SheetCalculate(ByVal Sh As Object)
```

```
End Sub
```

```
Private Sub Workbook_SheetDeactivate(ByVal Sh As Object)
```

```
End Sub
```

```
Private Sub Workbook_SheetLensGalleryRenderComplete(ByVal Sh As Object)
```

```
End Sub
```

```
Private Sub Workbook_SheetPivotTableBeforeAllocateChanges(ByVal Sh As Object, ByVal TargetPivotTable As PivotTable, ByVal ValueChangeStart As Long, ByVal ValueChangeEnd As Long, Cancel As Boolean)
```

```
End Sub
```

```
Private Sub Workbook_SheetPivotTableBeforeDiscardChanges(ByVal Sh As Object, ByVal TargetPivotTable As PivotTable, ByVal ValueChangeStart As Long, ByVal ValueChangeEnd As Long)
```

```
End Sub
```

```
Private Sub Workbook_SheetPivotTableChangeSync(ByVal Sh As Object, ByVal Target As PivotTable)
```

```
End Sub
```

```
Private Sub Workbook_SheetPivotTableUpdate(ByVal Sh As Object, ByVal Target As PivotTable)
```

```
End Sub
```

```
Private Sub Workbook_SheetTableUpdate(ByVal Sh As Object, ByVal Target As TableObject)
```

```
End Sub
```

```
Private Sub Workbook_Sync(ByVal SyncEventType As Office.MsoSyncEventType)
```

```
End Sub
```

```
Private Sub Workbook_WindowDeactivate(ByVal Wn As Window)
```

```
End Sub
```

```
Private Sub Workbook_WindowResize(ByVal Wn As Window)
```

```
End Sub
```

```
Call InitializeCredentialEngine
```

```
Call LoadRubricTemplates
```

```
MsgBox "Credential system initialized.", vbInformation
```

```
End Sub

If Sh.Name = "RubricScores" Then
    Call RecalculateDiagnostics(Sh)
End If
End Sub

LogAction "Attempted to delete sheet: " & Sh.Name
If Sh.Name = "CredentialMap" Then
    MsgBox "Deletion blocked: Credential map is protected.", vbCritical
    Cancel = True
End If
End Sub

Select Case SyncEventType
    Case msoSyncEventDownloadInitiated
        MsgBox "Syncing latest credential data from cloud..."
    Case msoSyncEventUploadInitiated
        MsgBox "Uploading updated learner portfolios..."
End Select
End Sub
```

```
Private Sub Label5_Click()  
End Sub  
  
Private Sub Label6_Click()  
End Sub  
  
Private Sub Label7_Click()  
End Sub  
  
Private Sub Label8_Click()  
End Sub  
  
Private Sub Label9_Click()  
End Sub  
  
Private Sub TextBox1_Change()  
End Sub  
  
Private Sub TextBox10_Change()  
End Sub  
  
Private Sub TextBox11_Change()  
End Sub  
  
Private Sub TextBox12_Change()  
End Sub  
  
Private Sub TextBox13_Change()  
End Sub  
  
Private Sub TextBox14_Change()  
End Sub  
  
Private Sub TextBox15_Change()  
End Sub  
  
Private Sub TextBox16_Change()  
End Sub  
  
Private Sub TextBox17_Change()  
End Sub  
  
Private Sub TextBox19_Change()  
End Sub  
  
Private Sub TextBox20_Change()  
End Sub  
  
Private Sub TextBox21_Change()  
End Sub  
  
Private Sub TextBox23_Change()
```

```
End Sub

Private Sub TextBox3_Change()

End Sub

Private Sub TextBox5_Change()

End Sub

Private Sub TextBox6_Change()

End Sub

Private Sub TextBox8_Change()

End Sub

Private Sub TextBox9_Change()

End Sub

Private Sub UserForm_Activate()

End Sub

Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.Co
ntrol, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal State As MSForms.
fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

Private Sub UserForm_Click()

End Sub

Private Sub UserForm_DblClick(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub UserForm_Deactivate()

End Sub

Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal S
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal Cance
lDisplay As MSForms.ReturnBoolean)

End Sub

Private Sub UserForm_Initialize()

End Sub

Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub UserForm_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)

End Sub
```

UserForm1 - 3

```
Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
```

```
End Sub
```

```
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
```

```
End Sub
```

```
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_Resize()
```

```
End Sub
```

```
Private Sub UserForm_Scroll(ByVal ActionX As MSForms.fmScrollAction, ByVal ActionY As MSForms.fmScrollAction, ByVal RequestDx As Single, ByVal RequestDy As Single, ByVal ActualDx As MSForms.ReturnSingle, ByVal ActualDy As MSForms.ReturnSingle)
```

```
End Sub
```

```
Private Sub UserForm_Terminate()
```

```
End Sub
```

```
Private Sub Frame1_Click()  
End Sub  
  
Private Sub Label1_Click()  
End Sub  
  
Private Sub Label4_Click()  
End Sub  
  
Private Sub Label9_Click()  
End Sub  
  
Private Sub MultiPage1_Change()  
End Sub  
  
Private Sub OptionButton1_Click()  
End Sub  
  
Private Sub SpinButton1_Change()  
End Sub  
  
Private Sub SpinButton2_Change()  
End Sub  
  
Private Sub TabStrip1_Change()  
End Sub  
  
Private Sub TextBox1_Change()  
End Sub  
  
Private Sub TextBox11_Change()  
End Sub  
  
Private Sub TextBox13_Change()  
End Sub  
  
Private Sub TextBox16_Change()  
End Sub  
  
Private Sub TextBox17_Change()  
End Sub  
  
Private Sub TextBox18_Change()  
End Sub  
  
Private Sub TextBox19_Change()  
End Sub  
  
Private Sub TextBox20_Change()  
End Sub  
  
Private Sub TextBox22_Change()  
End Sub
```

```
Private Sub TextBox3_Change()
```

```
End Sub
```

```
Private Sub TextBox4_Change()
```

```
End Sub
```

```
Private Sub TextBox5_Change()
```

```
End Sub
```

```
Private Sub TextBox6_Change()
```

```
End Sub
```

```
Private Sub TextBox8_Change()
```

```
End Sub
```

```
Private Sub TextBox9_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal DragState As MSForms.fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub TextBox9_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub TextBox9_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub TextBox9_Change()
```

```
End Sub
```

```
Private Sub TextBox9_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub TextBox9_DropButtonClick()
```

```
End Sub
```

```
Private Sub TextBox9_Enter()
```

```
End Sub
```

```
Private Sub TextBox9_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal SourceCode As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal CancelDisplay As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub TextBox9_Exit(ByVal Cancel As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub TextBox9_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub TextBox9_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
```

```
End Sub
```

```
Private Sub TextBox9_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
```

End Sub

Private Sub TextBox9\_MouseMove(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub TextBox9\_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm\_Click()

End Sub



```
Private Sub Frame1_Click()  
End Sub  
  
Private Sub Label1_Click()  
End Sub  
  
Private Sub Label17_Click()  
End Sub  
  
Private Sub Label6_Click()  
End Sub  
  
Private Sub Label7_Click()  
End Sub  
  
Private Sub Label8_Click()  
End Sub  
  
Private Sub Label9_Click()  
End Sub  
  
Private Sub ListBox1_Click()  
End Sub  
  
Private Sub MultiPage1_Change()  
End Sub  
  
Private Sub MultiPage2_Change()  
End Sub  
  
Private Sub ScrollBar1_Change()  
End Sub  
  
Private Sub SpinButton1_Change()  
End Sub  
  
Private Sub TabStrip1_Change()  
End Sub  
  
Private Sub TextBox1_Change()  
End Sub  
  
Private Sub TextBox10_Change()  
End Sub  
  
Private Sub TextBox11_Change()  
End Sub  
  
Private Sub TextBox12_Change()  
End Sub  
  
Private Sub TextBox13_Change()  
End Sub
```

```
Private Sub TextBox15_Change()
```

```
End Sub
```

```
Private Sub TextBox16_Change()
```

```
End Sub
```

```
Private Sub TextBox17_Change()
```

```
End Sub
```

```
Private Sub TextBox18_Change()
```

```
End Sub
```

```
Private Sub TextBox19_Change()
```

```
End Sub
```

```
Private Sub TextBox2_Change()
```

```
End Sub
```

```
Private Sub TextBox3_Change()
```

```
End Sub
```

```
Private Sub TextBox4_Change()
```

```
End Sub
```

```
Private Sub TextBox6_Change()
```

```
End Sub
```

```
Private Sub TextBox7_Change()
```

```
End Sub
```

```
Private Sub TextBox8_Change()
```

```
End Sub
```

```
Private Sub TextBox9_Change()
```

```
End Sub
```

```
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms  
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal  
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_Click()
```

```
End Sub
```

```
Private Sub UserForm_Deactivate()
```

```
End Sub
```

```
Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal S  
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal Cance  
lDisplay As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)
```

End Sub

Private Sub UserForm\_KeyPress (ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub UserForm\_Layout()

End Sub

Private Sub UserForm\_MouseDown (ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm\_MouseUp (ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm\_RemoveControl (ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm\_Resize()

End Sub

Private Sub UserForm\_Terminate()

End Sub

Private Sub UserForm\_Zoom (Percent As Integer)

End Sub

Function K\_Rdiv1 (R1, R2)  
 ' Gain of resistor divider  
 K\_Rdiv1 = R2 / (R2 + R1)

End Function  
 Function Tri\_Wave (t, V1, V2, T1, T2)

' \*\*\*\*\*  
 ' Generate Triangle Wave  
 '  
 ' t - time  
 ' V1 - voltage level 1 (initial voltage)  
 ' V2 - voltage level 2  
 ' T1 - period ramping from V1 to V2  
 ' T2 - period ramping from V2 to V1  
 ' \*\*\*\*\*

Dim t\_tri, dV\_dt1, dV\_dt2 As Double  
 Dim N As Single

' Calculate voltage rates of change (slopes) during T1 and T2  
 dV\_dt1 = (V2 - V1) / T1  
 dV\_dt2 = (V1 - V2) / T2

' given t, how many full cycles have occurred  
 N = Application.WorksheetFunction.Floor (t / (T1 + T2), 1)

' calc the time point in the current triangle wave  
 t\_tri = t - (T1 + T2) \* N

' if during T1, calculate triangle value using V1 and dV\_dt1  
 If t\_tri <= T1 Then  
 Tri\_Wave = V1 + dV\_dt1 \* t\_tri

' if during T2, calculate triangle value using V2 and dV\_dt2  
 Else  
 Tri\_Wave = V2 + dV\_dt2 \* (t\_tri - T1)

```

End If
' given t, how many full cycles have occurred
N = Application.WorksheetFunction.Floor(t / (T1 + T2), 1)

' calc the time point in the current triangle wave
t_tri = t - (T1 + T2) * N

End Function
If t_tri <= T1 ThenElse
    Tri_Wave = V2 + dV_dt2 * (t_tri - T1)
    Tri_Wave = V1 + dV_dt1 * t_tri
    Function K_op_non(R1, R2)
        ' Op amp closed loop gain - non-inverting amplifier
        K_op_non = (R2 + R1) / R1
    End Function

Function SineWave(t, Vp, fo, Phase, Vdc)
    ' create sine wave
    ' phase in deg

    Dim pi As Double
    pi = 3.1415927

    'Calc sine wave
    SineWave = Vp * Sin(2 * pi * fo * t + Phase * pi / 180) + Vdc
End Function

Function K_op_inv(R1, R2)
    ' Op amp closed loop gain - inverting amplifier
    K_op_inv = -R2 / R1
End Function
Functionn

```

```
Private Sub Frame1_Click()  
End Sub  
  
Private Sub Label4_Click()  
End Sub  
  
Private Sub TextBox16_Change()  
End Sub  
  
Private Sub TextBox17_Change()  
End Sub  
  
Private Sub TextBox18_Change()  
End Sub  
  
Private Sub TextBox19_Change()  
End Sub  
  
Private Sub TextBox2_Change()  
End Sub  
  
Private Sub TextBox20_Change()  
End Sub  
  
Private Sub TextBox21_Change()  
End Sub  
  
Private Sub TextBox23_Change()  
End Sub  
  
Private Sub TextBox24_Change()  
End Sub  
  
Private Sub TextBox26_Change()  
End Sub  
  
Private Sub TextBox27_Change()  
End Sub  
  
Private Sub TextBox29_Change()  
End Sub  
  
Private Sub TextBox3_Change()  
End Sub  
  
Private Sub TextBox31_Change()  
End Sub  
  
Private Sub TextBox33_Change()  
End Sub  
  
Private Sub TextBox35_Change()  
End Sub
```

```
Private Sub TextBox36_Change()
```

```
End Sub
```

```
Private Sub TextBox5_Change()
```

```
End Sub
```

```
Private Sub TextBox7_Change()
```

```
End Sub
```

```
Private Sub TextBox8_Change()
```

```
End Sub
```

```
Private Sub TextBox9_Change()
```

```
End Sub
```

```
Private Sub UserForm_Activate()
```

```
End Sub
```

```
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.Co  
ntrol, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal State As MSForms.  
fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms  
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal  
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_Click()
```

```
End Sub
```

```
Private Sub UserForm_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub UserForm_Deactivate()
```

```
End Sub
```

```
Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal S  
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal Cance  
lDisplay As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub UserForm_Initialize()
```

```
End Sub
```

```
Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
```

```
End Sub
```

```
Private Sub UserForm_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByV  
al Y As Single)
```

End Sub

```
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
```

End Sub

```
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)
```

End Sub

```
Private Sub UserForm_Scroll(ByVal ActionX As MSForms.fmScrollAction, ByVal ActionY As MSForms.fmScrollAction, ByVal RequestDx As Single, ByVal RequestDy As Single, ByVal ActualDx As MSForms.ReturnSingle, ByVal ActualDy As MSForms.ReturnSingle)
```

End Sub

```
Private Sub UserForm17_Terminate()
```

End Sub

End Subtshingombe fiston

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<https://doi.org/10.32388/JGU5FH>

Web-Based Crime Management System for Samara City Main Police Station

Demelash Lemmi Ettisa<sup>1</sup>, Minota Milkias<sup>2</sup>

Abstract

Crime is a human experience, and it must be controlled. The Samara town police station plays a significant role in controlling crime. However, the management of crime activities is done manually, which is due to the lack of an automated system that supports the station workers in communicating with citizens to share information and store, retrieve, and manage crime activities. To control crime efficiently

, we need to develop online crime management systems.

This project, entitled "Web-Based Crime Management System," is designed to develop an online application in which any citizen can report crimes; if anybody wants to file a complaint against crimes, they must enjoy online communication with the police. This project provides records of crimes that have led to disciplinary cases in addition to being used to simply retrieve information from the database. The system implemented is a typical web-based crime record management system based on client-server architecture, allowing data storage and crime record interchange with police stations.

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## Chapter One

### 1. Introduction to the Study

The "Crime Management System" is a web-based website for online complaining and computerized management of crime records (Khan et al., 2008).

A criminal is a popular term used for a person who has committed a crime or has been legally convicted of a crime. "Criminal" also means being connected with a crime. When certain acts or people are involved in or related to a crime, they are termed as criminal (Wex, 2023).

Samara City 's main police station is located in Samara City, within the Afar Regional State. It was established in 1984 E.C. with the purpose of protecting local communities from criminal activities. The Samara City police station is situated near the diesel suppliers in Samara City. In the first phase, there was a small number of police members, including commanders, inspectors, and constables. But recently, more than 170 police members have been employed. It is a well-organized police station that serves in crime prevention; the detection and conviction of criminals depend on a highly responsive manner. The effectiveness of this station is based on how efficient, reliable, and fast it is. As a consequence, the station maintains a large volume of information. To manage their information requirements, the station is currently using an information system. This system is manual and paper-based, where information is passed hand-to-hand, and information is kept in hard-copy paper files stored ordinarily in file cabinets.



```
Private Sub CommandButton1_Click()
```

```
End Sub
```

```
Private Sub CommandButton2_Click()
```

```
End Sub
```

```
Private Sub Frame1_Click()
```

```
End Sub
```

```
Private Sub Label1_Click()
```

```
End Sub
```

```
Private Sub Label2_Click()
```

```
End Sub
```

```
Private Sub Label3_Click()
```

```
End Sub
```

```
Private Sub Label4_Click()
```

```
End Sub
```

```
Private Sub TextBox2_Change()
```

```
End Sub
```

```
Private Sub TextBox3_Change()
```

```
End Sub
```

```
Private Sub UserForm_Click()
```

```
End Sub
```

```
Private Sub UserForm_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal S  
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal Cance  
lDisplay As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
```

```
End Sub
```

```
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal  
Y As Single)
```

```
End Sub
```

```
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_Resize()
```

```
End Sub
```

```
Private Sub UserForm_Scroll(ByVal ActionX As MSForms.fmScrollAction, ByVal ActionY As MSForms.fmScroll  
Action, ByVal RequestDx As Single, ByVal RequestDy As Single, ByVal ActualDx As MSForms.ReturnSingle,  
ByVal ActualDy As MSForms.ReturnSingle)
```

```
End Sub
```

```
End Sub

Private Sub Label5_Click()

End Sub

Private Sub Label6_Click()

End Sub

Private Sub Label7_Click()

End Sub

Private Sub Label8_Click()

End Sub

Private Sub Label9_Click()

End Sub

Private Sub TextBox1_Change()

End Sub

Private Sub TextBox10_Change()

End Sub

Private Sub TextBox11_Change()

End Sub

Private Sub TextBox12_Change()

End Sub

Private Sub TextBox13_Change()

End Sub

Private Sub TextBox14_Change()

End Sub

Private Sub TextBox15_Change()

End Sub

Private Sub TextBox16_Change()

End Sub

Private Sub TextBox17_Change()

End Sub

Private Sub TextBox19_Change()

End Sub

Private Sub TextBox20_Change()

End Sub

Private Sub TextBox21_Change()

End Sub

Private Sub TextBox23_Change()
```

```
End Sub

End Sub

Private Sub TextBox5_Change()

End Sub

Private Sub TextBox6_Change()

End Sub

Private Sub TextBox8_Change()

End Sub

Private Sub TextBox9_Change()

End Sub

Private Sub UserForm_Activate()

End Sub

Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.Co
ntrol, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal State As MSForms.
fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

End Sub

End Sub

Private Sub UserForm_Deactivate()

End Sub

End Sub

End Sub

Private Sub UserForm_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)

End Sub
End Sub

Private Sub ComboBox1_Change()

End Sub

Private Sub ComboBox2_Change()
```

End Sub

Private Sub ComboBox3\_Change()

End Sub

Private Sub ComboBox5\_Change()

End Sub

End Sub

End Sub

Private Sub CommandButton3\_Click()

End Sub

Private Sub CommandButton4\_Click()

End Sub

End Sub

End Sub

Private Sub OptionButton1\_Click()

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

Private Sub UserForm\_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)

End Sub

End Sub

End Sub

Private Sub UserForm\_Terminate()

End Sub

Private Sub UserForm\_Zoom(Percent As Integer)

End Sub

Option Explicit

Private Const SHEET\_CASES As String = "Cases"

Private isInitializing As Boolean

```
'=====
' Lifecycle
'=====
```

```
On Error Resume Next
isInitializing = True
```

EnsureCasesSheet

```
' Populate top-level lists
With Me.ComboBox1 ' Case Type
    .Clear
    .AddItem "Refund"
    .AddItem "Compensation"
    .AddItem "Recognition"
    .AddItem "Insurance claim"
End With
```

```
With Me.ComboBox3 ' Issuing Body
    .Clear
    .AddItem "Institution"
    .AddItem "SETA"
    .AddItem "QCTO"
    .AddItem "CCMA"
    .AddItem "Department of Employment and Labour"
    .AddItem "Other"
End With
```

```
With Me.ComboBox5 ' Desired Outcome
    .Clear
    .AddItem "Refund"
    .AddItem "Credit"
    .AddItem "Provisional certificate"
    .AddItem "Appeal"
    .AddItem "Escalation"
    .AddItem "Correction/Letter of completion"
End With
```

```
' Priority toggle
Me.OptionButton1.Caption = "Visa/Job critical"
Me.OptionButton1.Value = False
```

```
' Sensible defaults
Me.ComboBox1.ListIndex = -1
Me.ComboBox2.Clear
Me.ComboBox3.ListIndex = -1
Me.ComboBox5.ListIndex = -1
```

```
isInitializing = False
On Error GoTo 0
```

End Sub

```
On Error Resume Next
If Me.ComboBox1.ListCount > 0 Then Me.ComboBox1.SetFocus
On Error GoTo 0
```

End Sub

```

' No special teardown
End Sub

'=====
' Dynamic lists & helpers
'=====
' Case Type changed -> repopulate Scenario list
If isInitializing Then Exit Sub
FillScenarioList Me.ComboBox1.Value
SuggestOutcome
End Sub

If isInitializing Then Exit Sub
SuggestOutcome
End Sub

' Issuing body selected; no-op or future routing logic
End Sub

' User prefers a specific outcome; respect selection
End Sub

' Toggle priority; could visually cue user
End Sub

' Container click; no action
End Sub

' Could display help or open a guidance sheet
MsgBox "Select Case Type ? Scenario ? Issuing Body ? Desired Outcome. Then Submit or Save Draft.",
vbInformation, "Help"
End Sub

'=====
' Commands
'=====

' Submit (final)
If Not ValidateForm(True) Then Exit Sub

Dim caseId As String
caseId = GenerateCaseId

Dim ws As Worksheet
Set ws = ThisWorkbook.Worksheets(SHEET_CASES)

Dim r As Long
r = NextFreeRow(ws)

ws.Cells(r, 1).Value = Now
ws.Cells(r, 2).Value = caseId
ws.Cells(r, 3).Value = Nz(Me.ComboBox1.Value)
ws.Cells(r, 4).Value = Nz(Me.ComboBox2.Value)
ws.Cells(r, 5).Value = Nz(Me.ComboBox3.Value)
ws.Cells(r, 6).Value = Nz(Me.ComboBox5.Value)
ws.Cells(r, 7).Value = IIf(Me.OptionButton1.Value, "High", "Normal")
ws.Cells(r, 8).Value = "Submitted"
ws.Cells(r, 9).Value = "" ' Notes (optional)

MsgBox "Case submitted: " & caseId, vbInformation, "Success"

ResetForm
End Sub

' Save draft (partial allowed)
Dim caseId As String
caseId = GenerateCaseId

Dim ws As Worksheet
Set ws = ThisWorkbook.Worksheets(SHEET_CASES)

```

```

Dim r As Long
r = NextFreeRow(ws)

ws.Cells(r, 1).Value = Now
ws.Cells(r, 2).Value = caseId
ws.Cells(r, 3).Value = Nz(Me.ComboBox1.Value)
ws.Cells(r, 4).Value = Nz(Me.ComboBox2.Value)
ws.Cells(r, 5).Value = Nz(Me.ComboBox3.Value)
ws.Cells(r, 6).Value = Nz(Me.ComboBox5.Value)
ws.Cells(r, 7).Value = IIf(Me.OptionButton1.Value, "High", "Normal")
ws.Cells(r, 8).Value = "Draft"
ws.Cells(r, 9).Value = "" ' Notes

MsgBox "Draft saved: " & caseId, vbInformation, "Saved"
End Sub

' Reset
ResetForm
End Sub

' Close
Unload Me
End Sub

'=====
' User experience events
'=====

' ESC closes; Ctrl+S saves draft
If KeyCode = vbKeyEscape Then
    Unload Me
ElseIf KeyCode = vbKeyS And (Shift And fmCtrlMask) = fmCtrlMask Then
    CommandButton2_Click
End If
End Sub

' No-op
End Sub

' No-op
End Sub

' Hook for responsive layout if needed
End Sub

' No-op
End Sub

End Sub

End Sub

' Keep default behavior
End Sub

' Optionally reposition/resize controls here
End Sub

'=====
' Helpers
'=====

Private Sub FillScenarioList(ByVal caseType As String)
    Me.ComboBox2.Clear

    Select Case LCase$(Trim$(caseType))
        Case "refund"
            Me.ComboBox2.AddItem "Training not delivered"
            Me.ComboBox2.AddItem "Material defects / not as described"
            Me.ComboBox2.AddItem "Admin error in registration"

```

```

        Me.ComboBox2.AddItem "Overbilling"
    Case "compensation"
        Me.ComboBox2.AddItem "Diploma printing delay (loss of opportunity)"
        Me.ComboBox2.AddItem "Application rejected without due cause"
        Me.ComboBox2.AddItem "Published without registration confirmation"
    Case "recognition"
        Me.ComboBox2.AddItem "Request provisional certificate"
        Me.ComboBox2.AddItem "Request letter of completion"
        Me.ComboBox2.AddItem "Appeal assessment outcome"
    Case "insurance claim"
        Me.ComboBox2.AddItem "Policy claim for learning costs"
        Me.ComboBox2.AddItem "Denied claim appeal"
    Case Else
        ' Generic fallback
        Me.ComboBox2.AddItem "Other"
    End Select
End Sub

```

```

Private Sub SuggestOutcome()
    ' Suggest an outcome based on scenario keywords (non-binding)
    Dim s As String
    s = LCase$(Nz(Me.ComboBox2.Value))

    If s Like "*not delivered*" Or s Like "*overbilling*" Then
        SelectOutcomeIfExists "Refund"
    ElseIf s Like "*printing*" Or s Like "*provisional*" Or s Like "*completion*" Then
        SelectOutcomeIfExists "Provisional certificate"
    ElseIf s Like "*rejected*" Or s Like "*appeal*" Then
        SelectOutcomeIfExists "Appeal"
    ElseIf s Like "*published*" Or s Like "*admin*" Then
        SelectOutcomeIfExists "Correction/Letter of completion"
    End If
End Sub

```

```

Private Sub SelectOutcomeIfExists(ByVal text As String)
    Dim i As Long
    For i = 0 To Me.ComboBox5.ListCount - 1
        If StrComp(Me.ComboBox5.List(i), text, vbTextCompare) = 0 Then
            Me.ComboBox5.ListIndex = i
            Exit For
        End If
    Next i
End Sub

```

```

Private Function ValidateForm(ByVal isFinal As Boolean) As Boolean
    ValidateForm = False

    Dim missing As String
    missing = ""

    If Len(Trim$(Nz(Me.ComboBox1.Value))) = 0 Then missing = missing & "- Case Type" & vbCrLf
    If Len(Trim$(Nz(Me.ComboBox2.Value))) = 0 Then missing = missing & "- Scenario" & vbCrLf
    If Len(Trim$(Nz(Me.ComboBox3.Value))) = 0 Then missing = missing & "- Issuing Body" & vbCrLf

    If isFinal And Len(missing) > 0 Then
        MsgBox "Please complete the following before submitting:" & vbCrLf & vbCrLf & missing, vbExclamation, "Incomplete"
        Exit Function
    End If

    ValidateForm = True
End Function

```

```

Private Sub ResetForm()
    isInitializing = True

    Me.ComboBox1.ListIndex = -1
    Me.ComboBox2.Clear
    Me.ComboBox3.ListIndex = -1
    Me.ComboBox5.ListIndex = -1
    Me.OptionButton1.Value = False

    isInitializing = False

```



End Sub

```
Private Function GenerateCaseId() As String
    GenerateCaseId = "CASE-" & Format(Now, "yymmdd-hhnnss")
End Function
```

```
Private Function NextFreeRow(ws As Worksheet) As Long
    Dim r As Long
    r = ws.Cells(ws.Rows.Count, 1).End(xlUp).row
    If r < 2 Then
        NextFreeRow = 2
    Else
        NextFreeRow = r + 1
    End If
End Function
```

```
Private Sub EnsureCasesSheet()
    Dim ws As Worksheet
    On Error Resume Next
    Set ws = ThisWorkbook.Worksheets(SHEET_CASES)
    On Error GoTo 0

    If ws Is Nothing Then
        Set ws = ThisWorkbook.Worksheets.Add(After:=ThisWorkbook.Worksheets(ThisWorkbook.Worksheets.Count))
        ws.Name = SHEET_CASES
    End If
```

```
    ' Headers if empty
    If ws.Cells(1, 1).Value = "" Then
        ws.Cells(1, 1).Value = "DateTime"
        ws.Cells(1, 2).Value = "CaseID"
        ws.Cells(1, 3).Value = "CaseType"
        ws.Cells(1, 4).Value = "Scenario"
        ws.Cells(1, 5).Value = "IssuingBody"
        ws.Cells(1, 6).Value = "DesiredOutcome"
        ws.Cells(1, 7).Value = "Priority"
        ws.Cells(1, 8).Value = "Status"
        ws.Cells(1, 9).Value = "Notes"
    End If
End Sub
```

```
Private Function Nz(ByVal v) As String
    If IsNull(v) Then
        Nz = ""
    Else
        Nz = CStr(v)
    End If
End Function
```

```
Private Sub CommandButton8_Click()
```

End Sub

```
Private Sub CommandButton9_Click()
```

End Sub

End Sub

End Sub

End Sub

End Sub

Private Sub ListBox1\_Click()

End Sub

Private Sub ScrollBar1\_Change()

End Sub

End Sub

P

End Sub

End Sub

End Sub

Private Sub UserForm\_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

Private Sub MultiPage1\_Change()

End Sub

End Sub

Private Sub SpinButton1\_Change()

End Sub

```
Private Sub SpinButton2_Change()
```

```
End Sub
```

```
Private Sub TabStrip1_Change()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub TextBox18_Change()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub TextBox22_Change()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Application.ScreenUpdating = False
```

```
Dim sDate As String
```

```
On Error Resume Next
```

```
sDate = MyCalendar.DatePicker(Me.txtDOB)
```

```
Me.txtDOB.Value = Format(sDate, "dd-mmm-yyyy")
```

```
On Error GoTo 0
```

```
Application.ScreenUpdating = True
```

```
End Sub
```

```

Private Sub imgCalendar_Click()
Application.ScreenUpdating = False

Dim sDate As String

On Error Resume Next

sDate = MyCalendar.DatePicker(Me.txtDOB)

Me.txtDOB.Value = Format(sDate, "dd-mmm-yyyy")
Sub Reset_Form()
Dim iRow As Long

With frmDataEntry

.txtStudentName.text = ""
.txtStudentName.BackColor = vbWhite

.txtFatherName.text = ""
.txtFatherName.BackColor = vbWhite

.txtDOB.text = ""
.txtDOB.BackColor = vbWhite

.optFemale.Value = False
.optMale.Value = False

.txtMobile.Value = ""
.txtMobile.BackColor = vbWhite

.txtEmail.Value = ""
.txtEmail.BackColor = vbWhite

.txtAddress.Value = ""
.txtAddress.BackColor = vbWhite

.txtRowNumber.Value = ""
.txtImagePath.Value = ""

.imgStudent.Picture = LoadPicture(vbNullString)

.cmdSubmit.Caption = "Submit"

'.cmbCourse.Clear
.cmbCourse.BackColor = vbWhite

'Dynamic range based on Support Sheet
shSupport.Range("A2", shSupport.Range("A" & Rows.Count).End(xlUp)).Name = "Dynamic"

.cmbCourse.RowSource = "Dynamic"

.cmbCourse.Value = ""

.cmbCourse.Value = ""

'Assigning RowSource to lstDatabase

.lstDatabase.ColumnCount = 12
.lstDatabase.ColumnHeads = True

.lstDatabase.ColumnWidths = "30,70,70,40,45,70,60,60,70,0,0,0"

iRow = shDatabase.Range("A" & Rows.Count).End(xlUp).row + 1 ' Identify last blank row

If iRow > 1 Then

.lstDatabase.RowSource = "Database!A2:L" & iRow

Else

.lstDatabase.RowSource = "Database!A2:L2"

```

```

End If

End With
End Sub

On Error GoTo 0

Application.ScreenUpdating = True

Set oRegEx = CreateObject("VBScript.RegExp")
With oRegEx
    .Pattern = "^[\w-\.]{1,}\@([\da-zA-Z-]{1,}\.){1,}[\da-zA-Z-]{2,3}$"
    ValidEmail = .Test(Email)
End With
Set oRegEx = Nothing

GetImagePath = ""

With Application.FileDialog(msoFileDialogFilePicker) ' File Picker Dialog box
    .AllowMultiSelect = False
    .Filters.Clear ' Clear the exisiting filters
    .Filters.Add "Images", "*.gif; *.jpg; *.jpeg" 'Add a filter that includes GIF and JPEG images
    ' show the file picker dialog box
    If .Show <> 0 Then

        GetImagePath = .SelectedItems(1) ' Getting the path of selected file name

    End If

End With
End Function

Sub CreateFolder()
Dim strFolder As String ' To hold the folter path where we need to replicate the image

strFolder = ThisWorkbook.Path & Application.PathSeparator & "Images"
'Check Directory exist or not. If not exist then it will return blank
If Dir(strFolder, vbDirectory) = "" Then
    MkDir strFolder ' Make a folder with the name of 'Images'
End If
End Sub

Sub LoadImange()
Dim imgSourcePath As String ' To store the path of image selected by user
Dim imgDestination As String ' To store the path of image selected by user

imgSourcePath = Trim(GetImagePath()) ' Call the Function

If imgSourcePath = "" Then Exit Sub

Call CreateFolder 'Create Image folder if not exist

imgDestination = ThisWorkbook.Path & Application.PathSeparator & _
frmDataEntry.txtStudentName & "." & Split(imgSourcePath, ".")(UBound(Split(imgSourcePath, ".")))

FileCopy imgSourcePath, imgDestination ' Code to copy image

frmDataEntry.imgStudent.PictureSizeMode = fmPictureSizeModeStretch 'Stretch mode
frmDataEntry.imgStudent.Picture = LoadPicture(imgDestination) ' Loading picture to imgStudent
frmDataEntry.txtImagePath.Value = imgDestination ' Assigning the path to text boxFunction ValidEntry()
As Boolean

ValidEntry = True

With frmDataEntry

'Default Color

```

```
.txtStudentName.BackColor = vbWhite
.txtFatherName.BackColor = vbWhite
.txtDOB.BackColor = vbWhite
.txtMobile.BackColor = vbWhite
.txtEmail.BackColor = vbWhite
.txtAddress.BackColor = vbWhite
.cmbCourse.BackColor = vbWhite
```

```
'Validating Student Name
```

```
If Trim(.txtStudentName.Value) = "" Then
    MsgBox "Please enter Student's name.", vbOKOnly + vbInformation, "Student Name"
    .txtStudentName.BackColor = vbRed
    .txtStudentName.SetFocus
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Father's name
```

```
If Trim(.txtFatherName.Value) = "" Then
    MsgBox "Please enter Father's name.", vbOKOnly + vbInformation, "Father Name"
    .txtFatherName.BackColor = vbRed
    .txtFatherName.SetFocus
    ValidEntry = False
    Exit Function
End If
```

```
'Validating DOB
```

```
If Trim(.txtDOB.Value) = "" Then
    MsgBox "DOB is blank. Please enter DOB.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtDOB.BackColor = vbRed
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Gender
```

```
If .optFemale.Value = False And .optMale.Value = False Then
    MsgBox "Please select gender.", vbOKOnly + vbInformation, "Invalid Entry"
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Course
```

```
If Trim(.cmbCourse.Value) = "" Then
    MsgBox "Please select the Course from drop-down.", vbOKOnly + vbInformation, "Course Applied"
    .cmbCourse.BackColor = vbRed
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Mobile Number
```

```
If Trim(.txtMobile.Value) = "" Or Len(.txtMobile.Value) < 10 Or Not IsNumeric(.txtMobile.Value) Then
    MsgBox "Please enter a valid mobile number.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtMobile.BackColor = vbRed
    .txtMobile.SetFocus
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Email
```

```
If ValidEmail(Trim(.txtEmail.Value)) = False Then
    MsgBox "Please enter a valid email address.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtEmail.BackColor = vbRed
    .txtEmail.SetFocus
End If
```

```

        ValidEntry = False
        Exit Function
    End If

    'Validating Address

    If Trim(.txtAddress.Value) = "" Then
        MsgBox "Address is blank. Please enter a valid address.", vbOKOnly + vbInformation, "Invalid E
ntry"
        .txtAddress.BackColor = vbRed
        ValidEntry = False
        Exit Function
    End If

    'Validating Image

    If .imgStudent.Picture Is Nothing Then
        MsgBox "Please upload the PP Size Photo.", vbOKOnly + vbInformation, "Picture"
        ValidEntry = False
        Exit Function
    End If

End With
End Function

```

```

Sub Submit_Data()
    Dim iRow As Long

    If frmDataEntry.txtRowNumber.Value = "" Then

        iRow = shDatabase.Range("A" & Rows.Count).End(xlUp).row + 1 ' Identify last blank row

    Else
        iRow = frmDataEntry.txtRowNumber.Value
    End If

    With shDatabase.Range("A" & iRow)

        .Offset(0, 0).Value = "=Row()-1" 'S. No.

        .Offset(0, 1).Value = frmDataEntry.txtStudentName.Value 'Student's Name

        .Offset(0, 2).Value = frmDataEntry.txtFatherName.Value 'Father's Name

        .Offset(0, 3).Value = frmDataEntry.txtDOB.Value 'DOB

        .Offset(0, 4).Value = IIf(frmDataEntry.optFemale.Value = True, "Female", "Male") 'Gender

        .Offset(0, 5).Value = frmDataEntry.cmbCourse.Value 'Qualification

        .Offset(0, 6).Value = frmDataEntry.txtMobile.Value 'Mobile Number

        .Offset(0, 7).Value = frmDataEntry.txtEmail.Value 'Email

        .Offset(0, 8).Value = frmDataEntry.txtAddress.Value 'Address

        .Offset(0, 9).Value = frmDataEntry.txtImagePath.Value 'Photo

        .Offset(0, 10).Value = Application.UserName 'Submitted By

        .Offset(0, 11).Value = Format([Now()], "DD-MMM-YYYY HH:MM:SS") 'Submitted On

    End With

    'Reset the form

    Call Reset_Form

    Application.ScreenUpdating = True

    MsgBox "Data submitted successfully!"

End Sub

```

```

Function Selected_List() As Long
Dim i As Long
Selected_List = 0
If frmDataEntry.lstDatabase.ListCount = 1 Then Exit Function ' If no items exist in List Box
For i = 0 To frmDataEntry.lstDatabase.ListCount - 1
If frmDataEntry.lstDatabase.Selected(i) = True Then
    Selected_List = i + 1
    Exit For
End If
Next i
End Function
End Function

```

```

Sub Show_Form()
frmDataEntry.Show
End Sub

```

```

Private Sub cmdLoadImage_Click()
If Me.txtStudentName.Value = "" Then
    MsgBox "Please enter Student's first.", vbOKOnly + vbCritical, "Error"
    Exit Sub
End If

```

```

Call LoadImage
End Sub

```

```

Private Sub UserForm6_Initialize()
Call Reset_Form
End Sub

```

```

Private Sub cmdSubmit_Click()
Dim i As VbMsgBoxResult

i = MsgBox("Do you want to submit the data?", vbYesNo + vbQuestion, "Submit Data")

If i = vbNo Then Exit Sub

If ValidEntry Then

    Call Submit_Data

End If
End Sub

```

```

Private Sub cmdReset_Click()
Dim i As VbMsgBoxResult

i = MsgBox("Do you want to reset the form?", vbYesNo + vbQuestion, "Reset")

If i = vbNo Then Exit Sub

Call Reset_Form
End Sub

```

```

Private Sub lstDatabase_DblClick(ByVal Cancel As MSForms.ReturnBoolean)

If Selected_List = 0 Then
    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Edit"
    Exit Sub
End If

```

```

Dim sGender As String

```

```

'Me.txtRowNumber = Selected_List + 1 ' Assigning Selected Row Number of Database Sheet

```



```
Me.txtRowNumber = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 0) + 1
```

```
'Assigning the Selected Reocords to Form controls
```

```
frmDataEntry.txtStudentName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 1)
```

```
frmDataEntry.txtFatherName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 2)
```

```
frmDataEntry.txtDOB.Value = Format(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 3), "dd-mmm-yyyy")
```

```
sGender = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 4)
```

```
If sGender = "Female" Then
```

```
    frmDataEntry.optFemale.Value = True
```

```
Else
```

```
    frmDataEntry.optMale.Value = True
```

```
End If
```

```
frmDataEntry.cmbCourse.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 5)
```

```
frmDataEntry.txtMobile.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 6)
```

```
frmDataEntry.txtEmail.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 7)
```

```
frmDataEntry.txtAddress.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 8)
```

```
frmDataEntry.imgStudent.Picture = LoadPicture(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9))
```

```
frmDataEntry.txtImagePath = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9)
```

```
Me.cmdSubmit.Caption = "Update"
```

```
MsgBox "Please make the required changes and Click on Update."
```

```
End Sub
```

```
Private Sub cmdDelete_Click()
```

```
If Selected_List = 0 Then
```

```
    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Delete"
```

```
Exit Sub
```

```
End If
```

```
Dim i As VbMsgBoxResult
```

```
Dim row As Long
```

```
row = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 0) + 1
```

```
i = MsgBox("Do you want ot delete the selected record?", vbYesNo + vbQuestion, "Delete")
```

```
If i = vbNo Then Exit Sub
```

```
ThisWorkbook.Sheets("Database").Rows(row).Delete
```

```
Call Reset ' Refresh the controls with latest information
```

```
MsgBox "Selected record has been successfully deleted.", vbOKOnly + vbInformation, "Delete"
```

```
End Sub
```

```
Private Sub cmdEdit_Click()
```

```
If Selected_List = 0 Then
```

```
    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Edit"
```

```
Exit Sub
```

```
End If
```

```
Dim sGender As String
```

```
Me.txtRowNumber = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 0) + 1
```

```
'Assigning the Selected Reocords to Form controls
```

```
frmDataEntry.txtStudentName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 1)
```

```

frmDataEntry.txtFatherName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 2)

frmDataEntry.txtDOB.Value = Format(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 3), "dd-mmm-yyyy")

sGender = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 4)

If sGender = "Female" Then
    frmDataEntry.optFemale.Value = True
Else
    frmDataEntry.optMale.Value = True
End If

frmDataEntry.cmbCourse.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 5)
frmDataEntry.txtMobile.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 6)
frmDataEntry.txtEmail.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 7)
frmDataEntry.txtAddress.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 8)
frmDataEntry.imgStudent.Picture = LoadPicture(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9))
frmDataEntry.txtImagePath = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9)
Me.cmdSubmit.Caption = "Update"
MsgBox "Please make the required changes and Click on Update."

Select Case ComboBox1.Value
    Case "Electrical Simulation"
        Label1.Caption = "Domain: Electrical"
    Case "Portfolio Builder"
        Label1.Caption = "Domain: Portfolio"
    Case "Rubric Mapping"
        Label1.Caption = "Domain: Rubric"
End Select
End Sub

Label2.Caption = "Rubric Level: Intermediate"
End Sub

If ComboBox3.Value = "" Or ComboBox4.Value = "" Then
    MsgBox "Please select all required rubric parameters.", vbExclamation
    Exit Sub
End If
Label3.Caption = "Simulation executed successfully."
End Sub

MsgBox "Credential artifact generated and submitted.", vbInformation
End Sub

()
Label5.Caption = "Rubric template loaded: " & ListBox1.Value
End Sub

()
MsgBox "Ensure rubric alignment with SAQA/NQF thresholds.", vbInformation
End Sub

```

End Subtshingombe fiston

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Web-Based Crime Management System for Samara City Main Police Station

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Abstract

Crime is a human experience, and it must be controlled. The Samara town police station plays a significant role in controlling crime. However, the management of crime activities is done manually, which is due to the lack of an automated system that supports the station workers in communicating with citizens to share information and store, retrieve, and manage crime activities. To control crime efficiently, we need to develop online crime management systems.

This project, entitled "Web-Based Crime Management System," is designed to develop an online application in which any citizen can report crimes; if anybody wants to file a complaint against crimes, they must enjoy online communication with the police. This project provides records of crimes that have led to disciplinary cases in addition to being used to simply retrieve information from the database. The system implemented is a typical web-based crime record management system based on client-server architecture, allowing data storage and crime record interchange with police stations.

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Chapter One

1. Introduction to the Study

The "Crime Management System" is a web-based website for online complaining and computerized management of crime records (Khan et al., 2008).

A criminal is a popular term used for a person who has committed a crime or has been legally convicted of a crime. "Criminal" also means being connected with a crime. When certain acts or people are involved in or related to a crime, they are termed as criminal (Wex, 2023).

Samara City 's main police station is located in Samara City, within the Afar Regional State. It was established in 1984 E.C. with the purpose of protecting local communities from criminal activities. The Samara City police station is situated near the diesel suppliers in Samara City. In the first phase, there was a small number of police members, including commanders, inspectors, and constables. But recently, more than 170 police members have been employed. It is a well-organized police station that serves in crime prevention; the detection and conviction of criminals depend on a highly responsive manner. The effectiveness of this station is based on how efficient, reliable, and fast it is. As a consequence, the station maintains a large volume of information. To manage their information requirements, the station is currently using an information system. This system is manual and paper-based, where information is passed hand-to-hand, and information is kept in hard-copy paper files stored ordinarily in files.

End Sub

MsgBox

' Trigger Python backend for signal acquisition

```
    Shell "python capture_signal.py", vbNormalFocus
End Sub

MsgBox "Running Full Diagnostic..."
' Trigger full algorigramme pipeline
Shell "python run_diagnostic.py", vbNormalFocus
End Sub

' Update SNR threshold
Dim snrThreshold As Double
snrThreshold = Val(TextBox2.text)
' Store or pass to backend
End Sub

MsgBox "Fourier Transform Module"
End Sub

MsgBox "SNR Evaluation Module"
End Sub

MsgBox "Bandwidth Classification"
End Sub

MsgBox "Linearity Check"
End Sub
```

UserForm3 - 1

```
Private Sub UserForm_Click()
```

```
End Sub
```

```
Private Sub ComboBox1_Change()
```

```
End Sub
```

```
Private Sub UserForm_Activate()
```

```
End Sub
```

```
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.  
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal  
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_Click()
```

```
End Sub
```

```
Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal S  
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal Cance  
lDisplay As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub UserForm_Initialize()
```

```
End Sub
```

```
Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
```

```
End Sub
```

```
Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByV  
al Y As Single)
```

```
End Sub
```

```
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal  
Y As Single)
```

```
End Sub
```

```
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_Resize()
```

```
End Sub
```

```
Private Sub UserForm_Terminate()
```

```
End Sub
```

```
Private Sub Frame1_Click()  
End Sub  
  
Private Sub Label1_Click()  
End Sub  
  
Private Sub Label10_Click()  
End Sub  
  
Private Sub Label11_Click()  
End Sub  
  
Private Sub Label12_Click()  
End Sub  
  
Private Sub Label13_Click()  
End Sub  
  
Private Sub Label14_Click()  
End Sub  
  
Private Sub Label15_Click()  
End Sub  
  
Private Sub Label16_Click()  
End Sub  
  
Private Sub Label17_Click()  
End Sub  
  
Private Sub Label18_Click()  
End Sub  
  
Private Sub Label19_Click()  
End Sub  
  
Private Sub Label2_Click()  
End Sub  
  
Private Sub Label3_Click()  
End Sub  
  
Private Sub Label4_Click()  
End Sub  
  
Private Sub Label5_Click()  
End Sub  
  
Private Sub Label6_Click()  
End Sub  
  
Private Sub Label7_Click()  
End Sub
```

```
Private Sub Label8_Click()
```

```
End Sub
```

```
Private Sub Label9_Click()
```

```
End Sub
```

```
Private Sub ListBox1_Click()
```

```
End Sub
```

```
Private Sub OptionButton1_Click()
```

```
End Sub
```

```
Private Sub OptionButton2_Click()
```

```
End Sub
```

```
Private Sub TextBox1_Change()
```

```
End Sub
```

```
Private Sub TextBox3_Change()
```

```
End Sub
```

```
Private Sub TextBox5_Change()
```

```
End Sub
```

```
Private Sub TextBox7_Change()
```

```
End Sub
```

```
Private Sub UserForm_Activate()
```

```
End Sub
```

```
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.Co  
ntrol, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal State As MSForms.  
fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_Click()
```

```
End Sub
```

```
Private Sub UserForm_Deactivate()
```

```
End Sub
```

```
Private Sub UserForm_Initialize()
```

```
End Sub
```

```
Private Sub UserForm_Layout()
```

```
End Sub
```

```
Private Sub UserForm_MouseMove(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByV  
al Y As Single)
```

```
End Sub
```

```
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal
```



```
Y As Single)
```

```
End Sub
```

```
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_Resize()
```

```
End Sub
```

```
Private Sub UserForm_Scroll(ByVal ActionX As MSForms.fmScrollAction, ByVal ActionY As MSForms.fmScrollAction, ByVal RequestDx As Single, ByVal RequestDy As Single, ByVal ActualDx As MSForms.ReturnSingle, ByVal ActualDy As MSForms.ReturnSingle)
```

```
End Sub
```

```
Private Sub UserForm_Terminate()
```

```
End Sub
```

```
Private Sub UserForm_Zoom(Percent As Integer)
```

```
Application.ScreenUpdating = False
```

```
Dim sDate As String
```

```
On Error Resume Next
```

```
sDate = MyCalendar.DatePicker(Me.txtDOB)
```

```
Me.txtDOB.Value = Format(sDate, "dd-mmm-yyyy")
```

```
On Error GoTo 0
```

```
Application.ScreenUpdating = True
```

```
End Sub
```

```
Private Sub imgCalendar_Click()
```

```
Application.ScreenUpdating = False
```

```
Dim sDate As String
```

```
On Error Resume Next
```

```
sDate = MyCalendar.DatePicker(Me.txtDOB)
```

```
Me.txtDOB.Value = Format(sDate, "dd-mmm-yyyy")
```

```
Sub Reset_Form()
```

```
Dim iRow As Long
```

```
With frmDataEntry
```

```
.txtStudentName.text = ""
.txtStudentName.BackColor = vbWhite
```

```
.txtFatherName.text = ""
.txtFatherName.BackColor = vbWhite
```

```
.txtDOB.text = ""
.txtDOB.BackColor = vbWhite
```

```
.optFemale.Value = False
.optMale.Value = False
```

```
.txtMobile.Value = ""
.txtMobile.BackColor = vbWhite
```

```
.txtEmail.Value = ""
```

```

.txtEmail.BackColor = vbWhite

.txtAddress.Value = ""
.txtAddress.BackColor = vbWhite

.txtRowNumber.Value = ""
.txtImagePath.Value = ""

.imgStudent.Picture = LoadPicture(vbNullString)

.cmdSubmit.Caption = "Submit"

'.cmbCourse.Clear
.cmbCourse.BackColor = vbWhite

'Dynamic range based on Support Sheet
shSupport.Range("A2", shSupport.Range("A" & Rows.Count).End(xlUp)).Name = "Dynamic"

.cmbCourse.RowSource = "Dynamic"

.cmbCourse.Value = ""

.cmbCourse.Value = ""

'Assigning RowSource to lstDatabase

.lstDatabase.ColumnCount = 12
.lstDatabase.ColumnHeads = True

.lstDatabase.ColumnWidths = "30,70,70,40,45,70,60,60,70,0,0,0"

iRow = shDatabase.Range("A" & Rows.Count).End(xlUp).row + 1 ' Identify last blank row

If iRow > 1 Then

    .lstDatabase.RowSource = "Database!A2:L" & iRow

Else

    .lstDatabase.RowSource = "Database!A2:L2"

End If

End With
End Sub

On Error GoTo 0

Application.ScreenUpdating = True

Set oRegex = CreateObject("VBScript.RegExp")
With oRegex
    .Pattern = "^[\\w-\\.]{1,}\\@([\\da-z-A-Z-]{1,}\\.){1,}[\\da-z-A-Z-]{2,3}$"
    ValidEmail = .Test(Email)
End With
Set oRegex = Nothing

GetImagePath = ""

With Application.FileDialog(msoFileDialogFilePicker) ' File Picker Dialog box

    .AllowMultiSelect = False
    .Filters.Clear ' Clear the exisiting filters
    .Filters.Add "Images", "*.gif; *.jpg; *.jpeg" 'Add a filter that includes GIF and JPEG images

    ' show the file picker dialog box
    If .Show <> 0 Then

        GetImagePath = .SelectedItems(1) ' Getting the path of selected file name

    End If

```

```

End With
End Function
Sub CreateFolder()
Dim strFolder As String ' To hold the folder path where we need to replicate the image

strFolder = ThisWorkbook.Path & Application.PathSeparator & "Images"
'Check Directory exist or not. If not exist then it will return blank
If Dir(strFolder, vbDirectory) = "" Then
    MkDir strFolder ' Make a folder with the name of 'Images'
End If
End Sub

Sub LoadImage()
Dim imgSourcePath As String ' To store the path of image selected by user
Dim imgDestination As String ' To store the path of image selected by user

imgSourcePath = Trim(GetImagePath()) ' Call the Function

If imgSourcePath = "" Then Exit Sub

Call CreateFolder 'Create Image folder if not exist

imgDestination = ThisWorkbook.Path & Application.PathSeparator & _
frmDataEntry.txtStudentName & "." & Split(imgSourcePath, ".")(UBound(Split(imgSourcePath, ".")))

FileCopy imgSourcePath, imgDestination ' Code to copy image

frmDataEntry.imgStudent.PictureSizeMode = fmPictureSizeModeStretch 'Stretch mode
frmDataEntry.imgStudent.Picture = LoadPicture(imgDestination) ' Loading picture to imgStudent
frmDataEntry.txtImagePath.Value = imgDestination ' Assigning the path to text boxFunction ValidEntry()
As Boolean

ValidEntry = True

With frmDataEntry

'Default Color

.txtStudentName.BackColor = vbWhite
.txtFatherName.BackColor = vbWhite
.txtDOB.BackColor = vbWhite
.txtMobile.BackColor = vbWhite
.txtEmail.BackColor = vbWhite
.txtAddress.BackColor = vbWhite
.cmbCourse.BackColor = vbWhite

'Validating Student Name

If Trim(.txtStudentName.Value) = "" Then
    MsgBox "Please enter Student's name.", vbOKOnly + vbInformation, "Student Name"
    .txtStudentName.BackColor = vbRed
    .txtStudentName.SetFocus
    ValidEntry = False
    Exit Function
End If

'Validating Father's name

If Trim(.txtFatherName.Value) = "" Then
    MsgBox "Please enter Father's name.", vbOKOnly + vbInformation, "Father Name"
    .txtFatherName.BackColor = vbRed
    .txtFatherName.SetFocus
    ValidEntry = False
    Exit Function
End If

'Validating DOB

If Trim(.txtDOB.Value) = "" Then
    MsgBox "DOB is blank. Please enter DOB.", vbOKOnly + vbInformation, "Invalid Entry"

```

```

        .txtDOB.BackColor = vbRed
        ValidEntry = False
        Exit Function
    End If

```

```

'Validating Gender

```

```

If .optFemale.Value = False And .optMale.Value = False Then
    MsgBox "Please select gender.", vbOKOnly + vbInformation, "Invalid Entry"
    ValidEntry = False
    Exit Function
End If

```

```

'Validating Course

```

```

If Trim(.cmbCourse.Value) = "" Then
    MsgBox "Please select the Course from drop-down.", vbOKOnly + vbInformation, "Course Applied"
    .cmbCourse.BackColor = vbRed
    ValidEntry = False
    Exit Function
End If

```

```

'Validating Mobile Number

```

```

If Trim(.txtMobile.Value) = "" Or Len(.txtMobile.Value) < 10 Or Not IsNumeric(.txtMobile.Value) Then
    MsgBox "Please enter a valid mobile number.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtMobile.BackColor = vbRed
    .txtMobile.SetFocus
    ValidEntry = False
    Exit Function
End If

```

```

'Validating Email

```

```

If ValidEmail(Trim(.txtEmail.Value)) = False Then
    MsgBox "Please enter a valid email address.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtEmail.BackColor = vbRed
    .txtEmail.SetFocus
    ValidEntry = False
    Exit Function
End If

```

```

'Validating Address

```

```

If Trim(.txtAddress.Value) = "" Then
    MsgBox "Address is blank. Please enter a valid address.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtAddress.BackColor = vbRed
    ValidEntry = False
    Exit Function
End If

```

```

'Validating Image

```

```

If .imgStudent.Picture Is Nothing Then
    MsgBox "Please upload the PP Size Photo.", vbOKOnly + vbInformation, "Picture"
    ValidEntry = False
    Exit Function
End If

```

```

End With
End Function

```

```

Sub Submit_Data()
    Dim iRow As Long

```

```

If frmDataEntry.txtRowNumber.Value = "" Then

```

```

    iRow = shDatabase.Range("A" & Rows.Count).End(xlUp).row + 1 ' Identify last blank row

```

```

Else
    iRow = frmDataEntry.txtRowNumber.Value
End If

With shDatabase.Range("A" & iRow)

.Offset(0, 0).Value = "=Row()-1" 'S. No.

.Offset(0, 1).Value = frmDataEntry.txtStudentName.Value 'Student's Name

.Offset(0, 2).Value = frmDataEntry.txtFatherName.Value 'Father's Name

.Offset(0, 3).Value = frmDataEntry.txtDOB.Value 'DOB

.Offset(0, 4).Value = IIf(frmDataEntry.optFemale.Value = True, "Female", "Male") 'Gender

.Offset(0, 5).Value = frmDataEntry.cmbCourse.Value 'Qualification

.Offset(0, 6).Value = frmDataEntry.txtMobile.Value 'Mobile Number

.Offset(0, 7).Value = frmDataEntry.txtEmail.Value 'Email

.Offset(0, 8).Value = frmDataEntry.txtAddress.Value 'Address

.Offset(0, 9).Value = frmDataEntry.txtImagePath.Value 'Photo

.Offset(0, 10).Value = Application.UserName 'Submitted By

.Offset(0, 11).Value = Format([Now()], "DD-MMM-YYYY HH:MM:SS") 'Submitted On

'Reset the form

Call Reset_Form

Application.ScreenUpdating = True

MsgBox "Data submitted successfully!"
End Sub

Function Selected_List() As Long
Dim i As Long
Selected_List = 0
If frmDataEntry.lstDatabase.ListCount = 1 Then Exit Function ' If no items exist in List Box
For i = 0 To frmDataEntry.lstDatabase.ListCount - 1
If frmDataEntry.lstDatabase.Selected(i) = True Then
    Selected_List = i + 1
Exit For
End If
Next i
End Function
End Function

Sub Show_Form()
frmDataEntry.Show
End Sub

Private Sub cmdLoadImage_Click()
If Me.txtStudentName.Value = "" Then
    MsgBox "Please enter Student's first.", vbOKOnly + vbCritical, "Error"
Exit Sub
End If

Call LoadImange
End Sub

Private Sub UserForm6_Initialize()
Call Reset_Form

```

End Sub

```
Private Sub cmdSubmit_Click()
Dim i As VbMsgBoxResult
```

```
i = MsgBox("Do you want to submit the data?", vbYesNo + vbQuestion, "Submit Data")
```

```
If i = vbNo Then Exit Sub
```

```
If ValidEntry Then
```

```
    Call Submit_Data
```

```
End If
```

```
End Sub
```

```
Private Sub cmdReset_Click()
Dim i As VbMsgBoxResult
```

```
i = MsgBox("Do you want to reset the form?", vbYesNo + vbQuestion, "Reset")
```

```
If i = vbNo Then Exit Sub
```

```
Call Reset_Form
```

```
End Sub
```

```
Private Sub lstDatabase_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
```

```
If Selected_List = 0 Then
```

```
    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Edit"
```

```
    Exit Sub
```

```
End If
```

```
Dim sGender As String
```

```
'Me.txtRowNumber = Selected_List + 1 ' Assigning Selected Row Number of Database Sheet
```

```
Me.txtRowNumber = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 0) + 1
```

```
'Assigning the Selected Records to Form controls
```

```
frmDataEntry.txtStudentName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 1)
```

```
frmDataEntry.txtFatherName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 2)
```

```
frmDataEntry.txtDOB.Value = Format(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 3), "dd-mmm-yyyy")
```

```
sGender = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 4)
```

```
If sGender = "Female" Then
```

```
    frmDataEntry.optFemale.Value = True
```

```
Else
```

```
    frmDataEntry.optMale.Value = True
```

```
End If
```

```
frmDataEntry.cmbCourse.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 5)
```

```
frmDataEntry.txtMobile.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 6)
```

```
frmDataEntry.txtEmail.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 7)
```

```
frmDataEntry.txtAddress.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 8)
```

```
frmDataEntry.imgStudent.Picture = LoadPicture(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9))
```

```
frmDataEntry.txtImagePath = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9)
```

```
Me.cmdSubmit.Caption = "Update"
```

```
MsgBox "Please make the required changes and Click on Update."
```

```
End Sub
```

```
Private Sub cmdDelete_Click()
```

```
If Selected_List = 0 Then
```

```

    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Delete"
    Exit Sub

```

```
End If
```

```
Dim i As VbMsgBoxResult
```

```
Dim row As Long
```

```
row = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 0) + 1
```

```
i = MsgBox("Do you want ot delete the selected record?", vbYesNo + vbQuestion, "Delete")
```

```
If i = vbNo Then Exit Sub
```

```
ThisWorkbook.Sheets("Database").Rows(row).Delete
```

```
Call Reset ' Refresh the controls with latest information
```

```
MsgBox "Selected record has been successfully deleted.", vbOKOnly + vbInformation, "Delete"
End Sub
```

```
Private Sub cmdEdit_Click()
If Selected_List = 0 Then

```

```

    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Edit"
    Exit Sub

```

```
End If
```

```
Dim sGender As String
```

```
Me.txtRowNumber = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 0) + 1
```

```
'Assigning the Selected Reocords to Form controls
```

```
frmDataEntry.txtStudentName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 1)
```

```
frmDataEntry.txtFatherName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 2)
```

```
frmDataEntry.txtDOB.Value = Format(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 3), "dd-mmm-yyyy")
```

```
sGender = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 4)
```

```

If sGender = "Female" Then
    frmDataEntry.optFemale.Value = True
Else

```

```
    frmDataEntry.optMale.Value = True
```

```
End If
```

```
frmDataEntry.cmbCourse.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 5)
```

```
frmDataEntry.txtMobile.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 6)
```

```
frmDataEntry.txtEmail.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 7)
```

```
frmDataEntry.txtAddress.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 8)
```

```
frmDataEntry.imgStudent.Picture = LoadPicture(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9))
```

```
frmDataEntry.txtImagePath = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9)
```

```
Me.cmdSubmit.Caption = "Update"
```

```
MsgBox "Please make the required changes and Click on Update."
```

```
Private Sub ComboBox1_Change()
```

```
    Select Case ComboBox1.Value
```

```
        Case "Electrical Simulation"
```

```
            Label1.Caption = "Domain: Electrical"
```

```
        Case "Portfolio Builder"
```

```
            Label1.Caption = "Domain: Portfolio"
```

```
        Case "Rubric Mapping"
```

```
            Label1.Caption = "Domain: Rubric"
```

```
    End Select
```

```
End Sub
```

```
()
```

```
    Label2.Caption = "Rubric Level: Intermediate"
```

```
End Sub
```

```
Private Sub CommandButton1_Click()  
    If ComboBox3.Value = "" Or ComboBox4.Value = "" Then  
        MsgBox "Please select all required rubric parameters.", vbExclamation  
        Exit Sub  
    End If  
    Label3.Caption = "Simulation executed successfully."  
End Sub  
Private Sub CommandButton2_Click()  
    MsgBox "Credential artifact generated and submitted.", vbInformation  
End Sub  
(  
    Label5.Caption = "Rubric template loaded: " & ListBox1.Value  
End Sub  
(  
    MsgBox "Ensure rubric alignment with SAQA/NQF thresholds.", vbInformation  
End Sub
```



```
Private Sub ComboBox1_Change()  
End Sub  
  
Private Sub ComboBox2_Change()  
End Sub  
  
Private Sub CommandButton1_Click()  
End Sub  
  
Private Sub CommandButton2_Click()  
End Sub  
  
Private Sub CommandButton3_Click()  
End Sub  
  
Private Sub CommandButton5_Click()  
End Sub  
  
Private Sub CommandButton6_Click()  
End Sub  
  
Private Sub CommandButton8_Click()  
End Sub  
  
Private Sub CommandButton9_Click()  
End Sub  
  
Private Sub Label1_Click()  
End Sub  
  
Private Sub Label2_Click()  
End Sub  
  
Private Sub Label3_Click()  
End Sub  
  
Private Sub Label5_Click()  
End Sub  
  
Private Sub ListBox1_Click()  
End Sub  
  
Private Sub ScrollBar1_Change()  
End Sub  
  
Private Sub UserForm_Activate()  
End Sub  
  
Private Sub UserForm_Click()  
End Sub
```

```
Private Sub ComboBox1_Change()
```

```
End Sub
```

```
Private Sub ComboBox2_Change()
```

```
End Sub
```

```
Private Sub ComboBox3_Change()
```

```
End Sub
```

```
Private Sub ComboBox5_Change()
```

```
End Sub
```

```
Private Sub CommandButton1_Click()
```

```
End Sub
```

```
Private Sub CommandButton2_Click()
```

```
End Sub
```

```
Private Sub CommandButton3_Click()
```

```
End Sub
```

```
Private Sub CommandButton4_Click()
```

```
End Sub
```

```
Private Sub Frame1_Click()
```

```
End Sub
```

```
Private Sub Label1_Click()
```

```
End Sub
```

```
Private Sub OptionButton1_Click()
```

```
End Sub
```

```
Private Sub UserForm_Activate()
```

```
End Sub
```

```
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.  
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal  
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_Click()
```

```
End Sub
```

```
Private Sub UserForm_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
```

```
End Sub
```

```
Private Sub UserForm_Initialize()
```

```
End Sub
```

```
Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)
```

End Sub

Private Sub UserForm\_Layout()

End Sub

Private Sub UserForm\_MouseMove(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm\_RemoveControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm\_Resize()

End Sub

Private Sub UserForm\_Terminate()

End Sub

Private Sub UserForm\_Zoom(Percent As Integer)

End Sub

Option Explicit

Private Const SHEET\_CASES As String = "Cases"

Private isInitializing As Boolean

```
'=====
' Lifecycle
'=====
```

```
On Error Resume Next
isInitializing = True
```

EnsureCasesSheet

```
' Populate top-level lists
With Me.ComboBox1 ' Case Type
    .Clear
    .AddItem "Refund"
    .AddItem "Compensation"
    .AddItem "Recognition"
    .AddItem "Insurance claim"
End With
```

```
With Me.ComboBox3 ' Issuing Body
    .Clear
    .AddItem "Institution"
    .AddItem "SETA"
    .AddItem "QCTO"
    .AddItem "CCMA"
    .AddItem "Department of Employment and Labour"
    .AddItem "Other"
End With
```

```
With Me.ComboBox5 ' Desired Outcome
    .Clear
    .AddItem "Refund"
    .AddItem "Credit"
    .AddItem "Provisional certificate"
    .AddItem "Appeal"
    .AddItem "Escalation"
    .AddItem "Correction/Letter of completion"
End With
```

```
' Priority toggle
Me.OptionButton1.Caption = "Visa/Job critical"
```

```

Me.OptionButton1.Value = False

' Sensible defaults
Me.ComboBox1.ListIndex = -1
Me.ComboBox2.Clear
Me.ComboBox3.ListIndex = -1
Me.ComboBox5.ListIndex = -1

isInitializing = False
On Error GoTo 0
End Sub

On Error Resume Next
If Me.ComboBox1.ListCount > 0 Then Me.ComboBox1.SetFocus
On Error GoTo 0
End Sub

' No special teardown
End Sub

'=====
' Dynamic lists & helpers
'=====
' Case Type changed -> repopulate Scenario list
If isInitializing Then Exit Sub
FillScenarioList Me.ComboBox1.Value
SuggestOutcome
End Sub

If isInitializing Then Exit Sub
SuggestOutcome
End Sub

' Issuing body selected; no-op or future routing logic
End Sub

' User prefers a specific outcome; respect selection
End Sub

' Toggle priority; could visually cue user
End Sub

' Container click; no action
End Sub

' Could display help or open a guidance sheet
MsgBox "Select Case Type ? Scenario ? Issuing Body ? Desired Outcome. Then Submit or Save Draft.",
vbInformation, "Help"
End Sub

'=====
' Commands
'=====

' Submit (final)
If Not ValidateForm(True) Then Exit Sub

Dim caseId As String
caseId = GenerateCaseId

Dim ws As Worksheet
Set ws = ThisWorkbook.Worksheets(SHEET_CASES)

Dim r As Long
r = NextFreeRow(ws)

ws.Cells(r, 1).Value = Now
ws.Cells(r, 2).Value = caseId
ws.Cells(r, 3).Value = Nz(Me.ComboBox1.Value)
ws.Cells(r, 4).Value = Nz(Me.ComboBox2.Value)
ws.Cells(r, 5).Value = Nz(Me.ComboBox3.Value)

```

```

ws.Cells(r, 6).Value = Nz(Me.ComboBox5.Value)
ws.Cells(r, 7).Value = IIf(Me.OptionButton1.Value, "High", "Normal")
ws.Cells(r, 8).Value = "Submitted"
ws.Cells(r, 9).Value = "" ' Notes (optional)

MsgBox "Case submitted: " & caseId, vbInformation, "Success"

ResetForm
End Sub

' Save draft (partial allowed)
Dim caseId As String
caseId = GenerateCaseId

Dim ws As Worksheet
Set ws = ThisWorkbook.Worksheets(SHEET_CASES)

Dim r As Long
r = NextFreeRow(ws)

ws.Cells(r, 1).Value = Now
ws.Cells(r, 2).Value = caseId
ws.Cells(r, 3).Value = Nz(Me.ComboBox1.Value)
ws.Cells(r, 4).Value = Nz(Me.ComboBox2.Value)
ws.Cells(r, 5).Value = Nz(Me.ComboBox3.Value)
ws.Cells(r, 6).Value = Nz(Me.ComboBox5.Value)
ws.Cells(r, 7).Value = IIf(Me.OptionButton1.Value, "High", "Normal")
ws.Cells(r, 8).Value = "Draft"
ws.Cells(r, 9).Value = "" ' Notes

MsgBox "Draft saved: " & caseId, vbInformation, "Saved"
End Sub

' Reset
ResetForm
End Sub

' Close
Unload Me
End Sub

'=====
' User experience events
'=====

' ESC closes; Ctrl+S saves draft
If KeyCode = vbKeyEscape Then
    Unload Me
ElseIf KeyCode = vbKeyS And (Shift And fmCtrlMask) = fmCtrlMask Then
    CommandButton2_Click
End If
End Sub

' No-op
End Sub

' No-op
End Sub

' Hook for responsive layout if needed
End Sub

' No-op
End Sub

End Sub

End Sub

' Keep default behavior

```

End Sub

' Optionally reposition/resize controls here

End Sub

'=====

' Helpers

'=====

Private Sub FillScenarioList(ByVal caseType As String)

Me.ComboBox2.Clear

Select Case LCase\$(Trim\$(caseType))

Case "refund"

Me.ComboBox2.AddItem "Training not delivered"

Me.ComboBox2.AddItem "Material defects / not as described"

Me.ComboBox2.AddItem "Admin error in registration"

Me.ComboBox2.AddItem "Overbilling"

Case "compensation"

Me.ComboBox2.AddItem "Diploma printing delay (loss of opportunity)"

Me.ComboBox2.AddItem "Application rejected without due cause"

Me.ComboBox2.AddItem "Published without registration confirmation"

Case "recognition"

Me.ComboBox2.AddItem "Request provisional certificate"

Me.ComboBox2.AddItem "Request letter of completion"

Me.ComboBox2.AddItem "Appeal assessment outcome"

Case "insurance claim"

Me.ComboBox2.AddItem "Policy claim for learning costs"

Me.ComboBox2.AddItem "Denied claim appeal"

Case Else

' Generic fallback

Me.ComboBox2.AddItem "Other"

End Select

End Sub

Private Sub SuggestOutcome()

' Suggest an outcome based on scenario keywords (non-binding)

Dim s As String

s = LCase\$(Nz(Me.ComboBox2.Value))

If s Like "\*not delivered\*" Or s Like "\*overbilling\*" Then

SelectOutcomeIfExists "Refund"

ElseIf s Like "\*printing\*" Or s Like "\*provisional\*" Or s Like "\*completion\*" Then

SelectOutcomeIfExists "Provisional certificate"

ElseIf s Like "\*rejected\*" Or s Like "\*appeal\*" Then

SelectOutcomeIfExists "Appeal"

ElseIf s Like "\*published\*" Or s Like "\*admin\*" Then

SelectOutcomeIfExists "Correction/Letter of completion"

End If

End Sub

Private Sub SelectOutcomeIfExists(ByVal text As String)

Dim i As Long

For i = 0 To Me.ComboBox5.ListCount - 1

If StrComp(Me.ComboBox5.List(i), text, vbTextCompare) = 0 Then

Me.ComboBox5.ListIndex = i

Exit For

End If

Next i

End Sub

Private Function ValidateForm(ByVal isFinal As Boolean) As Boolean

ValidateForm = False

Dim missing As String

missing = ""

If Len(Trim\$(Nz(Me.ComboBox1.Value))) = 0 Then missing = missing & "- Case Type" & vbCrLf

If Len(Trim\$(Nz(Me.ComboBox2.Value))) = 0 Then missing = missing & "- Scenario" & vbCrLf

If Len(Trim\$(Nz(Me.ComboBox3.Value))) = 0 Then missing = missing & "- Issuing Body" & vbCrLf

If isFinal And Len(missing) > 0 Then

MsgBox "Please complete the following before submitting:" & vbCrLf & vbCrLf & missing, vbExclamation, "Incomplete"

```

        Exit Function
    End If

    ValidateForm = True
End Function

Private Sub ResetForm()
    isInitializing = True

    Me.ComboBox1.ListIndex = -1
    Me.ComboBox2.Clear
    Me.ComboBox3.ListIndex = -1
    Me.ComboBox5.ListIndex = -1
    Me.OptionButton1.Value = False

    isInitializing = False
End Sub

Private Function GenerateCaseId() As String
    GenerateCaseId = "CASE-" & Format(Now, "yymmdd-hhnnss")
End Function

Private Function NextFreeRow(ws As Worksheet) As Long
    Dim r As Long
    r = ws.Cells(ws.Rows.Count, 1).End(xlUp).row
    If r < 2 Then
        NextFreeRow = 2
    Else
        NextFreeRow = r + 1
    End If
End Function

Private Sub EnsureCasesSheet()
    Dim ws As Worksheet
    On Error Resume Next
    Set ws = ThisWorkbook.Worksheets(SHEET_CASES)
    On Error GoTo 0

    If ws Is Nothing Then
        Set ws = ThisWorkbook.Worksheets.Add(After:=ThisWorkbook.Worksheets(ThisWorkbook.Worksheets.Count))
        ws.Name = SHEET_CASES
    End If

    ' Headers if empty
    If ws.Cells(1, 1).Value = "" Then
        ws.Cells(1, 1).Value = "DateTime"
        ws.Cells(1, 2).Value = "CaseID"
        ws.Cells(1, 3).Value = "CaseType"
        ws.Cells(1, 4).Value = "Scenario"
        ws.Cells(1, 5).Value = "IssuingBody"
        ws.Cells(1, 6).Value = "DesiredOutcome"
        ws.Cells(1, 7).Value = "Priority"
        ws.Cells(1, 8).Value = "Status"
        ws.Cells(1, 9).Value = "Notes"
    End If
End Sub

Private Function Nz(ByVal v) As String
    If IsNull(v) Then
        Nz = ""
    Else
        Nz = CStr(v)
    End If
End Function

```

Module1 - 1

```
Sub ets()  
End Sub  
Private Sub CommandButton1_Click()  
End Sub  
Private Sub CommandButton2_Click()  
End Sub  
Private Sub Frame1_Click()  
End Sub  
Private Sub Label1_Click()  
End Sub  
Private Sub Label2_Click()  
End Sub  
Private Sub Label3_Click()  
End Sub  
Private Sub Label4_Click()  
End Sub  
Private Sub TextBox2_Change()  
End Sub  
Private Sub TextBox3_Change()  
End Sub  
Private Sub UserForm_Click()  
End Sub  
Private Sub UserForm_DblClick(ByVal Cancel As MSForms.ReturnBoolean)  
End Sub  
Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal S  
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal Cance  
lDisplay As MSForms.ReturnBoolean)  
End Sub  
Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)  
End Sub  
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal  
Y As Single)  
End Sub  
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)  
End Sub  
Private Sub UserForm_Resize()  
End Sub  
Private Sub UserForm_Scroll(ByVal ActionX As MSForms.fmScrollAction, ByVal ActionY As MSForms.fmScroll  
Action, ByVal RequestDx As Single, ByVal RequestDy As Single, ByVal ActualDx As MSForms.ReturnSingle,  
ByVal ActualDy As MSForms.ReturnSingle)
```



End Sub

End Sub

Private Sub Label5\_Click()

End Sub

Private Sub Label6\_Click()

End Sub

Private Sub Label7\_Click()

End Sub

Private Sub Label8\_Click()

End Sub

Private Sub Label9\_Click()

End Sub

Private Sub TextBox1\_Change()

End Sub

Private Sub TextBox10\_Change()

End Sub

Private Sub TextBox11\_Change()

End Sub

Private Sub TextBox12\_Change()

End Sub

Private Sub TextBox13\_Change()

End Sub

Private Sub TextBox14\_Change()

End Sub

Private Sub TextBox15\_Change()

End Sub

Private Sub TextBox16\_Change()

End Sub

Private Sub TextBox17\_Change()

End Sub

Private Sub TextBox19\_Change()

End Sub

Private Sub TextBox20\_Change()

End Sub

Private Sub TextBox21\_Change()

End Sub

```
Private Sub TextBox23_Change()
```

```
End Sub
```

```
End Sub
```

```
Private Sub TextBox5_Change()
```

```
End Sub
```

```
Private Sub TextBox6_Change()
```

```
End Sub
```

```
Private Sub TextBox8_Change()
```

```
End Sub
```

```
Private Sub TextBox9_Change()
```

```
End Sub
```

```
Private Sub UserForm_Activate()
```

```
End Sub
```

```
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.Co  
ntrol, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal State As MSForms.  
fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms  
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal  
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub UserForm_Deactivate()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub UserForm_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)
```

```
End Sub
```

```
End Sub
```

```
Private Sub ComboBox1_Change()
```

```
End Sub
```

```
Private Sub ComboBox2_Change()
```

```
End Sub
```

```
Private Sub ComboBox3_Change()
```

```
End Sub
```

```
Private Sub ComboBox5_Change()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub CommandButton3_Click()
```

```
End Sub
```

```
Private Sub CommandButton4_Click()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub OptionButton1_Click()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)
```

```
End Sub
```

```
End Sub
```

End Sub

Private Sub UserForm\_Terminate()

End Sub

Private Sub UserForm\_Zoom(Percent As Integer)

End Sub

Option Explicit

Private Const SHEET\_CASES As String = "Cases"

Private isInitializing As Boolean

```
'=====
' Lifecycle
'=====
```

```
On Error Resume Next
isInitializing = True
```

EnsureCasesSheet

```
' Populate top-level lists
With Me.ComboBox1 ' Case Type
    .Clear
    .AddItem "Refund"
    .AddItem "Compensation"
    .AddItem "Recognition"
    .AddItem "Insurance claim"
End With
```

```
With Me.ComboBox3 ' Issuing Body
    .Clear
    .AddItem "Institution"
    .AddItem "SETA"
    .AddItem "QCTO"
    .AddItem "CCMA"
    .AddItem "Department of Employment and Labour"
    .AddItem "Other"
End With
```

```
With Me.ComboBox5 ' Desired Outcome
    .Clear
    .AddItem "Refund"
    .AddItem "Credit"
    .AddItem "Provisional certificate"
    .AddItem "Appeal"
    .AddItem "Escalation"
    .AddItem "Correction/Letter of completion"
End With
```

```
' Priority toggle
Me.OptionButton1.Caption = "Visa/Job critical"
Me.OptionButton1.Value = False
```

```
' Sensible defaults
Me.ComboBox1.ListIndex = -1
Me.ComboBox2.Clear
Me.ComboBox3.ListIndex = -1
Me.ComboBox5.ListIndex = -1
```

```
isInitializing = False
On Error GoTo 0
```

End Sub

```
On Error Resume Next
```

```

    If Me.ComboBox1.ListCount > 0 Then Me.ComboBox1.SetFocus
    On Error GoTo 0
End Sub

' No special teardown
End Sub

'=====
' Dynamic lists & helpers
'=====
' Case Type changed -> repopulate Scenario list
If isInitializing Then Exit Sub
FillScenarioList Me.ComboBox1.Value
SuggestOutcome
End Sub

If isInitializing Then Exit Sub
SuggestOutcome
End Sub

' Issuing body selected; no-op or future routing logic
End Sub

' User prefers a specific outcome; respect selection
End Sub

' Toggle priority; could visually cue user
End Sub

' Container click; no action
End Sub

' Could display help or open a guidance sheet
MsgBox "Select Case Type ? Scenario ? Issuing Body ? Desired Outcome. Then Submit or Save Draft.",
vbInformation, "Help"
End Sub

'=====
' Commands
'=====

' Submit (final)
If Not ValidateForm(True) Then Exit Sub

Dim caseId As String
caseId = GenerateCaseId

Dim ws As Worksheet
Set ws = ThisWorkbook.Worksheets(SHEET_CASES)

Dim r As Long
r = NextFreeRow(ws)

ws.Cells(r, 1).Value = Now
ws.Cells(r, 2).Value = caseId
ws.Cells(r, 3).Value = Nz(Me.ComboBox1.Value)
ws.Cells(r, 4).Value = Nz(Me.ComboBox2.Value)
ws.Cells(r, 5).Value = Nz(Me.ComboBox3.Value)
ws.Cells(r, 6).Value = Nz(Me.ComboBox5.Value)
ws.Cells(r, 7).Value = IIf(Me.OptionButton1.Value, "High", "Normal")
ws.Cells(r, 8).Value = "Submitted"
ws.Cells(r, 9).Value = "" ' Notes (optional)

MsgBox "Case submitted: " & caseId, vbInformation, "Success"

ResetForm
End Sub

' Save draft (partial allowed)
Dim caseId As String
caseId = GenerateCaseId

```

```

Dim ws As Worksheet
Set ws = ThisWorkbook.Worksheets(SHEET_CASES)

Dim r As Long
r = NextFreeRow(ws)

ws.Cells(r, 1).Value = Now
ws.Cells(r, 2).Value = caseId
ws.Cells(r, 3).Value = Nz(Me.ComboBox1.Value)
ws.Cells(r, 4).Value = Nz(Me.ComboBox2.Value)
ws.Cells(r, 5).Value = Nz(Me.ComboBox3.Value)
ws.Cells(r, 6).Value = Nz(Me.ComboBox5.Value)
ws.Cells(r, 7).Value = IIf(Me.OptionButton1.Value, "High", "Normal")
ws.Cells(r, 8).Value = "Draft"
ws.Cells(r, 9).Value = "" ' Notes

MsgBox "Draft saved: " & caseId, vbInformation, "Saved"
End Sub

' Reset
ResetForm
End Sub

' Close
Unload Me
End Sub

'=====
' User experience events
'=====

' ESC closes; Ctrl+S saves draft
If KeyCode = vbKeyEscape Then
    Unload Me
ElseIf KeyCode = vbKeyS And (Shift And fmCtrlMask) = fmCtrlMask Then
    CommandButton2_Click
End If
End Sub

' No-op
End Sub

' No-op
End Sub

' Hook for responsive layout if needed
End Sub

' No-op
End Sub

End Sub

End Sub

' Keep default behavior
End Sub

' Optionally reposition/resize controls here
End Sub

'=====
' Helpers
'=====
Private Sub FillScenarioList(ByVal caseType As String)
    Me.ComboBox2.Clear

    Select Case LCase$(Trim$(caseType))
        Case "refund"

```

```

        Me.ComboBox2.AddItem "Training not delivered"
        Me.ComboBox2.AddItem "Material defects / not as described"
        Me.ComboBox2.AddItem "Admin error in registration"
        Me.ComboBox2.AddItem "Overbilling"
    Case "compensation"
        Me.ComboBox2.AddItem "Diploma printing delay (loss of opportunity)"
        Me.ComboBox2.AddItem "Application rejected without due cause"
        Me.ComboBox2.AddItem "Published without registration confirmation"
    Case "recognition"
        Me.ComboBox2.AddItem "Request provisional certificate"
        Me.ComboBox2.AddItem "Request letter of completion"
        Me.ComboBox2.AddItem "Appeal assessment outcome"
    Case "insurance claim"
        Me.ComboBox2.AddItem "Policy claim for learning costs"
        Me.ComboBox2.AddItem "Denied claim appeal"
    Case Else
        ' Generic fallback
        Me.ComboBox2.AddItem "Other"
End Select
End Sub

Private Sub SuggestOutcome()
    ' Suggest an outcome based on scenario keywords (non-binding)
    Dim s As String
    s = LCase$(Nz(Me.ComboBox2.Value))

    If s Like "*not delivered*" Or s Like "*overbilling*" Then
        SelectOutcomeIfExists "Refund"
    ElseIf s Like "*printing*" Or s Like "*provisional*" Or s Like "*completion*" Then
        SelectOutcomeIfExists "Provisional certificate"
    ElseIf s Like "*rejected*" Or s Like "*appeal*" Then
        SelectOutcomeIfExists "Appeal"
    ElseIf s Like "*published*" Or s Like "*admin*" Then
        SelectOutcomeIfExists "Correction/Letter of completion"
    End If
End Sub

Private Sub SelectOutcomeIfExists(ByVal text As String)
    Dim i As Long
    For i = 0 To Me.ComboBox5.ListCount - 1
        If StrComp(Me.ComboBox5.List(i), text, vbTextCompare) = 0 Then
            Me.ComboBox5.ListIndex = i
            Exit For
        End If
    Next i
End Sub

Private Function ValidateForm(ByVal isFinal As Boolean) As Boolean
    ValidateForm = False

    Dim missing As String
    missing = ""

    If Len(Trim$(Nz(Me.ComboBox1.Value))) = 0 Then missing = missing & "- Case Type" & vbCrLf
    If Len(Trim$(Nz(Me.ComboBox2.Value))) = 0 Then missing = missing & "- Scenario" & vbCrLf
    If Len(Trim$(Nz(Me.ComboBox3.Value))) = 0 Then missing = missing & "- Issuing Body" & vbCrLf

    If isFinal And Len(missing) > 0 Then
        MsgBox "Please complete the following before submitting:" & vbCrLf & vbCrLf & missing, vbExclamation, "Incomplete"
        Exit Function
    End If

    ValidateForm = True
End Function

Private Sub ResetForm()
    isInitializing = True

    Me.ComboBox1.ListIndex = -1
    Me.ComboBox2.Clear
    Me.ComboBox3.ListIndex = -1
    Me.ComboBox5.ListIndex = -1

```

```

Me.OptionButton1.Value = False

isInitializing = False
End Sub

Private Function GenerateCaseId() As String
    GenerateCaseId = "CASE-" & Format(Now, "yymmdd-hhnnss")
End Function

Private Function NextFreeRow(ws As Worksheet) As Long
    Dim r As Long
    r = ws.Cells(ws.Rows.Count, 1).End(xlUp).row
    If r < 2 Then
        NextFreeRow = 2
    Else
        NextFreeRow = r + 1
    End If
End Function

Private Sub EnsureCasesSheet()
    Dim ws As Worksheet
    On Error Resume Next
    Set ws = ThisWorkbook.Worksheets(SHEET_CASES)
    On Error GoTo 0

    If ws Is Nothing Then
        Set ws = ThisWorkbook.Worksheets.Add(After:=ThisWorkbook.Worksheets(ThisWorkbook.Worksheets.Count))
        ws.Name = SHEET_CASES
    End If

    ' Headers if empty
    If ws.Cells(1, 1).Value = "" Then
        ws.Cells(1, 1).Value = "DateTime"
        ws.Cells(1, 2).Value = "CaseID"
        ws.Cells(1, 3).Value = "CaseType"
        ws.Cells(1, 4).Value = "Scenario"
        ws.Cells(1, 5).Value = "IssuingBody"
        ws.Cells(1, 6).Value = "DesiredOutcome"
        ws.Cells(1, 7).Value = "Priority"
        ws.Cells(1, 8).Value = "Status"
        ws.Cells(1, 9).Value = "Notes"
    End If
End Sub

Private Function Nz(ByVal v) As String
    If IsNull(v) Then
        Nz = ""
    Else
        Nz = CStr(v)
    End If
End Function

Private Sub CommandButton8_Click()

End Sub

Private Sub CommandButton9_Click()

End Sub

End Sub

End Sub

End Sub

```



End Sub

Private Sub ListBox1\_Click()

End Sub

Private Sub ScrollBar1\_Change()

End Sub

End Sub

P

End Sub

End Sub

End Sub

Private Sub UserForm\_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

End Sub

Private Sub MultiPage1\_Change()

End Sub

End Sub

Module1 - 11

```
Private Sub SpinButton1_Change()
```

```
End Sub
```

```
Private Sub SpinButton2_Change()
```

```
End Sub
```

```
Private Sub TabStrip1_Change()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub TextBox18_Change()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Private Sub TextBox22_Change()
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
End Sub
```

```
Application.ScreenUpdating = False
```

```
Dim sDate As String
```

```
On Error Resume Next
```

```
sDate = MyCalendar.DatePicker(Me.txtDOB)
```

```
Me.txtDOB.Value = Format(sDate, "dd-mmm-yyyy")
```

```
On Error GoTo 0
```

```
Application.ScreenUpdating = True
End Sub
```

```
Private Sub imgCalendar_Click()
```

```
Application.ScreenUpdating = False
```

```
Dim sDate As String
```

```
On Error Resume Next
```

```
sDate = MyCalendar.DatePicker(Me.txtDOB)
```

```
Me.txtDOB.Value = Format(sDate, "dd-mmm-yyyy")
```

```
Sub Reset_Form()
```

```
Dim iRow As Long
```

```
With frmDataEntry
```

```
.txtStudentName.text = ""
```

```
.txtStudentName.BackColor = vbWhite
```

```
.txtFatherName.text = ""
```

```
.txtFatherName.BackColor = vbWhite
```

```
.txtDOB.text = ""
```

```
.txtDOB.BackColor = vbWhite
```

```
.optFemale.Value = False
```

```
.optMale.Value = False
```

```
.txtMobile.Value = ""
```

```
.txtMobile.BackColor = vbWhite
```

```
.txtEmail.Value = ""
```

```
.txtEmail.BackColor = vbWhite
```

```
.txtAddress.Value = ""
```

```
.txtAddress.BackColor = vbWhite
```

```
.txtRowNumber.Value = ""
```

```
.txtImagePath.Value = ""
```

```
.imgStudent.Picture = LoadPicture(vbNullString)
```

```
.cmdSubmit.Caption = "Submit"
```

```
' .cmbCourse.Clear
```

```
.cmbCourse.BackColor = vbWhite
```

```
'Dynamic range based on Support Sheet
```

```
shSupport.Range("A2", shSupport.Range("A" & Rows.Count).End(xlUp)).Name = "Dynamic"
```

```
.cmbCourse.RowSource = "Dynamic"
```

```
.cmbCourse.Value = ""
```

```
.cmbCourse.Value = ""
```

```
'Assigning RowSource to lstDatabase
```

```
.lstDatabase.ColumnCount = 12
```

```
.lstDatabase.ColumnHeads = True
```

```
.lstDatabase.ColumnWidths = "30,70,70,40,45,70,60,60,70,0,0,0"
```

```
iRow = shDatabase.Range("A" & Rows.Count).End(xlUp).row + 1 ' Identify last blank row
```

```
If iRow > 1 Then
```

```
.lstDatabase.RowSource = "Database!A2:L" & iRow
```

```

Else

    .lstDatabase.RowSource = "Database!A2:L2"

End If

End With
End Sub

On Error GoTo 0

Application.ScreenUpdating = True

Set oRegEx = CreateObject("VBScript.RegExp")
With oRegEx
    .Pattern = "^[\w-\.]{1,}\@([\da-zA-Z-]{1,}\.){1,}[\da-zA-Z-]{2,3}$"
    ValidEmail = .Test(Email)
End With
Set oRegEx = Nothing

GetImagePath = ""

With Application.FileDialog(msoFileDialogFilePicker) ' File Picker Dialog box

    .AllowMultiSelect = False
    .Filters.Clear ' Clear the exisiting filters
    .Filters.Add "Images", "*.gif; *.jpg; *.jpeg" 'Add a filter that includes GIF and JPEG images

    ' show the file picker dialog box
    If .Show <> 0 Then

        GetImagePath = .SelectedItems(1) ' Getting the path of selected file name

    End If

End With
End Function
Sub CreateFolder()
Dim strFolder As String ' To hold the folter path where we need to replicate the image

strFolder = ThisWorkbook.Path & Application.PathSeparator & "Images"
'Check Directory exist or not. If not exist then it will return blank
If Dir(strFolder, vbDirectory) = "" Then
    MkDir strFolder ' Make a folder with the name of 'Images'
End If
End Sub

Sub LoadImange()
Dim imgSourcePath As String ' To store the path of image selected by user
Dim imgDestination As String ' To store the path of image selected by user

imgSourcePath = Trim(GetImagePath()) ' Call the Function

If imgSourcePath = "" Then Exit Sub

Call CreateFolder 'Create Image folder if not exist

imgDestination = ThisWorkbook.Path & Application.PathSeparator & _
frmDataEntry.txtStudentName & "." & Split(imgSourcePath, ".")(UBound(Split(imgSourcePath, ".")))

FileCopy imgSourcePath, imgDestination ' Code to copy image

frmDataEntry.imgStudent.PictureSizeMode = fmPictureSizeModeStretch 'Stretch mode
frmDataEntry.imgStudent.Picture = LoadPicture(imgDestination) ' Loading picture to imgStudent
frmDataEntry.txtImagePath.Value = imgDestination ' Assigning the path to text boxFunction ValidEntry()
As Boolean

ValidEntry = True

With frmDataEntry

```

```
'Default Color
```

```
.txtStudentName.BackColor = vbWhite
.txtFatherName.BackColor = vbWhite
.txtDOB.BackColor = vbWhite
.txtMobile.BackColor = vbWhite
.txtEmail.BackColor = vbWhite
.txtAddress.BackColor = vbWhite
.cmbCourse.BackColor = vbWhite
```

```
'Validating Student Name
```

```
If Trim(.txtStudentName.Value) = "" Then
    MsgBox "Please enter Student's name.", vbOKOnly + vbInformation, "Student Name"
    .txtStudentName.BackColor = vbRed
    .txtStudentName.SetFocus
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Father's name
```

```
If Trim(.txtFatherName.Value) = "" Then
    MsgBox "Please enter Father's name.", vbOKOnly + vbInformation, "Father Name"
    .txtFatherName.BackColor = vbRed
    .txtFatherName.SetFocus
    ValidEntry = False
    Exit Function
End If
```

```
'Validating DOB
```

```
If Trim(.txtDOB.Value) = "" Then
    MsgBox "DOB is blank. Please enter DOB.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtDOB.BackColor = vbRed
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Gender
```

```
If .optFemale.Value = False And .optMale.Value = False Then
    MsgBox "Please select gender.", vbOKOnly + vbInformation, "Invalid Entry"
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Course
```

```
If Trim(.cmbCourse.Value) = "" Then
    MsgBox "Please select the Course from drop-down.", vbOKOnly + vbInformation, "Course Applied"
    .cmbCourse.BackColor = vbRed
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Mobile Number
```

```
If Trim(.txtMobile.Value) = "" Or Len(.txtMobile.Value) < 10 Or Not IsNumeric(.txtMobile.Value) Then
    MsgBox "Please enter a valid mobile number.", vbOKOnly + vbInformation, "Invalid Entry"
    .txtMobile.BackColor = vbRed
    .txtMobile.SetFocus
    ValidEntry = False
    Exit Function
End If
```

```
'Validating Email
```

```
If ValidEmail(Trim(.txtEmail.Value)) = False Then
```

```

        MsgBox "Please enter a valid email address.", vbOKOnly + vbInformation, "Invalid Entry"
        .txtEmail.BackColor = vbRed
        .txtEmail.SetFocus
        ValidEntry = False
        Exit Function
    End If

    'Validating Address

    If Trim(.txtAddress.Value) = "" Then
        MsgBox "Address is blank. Please enter a valid address.", vbOKOnly + vbInformation, "Invalid Entry"
        .txtAddress.BackColor = vbRed
        ValidEntry = False
        Exit Function
    End If

    'Validating Image

    If .imgStudent.Picture Is Nothing Then
        MsgBox "Please upload the PP Size Photo.", vbOKOnly + vbInformation, "Picture"
        ValidEntry = False
        Exit Function
    End If

End With
End Function

Sub Submit_Data()
    Dim iRow As Long

    If frmDataEntry.txtRowNumber.Value = "" Then

        iRow = shDatabase.Range("A" & Rows.Count).End(xlUp).row + 1 ' Identify last blank row
    Else
        iRow = frmDataEntry.txtRowNumber.Value
    End If

    With shDatabase.Range("A" & iRow)

        .Offset(0, 0).Value = "=Row()-1" 'S. No.
        .Offset(0, 1).Value = frmDataEntry.txtStudentName.Value 'Student's Name
        .Offset(0, 2).Value = frmDataEntry.txtFatherName.Value 'Father's Name
        .Offset(0, 3).Value = frmDataEntry.txtDOB.Value 'DOB
        .Offset(0, 4).Value = IIf(frmDataEntry.optFemale.Value = True, "Female", "Male") 'Gender
        .Offset(0, 5).Value = frmDataEntry.cmbCourse.Value 'Qualification
        .Offset(0, 6).Value = frmDataEntry.txtMobile.Value 'Mobile Number
        .Offset(0, 7).Value = frmDataEntry.txtEmail.Value 'Email
        .Offset(0, 8).Value = frmDataEntry.txtAddress.Value 'Address
        .Offset(0, 9).Value = frmDataEntry.txtImagePath.Value 'Photo
        .Offset(0, 10).Value = Application.UserName 'Submitted By
        .Offset(0, 11).Value = Format([Now()], "DD-MMM-YYYY HH:MM:SS") 'Submitted On

    End With

    'Reset the form

    Call Reset_Form

    Application.ScreenUpdating = True

```

```
MsgBox "Data submitted successfully!"
End Sub
```

```
Function Selected_List() As Long
Dim i As Long
Selected_List = 0
If frmDataEntry.lstDatabase.ListCount = 1 Then Exit Function ' If no items exist in List Box
For i = 0 To frmDataEntry.lstDatabase.ListCount - 1
If frmDataEntry.lstDatabase.Selected(i) = True Then
    Selected_List = i + 1
Exit For
End If
Next i
End Function
End Function
```

```
Sub Show_Form()
frmDataEntry.Show
End Sub
```

```
Private Sub cmdLoadImage_Click()
If Me.txtStudentName.Value = "" Then
    MsgBox "Please enter Student's first.", vbOKOnly + vbCritical, "Error"
Exit Sub
End If

Call LoadImage
End Sub
```

```
Private Sub UserForm6_Initialize()
Call Reset_Form
End Sub
```

```
Private Sub cmdSubmit_Click()
Dim i As VbMsgBoxResult

i = MsgBox("Do you want to submit the data?", vbYesNo + vbQuestion, "Submit Data")

If i = vbNo Then Exit Sub

If ValidEntry Then

    Call Submit_Data

End If
End Sub
```

```
Private Sub cmdReset_Click()
Dim i As VbMsgBoxResult

i = MsgBox("Do you want to reset the form?", vbYesNo + vbQuestion, "Reset")

If i = vbNo Then Exit Sub

Call Reset_Form
End Sub
```

```
Private Sub lstDatabase_DblClick(ByVal Cancel As MSForms.ReturnBoolean)

If Selected_List = 0 Then
    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Edit"
Exit Sub
End If
```

```
Dim sGender As String
```

```
'Me.txtRowNumber = Selected_List + 1 ' Assigning Selected Row Number of Database Sheet
```

```
Me.txtRowNumber = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 0) + 1
```

```
'Assigning the Selected Reocords to Form controls
```

```
frmDataEntry.txtStudentName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 1)
```

```
frmDataEntry.txtFatherName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 2)
```

```
frmDataEntry.txtDOB.Value = Format(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 3), "dd-mmm-yyyy")
```

```
sGender = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 4)
```

```
If sGender = "Female" Then
```

```
    frmDataEntry.optFemale.Value = True
```

```
Else
```

```
    frmDataEntry.optMale.Value = True
```

```
End If
```

```
frmDataEntry.cmbCourse.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 5)
```

```
frmDataEntry.txtMobile.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 6)
```

```
frmDataEntry.txtEmail.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 7)
```

```
frmDataEntry.txtAddress.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 8)
```

```
frmDataEntry.imgStudent.Picture = LoadPicture(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9))
```

```
frmDataEntry.txtImagePath = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9)
```

```
Me.cmdSubmit.Caption = "Update"
```

```
MsgBox "Please make the required changes and Click on Update."
```

```
End Sub
```

```
If Selected_List = 0 Then
```

```
    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Delete"
```

```
Exit Sub
```

```
End If
```

```
Dim i As VbMsgBoxResult
```

```
Dim row As Long
```

```
row = Me.lstDatabase.List(.lstDatabase.ListIndex, 0) + 1
```

```
i = MsgBox("Do you want ot delete the selected record?", vbYesNo + vbQuestion, "Delete")
```

```
If i = vbNo Then Exit Sub
```

```
ThisWorkbook.Sheets("Database").Rows(row).Delete
```

```
Call Reset ' Refresh the controls with latest information
```

```
MsgBox "Selected record has been successfully deleted.", vbOKOnly + vbInformation, "Delete"
```

```
End Sub
```

```
If Selected_List = 0 Then
```

```
    MsgBox "No row is selected.", vbOKOnly + vbInformation, "Edit"
```

```
Exit Sub
```

```
End If
```

```
Dim sGender As String
```

```
Me.txtRowNumber = Me.lstDatabase.List(.lstDatabase.ListIndex, 0) + 1
```

```
'Assigning the Selected Reocords to Form controls
```

```
frmDataEntry.txtStudentName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 1)
```



```

frmDataEntry.txtFatherName.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 2)

frmDataEntry.txtDOB.Value = Format(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 3), "dd-mmm-yyyy")

sGender = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 4)

If sGender = "Female" Then
    frmDataEntry.optFemale.Value = True
Else
    frmDataEntry.optMale.Value = True
End If

frmDataEntry.cmbCourse.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 5)
frmDataEntry.txtMobile.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 6)
frmDataEntry.txtEmail.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 7)
frmDataEntry.txtAddress.Value = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 8)
frmDataEntry.imgStudent.Picture = LoadPicture(Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9))
frmDataEntry.txtImagePath = Me.lstDatabase.List(Me.lstDatabase.ListIndex, 9)
Me.cmdSubmit.Caption = "Update"
MsgBox "Please make the required changes and Click on Update."

Select Case ComboBox1.Value
    Case "Electrical Simulation"
        Label1.Caption = "Domain: Electrical"
    Case "Portfolio Builder"
        Label1.Caption = "Domain: Portfolio"
    Case "Rubric Mapping"
        Label1.Caption = "Domain: Rubric"
End Select
End Sub

Label2.Caption = "Rubric Level: Intermediate"
End Sub

If ComboBox3.Value = "" Or ComboBox4.Value = "" Then
    MsgBox "Please select all required rubric parameters.", vbExclamation
    Exit Sub
End If
Label3.Caption = "Simulation executed successfully."
End Sub

MsgBox "Credential artifact generated and submitted.", vbInformation
End Sub

()
Label5.Caption = "Rubric template loaded: " & ListBox1.Value
End Sub

()
MsgBox "Ensure rubric alignment with SAQA/NQF thresholds.", vbInformation
End Sub

```

End Subtshingombe fiston

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Web-Based Crime Management System for Samara City Main Police Station

Demelash Lemmi Ettisa<sup>1</sup>, Minota Milkias<sup>2</sup>

Abstract

Crime is a human experience, and it must be controlled. The Samara town police station plays a significant role in controlling crime. However, the management of crime activities is done manually, which is due to the lack of an automated system that supports the station workers in communicating with citizens to share information and store, retrieve, and manage crime activities. To control crime efficiently, we need to develop online crime management systems.

This project, entitled "Web-Based Crime Management System," is designed to develop an online application in which any citizen can report crimes; if anybody wants to file a complaint against crimes, they must enjoy online communication with the police. This project provides records of crimes that have led to disciplinary cases in addition to being used to simply retrieve information from the database. The system implemented is a typical web-based crime record management system based on client-server architecture, allowing data storage and crime record interchange with police stations.

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Chapter One

1. Introduction to the Study

The "Crime Management System" is a web-based website for online complaining and computerized management of crime records (Khan et al., 2008).

A criminal is a popular term used for a person who has committed a crime or has been legally convicted of a crime. "Criminal" also means being connected with a crime. When certain acts or people are involved in or related to a crime, they are termed as criminal (Wex, 2023).

Samara City 's main police station is located in Samara City, within the Afar Regional State. It was established in 1984 E.C. with the purpose of protecting local communities from criminal activities. The Samara City police station is situated near the diesel suppliers in Samara City. In the first phase, there was a small number of police members, including commanders, inspectors, and constables. But recently, more than 170 police members have been employed. It is a well-organized police station that serves in crime prevention; the detection and conviction of criminals depend on a highly responsive manner. The effectiveness of this station is based on how efficient, reliable, and fast it is. As a consequence, the station maintains a large volume of information. To manage their information requirements, the station is currently using an information system. This system is manual and paper-based, where information is passed hand-to-hand, and information is kept in hard-copy paper files stored ordinarily in files.

End Sub

MsgBox

' Trigger Python backend for signal acquisition

Shell "python capture\_signal.py", vbNormalFocus

End Sub

MsgBox "Running Full Diagnostic..."

```
' Trigger full algorithme pipeline
Shell "python run_diagnostic.py", vbNormalFocus
End Sub
```

```
' Update SNR threshold
Dim snrThreshold As Double
snrThreshold = Val(TextBox2.text)
' Store or pass to backend
End Sub
```

```
MsgBox "Fourier Transform Module"
End Sub
```

```
MsgBox "SNR Evaluation Module"
End Sub
```

```
MsgBox "Bandwidth Classification"
End Sub
```

```
MsgBox "Linearity Check"
End Sub
```

```
Sub tsh()
```

```
End Sub
```

```
Sub shel()
```

```
End Sub
```

```
Sub wsh1()
```

```
End Sub
```

```
Sub wb2()
```

```
End Sub
```

```
Sub wb1()
```

```
End Sub
```

```
Sub wb4()
```

```
End Sub
```

[illegible]

```

:=True, WritePassword:="", ReadOnlyRecommended:=False, EmbedTrueTypeFonts _
:=False, SaveNativePictureFormat:=False, SaveFormsData:=False, _
SaveAsAOCELetter:=False, CompatibilityMode:=15
ActiveWindow.Close
Application.Quit
End Sub
Sub Macro3()
'
' Macro3 Macro
' 170.{ ` IF (X1=0)+(X2=0)+(X3=0)+(X4=0)+(X5=0)+(X6=0)+(X7=0)+(X8=) THEN ` } OR "SUB"_" CLICK"
' "&chr(10)&" `SELECT REGISTER .ELSE , CPU`=0 , ADRESSPIN = 000000000
' "&chr(10)&"180 END IF ` IF (S1=0)+(S2=0)+(S3=0)+(S4=0)+(S5=0)+(S6=0)+(S7=0)+(S8=0) THEN ` } OR "SUB"_"
' CLICK
' "&chr(10)&"EXECU
'
' Application.Run MacroName:="frm1"
End Sub
Sub Macro4()
'
' Macro4 Macro
' 170.{ ` IF (X1=0)+(X2=0)+(X3=0)+(X4=0)+(X5=0)+(X6=0)+(X7=0)+(X8=0) THEN ` } OR "SUB"_" CLICK"
' "&chr(10)&" SELECT REGISTER .ELSE , CPU ,
' "&chr(10)&"180 END IF ` IF (S1=1)+(S2=1)+(S3=1)+(S4=1)+(S5=1)+(S6=1)+(S7=1)+(S8=1) THEN ` } OR "SUB"_"
' CLICK
' "&chr(10)&"EXECUTION LOOP
'
'
' Application.Run MacroName:="frm1"
ActiveWindow.ActivePane.VerticalPercentScrolled = 119
Selection.Copy
Application.Run MacroName:="frm1"
End Sub
Sub Macro5()
'
' Macro5 Macro
' 10.INPUT X1
' "&chr(10)&"20. INPUT .X2
' "&chr(10)&"30. INPUT X3
' "&chr(10)&"40. INPUT X4
' "&chr(10)&"50,IN[UT X5
' "&chr(10)&"60. INPUT X6
' "&chr(10)&"60.INPUT .X7.
'
' "&chr(10)&" 70.OUTPUT S1
' "&chr(10)&"80.OUTPUT.S2
' "&chr(10)&"90,OUTPUT S3
' "&chr(10)&"100.OUTPUT S4
' "&chr(10)&"110.OUTPUT S5
' "&chr(10)&"120 OUTPUT S6
' "&chr(10)&"130.OUTPUT S7
' "&chr(10)&"140.OUTPUT
' "&chr(10)&"150 SELECT REGISTER
' "&chr(10)&"150 OUTPUT HARDW
'
' Application.Run MacroName:="frm1"
End Sub
Sub frm1()
'
' frm1 Macro
'
'
'
End Sub
Sub Macro24()
'
' Macro24 Macro
'
' "&chr(10)&" \ (f(x,y)\) the partial derivatives with respect to \ (x\)
' "&chr(10)&"
' "&chr(10)&" Is denoted as \ (\frac{\partial f}{\partial x}) and with ,
' "&chr(10)&"

```

```
' "&chr(10)&"      Respect to \ ( y\ ) as \(\frac {\partial f }{\partial ,y }\)
' "&chr(10)&"
' "&chr(10)&"      Examp : \[ funct \[ f( x,y)=x^2y+3xy^3\]
' "&chr(10)&"
' "&chr(10)&"      * Calcu
'
```

End Sub

Sub Macro6()

Macro6 Macro

```
' "&chr(10)&"      \ (f(x,y)\ ) the partial derivatives with respect to \ (x\ )
' "&chr(10)&"
' "&chr(10)&"      Is denoted as \(\frac {\partial f }{\partial x }\) and with ,
' "&chr(10)&"
' "&chr(10)&"      Respect to \ ( y\ ) as \(\frac {\partial f }{\partial ,y }\)
' "&chr(10)&"
' "&chr(10)&"      Examp : \[ funct \[ f( x,y)=x^2y+3xy^3\]
' "&chr(10)&"
' "&chr(10)&"      * Calcu
'
```

End Sub

Sub Macro7()

Macro7 Macro

```
' "&chr(10)&"      \ ( f(x,y)\ ), the total derivatives \ ( DF \ ) is given by : \[ DF = \frac { \partial
f }{\partial x }sx + \frac{ \partial }{\partial y } St \ ]
' "&chr(10)&"
' "&chr(10)&"      Using the previous : \ [ DF = 2xy+ 2y^2)
' "&chr(10)&"
'
```

End Sub

Sub Macro8()

Macro8 Macro

1. Fourier series : the Fourier series and cosine function for periodic function \ ( ft)\ ) with period ( t ) the Fourier series is.

```
' "&chr(10)&"
' "&chr(10)&"      f(t)= a 0+\ sum ${n= 1}{\ infty}
' "&chr(10)&"
' "&chr(10)&"      \ left + a_ n \ cos \ left \ left + } frac { 2\ pi not }{T}
' "&chr(10)&"
' "&chr(10)&"      \ right ) + b _
'
```

End Sub

Sub Macro9()

Macro9 Macro

```
' "&chr(10)&"      .\[ R-{\text t{ total }}= R1+R2+R3\]
' "&chr(10)&"
' "&chr(10)&"      . Substituting the values \[ R - { \text { total }}= 10\.\text , { ohms }+ 20\, \text
{ ohms}+30\, \text {ohms}\], calculating ,\[ R - { \text { total /}} = 60\text { ohm }\]
'
```

End Sub

Sub Macro10()

Macro10 Macro

```
' 0
' "&chr(10)&"      [ Z =\ sqrt{R^ 2+(x-L-X_C)^2}\]
' "&chr(10)&"
' "&chr(10)&"      Where _\ (x_L= 2\ pi f L \ Pi .f.c\ ) ( capacitive reactance ,
' "&chr(10)&"
' "&chr(10)&"      -\ (X_C)=\ frac ,{1}{2\ pi.f.c}\ ) ( capacitive reactance.
' "&chr(10)&"
' "&chr(10)&"      -| (fI) is the frequency in Hertz ( z)
' "&chr(10)&"
' "&chr(10)&"      -\ (L/) is the inductance in Hertz ( Hz )
'
```

```

,
End Sub
Sub Macro11()
,
' Macro11 Macro
' The power factor ,of is defined as the ratio of real power to apparent power , \ [ \ text power fa
ctor ,of )}=\ frac ,{P}{s}\]
' "&chr(10)&"
' "&chr(10)&" Where : .\ (P\)= real power ( w)
' "&chr(10)&"
' "&chr(10)&" .\ (S\)= apparent power , ( VA)
,
,
End Sub
Sub Macro12()
,
' Macro12 Macro
' \[S=\sqrt{P^2+Q^2}\]
' "&chr(10)&"
' "&chr(10)&" .value .real power (\ (P\))=500w,
' "&chr(10)&"
' "&chr(10)&" .reactive power(\ Q\))=300VAR
' "&chr(10)&"
' "&chr(10)&" - calculate apparent power ( s)\[,S=\sqrt{P^2+
,
,
End Sub
Sub Macro13()
,
' Macro13 Macro
,
' "&chr(10)&" -where .
' "&chr(10)&"
' "&chr(10)&" |(a=0=| frac {1}{T} \int_0^T f(t) dt)
' "&chr(10)&"
' "&chr(10)&" .\ +a-n = frac {2}{T} \int_0^T f(t) \cos\left(\frac{2\pi nt}{T}\right) dt \, , D
T have simple square wave function.
,
,
End Sub
Sub Macro14()
,
' Macro14 Macro
' - the Fourier transform is used to convert a time domain signal into it frequency domain represent
formula : transform \ F ( \ omega )\ ( of a continuous signal \ ( f(t) , e^{-j \ omega } \ dt\ )
' "&chr(10)&"
' "&chr(10)&" - where . \ ( f+ \ omega )\ ) = Fourier transform of the
,
End Sub
Sub Macro15()
,
' Macro15 Macro
' - the la place trans is another transformation used to analyse linear time _ invariant system form
ula for the la place transform \ F( S)\ of function \ ( f(t)\ ) is \[f(s)=\int_0^\infty f(t) e^{-st} dt \]
' "&chr(10)&"
' "&chr(10)&" - \ ( f( s)\ )= Laplace transform
,
End Sub
Sub Macro16()
,
' Macro16 Macro
' \[ \dot{x}(t)=Ax(t)+Bu(t) \] \[y(t)=Cx(t)+Du(t) \]
' "&chr(10)&"
' "&chr(10)&" Where :
' "&chr(10)&"
' "&chr(10)&" -| (x(t)\ )= state vector
' "&chr(10)&"
' "&chr(10)&" .| (u(t)\ )= Input vector
' "&chr(10)&"

```

```

' "&chr(10)&"      .\ (y( t) \)= output vector .
' "&chr(10)&"
' "&chr(10)&"      .(A\)= System .
' "&chr(10)&"
' "&chr(10)&"      .\ (B\)= input matrix .
' "&chr(10)&"
' "&chr(10)&"      .|(C\)= Output matrix .
' "&chr(10)&"
' "&chr(10)&"      .\ ( D \ )
'
End Sub
Sub Macro17()
'
' Macro17 Macro
' 1. DC machines : speed ( n ) the speed of DC motor can be calculated using formula  $N = \frac{V - 1 \cdot \text{CDOT} - R \cdot \Phi}{\text{CDOT}}$ 
' "&chr(10)&"
' "&chr(10)&"      - where  $N$  = speed in Rpm ( revolution perminute .
' "&chr(10)&"
' "&chr(10)&"      -  $V$  = supply voltage ( v ) ,
' "&chr(10)&"
' "&chr(10)&"      -  $i$  = armature curr
'
End Sub
Sub Macro18()
'
' Macro18 Macro
' 14*. Mass balance equation : the general mass balance equation can expressed as :
' "&chr(10)&"
' "&chr(10)&"      
$$\text{input} - \text{output} + \text{generation} - \text{consumption} = \text{accumulation}$$

' "&chr(10)&"
'
End Sub
Sub Macro19()
'
' Macro19 Macro
' - for a steady state process ( where accumulation is zero the equation simplified to  $\text{input} - \text{output} + \text{generation} - \text{consumption} = 0$ 
'
End Sub
Sub Macro20()
'
' Macro20 Macro
' - for a steady state process ( where accumulation is zero the equation simplified to  $\text{input} - \text{output} + \text{generation} - \text{consumption} = 0$ 
'
End Sub
Sub Macro21()
'
' Macro21 Macro
' 14.1. master derivatives : electrical derivatives for a simple electrical circuit with an induction
,  $L$  and a resistor  $R$  the voltage across the inductance can be by :  $V_L = L \frac{di}{dt}$ 
'
' "&chr(10)&"Where  $v-L$  = voltage accross the inductor.
'
End Sub
Sub Macro22()
'
' Macro22 Macro
' Eigenvalue analysis for a system represented by a matrix the eigenvalue can indicate stability
, if all eigenvalue have negative real part the involved finding a lyapunov , ( function  $V(x)$  ) , such
that  $V(x) > 0$  and  $\dot{V}(x) < 0$  for stabilit
'
End Sub

```



```

NewMacros - 6
Sub Macro23()
'
' Macro23 Macro
' - r esponse request get ,( f" http:// API electricity meter comparable ,/ { meter _ I'd " } return
response .jsob ( )
'
'
End Sub
Sub Macro25()
'
' Macro25 Macro
' _1 force balance the net force acting on the system,express as  $F - \{\text{net}\} = F - \{\text{pneu}$ 
 $\text{matic}\}++$  ,
' "&chr(10)&"
' "&chr(10)&"  $F - \{\text{hydraulic}\} - , F \{\text{damping}\} - F \{\text{inertial}\}$ 
'
'
End Sub
Sub Macro26()
'
' Macro26 Macro
' To derive the relationship force ,motion. ,power ,energy .
' "&chr(10)&"
' "&chr(10)&"  $[F = m \cdot a]$  where.
' "&chr(10)&"
' "&chr(10)&"  $(F) = \text{force ( N ) , } m ( \text{ m } ) = \text{mass ( kg ) } | (a) = \text{acceleration , ( m/s.s)}$ 
'
'
End Sub
Sub Macro27()
'
' Macro27 Macro
' Kinetic energy ,( k.E) is the energy of an object du it's motion .
' "&chr(10)&"
' "&chr(10)&"  $[K.E = \frac{1}{2} . m . V^2]$  ..
' "&chr(10)&"
'
'
End Sub
Sub Macro28()
'
' Macro28 Macro
' Example: Grades: [70,75,80,85,90][70, 75, 80, 85, 90], N=5N = 5:
' "&chr(10)&" 1. Mean:
' "&chr(10)&"
' "&chr(10)&"  $\mu = 70+75+80+85+90=80. \mu = \frac{70 + 75 + 80 + 85 + 90}{5} = 80.$ 
' "&chr(10)&" 2. Variance:
' "&chr(10)&"
' "&chr(10)&"  $s^2 = (70-80)^2 + (75-80)^2 + (80-80)^2 + (85-80)^2 + (90-80)^2 = 50. \sigma^2 = \frac{(70-80)^2 + (75-80)^2 + (80-80)^2 + (85-80)^2 + (90-80)^2}{5} = 50.$ 
'
'
End Sub
Sub Macro29()
'
' Macro29 Macro
' a) Energy in Capacitors
'
' "&chr(10)&"Formula:  $E = \frac{1}{2} C V^2$  Where:
' "&chr(10)&"· CC: Capacitance (Farads),
' "&chr(10)&"· VV: Voltage (Volts).
'
'
' "&chr(10)&"Example: For a 10  $\mu$ F capacitor with V=240V:  $E = \frac{1}{2} \times 10 \times 10^{-6} \times 240^2 = 0.288$ 
'
'
End Sub
Sub Macro30()
'

```

```
' Macro30 Macro
```

```
'
' "&chr(10)&"      B=?0Tc(t) dt,B = \int_0^T c(t) \, dt,
' "&chr(10)&"
' "&chr(10)&"      where c(t)c(t): cost rate over time tt.
' "&chr(10)&"
' "&chr(10)&"      Example: For c(t)=200-20tc(t) = 200 - 20t over [0,5][0, 5]:
' "&chr(10)&"      1. Compute:
' "&chr(10)&"
' "&chr(10)&"      \[ B = \int_0^5 (200 - 20t) \, dt = \left[200t - 10t^2\right]_{05. \,}
' "&chr(10)&"      2. Result:
' "&chr(10)&"
```

```
End Sub
```

```
Sub Macro31()
```

```
' Macro31 Macro
```

```
' For time-dependent power P(t)P(t), energy is: $$ E = \int_{t_1}^{t_2} P(t) \, dt $$ . If P(t)=100sin(2\pi t)P(t) = 100 \sin(2\pi t), calculate energy over t=0t = 0 to t=1st = 1s: $$ E = \int_0^1 100 \sin(2\pi t) \, dt = \left[-\frac{100}{2\pi} \cos(2\pi t)\right]_0^1
```

```
End Sub
```

```
Sub Macro32()
```

```
' Macro32 Macro
```

```
' 5. Predictive Analytics for Crime Prevention
' "&chr(10)&"Using linear regression to predict crime patterns:
' "&chr(10)&"
' "&chr(10)&"y=mx+b,y = mx + b,
' "&chr(10)&"where:
' "&chr(10)&"· yy: Predicted crime rate,
```

```
End Sub
```

```
Sub Macro33()
```

```
' Macro33 Macro
```

```
' Example: If m=0.02 crimes/personm = 0.02 \, \text{crimes/person}, b=10b = 10:
' "&chr(10)&"1. For x=1000x = 1000:
' "&chr(10)&"
' "&chr(10)&"y=0.02·1000+10=30 crimes.y = 0.02 \cdot 1000 + 10 = 30 \, \text{crimes}.
```

```
End Sub
```

```
Sub Macro34()
```

```
' Macro34 Macro
```

```
' Applications in Crime Resolution and Prevention
' "&chr(10)&"1. Forensic Investigations:
' "&chr(10)&"o Use ballistic and decay models to reconstruct crime scenes.
' "&chr(10)&"2. Crime Scene Management:
' "&chr(10)&"o Employ area estimation to secure and document crime perimeters.
' "&chr(10)&"3. Predictive
```

```
End Sub
```

```
Sub Macro35()
```

```
' Macro35 Macro
```

```
' 1. Evidence Decay Over Time Using Exponential Models
' "&chr(10)&"Physical evidence, such as DNA or chemical residues, decays over time, which can be modeled using exponential decay:
' "&chr(10)&"
' "&chr(10)&"C(t)=C0e-?t,C(t) = C_
```

```
End Sub
```

```
Sub Macro36()
```

```
' Macro36 Macro
```

```
' "&chr(10)&"y57.7-0.27=57.43 m.y \approx 57.7 - 0.27 = 57.43 \, \text{m}.
' "&chr(10)&"3. Area Estimation for Crime Scene Management
' "&chr(10)&"Using calculus, calculate the area of irregular crime scene perimeters. Divide the boundary into segments described by functions, and integ
```

```

',
End Sub
Sub Macro37()
',
' Macro37 Macro
' 4. Surveillance Analysis Using Camera Rotation
' "&chr(10)&"The angular velocity of a surveillance camera can be modeled as:
' "&chr(10)&"
' "&chr(10)&" $\theta(t) = \omega t + \frac{1}{2} \alpha t^2$ ,
' "&chr(10)&"where:
' "&chr(10)&" $\theta(t)$ : Angle rotated,
' "&chr(10)&" $\omega$ : Initial angular vel
',
End Sub
Sub Macro38()
',
' Macro38 Macro
' 1. Management Information Systems in Policing
' "&chr(10)&"Background:
' "&chr(10)&" Management Information Systems (MIS) in policing are designed to collect, analyze, and
disseminate crime data for decision-making and resource allocation.
' "&chr(10)&" Applications include crime mappi
',
End Sub
Sub Macro39()
',
' Macro39 Macro
' Applied Policing and Crime Resolution
',
End Sub
Sub Macro40()
',
' Macro40 Macro
' 2. Investigative Techniques
' "&chr(10)&"•Key Concepts:
' "&chr(10)&"o Conducting preliminary investigations.
' "&chr(10)&"o Using surveillance and undercover operations.
',
',
End Sub
Sub Macro41()
',
' Macro41 Macro
' 3. Evidence Handling and Analysis
' "&chr(10)&"•Principles:
' "&chr(10)&"o Proper collection, labeling, and storage of evidence.
',
',
End Sub
Sub Macro42()
',
' Macro42 Macro
' 4. Legal Framework
' "&chr(10)&"•Key Topics:
' "&chr(10)&"o Understanding the Criminal Procedure Act and Evidence Act.
',
',
End Sub
Sub Macro43()
',
' Macro43 Macro
' Applications in Law Enforcement
' "&chr(10)&"1. Forensic Investigation:
' "&chr(10)&"o Analyze evidence to reconstruct crime scenes.
' "&chr(10)&"2. Criminal Profiling:
' "&chr(10)&"o Use psychological and behavioral analysis to identify suspects.
' "&chr(10)&"3. Community Engagement:
',
',

```

```

End Sub
Sub Macro44()
'
' Macro44 Macro
' 3. Area Estimation for Crime Scene Management
' "&chr(10)&"Using calculus, calculate the area of irregular crime scene perimeters. Divide the bounda
ry into segments described by functions, and integrate:
' "&chr(10)&"
' "&chr(10)&"A=?x1x2y(x) dx.A = \int_{x_1}^{x_2} y(x) \, dx.
'
'
End Sub
Sub Macro45()
'
' Macro45 Macro
' 5. Predictive Analytics for Crime Prevention
' "&chr(10)&"Using linear regression to predict crime patterns:
' "&chr(10)&"
' "&chr(10)&"y=mx+b,y = mx + b,
' "&chr(10)&"where:
' "&chr(10)&"•?yy: Predicted crime rate,
' "&chr(10)&"•?xx: Variable (e.g., population density),
' "&chr(10)&"•?mm: Slope of the trendline,
' "&chr(10)&"•?bb: Intercept.
'
'
'
ActiveWindow.ActivePane.VerticalPercentScrolled = -145
End Sub
Sub Macro46()
'
' Macro46 Macro
' 5. Predictive Analytics for Crime Prevention
' "&chr(10)&"Using linear regression to predict crime patterns:
' "&chr(10)&"
' "&chr(10)&"y=mx+b,y = mx + b,
' "&chr(10)&"where:
' "&chr(10)&"•?yy: Predicted crime rate,
' "&chr(10)&"•?xx: Variable (e.g., population density),
' "&chr(10)&"•?mm: Slope of the trendline,
' "&chr(10)&"•?bb: Intercept.
'
'
'
End Sub
Sub Macro47()
'
' Macro47 Macro
' 2. Incident Collision Scenarios
' "&chr(10)&"Background:
' "&chr(10)&"•?Focuses on investigating road traffic collisions to determine causes and prevent future
incidents.
' "&chr(10)&"•?Includes analyzing human, vehicle, and environmental factors.
'
'
'
ActiveWindow.ActivePane.SmallScroll Down:=23
End Sub
Sub Macro48()
'
' Macro48 Macro
' 2. Incident Collision Scenarios
' "&chr(10)&"Background:
' "&chr(10)&"•?Focuses on investigating road traffic collisions to determine causes and prevent future
incidents.
' "&chr(10)&"•?Includes analyzing human, vehicle, and environmental factors.
'
'
'
End Sub
Sub Macro49()
'

```

NewMacros - 10

```
' Macro49 Macro
' 4. Community Policing and Communication Skills
' "&chr(10)"&"Background:
' "&chr(10)"&"•?Community policing emphasizes collaboration between police and communities to solve problems and build trust.
' "&chr(10)"&"•?Effective communication skills are essential for engaging with diverse populations.
'
End Sub
Sub Macro50()
'
' Macro50 Macro
' 5. Operational Performance in Traffic Management
' "&chr(10)"&"Background:
' "&chr(10)"&"•?Traffic management involves optimizing road safety and flow through enforcement and education.
' "&chr(10)"&"•?Operational performance measures include response times and accident reduction rates.
' "&chr(10)"&"Experimental Applications:
' "&chr(10)"&"•?Conduct mock crime scenarios.
'
End Sub
Sub Macro51()
'
' Macro51 Macro
' 6. Principles of Police Investigation
' "&chr(10)"&"Background:
' "&chr(10)"&"•?Investigative principles include evidence preservation, chain of custody, and impartiality.
' "&chr(10)"&"•?Focuses on systematic approaches to solving crimes.
' "&chr(10)"&"Experimental Applications:
' "&chr(10)"&"•?Conduct mock crime scenarios.
'
End Sub
Sub Macro52()
'
' Macro52 Macro
' 7. Study Material for Police Firearms
' "&chr(10)"&"Background:
' "&chr(10)"&"•?Covers firearm handling, safety, and competency testing.
' "&chr(10)"&"•?Includes theoretical knowledge and practical training.
' "&chr(10)"&"Experimental Applications:
' "&chr(10)"&"•?Practice firearm handling and target shooting in controlled environments.
'
End Sub
Sub Macro53()
'
' Macro53 Macro
' 1. Management Information Systems (MIS): Optimizing Police Patrol
' "&chr(10)"&"•?Crime Hotspot Modeling Using Integrals: Crime density in a region can be modeled as a double density function  $f(x,y)f(x, y)$ , where  $x$  and  $y$  are spatial coordinates.
' "&chr(10)"&"o Total crime density in a region  $R$  is given by:
'
End Sub
Sub Macro54()
'
' Macro54 Macro
'
' "&chr(10)"&"D=∫∫(r^2) r dr dθ. D = ∫_0^{2π} ∫_0^2 (r^2) \, r \, dr \, d\theta.
' "&chr(10)"&"2. Compute:
' "&chr(10)"&"\[ D = ∫_0^{2π} ∫_0^2 r^3 \, dr \, d\theta = ∫_0^{2π} [\frac{r^4}{4}]_0^2 d\theta = ∫_0^{2π} 4 d\theta = 8π. \]
'
End Sub
Sub Macro55()
'
' Macro55 Macro
' 2. Incident Collision Scenarios
' "&chr(10)"&"•?Projectile Motion and Trajectories: Use derivatives to determine speed and angles during a collision or vehicle impact.
' "&chr(10)"&"o Position as a function of time  $s(t)$ :
' "&chr(10)"&"
' "&chr(10)"&"v(t)=ds/dt, a(t)=dv/dt. v(t) = \frac{ds}{dt}, \quad a(t) = \frac{dv}{dt}
```



```

'
    ActiveWindow.ActivePane.SmallScroll Down:=17
End Sub
Sub Macro62()
'
' Macro62 Macro
' 5. Investigation Principles
' "&chr(10)&"•?Decay of Evidence Using Exponential Models: Biological or chemical evidence decays over
time, modeled by:
' "&chr(10)&"
' "&chr(10)&"C(t)=C0e-?t,C(t) = C_0 e^{-\lambda t},
' "&chr(10)&"where ?\lambda is the decay rate.
' "&chr(10)&"Example: For C0=100 ngC_0 = 100 \, \t
'
End Sub
Sub Macro63()
'
' Macro63 Macro
' 6. Firearm Ballistics
' "&chr(10)&"•?Trajectory Calculations: The path of a bullet can be calculated using physics and deriv
atives:
' "&chr(10)&"o Horizontal range:
' "&chr(10)&"
' "&chr(10)&"R=v0^2sin^2?g,R = \frac{v_0^2 \sin^2\theta}{g},
' "&chr(10)&"where v0v_0: initial velocity, ?\theta: angle, g=9.8 m/s^2g =
'
    ActiveWindow.ActivePane.SmallScroll Down:=40
End Sub
Sub Macro64()
'
' Macro64 Macro
' Example: If v0=300 m/sv_0 = 300 \, \text{m/s} and ?=45^\theta = 45^\circ:
' "&chr(10)&"1. Range:
' "&chr(10)&"
' "&chr(10)&"R=300^2sin^290^\theta=900009.89183.67 m.R = \frac{300^2 \sin^2 90^\circ}{9.8} = \frac{90000}{9.8}
\approx 9183.67 \, \text{m}.
'
'
    ActiveWindow.ActivePane.SmallScroll Down:=20
End Sub
Sub Macro65()
'
' Macro65 Macro
' Example: If v0=300 m/sv_0 = 300 \, \text{m/s} and ?=45^\theta = 45^\circ:
' "&chr(10)&"1. Range:
' "&chr(10)&"
' "&chr(10)&"R=300^2sin^290^\theta=900009.89183.67 m.R = \frac{300^2 \sin^2 90^\circ}{9.8} = \frac{90000}{9.8}
\approx 9183.67 \, \text{m}.
'
'
    ActiveWindow.ActivePane.LargeScroll Down:=1
    ActiveWindow.ActivePane.VerticalPercentScrolled = 0
End Sub

```

NewMacro1 - 1

```
Sub Macro1()
'
' Macro1 Macro
' Background on Radio and TV Systems
' "&chr(10)&"      · Radio Systems:
' "&chr(10)&"      o Focus on transmitting and receiving electromagnetic signals using frequencies in
the AM/FM spectrum.
' "&chr(10)&"      o Applications: Communicatio
'
End Sub
Sub frm1()
'
' frm1 Macro
' VERSION 5.00
' "&chr(10)&"Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm1
' "&chr(10)&"      Caption          = "UserForm1"
' "&chr(10)&"      ClientHeight     = 9792
' "&chr(10)&"      ClientLeft      = 108
' "&chr(10)&"      ClientTop       = 456
' "&chr(10)&"      ClientWidth    = 20004
' "&chr(10)&"      OleObjectBlob   = "UserForm
'
End Sub
Sub Macro2()
'
' Macro2 Macro
' VERSION 5.00
' "&chr(10)&"Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm1
' "&chr(10)&"      Caption          = "UserForm1"
' "&chr(10)&"      ClientHeight     = 9792
' "&chr(10)&"      ClientLeft      = 108
' "&chr(10)&"      ClientTop       = 456
' "&chr(10)&"      ClientWidth    = 20004
' "&chr(10)&"      OleObjectBlob   = "UserForm
'
End Sub
Sub Macro3()
'
' Macro3 Macro
'  $m(t) = A_c(1 + m_a \cos(\omega_m t)) \cos(\omega_c t)$ ,
' "&chr(10)&"      where  $m_a$ : modulation index,  $A_c$ : carrier amplitude,  $\omega_c$ : carrier frequ
ency,  $\omega_m$ : message frequency.
' "&chr(10)&"      2. FM S
'
End Sub
Sub Macro4()
'
' Macro4 Macro
' 2. FM Signal Equation:
' "&chr(10)&"
' "&chr(10)&"       $f(t) = \cos(\omega_c t + \beta \sin \omega_m t)$ ,
' "&chr(10)&"      where  $\beta$ : modulation index.
' "&chr(10)&"      · Demodulation:
'
End Sub
Sub Macro5()
'
' Macro5 Macro
' 2. FM Signal Equation:
' "&chr(10)&"
' "&chr(10)&"       $f(t) = \cos(\omega_c t + \beta \sin \omega_m t)$ ,
' "&chr(10)&"      where  $\beta$ : modulation index.
' "&chr(10)&"      · Demodulation:
'
End Sub
Sub Macro6()
'
' Macro6 Macro
'
' "&chr(10)&"      Example Calculation: For  $A_c = 5 \text{ V}$ ,  $A_m = 2 \text{ V}$ ,  $f_c =$ 
100 kHz,  $f_m = 1 \text{ kHz}$ :
' "&chr(10)&"      1. Modulation Index:
```



```

' "&chr(10)&"
' "&chr(10)&"          ma=AmAc=25
'
End Sub
Sub Macro7()
'
' Macro7 Macro
'
' "&chr(10)&"          m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"          2. Frequency Modulation (FM):
' "&chr(10)&"          The FM signal is expressed as:
'
End Sub
Sub Macro8()
'
' Macro8 Macro
'
' "&chr(10)&"          m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"          2. Frequency Modulation (FM):
' "&chr(10)&"          The FM signal is expressed as:
'
End Sub
Sub Macro9()
'
' Macro9 Macro
'
' "&chr(10)&"          m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"          2. Frequency Modulation (FM):
' "&chr(10)&"          The FM signal is expressed as:
'
End Sub
Sub Macro10()
'
' Macro10 Macro
'
' "&chr(10)&"          m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"          2. Frequency Modulation (FM):
' "&chr(10)&"          The FM signal is expressed as:
'
End Sub
Sub Macro11()
'
' Macro11 Macro
'
' "&chr(10)&"          m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"          2. Frequency Modulation (FM):
' "&chr(10)&"          The FM signal is expressed as:
'
End Sub
Sub Macro12()
'
' Macro12 Macro
'
' "&chr(10)&"          m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"          2. Frequency Modulation (FM):
' "&chr(10)&"          The FM signal is expressed as:
'
End Sub
Sub Macro13()
'
' Macro13 Macro
'
' "&chr(10)&"          The intensity of colors is calculated as:
' "&chr(10)&"
' "&chr(10)&"          I_{\text{display}} = R \cdot \text{gain}_R + G \cdot \text{gain}_G + B \cdot \text{gain}_B.
'

```

```

        Selection.Copy
End Sub
Sub Macro14()
'
' Macro14 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
End Sub
Sub Macro15()
'
' Macro15 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
End Sub
Sub Macro16()
'
' Macro16 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
        Selection.MoveDown Unit:=wdLine, Count:=203
End Sub
Sub Macro17()
'
' Macro17 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
End Sub
Sub Macro18()
'
' Macro18 Macro
'
' "&chr(10)&"      Ft=aDt-1+(1-a)Ft-1,F_t = \alpha D_{t-1} + (1 - \alpha) F_{t-1},
' "&chr(10)&"      where:
' "&chr(10)&"      · FtF_t: Forecast for current period,
' "&chr(10)&"      · a\alpha: Smoothing constant,
' "&chr(10)&"      · Dt-1
'
End Sub
Sub Macro19()
'
' Macro19 Macro
'
' "&chr(10)&"      Ft=aDt-1+(1-a)Ft-1,F_t = \alpha D_{t-1} + (1 - \alpha) F_{t-1},
' "&chr(10)&"      where:
' "&chr(10)&"      · FtF_t: Forecast for current period,
' "&chr(10)&"      · a\alpha: Smoothing constant,
' "&chr(10)&"      · Dt-1
'
End Sub
Sub Macro20()
'
' Macro20 Macro
'
' "&chr(10)&"      Ft=aDt-1+(1-a)Ft-1,F_t = \alpha D_{t-1} + (1 - \alpha) F_{t-1},
' "&chr(10)&"      where:
' "&chr(10)&"      · FtF_t: Forecast for current period,
' "&chr(10)&"      · a\alpha: Smoothing constant,

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' "&chr(10)&"      · Dt-1
'
' Selection.Copy
End Sub
Sub Macro21()
'
' Macro21 Macro
' F1=0.3(120)+0.7(100)=36+70=106 units.F_1 = 0.3(120) + 0.7(100) = 36 + 70 = 106 \, \text{units}.
' "&chr(10)&"      Advanced Calculation: Budget Optimization
' "&chr(10)&"      Budget allocation can be modeled using linear programming to maximize
'
' Selection.Copy
End Sub
Sub Macro22()
'
' Macro22 Macro
'
' "&chr(10)&"       $a_{11}x_1 + a_{12}x_2 = b_1, x_1, x_2 = 0, a_{11}x_1 + a_{12}x_2 \leq b_1, \quad x_1, x_2 \geq 0,$ 
' "&chr(10)&"      where:
' "&chr(10)&"      ·  $c_1, c_2$ : Contribution per unit,
' "&chr(10)&"      ·  $a_{ij}$ : Resource consumption
'
' Selection.Copy
End Sub
Sub Macro23()
'
' Macro23 Macro
' 2. Supervision in Industrial Environments
' "&chr(10)&"      Efficiency Metrics
' "&chr(10)&"      Evaluate employee performance using:
' "&chr(10)&"
' "&chr(10)&"      Efficiency=OutputStandard Output×100.\text{Efficiency} = \frac{
'
' Selection.Copy
End Sub
Sub Macro24()
'
' Macro24 Macro
' Efficiency=80100×100=80%.\text{Efficiency} = \frac{80}{100} \times 100 = 80\%.
' "&chr(10)&"      3. Organization in Industrial Operations
' "&chr(10)&"      Workflow Optimization Using Queue Theory
' "&chr(10)&"      Queue theory assesses
'
' Selection.Copy
End Sub
Sub Macro25()
'
' Macro25 Macro
'
' "&chr(10)&"       $L_q = \frac{\lambda^2}{\mu(\mu - \lambda)},$ 
' "&chr(10)&"      where:
' "&chr(10)&"      ·  $\lambda$ : Arrival rate,
' "&chr(10)&"      ·  $\mu$ : Service rate.
' "&chr(10)&"      Example: Given  $\lambda=5$  jobs/hour\lambda
'
' Selection.Copy
End Sub
Sub Macro26()
'
' Macro26 Macro
'
' "&chr(10)&"       $L_q = 5^2 / (8 - 5) = 25 / 3 \approx 8.33$  jobs.L_q = \frac{5^2}{8(8-5)} = \frac{25}{24} \approx 1.04 \, \,
' \text{jobs}.
' "&chr(10)&"      4. Related Experimental Topics
' "&chr(10)&"      Quality Control: Six Sigma
' "&chr(10)&"      Calculate proces
'
' Selection.Copy
End Sub
Sub Macro27()
'
' Macro27 Macro
' Z=X-μs,Z = \frac{\text{X} - \mu}{\sigma},

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' "&chr(10)&"      where:
' "&chr(10)&"      · X\text{X}: Observed value,
' "&chr(10)&"      ·  $\mu$ \mu: Mean,
' "&chr(10)&"      · s\sigma: Standard deviation.
' "&chr(10)&"      Application
'
      Selection.Copy
End Sub
Sub Macro28()
'
' Macro28 Macro
' o Apply inventory models like Economic Order Quantity (EOQ):
' "&chr(10)&"
' "&chr(10)&"      EOQ=2DSH,EOQ = \sqrt{\frac{2DS}{H}},
' "&chr(10)&"      where DD: Demand, SS: Ordering cost, HH: Holding cost.
' "&chr(10)&"      Would
'
      Selection.MoveDown Unit:=wdLine, Count:=92
      Selection.Copy
End Sub
Sub Macro29()
'
' Macro29 Macro
'
' "&chr(10)&"      o Using models like Economic Order Quantity (EOQ) to optimize inventory:
' "&chr(10)&"
' "&chr(10)&"      EOQ=2DSH,EOQ = \sqrt{\frac{2DS}{H}},
' "&chr(10)&"      where DD is demand, SS is setup cost, and HH is holding cost.
'
      Selection.MoveDown Unit:=wdLine, Count:=88
      Selection.Copy
End Sub
Sub Macro30()
'
' Macro30 Macro
'
' "&chr(10)&"      1. Personality Training
' "&chr(10)&"      Background:
' "&chr(10)&"      · Focuses on developing interpersonal skills, emotional intelligence, and self-awareness.
' "&chr(10)&"      · Aims to enhance communication, leadership, and
'
      Selection.MoveDown Unit:=wdLine, Count:=226
      ActiveWindow.ActivePane.VerticalPercentScrolled = -171
      ActiveWindow.ActivePane.SmallScroll Down:=82
      Selection.Copy
End Sub
Sub Macro31()
'
' Macro31 Macro
' · Technical Drawing: Reading, interpreting, and confirming designs.
' "&chr(10)&"      · Wiring and Testing:
' "&chr(10)&"      o Installing circuits (up to 1000 volts AC/1500 volts DC).
' "&chr(10)&"      o Testing systems for compliance w
'
      Selection.Copy
End Sub
Sub Macro32()
'
' Macro32 Macro
' o Total impedance: $$ Z = \sqrt{R^2 + (X_L - X_C)^2}, \text{ where } X_L = 2\pi f L \text{ and } X_C = \frac{1}{2\pi f C}. $$
' "&chr(10)&"      · Power:
' "&chr(10)&"      o For AC systems: $$ P = VI \cos\{\phi\}, \text{ where } \cos\{\phi\} \text{ text{
'
      Selection.Copy
End Sub
Sub Macro33()
'
' Macro33 Macro
'
' "&chr(10)&"      · Energy in Capacitors:
' "&chr(10)&"      o Stored energy: $$ E = \frac{1}{2}CV^2. $$

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' "&chr(10)&"      · Fault Current:
' "&chr(10)&"      o Use Ohm's Law to compute fault current: $$ I = \frac{V}{Z}, \text{ where}
'
' Selection.MoveDown Unit:=wdLine, Count:=52
' Selection.Copy
End Sub
Sub Macro34()
'
' Macro34 Macro
' Key Role: Integrals help analyze energy storage, system behavior over time, and power distribution
' in circuits.
' "&chr(10)&"      · Energy Stored in Capacitors: $$ E = \frac{1}{2} C V^2 $$ Example: For a capacitor
' with C=10μF = 10 μF and V=230V
'
' Selection.Copy
End Sub
Sub Macro35()
'
' Macro35 Macro
' 2645 \, \text{Joules}. $$
' "&chr(10)&"      · Total Energy in a Time Period (AC Systems): Calculate energy consumption using:
$$ E = \int P(t) \, dt $$ If P(t)=5sin(2πt) P(t) = 5 sin(2πt), solve: $$ E = \int_0^1 5 \sin(2\pi t) \, dt. $$
'
' Selection.Copy
End Sub
Sub Macro36()
'
' Macro36 Macro
'
' "&chr(10)&"      · Induced Voltage in Inductors: Voltage across an inductor is: $$ V(t) = L \frac{di(t)}{dt}. $$ Example: With L=5H and i(t)=t^2i(t) = t^2: $$ V(t) = 5 \times \frac{d(t^2)}{dt} = 10t. $$ At t = 2s, V(2) = 10 \times 2 = 20V. $$
'
' Selection.MoveDown Unit:=wdLine, Count:=130
End Sub
Sub Macro37()
'
' Macro37 Macro
' o Use derivatives to study transient behaviors or integrals for analyzing energy losses: $$ i(t) = C \frac{dV}{dt} $$ $$ V(t) = L \frac{di}{dt} $$
' "&chr(10)&"      4. Practical Growth Path
' "&chr(10)&"      Completing these work experiences e
'
' Selection.MoveDown Unit:=wdLine, Count:=35
' Selection.Copy
End Sub
Sub Macro38()
'
' Macro38 Macro
' Example: For a 2H inductor carrying I=5A: $$ E = \frac{1}{2} \times 2 \times 5^2 = 25 \, \text{Joules}. $$
' "&chr(10)&"      c) Cumulative Power Consumption
' "&chr(10)&"      For time-dependent power P(t), energy is: $$ E = \int_{t_1}^{t_2} P(t) \, dt
'
' Selection.Copy
End Sub
Sub Macro39()
'
' Macro39 Macro
'
' "&chr(10)&"      For time-dependent power P(t), energy is: $$ E = \int_{t_1}^{t_2} P(t) \, dt $$ If P(t)=100sin(2πt) P(t) = 100 sin(2πt), calculate energy over t=0 to t=1s: $$ E = \int_0^1 100 \sin(2\pi t) \, dt = \left[-\frac{100}{2\pi} \cos(2\pi t)\right]_0^1 = 0
'
' Selection.MoveDown Unit:=wdLine, Count:=19
' Selection.Copy
End Sub
Sub Macro40()
'
' Macro40 Macro
'
' "&chr(10)&"      Example: For L=5H, i(t)=t^2: $$ V(t) = 5 \cdot \frac{d(t^2)}{dt} = 10t. $$ At t = 2s, V(2) = 10 \times 2 = 20V.

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10t. $$ At \ ( t = 3s, V = 10 \cdot 3 = 30V. $$
' "&chr(10)&"          b) Charging of a Capacitor
' "&chr(10)&"          Current through a charging capaci
,
    Selection.Copy
End Sub
Sub Macro41()
,
' Macro41 Macro
,
' "&chr(10)&"          Current through a charging capacitor: $$ i(t) = C \frac{dV(t)}{dt}. $$ For V(t)=12
(1-e^{-t/RC})V(t) = 12(1 - e^{-\frac{t}{RC}}), calculate i(t)i(t): $$ i(t) = C \cdot \frac{d}{dt}[12(1 - e
^{-\frac{t}{RC}})] = \frac{12C}{RC} e^{-\frac{t}{RC}}. $
,
    Selection.MoveDown Unit:=wdLine, Count:=54
    Selection.MoveDown Unit:=wdLine, Count:=15
    Selection.MoveUp Unit:=wdLine, Count:=1
    Selection.Copy
End Sub
Sub Macro42()
,
' Macro42 Macro
' o Perform lathe, milling, grinding, and jig boring operations (WA015-WA018).
' "&chr(10)&"          o Program and operate CNC machines (WA0113-WA0116).
' "&chr(10)&"          · Mechanical Maintenance:
' "&chr(10)&"          o Diagnose and repair mechan
,
    Selection.MoveDown Unit:=wdLine, Count:=36
    Selection.Copy
End Sub
Sub Macro43()
,
' Macro43 Macro
,
' "&chr(10)&"          o Torque: $$ T = F \cdot r, \text{ where } F \text{ is force and } r \text{ is rad
ius.} $$
' "&chr(10)&"          o Power transmitted in shafts: $$ P = \frac{2\pi \cdot T \cdot N}{60}, \text{ wher
e } N \text{ is rotational speed (RPM).} $$
,
    Selection.Copy
End Sub
Sub Macro44()
,
' Macro44 Macro
,
' "&chr(10)&"          o Use integral calculations to analyze flow rates in hydraulic systems: $$ Q = \int
v \cdot A \, dt, \text{ where } v \text{ is velocity and } A \text{ is cross-sectional area.} $$
' "&chr(10)&"          · Stress Analysis:
,
    Selection.MoveDown Unit:=wdLine, Count:=128
    Selection.Copy
End Sub
Sub Macro45()
,
' Macro45 Macro
,
' "&chr(10)&"          · Fluid Dynamics:
' "&chr(10)&"          o Analyze flow rates using integrals: $$ Q = \int v \cdot A \, dt $$
' "&chr(10)&"          · Mechanical Stress:
' "&chr(10)&"          o Stress in materials: $$ \sigma = \frac{F}{A}, \text{ wh
,
    Selection.Copy
End Sub
Sub Macro46()
,
' Macro46 Macro
,
' "&chr(10)&"          · Mechanical Stress:
' "&chr(10)&"          o Stress in materials: $$ \sigma = \frac{F}{A}, \text{ where } F = \text{force and }
A = \text{area.} $$
' "&chr(10)&"          · Torque in Systems:
' "&chr(10)&"          o Torque transmi
,

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Selection.MoveDown Unit:=wdLine, Count:=69
ActiveWindow.ActivePane.VerticalPercentScrolled = 209
Selection.Copy
End Sub
Sub Macro47()
'
' Macro47 Macro
'
' "&chr(10)&"      The NCV (National Certificate Vocational) and NATED (National Accredited Technical
Education Diploma) programs offer specialized modules in electrical engineering, focusing on practical
and theoretical knowledge in areas like electrical panels
'
Selection.MoveDown Unit:=wdLine, Count:=43
Selection.Copy
End Sub
Sub Macro48()
'
' Macro48 Macro
' o Panel design and layout.
' "&chr(10)&"      o Circuit breakers and fuses.
' "&chr(10)&"      o Safety standards and regulations.
' "&chr(10)&"      · Experimental Applications:
' "&chr(10)&"      o Assemble and test electrical panels
'
Selection.MoveDown Unit:=wdLine, Count:=134
End Sub
Sub Macro49()
'
' Macro49 Macro
'
' "&chr(10)&"      · Load Distribution: Use integrals to calculate the total load on an electrical panel:
' "&chr(10)&"
' "&chr(10)&"       $P_{total} = \int_0^T P(t) dt$ , where  $P(t)$  is the power drawn over time  $t$ .
' "&chr(10)&"      where  $P(t)$  is the power drawn over time  $t$ .
'
Selection.Copy
End Sub
Sub Macro50()
'
' Macro50 Macro
' where  $P(t)$  is the power drawn over time  $t$ .
' "&chr(10)&"      Example: For a panel supplying  $P(t) = 100 + 20t$  W from  $t = 0$  to  $t = 5$  hr:
' "&chr(10)&"      hrt = 0 \, \text{hr} to t=5 hrt = 5 \, \text{hr}:
' "&chr(10)&"      1. Compute:
'
Selection.MoveDown Unit:=wdLine, Count:=23
Selection.Copy
End Sub
Sub Macro51()
'
' Macro51 Macro
'
' "&chr(10)&"       $P_{total} = (100 \cdot 5 + 10 \cdot 25) - 0 = 750$  Wh.  $P_{total} = (100 \cdot 5 + 10 \cdot 25) - 0 = 750$  Wh.
' "&chr(10)&"      Electrical Drawing:
'
Selection.MoveDown Unit:=wdLine, Count:=28
Selection.Copy
End Sub
Sub Macro52()
'
' Macro52 Macro
' · Voltage Drop Across Cables: Voltage drop is modeled as:
' "&chr(10)&"
' "&chr(10)&"       $\Delta V = \int_0^L I R dx$ , where  $I$ : current,  $R$ : resistance per unit length,  $L$ : total length of wire.
' "&chr(10)&"
'
Selection.Copy
End Sub
Sub Macro53()

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' Macro53 Macro
' where II: current, RR: resistance per unit length, LL: total length of wire.
' "&chr(10)&"      Example: For I=10 A,R=0.5 O/mI = 10 \, \text{A}, R = 0.5 \, \Omega/\text{m}, and L
=20 m = 20 \, \text{m}:
' "&chr(10)&"      1. Compute:
'
'      Selection.Copy
End Sub
Sub Macro54()
'
' Macro54 Macro
' ?V=?02010·0.5 dx=[5x]020.\Delta V = \int_0^{20} 10 \cdot 0.5 \, dx = \left[5x\right]_0^{20}.
' "&chr(10)&"      2. Result:
' "&chr(10)&"
' "&chr(10)&"      ?V=5·20=100 V.\Delta V = 5 \cdot 20 - 0 = 100 \, \text{V}.
'
'      Selection.MoveDown Unit:=wdLine, Count:=25
'      Selection.Copy
End Sub
Sub Macro55()
'
' Macro55 Macro
' 3. Control Switch Design
' "&chr(10)&"      Application of Calculus:
' "&chr(10)&"      · Switch Response Time: The behavior of a switch under a varying load is represent
ed by its resistance R(t)R(t):
'
'
'      Selection.Copy
End Sub
Sub Macro56()
'
' Macro56 Macro
'
' "&chr(10)&"      I(t)=VR(t),where R(t)=R0+kt.I(t) = \frac{V}{R(t)}, \quad \text{where } R(t) = R_0
+ kt.
' "&chr(10)&"      Example: For V=230 V,R0=10 O,k=2 O/s,t=5 sV = 230 \, \text{V}, R_0 = 10 \, \Omega,
k = 2 \, \Omega/\text{s}, t = 5 \, \text{s}:
'
'      Selection.Copy
End Sub
Sub Macro57()
'
' Macro57 Macro
' Example: For V=230 V,R0=10 O,k=2 O/s,t=5 sV = 230 \, \text{V}, R_0 = 10 \, \Omega, k = 2 \, \Omega/\
\text{s}, t = 5 \, \text{s}:
' "&chr(10)&"      1. Resistance after 5 s:
' "&chr(10)&"
' "&chr(10)&"      R(5)=10+2·5=20 O.R(5) = 10 +
'
'      Selection.Copy
End Sub
Sub Macro58()
'
' Macro58 Macro
'
' "&chr(10)&"      I(5)=23020=11.5 A.I(5) = \frac{230}{20} = 11.5 \, \text{A}.
' "&chr(10)&"      Electrical Drawing:
' "&chr(10)&"      · Design control systems using ladder diagrams.
' "&chr(10)&"      · Include components like rela
'
'      Selection.MoveDown Unit:=wdLine, Count:=25
'      Selection.Copy
End Sub
Sub Macro59()
'
' Macro59 Macro
'
' "&chr(10)&"      · Refrigeration Cycle Efficiency: Coefficient of Performance (COP) integrates heat
transfer over a cycle:
' "&chr(10)&"

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' "&chr(10)&"      COP=?0TQcold dt?0TW dt,\text{COP} = \frac{\int_0^T Q_{\text{cold}} \, dt}{\int_0^T W \, dt}
'
' Selection.Copy
End Sub
Sub Macro60()
'
' Macro60 Macro
' where QcoldQ_{\text{cold}}: heat removed, WW: work input.
' "&chr(10)&"      Example: For Qcold=300 J/s,W=100 J/sQ_{\text{cold}} = 300 \, \text{J/s}, W = 100 \,
' \text{J/s}, T=10 sT = 10 \, \text{s}:
' "&chr(10)&"      1. Compute:
'
' Selection.Copy
End Sub
Sub Macro61()
'
' Macro61 Macro
'
' "&chr(10)&"      COP=?010300 dt?010100 dt=300\cdot10100\cdot10=3.\text{COP} = \frac{\int_0^{10} 300 \, dt}{\int_0^{10} 100 \, dt} = \frac{300 \cdot 10}{100 \cdot 10} = 3.
' "&chr(10)&"      Electrical Drawing:
' "&chr(10)&"      · Create schematics of refrigeration system.
'
' Selection.MoveDown Unit:=wdLine, Count:=93
' Selection.Copy
End Sub
Sub Macro62()
'
' Macro62 Macro
'
' "&chr(10)&"      where A(t)A(t): cross-sectional area of pipe at time tt, v(t)v(t): flow velocity.
' "&chr(10)&"      Example: For A(t)=0.05 m^2A(t) = 0.05 \, \text{m}^2 and v(t)=2+0.5t m/sv(t) = 2 + 0.5t \, \text{m/s} over t=0 st = 0 \, \text{s} to
' .5t \, \text{m/s} over t=0 st = 0 \, \text{s} to
'
' Selection.Copy
End Sub
Sub Macro63()
'
' Macro63 Macro
' \[ V = \int_0^4 0.05 \cdot (2 + 0.5t) \, dt = 0.05 \left[ 2t + 0.25t^2 \right]_0^4. \]
' "&chr(10)&"      2. Result:
' "&chr(10)&"
' "&chr(10)&"      V=0.05(8+4)=0.6 m^3.V = 0.05 (8 + 4) = 0.6 \, \text{m}^3.
' "&chr(10)&"      2. Heat
'
' Selection.MoveDown Unit:=wdLine, Count:=147
' Selection.Copy
End Sub
Sub Macro64()
'
' Macro64 Macro
'
' "&chr(10)&"      2. Undertaking Electrical Material Design
' "&chr(10)&"      · Purpose:
' "&chr(10)&"      o Select and design materials for electrical systems to ensure efficiency and safety.
' "&chr(10)&"      · Key Topics:
'
' Selection.MoveDown Unit:=wdLine, Count:=172
' Selection.Copy
End Sub
Sub Macro65()
'
' Macro65 Macro
' performance testing. Below, I detail how calculus can enhance each topic:
' "&chr(10)&"      1. Log Activity: Data Analysis
' "&chr(10)&"      · Application of Derivatives:
' "&chr(10)&"      o Tracking performance trends from logged data:
'
' Selection.Copy
End Sub
Sub Macro66()

```

```

'
' Macro66 Macro
'

```

```

' "&chr(10)&"
' "&chr(10)&"      dPdt=rate of progress,\frac{dP}{dt} = \text{rate of progress},
' "&chr(10)&"      where PP: performance level, tt: time.
' "&chr(10)&"      Example: If  $P(t)=5t^2+2t$   $P(t) = 5t^2 + 2t$ , the rate of progress at  $t=3t = 3$  h
'

```

```

    Selection.Copy

```

```

End Sub

```

```

Sub Macro67()
'

```

```

' Macro67 Macro

```

```

' dPdt=10t+2 ? dPdt=10(3)+2=32 units/hour.\frac{dP}{dt} = 10t + 2 \implies \frac{dP}{dt} = 10(3) + 2
' = 32 \, \text{units/hour}.

```

```

' "&chr(10)&"      · Optimization:
' "&chr(10)&"      o Use integrals to estimate cumulative productivity:
'

```

```

    Selection.Copy

```

```

End Sub

```

```

Sub Macro68()
'

```

```

' Macro68 Macro
'

```

```

' "&chr(10)&"      Ptotal=?0T(5t^2+2t)dt.P_{\text{total}} = \int_0^T \left( 5t^2 + 2t \right) dt.
' "&chr(10)&"      2. Undertaking Electrical Material Design
' "&chr(10)&"      · Voltage Drop and Power Loss:
' "&chr(10)&"      o For a cable with r
'

```

```

    Selection.Copy

```

```

End Sub

```

```

Sub Macro69()
'

```

```

' Macro69 Macro
'

```

```

' "&chr(10)&"      o For a cable with resistance RR and current II, power loss is:
' "&chr(10)&"

```

```

' "&chr(10)&"       $P = \int_0^L I^2 R(x) \, dx$ ,
' "&chr(10)&"      where  $R(x)$ : resistance at length  $xx$ .
'

```

```

    Selection.Copy

```

```

End Sub

```

```

Sub Macro70()
'

```

```

' Macro70 Macro
'

```

```

' "&chr(10)&"      where  $R(x)$ : resistance at length  $xx$ .
' "&chr(10)&"      Example: For  $R(x)=0.5+0.01x$   $R(x) = 0.5 + 0.01x$  and  $I=10$   $I = 10$  \, \text{A}, find the power loss over  $L=10$   $L = 10$  \, \text{m}:
' "&chr(10)&"
'

```

```

    Selection.Copy

```

```

End Sub

```

```

Sub Macro71()
'

```

```

' Macro71 Macro

```

```

' P=?010102(0.5+0.01x)dx=100?010(0.5+0.01x)dx.P = \int_0^{10} 10^2 (0.5 + 0.01x) \, dx = 100 \int_0^{10}
' (0.5 + 0.01x) \, dx.

```

```

' "&chr(10)&"
' "&chr(10)&"       $P=100[0.5x+0.005x^2]_0^{10}=100(5+0.5)=550$  W. $P = 100 \left[ 0.5x + 0.005x^2 \right]_0^{10} =$ 
'  $100 \left[ 0.5x + 0.005x^2 \right]_0^{10} =$ 
'

```

```

    Selection.Copy

```

```

End Sub

```

```

Sub Macro72()
'

```

```

' Macro72 Macro
'

```

```

' "&chr(10)&"       $P=100[0.5x+0.005x^2]_0^{10}=100(5+0.5)=550$  W. $P = 100 \left[ 0.5x + 0.005x^2 \right]_0^{10} =$ 

```

10} = 100 (5 + 0.5) = 550 \, \text{W}.

' "&chr(10)&" 3. Inspection of Electrical Systems

' "&chr(10)&" · Insulation Resistance Testing:

' Selection.Copy  
End Sub

Sub Macro73()

' Macro73 Macro

' · Inspection of Electrical Systems

' "&chr(10)&" · Insulation Resistance Testing:

' "&chr(10)&" o Use integral-based models to assess insulation decay over time:

' "&chr(10)&"

' "&chr(10)&"  $R(t)=R_0e^{-\lambda t}, R(t) = R_0 e^{-\lambda t}$

' Selection.Copy  
End Sub

Sub Macro74()

' Macro74 Macro

' "&chr(10)&"  $R(t)=R_0e^{-\lambda t}, R(t) = R_0 e^{-\lambda t},$

' "&chr(10)&" where  $R_0$ : initial resistance,  $\lambda$ : decay constant.

' "&chr(10)&" Example: For  $R_0=100 \text{ k}\Omega$ ,  $\lambda = 0.02$ , find  $R(10)$

' Selection.Copy  
End Sub

Sub Macro75()

' Macro75 Macro

' "&chr(10)&"  $R(10)=100e^{-0.02 \cdot 10}=100e^{-0.281.87 \text{ k}\Omega. R(10) = 100 e^{-0.02 \cdot 10} = 100 e^{-0.2}$

' \approx 81.87 \, \text{k}\Omega.

' "&chr(10)&" 4. Design and Drawing of Electrical Panels

' "&chr(10)&" · Current Distribution

' Selection.Copy  
End Sub

Sub Macro76()

' Macro76 Macro

' o Use calculus to balance loads across circuits:

' "&chr(10)&"

' "&chr(10)&"  $I_{\text{total}} = \int_0^T I(t) dt, I_{\text{total}} = \int_0^T I(t) dt,$

' "&chr(10)&" where  $I(t)$ : current draw over time.

' "&chr(10)&" Example: For  $I(t)=5+t^2$

' Selection.Copy  
End Sub

Sub Macro77()

' Macro77 Macro

' "&chr(10)&" Example: For  $I(t)=5+t^2$ , the total current over  $T=4 \text{ s}$  is:

' "&chr(10)&"

' "&chr(10)&"  $I_{\text{total}} = \int_0^4 (5+t^2) dt = [5t + \frac{1}{3}t^3]_0^4 = (20 + \frac{64}{3}) - 0 = 41.33 \text{ A}.$

' "&chr(10)&"

' "&chr(10)&"  $I_{\text{total}} = \int_0^4 (5+t^2) dt = [5t + \frac{1}{3}t^3]_0^4 = (20 + \frac{64}{3}) - 0 = 41.33 \text{ A}.$

' Selection.Copy  
End Sub

Sub Macro78()

' Macro78 Macro

' 5. Wiring Design

' "&chr(10)&" · Voltage Drop Across Wiring:

' "&chr(10)&"

' "&chr(10)&"  $\Delta V = \int_0^L I R dx, \Delta V = \int_0^L I R dx,$

' "&chr(10)&" where  $I$ : current,  $R$ : resistance per unit length.

' Selection.Copy  
End Sub

```

Sub Macro79()
'
' Macro79 Macro
' ?V=?05010·0.2 dx=10·0.2·50=100 V.\Delta V = \int_0^{50} 10 \cdot 0.2 \, dx = 10 \cdot 0.2 \cdot 50
= 100 \, \text{V}.
' "&chr(10)&"          6. Material Design for Components
' "&chr(10)&"          · Heat Dissipation in Components:
'
' Selection.Copy
End Sub
Sub Macro80()
'
' Macro80 Macro
' 6. Material Design for Components
' "&chr(10)&"          · Heat Dissipation in Components:
' "&chr(10)&"          o Use Fourier's law for heat transfer:
' "&chr(10)&"
' "&chr(10)&"          Q=?0TkA?T dt,Q = \int_0^T k A \Delta T \, dt,
'
' Selection.MoveDown Unit:=wdLine, Count:=22
' Selection.Copy
End Sub
Sub Macro81()
'
' Macro81 Macro
'
' "&chr(10)&"          2. Analysis: Evaluate system behavior under changing conditions.
' "&chr(10)&"          3. Validation: Ensure designs meet performance and safety standards.
'
'
' Selection.MoveDown Unit:=wdLine, Count:=40
' Selection.Copy
End Sub
Sub Macro82()
'
' Macro82 Macro
' o Offered by the Department of Higher Education and Training (DHET) in South Africa.
' "&chr(10)&"          o Combine theoretical knowledge and practical application in disciplines like engi
neering, natural sciences, and business studies.
'
' Selection.Copy
End Sub
Sub Macro83()
'
' Macro83 Macro
' 2. ICASS (Internal Continuous Assessment):
' "&chr(10)&"          o Designed to monitor student progress through class tests, assignments, and pract
ical work.
' "&chr(10)&"          o Contributes to a semester or final mark.
' "&chr(10)&"          o Re
'
' Selection.Copy
End Sub
Sub Macro84()
'
' Macro84 Macro
' 1. Marksheet Records:
' "&chr(10)&"          o Capture detailed records of student performance over time.
' "&chr(10)&"          o Include theoretical, practical, and project components.
' "&chr(10)&"          2. Tools for Assessment:
'
' ActiveWindow.ActivePane.SmallScroll Down:=41
' Selection.Copy
End Sub
Sub Macro85()
'
' Macro85 Macro
' Grade Scales:
' "&chr(10)&"          $ Marks are recorded using weighted percentages:
' "&chr(10)&"          $ 70%-100%: Excellent
' "&chr(10)&"          $ 60%-69%: Good
' "&chr(10)&"          $ 50%-59%: Satisfactory

```

```

' "&chr(10)&"          $ Below 50
'
' Selection.Copy
End Sub
Sub Macro86()
'
' Macro86 Macro
' $ Below 50%: Needs Improvement.
' "&chr(10)&"          3. Guidelines for Reporting:
' "&chr(10)&"          o Final marksheets must integrate ICASS results with exam marks.
' "&chr(10)&"          o Include:
' "&chr(10)&"          $ Semester Marks (e.g.
'
' Selection.Copy
End Sub
Sub Macro87()
'
' Macro87 Macro
'
' "&chr(10)&"          · Marksheet Example:
' "&chr(10)&"          o Theoretical Tests: 30%
' "&chr(10)&"          o Practical Assignments: 50%
' "&chr(10)&"          o Portfolio: 20%
' "&chr(10)&"          2. Natural Sciences:
' "&chr(10)&"          · ICASS Structu
'
' Selection.Copy
End Sub
Sub Macro88()
'
' Macro88 Macro
'
' "&chr(10)&"          o Lab experiments and fieldwork reports evaluated continuously.
' "&chr(10)&"          o Emphasis on scientific method application.
' "&chr(10)&"          · Tools:
' "&chr(10)&"          o Lab evaluation rubrics to assess experimental pre
'
' Selection.Copy
End Sub
Sub Macro89()
'
' Macro89 Macro
'
' "&chr(10)&"          · ICASS Structure:
' "&chr(10)&"          o Case studies, presentations, and business plans.
' "&chr(10)&"          o Grading focus on decision-making and analysis skills.
' "&chr(10)&"          · Assessment Example:
'
' ActiveWindow.ActivePane.SmallScroll Down:=27
' Selection.Copy
End Sub
Sub Macro90()
'
' Macro90 Macro
'
' "&chr(10)&"          o Group Projects: 50%
' "&chr(10)&"          Final Statement Reports
' "&chr(10)&"          · Provide a summary of semester achievements.
' "&chr(10)&"          · Include:
' "&chr(10)&"          o ICASS mark breakdown.
'
' ActiveWindow.ActivePane.SmallScroll Down:=6
' ActiveWindow.ActivePane.LargeScroll Down:=1
' Selection.Copy
End Sub
Sub Macro91()
'
' Macro91 Macro
'
' "&chr(10)&"          1. Calculating Semester Marks Using Weighted Averages
' "&chr(10)&"          The semester mark combines the theoretical and practical components:
' "&chr(10)&"
' "&chr(10)&"          
$$M_{sem} = w_t T + w_p P$$


```

```

'
' Selection.Copy
End Sub
Sub Macro92()
'
' Macro92 Macro
'
' "&chr(10)&"      where:
' "&chr(10)&"      · TT: Theoretical component score,
' "&chr(10)&"      · PP: Practical component score,
' "&chr(10)&"      · wt,wpw_t, w_p: Weights for theoretical and practical marks.
' "&chr(10)&"      Example: If wt
'
' Selection.Copy
End Sub
Sub Macro93()
'
' Macro93 Macro
' Example: If wt=0.6w_t = 0.6, wp=0.4w_p = 0.4, T=75T = 75, and P=85P = 85:
' "&chr(10)&"
' "&chr(10)&"      Msem=(0.6·75)+(0.4·85)0.6+0.4=45+34=79.M_{\text{sem}} = \frac{(0.6 \cdot 75) + (0.
' "&chr(10)&"      4 \cdot 85)}{0.6 + 0.4} = \frac{45 + 34}{1} = 79
'
' Selection.Copy
End Sub
Sub Macro94()
'
' Macro94 Macro
' Msem=(0.6·75)+(0.4·85)0.6+0.4=45+34=79.M_{\text{sem}} = \frac{(0.6 \cdot 75) + (0.4 \cdot 85)}{0.6
' "&chr(10)&"      + 0.4} = \frac{45 + 34}{1} = 79.
' "&chr(10)&"      2. Total Final Mark Calculation
' "&chr(10)&"      The final mark combines semester marks (SS
'
' Selection.Copy
End Sub
Sub Macro95()
'
' Macro95 Macro
' F=0.4S+0.6E.F = 0.4S + 0.6E.
' "&chr(10)&"      Example: If S=79S = 79 and E=82E = 82:
' "&chr(10)&"
' "&chr(10)&"      F=0.4·79+0.6·82=31.6+49.2=80.8.F = 0.4 \cdot 79 + 0.6 \cdot 82 = 31.6 + 49.2 = 80.
' "&chr(10)&"      8.
' "&chr(10)&"      3. St
'
' Selection.Copy
End Sub
Sub Macro96()
'
' Macro96 Macro
'
' "&chr(10)&"      · Grade Distribution Analysis: Analyze how grades are distributed across students
' using measures like mean ( $\mu$ ), variance ( $s^2$ ), and standard deviation ( $s$ ):
' "&chr(10)&"
' "&chr(10)&"       $\mu = \frac{\sum x_i}{N}$ ,  $s^2 = \frac{\sum (x_i - \mu)^2}{N}$ 
'
' Selection.Copy
End Sub
Sub Macro97()
'
' Macro97 Macro
'
' "&chr(10)&"      Example: Grades: [75,80,85,70,90][75, 80, 85, 70, 90], N=5N = 5:
' "&chr(10)&"      1. Mean:
' "&chr(10)&"
' "&chr(10)&"       $\mu = \frac{75+80+85+70+90}{5} = 80.$ 
' "&chr(10)&"      2. Vari
'
' Selection.Copy
End Sub
Sub Macro98()
'
' Macro98 Macro

```

```

'      s2=(75-80)^2+(80-80)^2+(85-80)^2+(70-80)^2+(90-80)^2=50.\sigma^2 = \frac{(75-80)^2 + (80-80)^2 + (85-80)^2 + (70-80)^2 + (90-80)^2}{5} = 50.
' "&chr(10)&"      3. Standard Deviation:
' "&chr(10)&"
' "&chr(10)&"      s=507.07.\sigma = \sqrt{s}
'
'      Selection.Copy
End Sub
Sub Macro99()
'
'      Macro99 Macro
'
' "&chr(10)&"
' "&chr(10)&"      s=507.07.\sigma = \sqrt{50} \approx 7.07.
' "&chr(10)&"      4. Integrals for Continuous Assessment Analysis
' "&chr(10)&"      · Cumulative Marks Distribution: Use integrals to model cumulative performance
'
'      Selection.Copy
End Sub
Sub Macro101()
'
'      Macro101 Macro
'
' "&chr(10)&"      · Project Grades: Model project grading as a function of effort over time using derivatives:
' "&chr(10)&"
' "&chr(10)&"       $\frac{dP}{dt} = kE(t)$ ,
' "&chr(10)&"      where  $E(t)$ : effort,  $k$ : a scaling factor
'
'      Selection.Copy
End Sub
Sub Macro102()
'
'      Macro102 Macro
'      Natural Sciences:
' "&chr(10)&"      · Lab Precision: Evaluate experiment repeatability using statistical deviation:
' "&chr(10)&"
' "&chr(10)&"       $CV = \frac{\sigma}{\mu} \times 100$ .
'
'
'      Selection.Copy
End Sub
Sub Macro103()
'
'      Macro103 Macro
'      Business Studies:
' "&chr(10)&"      · Case Study Success: Analyze assignment success using regression models to predict trends:
' "&chr(10)&"
' "&chr(10)&"       $y = mx + b$ .
' "&chr(10)&"      Purpose of Calculus and Statistics
'
'      Selection.MoveDown Unit:=wdLine, Count:=197
'      Selection.Copy
End Sub
Sub Macro104()
'
'      Macro104 Macro
'       $M' = \frac{M - M_{\text{min}}}{M_{\text{max}} - M_{\text{min}}} \times 100$ ,
' "&chr(10)&"      where  $M$ : scaled marks,  $M_{\text{min}}$ ,  $M_{\text{max}}$ : minimum and maximum raw marks.
'
'
'      Selection.MoveDown Unit:=wdLine, Count:=36
'      ActiveWindow.ActivePane.VerticalPercentScrolled = 175
'      Selection.Copy
End Sub
Sub Macro105()
'
'      Macro105 Macro
'

```

```

' "&chr(10)&"      · Timetable Functionality:
' "&chr(10)&"      o The timetable systems used in vocational training programs need to be assessed for t
heir ability to provide functional, outcome-oriented schedules for both academic and practical trainin
g in engin
'
    Selection.MoveDown Unit:=wdLine, Count:=35
    Selection.Copy
End Sub
Sub Macro106()
'
' Macro106 Macro
' focusing on time management, outcomes, and practical application of skills.
' "&chr(10)&"      · Outcome-Based Design:
' "&chr(10)&"      The research will focus on outcome-oriented systems, where the success of students in
engineering (particul
'
    Selection.MoveDown Unit:=wdLine, Count:=40
    ActiveWindow.ActivePane.LargeScroll Down:=3
    ActiveWindow.ActivePane.VerticalPercentScrolled = 155
    Selection.Copy
End Sub
Sub Macro107()
'
' Macro107 Macro
' · Are you interested in how industry collaborations can further improve the electrical engineering
curriculum?
' "&chr(10)&"      · How can technology (e.g., AI, IoT, machine learning) enhance learning in electrical
engineering education?
'
    Selection.MoveDown Unit:=wdLine, Count:=61
    ActiveWindow.ActivePane.VerticalPercentScrolled = 105
    Selection.Copy
End Sub
Sub Macro108()
'
' Macro108 Macro
Histogram & Statistical Analysis of Training & Power Systems
' "&chr(10)&"      ?? Histogram & Droitegre Equation in Module Analysis
' "&chr(10)&"      · Mathematical Representation of Learning & Power Distribution
' "&chr(10)&"      o Hist
'
    Selection.Copy
End Sub
Sub Macro109()
'
' Macro109 Macro
'
' "&chr(10)&"      Model    Variance Analysis    X1    X2    X3    X5    X6    X7    X8
' "&chr(10)&"      Y1    Variance in student training hours    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"      Y2    Variance in attendance    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"      Y3    Energy demand in workplace training    ?    ?    ?    ?    ?    ?    ?
'
    Selection.Copy
End Sub
Sub Macro110()
'
' Macro110 Macro
'
' "&chr(10)&"      Y2    Variance in attendance    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"      Y3    Energy demand in workplace training    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"      Y4    Energy supply fluctuations    ?    ?    ?    ?    ?    ?    ?
'
'
    ActiveWindow.ActivePane.VerticalPercentScrolled = 115
End Sub
Sub Macro111()
'
' Macro111 Macro
' o Determine RthR_{th} by deactivating all sources (replace voltage sources with short circuits and c
urrent sources with open circuits).
'

```



NewMacros1 - 18

```
End Sub
Sub Macro112()
'
' Macro112 Macro
' Function K_Rdiv1(R1, R2)
' "&chr(10)&" ' Gain of resistor divider
' "&chr(10)&" K_Rdiv1 = R2 / (R2 + R1)
'
' "&chr(10)&"End Function
'
End Sub
Sub Macro113()
'
' Macro113 Macro
' the divider is creating a precision +5V reference from an available +10V reference. The +5V level is
' used as a reference voltage for an ADC. But how accurate is this +5V level? Let's calculate the output
' given ideal components and then given initial toler
'
End Sub
Sub Macro114()
'
' Macro114 Macro
'
'
' "&chr(10)&" =K_Rdiv1(C11,D11)
'
' "&chr(10)&"where C11 and D11 hold R1 and R2. Vo calculates the output as
'
' "&chr(10)&" vo = K_Rdiv * vs
'
' "&chr(10)&"And finally we calculate the error from the ideal result in both voltage and %.
'
' "&chr(10)&"The first row above, tells us the
'
End Sub
Sub Macro115()
'
' Macro115 Macro
' Function Tri_Wave(t, V1, V2, T1, T2)
'
' "&chr(10)&"' *****
' "&chr(10)&"' Generate Triangle Wave
' "&chr(10)&"'
' "&chr(10)&"' t - time
' "&chr(10)&"' V1 - voltage level 1 (initial voltage)
' "&chr(10)&"' V2 - voltage level 2
' "&chr(10)&"' T1 - period ramping from V1 to V2
' "&chr(10)&"' T2 -
'
End Sub
Sub Macro116()
'
' Macro116 Macro
' given t, how many full cycles have occurred
' "&chr(10)&"N = Application.WorksheetFunction.Floor(t / (T1 + T2), 1)
'
' "&chr(10)&"' calc the time point in the current triangle wave
' "&chr(10)&"t_tri = t - (T1 + T2) * N
'
' "&chr(10)&"' if during T1, calculate triangle value using V1 and dV_dt1
' "&chr(10)&"If t_
'
End Sub
Sub Macro117()
```

```

'
' Macro117 Macro
'   if during T2, calculate triangle value using V2 and dV_dt2
'   "&chr(10)&"Else
'   "&chr(10)&"      Tri_Wave = V2 + dV_dt2 * (t_tri - T1)
'
'   "&chr(10)&"End If
'
'
'   "&chr(10)&"End Function
'   "&chr(10)&"
'
End Sub
Sub Macro118()
'
'   Macro118 Macro
'   The time column is generated by entering the time increment dT at location C14. Each time point is s
'   imply the previous time point plus the delta, A17+$C$14. Note, that C14 is a fixed reference point.
'
'   "&chr(10)&"The cells in the Vtri column holds the function call
'
End Sub
Sub Macro119()
'
'   Macro119 Macro
'   CREATING THE WAVEFORM
'
'   "&chr(10)&"How do you create a triangle wave? The waveform simply ramps linearly from V1 to V2 durin
'   g T1, and then from V2 to V1 during T2. Therefore, you need to calculate the slope for both cases.
'
'   "&chr(10)&"      dV_dt1 = (V2 - V1) / T1
'   "&chr(10)&"      dV_dt2
'
End Sub
Sub Macro120()
'
'   Macro120 Macro
'   given t, how many full cycles have occurred
'   "&chr(10)&"N = Application.WorksheetFunction.Floor( t/(T1 + T2), 1)
'
'   "&chr(10)&"' calc the time point in the current triangle wave
'   "&chr(10)&"t_tri = t - (T1 + T2) * N
'
End Sub
Sub Macro121()
'
'   Macro121 Macro
'   f t_tri <= T1 Then
'   "&chr(10)&"      Tri_Wave = V1 + dV_dt1 * t_tri
'
'   "&chr(10)&"If in period T2, the waveform is a function of V2 and the slope dV_dt2.
'
'   "&chr(10)&"      Else
'   "&chr(10)&"      Tri_Wave = V2 + dV_dt2 * (t_tri - T1)
'
'
End Sub
Sub Macro122()
'
'   Macro122 Macro
'   and the inverting amplifier
'

```

```
' "&chr(10)&"The gain (K = vo/vs) for each of these amplifiers is given by
```

```
' "&chr(10)&"      NON-INVERTING:    K_non = R1 / R2 +1
' "&chr(10)&"      INVERTING:        K_inv  = -R2 / R1
```

```
' "&chr(10)&"Let's create some VBA functions to perform these calculations Op_Amp_Gai
```

```
End Sub
```

```
Sub Macro123()
```

```
' Macro123 Macro
```

```
' Function K_op_non(R1, R2)
```

```
' "&chr(10)&"      ' Op amp closed loop gain - non-inverting amplifier
```

```
' "&chr(10)&"      K_op_non = (R2 + R1) / R1
```

```
' "&chr(10)&"End Function
```

```
' "&chr(10)&"Function K_op_inv(R1, R2)
```

```
' "&chr(10)&"      ' Op amp closed loop gain - inverting amplifier
```

```
' "&chr(10)&"      K_op_inv = -R2 / R1
```

```
' "&chr(10)&"End Functionn
```

```
End Sub
```

```
Sub Macro124()
```

```
' Macro124 Macro
```

```
' Non-Inverting Amplifier
```

```
' "&chr(10)&"R1      R2  K non      fbw
' "&chr(10)&"1.00E+09  1,000  1.0      999,999
' "&chr(10)&"1,000   1,000  2.0      500,000
' "&chr(10)&"1,000   9,000  10.0     100,000
```

```
' "&chr(10)&"
```

```
' "&chr(10)&"Inverting Amplifier
```

```
' "&chr(10)&"R1      R2  K inv      K non      fbw
' "&chr(10)&"1,000  1,000  -1.0      2.0      500,000
```

```
End Sub
```

```
Sub Macro125()
```

```
' Macro125 Macro
```

```
' SINE WAVE GENERATOR
```

```
' "&chr(10)&"
```

```
' "&chr(10)&"SIGNAL GENERATOR
```

```
' "&chr(10)&"Here's a way to generate and explore the sine wave. You can change its Amplitude, Frequen
cy, Offset, Phase and see the waveform change. The VBA function is a simple equation.
```

```
' "&chr(10)&"To see the VBA code hit ALT-F
```

```
End Sub
```

```
Sub Macro126()
```

```
' Macro126 Macro
```

```
' Function SineWave(t, Vp, fo, Phase, Vdc)
```

```
' "&chr(10)&"      ' create sine wave
```

```
' "&chr(10)&"      ' phase in deg
```

```

' "&chr(10)&" Dim pi As Double
' "&chr(10)&" pi = 3.1415927
'
'
' "&chr(10)&" 'Calc sine wave
' "&chr(10)&" SineWave = Vp * Sin(2 * pi * fo * t + Phase * pi / 180) + Vdc
'
'
' "&chr(10)&"End Function
'
'
'
End Sub
Sub Macro127()
'
' Macro127 Macro
' he function calculates the value of the of the sine wave at each time point t, given the
'
'
' "&chr(10)&" Vp - Magnitude Peak (V)
' "&chr(10)&" fo - Frequency (Hz)
' "&chr(10)&" Phase - Phase (deg)
' "&chr(10)&" Vdc - Offset Voltage (V)
'
'
' "&chr(10)&"The phase gets converted from degree
'
'
End Sub
Sub Macro128()
'
' Macro128 Macro
' Vp 1 V
' "&chr(10)&"VDC 0 V
' "&chr(10)&"fo 200 Hz
' "&chr(10)&"Phase 0 deg
'
'
' "&chr(10)&"
' "&chr(10)&"dT 0.0001
'
'
' "&chr(10)&"The time column is generated by entering the time increment dT at location C14. Each time
' point is simply the previous time point plus the delta, A17+$C$14. Note, that C14 is a fix
'
'
End Sub
Sub Macro129()
'
' Macro129 Macro
' ublic Class transactionsGBox
' "&chr(10)&" Const SERVICE_CHARGE_DECIMAL As Decimal = 6.5
' "&chr(10)&" Const PIN As Integer = 9343
' "&chr(10)&" Dim Balance As Decimal = 150
'
'
' "&chr(10)&" Private Sub Label2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles Label2.C
'
'
End Sub
Sub Macro130()
'
' Macro130 Macro
' Private Sub Label2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Label2.
Click
' "&chr(10)&" End Sub
' "&chr(10)&" Private Sub RadioButton5_CheckedChanged(ByVal sender As System.Object, ByVal e As Sys
tem.EventArgs) Handles topUpButton.CheckedChan
'
'
End Sub
Sub Macro131()
'
' Macro131 Macro
' Private Function withdraw(ByVal amount As Decimal)

```

```

' "&chr(10)&"      Balance -= amount
' "&chr(10)&"      Return Balance
' "&chr(10)&"      End Function
' "&chr(10)&"      Private Function deposit(ByRef amount As Decimal)
' "&chr(10)&"      Balance += amount
' "&chr(10)&"      Return Balance
'
End Sub
Sub Macro132()
'
' Macro132 Macro
' End Function
' "&chr(10)&"      Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles clearButton1.Click
' "&chr(10)&"      End Sub
' "&chr(10)&"      Private Sub Button1_Click_1(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles confirmBut
'
End Sub
Sub Macro133()
'
' Macro133 Macro
' previewButton.Enabled = True
' "&chr(10)&"      proceedButton.Enabled = True
' "&chr(10)&"      pinBox.Enabled = False
' "&chr(10)&"      Else
' "&chr(10)&"      MessageBox.Show("Incorrect pin, try again", "Pin Error", MessageBoxButtons.OK
, MessageBoxIcon.Exclamation)
' "&chr(10)&"      End I
'
End Sub
Sub Macro134()
'
' Macro134 Macro
' End Sub
' "&chr(10)&"      Private Sub Label4_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles Label4.Click
' "&chr(10)&"      End Sub
' "&chr(10)&"      Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles clearButton2.Click
' "&chr(10)&"
'
End Sub
Sub Macro135()
'
' Macro135 Macro
' Private Sub exitButton_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles ex
itButton.Click
' "&chr(10)&"      Me.Close()
' "&chr(10)&"      End Sub
' "&chr(10)&"      Private Sub previewButton_Click(ByVal sender As System.Object, ByVal e As System.Even
tArgs) Handles pr
'
End Sub
Sub Macro136()
'
' Macro136 Macro
' previewButton.Click
' "&chr(10)&"      If depositButton.Checked = True Then
' "&chr(10)&"      previewBalance.Text = deposit(transactionValueBox.Text)
' "&chr(10)&"      Else
' "&chr(10)&"      previewBalance.Text = withdraw(transactionValueBox.Text)
' "&chr(10)&"      End If
' "&chr(10)&"      End Sub
' "&chr(10)&"      Pr
'
End Sub
Sub Macro137()
'
' Macro137 Macro
' previewButton.Click
' "&chr(10)&"      If depositButton.Checked = True Then
' "&chr(10)&"      previewBalance.Text = deposit(transactionValueBox.Text)

```

```

' "&chr(10)&"           Else
' "&chr(10)&"             previewBalance.Text = withdraw(transactionValueBox.Text)
' "&chr(10)&"             End If
' "&chr(10)&"           End Sub
' "&chr(10)&"           Pr
'
End Sub
Sub Macro138()
'
' Macro138 Macro
' Private Sub proceedButton_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
proceedButton.Click
' "&chr(10)&"           If depositButton.Checked = True Then
' "&chr(10)&"             finalBalance.Text = deposit(transactionValueBox.Text)
' "&chr(10)&"           Else
' "&chr(10)&"
End Sub
Sub Macro139()
'
' Macro139 Macro
' End If
' "&chr(10)&"           End Sub
' "&chr(10)&"End Class
'
End Sub
Sub Macro140()
'
' Macro140 Macro
' 1. Introduction to the Study
'
' "&chr(10)&"The "Crime Management System" is a web-based website for online complaining and computeri
zed management of crime records (Khan et al., 2008).
'
' "&chr(10)&"A criminal is a popular term used for a person who has committed a cri
'
End Sub
Sub Macro141()
'
' Macro141 Macro
' Security of data.
' "&chr(10)&"           Minimize manual data entry.
' "&chr(10)&"           Better service.
' "&chr(10)&"           User-friendly and interactive.
' "&chr(10)&"           Minimum time required.
' "&chr(10)&"           Changing the manual system into an automated system.
'
' "&chr(10)&"1.1. Statement of the Problem
'
End Sub
Sub Macro142()
'
' Macro142 Macro
' Limitations on crime recording: Recording crime information manually.
' "&chr(10)&"Limitation on System Retrievals: The information is very difficult to retrieve, and findi
ng particular information, like searching for crime detail information, is challenging.
' "&chr(10)&"Proble
'
End Sub
Sub Macro143()
'
' Macro143 Macro
' Problems with updating records: Various changes to information, like crime details, are difficult to
update.
' "&chr(10)&"More manpower required: Many police officers are needed to handle crime.
' "&chr(10)&"Time-consuming: It is time-consuming to record crime.
' "&chr(10)&"Consumes a large
'
End Sub
Sub Macro144()

```

```

'
' Macro144 Macro
' Time-consuming: It is time-consuming to record crime.
' "&chr(10)"Consumes a large volume of paperwork: it requires much paper to record a crime file.
' "&chr(10)"Lack of security and space: There is no security for data because it is paper-based and h
as no password.
' "&chr(10)"Report g
'
End Sub
Sub Macro145()
'
' Macro145 Macro
' 4. Data gathering
'
' "&chr(10)"To gather accurate data from the concerned body, the researcher used the following fact-f
inding techniques:
'
' "&chr(10)"      Interview: In o
'
End Sub
Sub Macro146()
'
' Macro146 Macro
' Document Analysis: To get historical information about the organization's activities and to know the
organization's rules and regulations, the team tried to analyze as many documents as possible that we
re relevant to the new system.
' "&chr(10)"Observation: To ge
'
End Sub
Sub Macro147()
'
' Macro147 Macro
' Analysis Methodology
'
' "&chr(10)"The analysis approach used is object-oriented analysis (OOA). This method was selected be
cause "object-oriented analysis is a method of analysis that examines requirements from the perspectiv
es of the classes and objects found in t
'
End Sub
Sub Macro148()
'
' Macro148 Macro
' nalysis Tools:
'
' "&chr(10)"      Class diagram
' "&chr(10)"      Use case diagram
' "&chr(10)"      Sequence diagram
' "&chr(10)"      Activity diagram
'
End Sub
Sub Macro149()
'
' Macro149 Macro
' . Hardware and Software to Be Used for Implementation
'
' "&chr(10)"The software requirements specification is the single most important document in the soft
ware development process. The following are software requirements:
'
' "&chr(10)"      XAMPP Server, MySQL, Editor, Edraw
'
End Sub
Sub Macro150()
'
' Macro150 Macro
' rdware requirements are the tangible and visible components that are necessary to develop a system.
Hardware Tools that were used to develop this project are:
'

```

```
' "&chr(10)&"      Computers, Flash Disk (8GB), Pen and Paper, Mobile, Camera, Hard Disk.
```

```
End Sub
```

```
Sub Macro151()
```

```
' Macro151 Macro
' se case ID      Use case Name      Include/
' "&chr(10)&"Uc1      Create Account      Login
' "&chr(10)&"Uc2      View User Account      Login
' "&chr(10)&"Uc3      Update account      Login
' "&chr(10)&"Uc4      View user Activities      Login
' "&chr(10)&"Uc5      Take backup      Login
' "&chr(10)&"Uc6      Restore backup      Login
' "&chr(10)&"Uc7      Assign placement for police Login
' "&chr(10)&"Uc8      View employee      L
```

```
End Sub
```

```
Sub Macro152()
```

```
' Macro152 Macro
' Uc9      View comment      Login
' "&chr(10)&"Uc10      View nomination Login
' "&chr(10)&"Uc11      Post missing criminals      Login
' "&chr(10)&"Uc12      Post notice      Login
' "&chr(10)&"Uc13      View criminal report      Login
' "&chr(10)&"Uc14      View placement      Login
' "&chr(10)&"Uc15      Register criminal      Login
' "&chr(10)&"Uc16      View nomination Login
' "&chr(10)&"Uc17      Send account request
```

```
End Sub
```

```
Sub Macro153()
```

```
' Macro153 Macro
' Uc15      Register criminal      Login
' "&chr(10)&"Uc16      View nomination Login
' "&chr(10)&"Uc17      Send account request for complaint      Login
' "&chr(10)&"Uc18      View order      Login
' "&chr(10)&"Uc19      View complaint request      Login
' "&chr(10)&"Uc20      View criminal      Login
' "&chr(10)&"Uc21      Register complaint      Login
' "&chr(10)&"Uc22      Order preventive police Login
```

```
End Sub
```

```
Sub Macro154()
```

```
' Macro154 Macro
' Uc21      Register complaint      Login
' "&chr(10)&"Uc22      Order preventive police Login
' "&chr(10)&"Uc23      Register witness      Login
' "&chr(10)&"Uc24      Register Accused      Login
' "&chr(10)&"Uc25      Register Accuser      Login
' "&chr(10)&"Uc26      Register first information report      Login
' "&chr(10)&"Uc27      Order preventive police Login
' "&chr(10)&"Uc28      Register emp
```

```
End Sub
```

```
Sub Macro155()
```

```
' Macro155 Macro
' Uc26      Register first information report      Login
' "&chr(10)&"Uc27      Order preventive police Login
' "&chr(10)&"Uc28      Register employee      Login
' "&chr(10)&"Uc29      Update employee      Login
' "&chr(10)&"Uc30      View employee      Login
' "&chr(10)&"Uc31      Send complain      Login
' "&chr(10)&"Uc32      View complain response      Login
' "&chr(10)&"Uc33      View missing criminal      -
```

```
End Sub
```

```
Sub Macro156()
```



```

' Macro156 Macro
' Uc33 View missing criminal -----
' "&chr(10)&"Uc34 Give nomination -----
' "&chr(10)&"Uc35 Give comment -----
' "&chr(10)&"Uc36 Login -----
' "&chr(10)&"Uc37 Logout Login
' "&chr(10)&"Table 1. Use Case Identification
' "&chr(10)&"2.2. Use Case Diagram
'
End Sub
Sub Macro157()
'
' Macro157 Macro
' System Administrator: An administrator who interacts with the proposed system and has full control o
ver the system. After logging in to the system, their responsibilities include:
'
' "&chr(10)&" View User Account
' "&chr(10)&" Update Account
' "&chr(10)&" View User Activities
' "&chr(10)&"
'
End Sub
Sub Macro158()
'
' Macro158 Macro
' Police Head: Has the following activities:
'
' "&chr(10)&" Assign placement for preventive police
' "&chr(10)&" View Employee
' "&chr(10)&" View Nomination
' "&chr(10)&" View missing criminal
' "&chr(10)&" Create account
' "&chr(10)&" View Comment
' "&chr(10)&" Post missing criminals
' "&chr(10)&" View Criminal Report
'
End Sub
Sub Macro159()
'
' Macro159 Macro
' Criminal Preventive Police: Have the following activities:
'
' "&chr(10)&" View their Placement assigned by police head
' "&chr(10)&" Register criminal
' "&chr(10)&" Register complaint
' "&chr(10)&" Register crime
' "&chr(10)&" View complaint request
' "&chr(10)&" View nomination
' "&chr(10)&" View notice
' "&chr(10)&" Send n
'
End Sub
Sub Macro160()
'
' Macro160 Macro
' Detective Officer: Have the following activities:
'
' "&chr(10)&" View criminal
' "&chr(10)&" Order preventive police
' "&chr(10)&" Register witness
' "&chr(10)&" Register Accused
' "&chr(10)&" Register Accuser
' "&chr(10)&" View witness
' "&chr(10)&" View accused
' "&chr(10)&" View accuser
' "&chr(10)&" Generate First Information Rep
'
End Sub
Sub Macro161()

```

```

'
' Macro161 Macro
' Human Resource Manager: Have the following activities:
'
' "&chr(10)&"      Register Employee
' "&chr(10)&"      View Employee
' "&chr(10)&"      Update Employee
'
End Sub
Sub Macro162()
'
' Macro162 Macro
' Customer: Have the following activities:
'
' "&chr(10)&"      View Missing Criminal
' "&chr(10)&"      Give Nomination
' "&chr(10)&"      Give Comment
'
' "&chr(10)&"Complaint: Have the following activities:
'
' "&chr(10)&"      Send request
' "&chr(10)&"      View response
'
End Sub
Sub Macro163()
'
' Macro163 Macro
' Use Case Name Register Employee
' "&chr(10)&"Use Case ID      Uc28
' "&chr(10)&"Include      Login
' "&chr(10)&"Actor      Human resource manager
' "&chr(10)&"Description      The human resources manager accepts the user and registers them for the da
' "&chr(10)&"Precondition      The users should be workers at the po
'
End Sub
Sub Macro164()
'
' Macro164 Macro
' Precondition      The users should be workers at the police station.
' "&chr(10)&"Basic course of Action
'
' "&chr(10)&"Actor action
'
' "&chr(10)&"1. HR manager opens the system.
'
' "&chr(10)&"3. HR manager, click on the Register Employee Link.
'
' "&chr(10)&"5. Fill each individual field and press the register butt
'
End Sub
Sub Macro165()
'
' Macro165 Macro
' Basic course of Action
'
' "&chr(10)&"Actor action
'
' "&chr(10)&"1. HR manager opens the system.
'
' "&chr(10)&"3. HR manager, click on the Register Employee Link.
'

```

```
' "&chr(10)&"5. Fill each individual field and press the register button.
```

```
' "&chr(10)&"7. Use case end
' "&chr(10)&"
```

```
' "&chr(10)&"System response
```

```
' "&chr(10)&"2. The system ope
```

```
End Sub
```

```
Sub Macro166()
```

```
' Macro166 Macro
```

```
' "&chr(10)&"Actor action
```

```
' "&chr(10)&"1. HR manager opens the system.
```

```
' "&chr(10)&"3. HR manager, click on the Register Employee Link.
```

```
' "&chr(10)&"5. Fill each individual field and press the register button.
```

```
' "&chr(10)&"7. Use case end
' "&chr(10)&"
```

```
' "&chr(10)&"System response
```

```
' "&chr(10)&"2. The system opens to the user page.
```

```
End Sub
```

```
Sub Macro167()
```

```
' Macro167 Macro
```

```
' Alternative course of action
```

```
' "&chr(10)&"If the HR manager enters the wrong username or password, the system displays
```

```
' "&chr(10)&"Incorrect input, " and the process turns again from step 5.
```

```
' "&chr(10)&"Post condition Employees are legal users of the station.
```

```
' "&chr(10)&"Table 2. Register Em
```

```
End Sub
```

```
Sub Macro168()
```

```
' Macro168 Macro
```

```
' Use Case Name Create Account
```

```
' "&chr(10)&"Use Case ID Ucl
```

```
' "&chr(10)&"Include Login
```

```
' "&chr(10)&"Actor Administrator
```

```
' "&chr(10)&"Description Administrators create accounts for already-registered users.
```

```
' "&chr(10)&"Precondition Administrators must login and should get a list of users' information from
```

```
End Sub
```

```
Sub Macro169()
```

```
' Macro169 Macro
```

```
'  
' "&chr(10)&"Actor action  
'  
' "&chr(10)&"1. Administrator Login to the system  
'  
' "&chr(10)&"3. Click on the Create Account Link.  
'  
' "&chr(10)&"5. The administrator fills out the field, including the user name and password, then clic  
ks on the Create Account button.  
'  
' "&chr(10)&"7. Use case-end.  
'  
    Application.Run MacroName:="Macro100"  
End Sub  
Sub Macro100()  
'  
' Macro100 Macro  
'  
'  
End Sub
```

```

Sub Macro2()
'
' Macro2 Macro
' current ( $I = \frac{dQ}{dt}$ ), where the derivative of charge with respect to time gives the current.
' "&chr(10)&"      · Integral Function ( $\int f(x,y) dx$ ):
'
End Sub

Sub Macro3()
'
' Macro3 Macro
' · Integral Function ( $\int f(x,y) dx$ ):
'
End Sub

Sub Macro4()
'
' Macro4 Macro
' Calculating the total energy in a capacitor ( $W = \int V \, dQ$ ) or the area under the voltage-time graph for evaluating work done.
'
End Sub

Sub Macro5()
'
' Macro5 Macro
' :  $W = \int_0^Q V \, dQ$ 
' "&chr(10)&"      $ Here, W represents the energy stored, V is voltage, and Q is charge. Integration helps calculate the energy based on the charge distribution.
' "&chr(10)&"      o Inductors:  $V = L \frac{dI}{dt}$ 
'
End Sub

Sub Macro6()
'
' Macro6 Macro
' Rate of Change in Current:  $I = \frac{dQ}{dt}$ 
' "&chr(10)&"      $ This derivative links the charge flowing through a conductor over time to the current.
' "&chr(10)&"      o Voltage in Changing Magnetic Fields (Faraday's Law):  $\mathcal{E}$ 
'
End Sub

Sub Macro7()
'
' Macro7 Macro
' 1. Junior-Level Focus:
' "&chr(10)&"      o Electrical Trade Theory (N1-N3):
' "&chr(10)&"      $ Covers foundational concepts like safety precautions, DC theory, conductors, and wiring systems.
' "&chr(10)&"      $ Practical applications i
'
End Sub

Sub Macro8()
'
' Macro8 Macro
' 1. Voltage Across a Capacitor:  $V(t) = \frac{1}{C} \int i(t) \, dt + V_0$ 
' "&chr(10)&"      o Application: Determines voltage V(t) across a capacitor, where i(t) is the current, C is capacitance, and V0 is the initial voltage.
'
End Sub

Sub Macro9()
'
' Macro9 Macro
' 2. Total Energy Stored in an Inductor:  $E = \frac{1}{2} L \int i^2(t) \, dt$ 
' "&chr(10)&"      o Application: Calculates energy in an inductor, where L is inductance and i(t) is current.
'
End Sub

Sub Macro10()
'
' Macro10 Macro
' 3. Charge in a Circuit:  $Q = \int I(t) \, dt$ 
' "&chr(10)&"      o Application: Finds the total electric charge Q flowing through a circuit over time, based on current I(t).

```

```

',
End Sub
Sub Macro11()
',
' Macro11 Macro
' 1. Current in a Capacitor:  $I(t) = C \frac{dV(t)}{dt}$ 
' "&chr(10)&"      o Application: Relates the rate of change of voltage to the current flowing through
' a capacitor.
' "&chr(10)&"      2. Electromotive Force (Faraday's Law):  $\mathcal{E}$ 
',
End Sub
Sub Macro12()
',
' Macro12 Macro
' Circuit Analysis:
' "&chr(10)&"      o Use integrals and derivatives to analyze RLC circuits and measure power dissipation.
' "&chr(10)&"      · Measuring Instruments:
' "&chr(10)&"      o Apply calculus to calibrate and interpret readings
',
End Sub
Sub Macro13()
',
' Macro13 Macro
' Circuit Analysis:
' "&chr(10)&"      o Use integrals and derivatives to analyze RLC circuits and measure power dissipation.
' "&chr(10)&"      · Measuring Instruments:
' "&chr(10)&"      o Apply calculus to calibrate and interpret readings
',
End Sub
Sub Macro14()
',
' Macro14 Macro
' 1. Junior-Level Roles: Maintenance technician, soldering specialist, or assistant in electrical installations.
' "&chr(10)&"      2. Senior-Level Roles: Electrical engineer, system designer, or project manager overseeing large-scale installations and
',
End Sub
Sub Macro1()
',
' Macro1 Macro
' · Derivative Function ( $f'(x, y)$ ):
' "&chr(10)&"      o Derivatives measure the rate of change of a function, essential for analyzing varying electrical quantities like current (I), voltage (V), and resistance (R).
' "&chr(10)&"      o Example in
',
End Sub
Sub Macro15()
',
' Macro15 Macro
'  $\int f(x) g'(x) dx = f(x) g(x) - \int g(x) f'(x) dx$ .  $\int f(x) g'(x) dx = f(x) g(x) - \int g(x) f'(x) dx$ .
' "&chr(10)&"      · Example: Integrate  $\int x e^x dx$ 
' "&chr(10)&"      1. Set  $f(x) = x$  and  $g'(x) = e^x$ .
',
End Sub
Sub Macro16()
',
' Macro16 Macro
',
' "&chr(10)&"       $f'(x) = 1, g(x) = e^x. f'(x) = 1, \quad g(x) = e^x.$ 
' "&chr(10)&"      3. Apply the formula:
' "&chr(10)&"       $\int x e^x dx = x e^x - \int e^x dx = x e^x - e^x + C.$ 
',
Selection.MoveDown Unit:=wdLine, Count:=19
End Sub
Sub Macro17()
',
' Macro17 Macro
',

```

```

' "&chr(10)&"      f'(x)=1,g(x)=ex.f'(x) = 1, \quad g(x) = e^x.
' "&chr(10)&"      3. Apply the formula:
' "&chr(10)&"
' "&chr(10)&"      ?xexdx=xex-?exdx=xex-ex+C.\int x e^x dx = x e^x - \int e^x dx = x e^x - e^x + C.
'
End Sub
Sub Macro18()
'
' Macro18 Macro
'
' "&chr(10)&"      ?sin^2(x)dx=?12dx-?cos^2(2x)2dx=x2-sin^2(2x)4+C.\int \sin^2(x) dx = \int \frac{1}{2}
dx - \int \frac{\cos(2x)}{2} dx = \frac{x}{2} - \frac{\sin(2x)}{4} + C.
' "&chr(10)&"      3. Completing the Square:
' "&chr(10)&"      o Transform qu
'
End Sub
Sub Macro19()
'
' Macro19 Macro
'
' "&chr(10)&"      o Example: Integrate ?1x^2+6x+10dx\int \frac{1}{x^2 + 6x + 10} dx.
' "&chr(10)&"      $ Complete the square: x^2+6x+10=(x+3)^2+1x^2 + 6x + 10 = (x + 3)^2 + 1.
' "&chr(10)&"      $ Use the formula for inverse tangent:
' "&chr(10)&"
'
End Sub
Sub Macro20()
'
' Macro20 Macro
'
' "&chr(10)&"      2(x+3)^3?Ax+3+B(x+3)^2+C(x+3)^3.\frac{2}{(x+3)^3} \to \frac{A}{x+3} + \frac{B}{(x+3)^2} + \frac{C}{(x+3)^3}.
' "&chr(10)&"      · Case 2: Two Recursive Factors:
' "&chr(10)&"
' "&chr(10)&"      5x(x-1)^2(2x-5)?A(x-1)+B(x-1)^2+C
'
End Sub
Sub Macro21()
'
' Macro21 Macro
'
' 5x(x-1)^2(2x-5)?A(x-1)+B(x-1)^2+C(2x-5).\frac{5x}{(x-1)^2(2x-5)} \to \frac{A}{(x-1)} + \frac{B}{(x-1)^2} + \frac{C}{(2x-5)}.
'
End Sub
Sub Macro22()
'
' Macro22 Macro
'
' 5x(x-1)^2(2x-5)?A(x-1)+B(x-1)^2+C(2x-5).\frac{5x}{(x-1)^2(2x-5)} \to \frac{A}{(x-1)} + \frac{B}{(x-1)^2} + \frac{C}{(2x-5)}.
'
End Sub
Sub Macro23()
'
' Macro23 Macro
'
' "&chr(10)&"      A=?01[(x+2)-x^2]dx=?01(-x^2+x+2)dx.A = \int_0^1 [(x+2) - x^2] dx = \int_0^1 (-x^2 +
x + 2) dx.
' "&chr(10)&"      Compute:
' "&chr(10)&"
' "&chr(10)&"      ?01(-x^2+x+2)dx=[-x^33+x^22+2x]01=-13+12+2=136.\int_0^1 (-x^2 + x + 2)
'
End Sub
Sub Macro24()
'
' Macro24 Macro
'
' "&chr(10)&"      V=p?ab[f(x)]^2dx.V = \pi \int_a^b [f(x)]^2 dx.
' "&chr(10)&"      · Shell Method:
' "&chr(10)&"
' "&chr(10)&"      V=2p?abxf(x)dx.V = 2\pi \int_a^b x f(x) dx.
'

```

```

End Sub
Sub Macro25()
'
' Macro25 Macro
' 1. Formula:
' "&chr(10)&"          \[ V = \pi \int_0^1 (x^2)^2 dx = \pi \int_0^1 x^4 dx. \]
' "&chr(10)&"          2. Compute:
' "&chr(10)&"          \[ V = \pi \left[\frac{x^5}{5}\right]_0^1 = \frac{\pi}{5}. \]
'
End Sub
Sub Macro26()
'
' Macro26 Macro
' x^2=4-x^2 ? 2x^2=4 ? x=±2.x^2 = 4 - x^2 \implies 2x^2 = 4 \implies x = \pm\sqrt{2}.
' "&chr(10)&"          Intersection points are (2,2)(\sqrt{2}, 2) and (-2,2)(-\sqrt{2}, 2).
'
End Sub
Sub Macro27()
'
' Macro27 Macro
'
' "&chr(10)&"          A=?-22[(4-x^2)-x^2]dx=?-22(4-2x^2)dx.A = \int_{-\sqrt{2}}^{\sqrt{2}} [(4 - x^2) - x^2]
' dx = \int_{-\sqrt{2}}^{\sqrt{2}} (4 - 2x^2) dx.
' "&chr(10)&"          Compute:
' "&chr(10)&"          \[ A = [4x - \frac{2x^3}{3}]_{-\sqrt{2}}^{\sqrt{2}}
'
End Sub
Sub Macro28()
'
' Macro28 Macro
'
' "&chr(10)&"          x^-=?abx[f(x)-g(x)]dx?ab[f(x)-g(x)]dx.\bar{x} = \frac{\int_a^b x [f(x) - g(x)] dx}{\int_a^b [f(x) - g(x)] dx}.
' "&chr(10)&"          · Example: For y=x^2y = x^2, find x^- \bar{x} over [0,1][0, 1]:
' "&chr(10)&"
' "&chr(10)&"
'
End Sub
Sub Macro29()
Attribute Macro29.VB_Description = "Compute numerator:

\r\n

?01x3dx=x44|01=14.\int_0^1 x^3 dx = \frac{x^4}{4} \big|_0^1 = \frac{1}{4}.

\r\n

Compute denominator:

\r\n

?01x2dx=x33|01=13."

' Macro29 Macro
' Compute numerator:
' "&chr(10)&"
' "&chr(10)&"          ?01x3dx=x44|01=14.\int_0^1 x^3 dx = \frac{x^4}{4} \big|_0^1 = \frac{1}{4}.
' "&chr(10)&"          Compute denominator:
' "&chr(10)&"
' "&chr(10)&"          ?01x2dx=x33|01=13.
'
End Sub
Sub Macro30()
Attribute Macro30.VB_Description = "

\r\n

2. Moment of Inertia:

\r\n

o For solids:

\r\n

I=?abx

2[f(x)]dx.I = \int_a^b x^2 [f(x)] dx. _

\r\n"
'

```



```
' Macro30 Macro
```

```
'
' "&chr(10)&"      Ix=?ab[f(x)]2dx.I_x = \int_a^b [f(x)]^2 dx.
' "&chr(10)&"      2. Moment of Inertia:
' "&chr(10)&"      o For solids:
' "&chr(10)&"
' "&chr(10)&"      I=?abx2[f(x)]dx.I = \int_a^b x^2 [f(x)] dx.
'
```

```
End Sub
```

```
Sub Macro31()
```

```
' Macro31 Macro
```

```
' : Find the area between  $y=x^2$  and  $y=4-x^2$  over  $x=-2$  to  $x=2$ :
' "&chr(10)&"
' "&chr(10)&"      A=?-22[(4-x^2)-x^2]dx=?-22(4-2x^2)dx.A = \int_{-\sqrt{2}}^{\sqrt{2}} [(4 - x^2) - x^2] dx = \int_{-\sqrt{2}}^{\sqrt{2}}
```

```
End Sub
```

```
Sub Macro32()
```

```
' Macro32 Macro
```

```
' Polar form representation (modulus  $r=\sqrt{x^2+y^2}$  and argument  $\theta=\tan^{-1}(y/x)$ ) is crucial for simplifying multiplications and divisions.
```

```
End Sub
```

```
Sub Macro33()
```

```
' Macro33 Macro
```

```
' o Formula:  $D=ad-bc$ 
' "&chr(10)&"      o Example Calculation: If  $D=\begin{bmatrix} 6 & 3 \\ -2 & 3 \end{bmatrix}$ , then:
```

```
' "&chr(10)&"      D=(6·3)-(3·-2)=18+6=24.D = (6 \cdot 3) - (3 \cdot -2) = 18
```

```
' Selection.MoveDown Unit:=wdLine, Count:=22
```

```
End Sub
```

```
Sub Macro34()
```

```
' Macro34 Macro
```

```
' D= $\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$ , the determinant is:
' "&chr(10)&"
' "&chr(10)&"      D=a(ei-fh)-b(di-fg)+c(dh-eg).D = a(ei - fh) - b(di - fg) + c(dh - eg).
```

```
End Sub
```

```
Sub Macro35()
```

```
' Macro35 Macro
```

```
' D= $\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$ , the determinant is:
' "&chr(10)&"
' "&chr(10)&"      D=a(ei-fh)-b(di-fg)+c(dh-eg).D = a(ei - fh) - b(di - fg) + c(dh - eg).
```

```
End Sub
```

```
Sub Macro36()
```

```
' Macro36 Macro
```

```
' "&chr(10)&"      o Using conjugates, divide  $(3+2i)(3+2i)$  by  $(1-i)(1-i)$ : Multiply numerator and denominator by  $(1+i)(1+i)$ :
' "&chr(10)&"      \[ \frac{(3+2i)}{(1-i)} = \frac{(3+2i)(1+i)}{(1-i)(1+i)} = \frac{3+3i+2i+2i^2}{1+1i+1i+i^2} = \frac{1+5i}{2}. \]
```

```
End Sub
```

```
Sub Macro37()
```

```
' Macro37 Macro
```

```
' "&chr(10)&"      o Convert  $z=3+4i$ : Modulus:  $r=\sqrt{3^2+4^2}=5$ . Argument:  $\theta=\tan^{-1}(4/3) \approx 53.1^\circ$ . Polar Form:  $z=5(\cos 53.1^\circ + i \sin 53.1^\circ)$ .
```



```

ple: f(x)=x3 ? f'(x)=3x2f(x) = x^3 \implies f'(x) = 3x^2.
' "&chr(10)&"      · Constant Rule: If f(x)=cf(x) = c, where cc is constant, then f'(x)=0f'(x) = 0. E
xam
'
End Sub
Sub Macro44()
'
' Macro44 Macro
' 2. Advanced Rules
' "&chr(10)&"      For more complex functions:
' "&chr(10)&"      · Product Rule: If f(x)=u(x) · v(x) f(x) = u(x) \cdot v(x), then f'(x)=u'(x) · v(x)+u(x)
· v'(x) f'(x) = u'(x) \cdot v(x) + u(x) \cdot v'(x). Example: f(x)=x · sin(x) ?
'
End Sub
Sub Macro45()
'
' Macro45 Macro
' Real-World Example
' "&chr(10)&"      Let's calculate the derivative of f(x)=3x2+5x+2f(x) = 3x^2 + 5x + 2, representing
velocity in an engineering context:
' "&chr(10)&"      1. Differentiate each term:
' "&chr(10)&"      o 3x2 ? 6x3x^2 \
'
' Selection.MoveDown Unit:=wdLine, Count:=145
End Sub
Sub Macro46()
'
' Macro46 Macro
' o The limit describes the value a function approaches as the input gets close to a specific point. N
otation: lim_{x \to a} f(x).
' "&chr(10)&"      o Example: Find lim_{x \to 2} (x^2 - 4):
' "&chr(10)&"
'
End Sub
Sub Macro47()
'
' Macro47 Macro
' o Forms like 00\frac{0}{0} are resolved by simplifying the function or applying L'Hôpital's rule (
if allowed).
' "&chr(10)&"      4. Continuity
' "&chr(10)&"      1. Definition:
' "&chr(10)&"      o A function f(x) is continuous at x=a
'
End Sub
Sub Macro48()
'
' Macro48 Macro
'
' "&chr(10)&"
' "&chr(10)&"      x=-4±42-4(2)(-6)2(2)=-4±16+484=-4±644.x = \frac{-4 \pm \sqrt{4^2 - 4(2)(-6)}}{2(2)}
= \frac{-4 \pm \sqrt{16 + 48}}{4} = \frac{-4 \pm \sqrt{64}}{4}.
' "&chr(10)&"      3. Simplify:
' "&chr(10)&"
'
End Sub
Sub Macro49()
'
' Macro49 Macro
'
' "&chr(10)&"      vr=vA2+vB2=402+302=1600+900=2500=50 km/h.v_r = \sqrt{v_A^2 + v_B^2} = \sqrt{40^2 +
30^2} = \sqrt{1600 + 900} = \sqrt{2500} = 50 \, \text{km/h}.
' "&chr(10)&"      2. Shortest Distance:
' "&chr(10)&"      o If both cars are moving tow
'
' Selection.MoveDown Unit:=wdLine, Count:=53
End Sub
Sub Macro50()
'
' Macro50 Macro
' A ball is projected horizontally from a height of 5 m \, \text{m} with an initial velocity of 10 m/s
10 \, \text{m/s}. Calculate the time of flight and range:
' "&chr(10)&"      1. Time of Flight: Using h=1/2gt^2h = \frac{1}{2} g t^2, solve:
'

```

```

End Sub
Sub Macro51()
'
' Macro51 Macro
'
' "&chr(10)&"          5=12·9.8·t2 ? t=109.81.01 s.5 = \frac{1}{2} \cdot 9.8 \cdot t^2 \implies t = \sqrt{\frac{2}{9.8}} \approx 1.01 \text{ s}.
' rt{\frac{10}{9.8}} \approx 1.01 \text{ s}.
' "&chr(10)&"          2. Range: Horizontal distance: x=v·t x = v \cdot t:
' "&chr(10)&"
'
End Sub
Sub Macro52()
'
' Macro52 Macro
' A wheel rotates at 10 rad/s10 \, \text{rad/s} with an angular acceleration of 2 rad/s22 \, \text{rad/s}^2. Find the angular displacement after 5 s5 \, \text{s}:
' "&chr(10)&"          1. Use:
' "&chr(10)&"
' "&chr(10)&"          ?=?t+12at2.\t
'
' Selection.MoveDown Unit:=wdLine, Count:=26
End Sub
Sub Macro53()
'
' Macro53 Macro
' F=ma=1000·2=2000 N.F = ma = 1000 \cdot 2 = 2000 \, \text{N}.
'
' Selection.MoveDown Unit:=wdLine, Count:=35
End Sub
Sub Macro54()
'
' Macro54 Macro
' F=ma=1000·2=2000 N.F = ma = 1000 \cdot 2 = 2000 \, \text{N}.
'
' Selection.MoveDown Unit:=wdLine, Count:=27
End Sub
Sub Macro55()
'
' Macro55 Macro
' 1. Use F=P·A F = P \cdot A:
' "&chr(10)&"
' "&chr(10)&"          A=p·(0.5)2=0.196 m2,A = \pi \cdot \left(\frac{0.5}{2}\right)^2 = 0.196 \, \text{m}^2,
' "&chr(10)&"
' "&chr(10)&"          F=500·0.196=98.1 kN.F = 500 \cdot 0.196 = 98.1 \, \text{kN}
'
' Selection.MoveDown Unit:=wdLine, Count:=27
End Sub
Sub Macro56()
'
' Macro56 Macro
' Example: A steel rod with L=2 m L = 2 \, \text{m} and cross-sectional area A=0.01 m2 A = 0.01 \, \text{m}^2 stretches by ΔL=0.002 m \Delta L = 0.002 \, \text{m}. Find the stress if E=2·105 MPa E = 2 \cdot 10^5 \, \text{MPa}:
' "&chr(10)&"          1. Strain:
'
End Sub
Sub Macro57()
'
' Macro57 Macro
' 2. Stress:
' "&chr(10)&"
' "&chr(10)&"          σ=E·ε=2·105·0.001=200 MPa.\sigma = E \cdot \epsilon = 2 \cdot 10^5 \cdot 0.001 = 200 \, \text{MPa}.
'
End Sub
Sub Macro58()
'
' Macro58 Macro
' A gas at 1 atm1 \, \text{atm} and 300 K300 \, \text{K} has a volume 2 m32 \, \text{m}^3. Find its final volume if the pressure is halved:

```

```

' "&chr(10)&"          1. Using Boyle's Law ( $P_1V_1=P_2V_2$   $P_1 V_1 = P_2 V_2$ ):
' "&chr(10)&"
'
    Selection.MoveDown Unit:=wdLine, Count:=32
End Sub
Sub Macro59()
'
' Macro59 Macro
' A gas at 1 atm1 \, \text{atm} and 300 K300 \, \text{K} has a volume 2 m32 \, \text{m}^3. Find its final
' volume if the pressure is halved:
' "&chr(10)&"          1. Using Boyle's Law ( $P_1V_1=P_2V_2$   $P_1 V_1 = P_2 V_2$ ):
' "&chr(10)&"
'
    Selection.MoveDown Unit:=wdLine, Count:=24
End Sub
Sub Macro60()
Attribute Macro60.VB_Description = "1. Angular Velocity:

    \r\n

\r\n          ?=at=4·3=12 rad/s.\omega = \alpha t = 4 \cdot 3 = 12 \, \, \text{rad/s}.

                                \r\n                                2. Work Done:

                                \r\n
                                W=12I^2=12·2·122=144 J.W = \"

' Macro60 Macro
' 1. Angular Velocity:
' "&chr(10)&"
' "&chr(10)&"          ?=at=4·3=12 rad/s.\omega = \alpha t = 4 \cdot 3 = 12 \, \, \text{rad/s}.
' "&chr(10)&"          2. Work Done:
' "&chr(10)&"
' "&chr(10)&"          W=12I^2=12·2·122=144 J.W = \

End Sub
Sub Macro61()
'
' Macro61 Macro
'
' "&chr(10)&"           $P=Q \cdot \eta$ ,  $P = \frac{Q \cdot \Delta P}{\eta}$ ,
' "&chr(10)&"          where  $Q=0.5/60 \text{ m}^3/\text{s} = 0.5/60 \, \, \text{m}^3/\text{s}$ ,  $\eta=2 \times 10^6 \text{ Pa} \cdot \text{s}$ ,  $\Delta P = 2 \times 10^6$ 
' es  $10^6 \, \, \text{Pa}$ , and assume  $\eta=0.85$ 
' "&chr(10)&"
'
End Sub
Sub Macro62()
'
' Macro62 Macro
'
' "&chr(10)&"           $A=p \cdot (0.025)^2=1.96 \times 10^{-3} \text{ m}^2$ .  $A = \pi \cdot (0.025)^2 = 1.96 \times 10^{-3} \, \, \text{m}^2$ .
' "&chr(10)&"          2. Stress:
' "&chr(10)&"
' "&chr(10)&"           $s=FA=800001.96 \times 10^{-3} 4.08 \times 10^7 \text{ Pa}$ .  $\sigma = \frac{F}{A} = \frac{80000}{1.96}$ 

End Sub
Sub Macro63()
'
' Macro63 Macro
' Advanced Example: A gas undergoes an isothermal expansion from  $P_1=3 \text{ atm}$ ,  $V_1=2 \text{ m}^3$   $P_1 = 3 \, \, \text{atm}$ ,
'  $V_1 = 2 \, \, \text{m}^3$  to  $V_2=5 \text{ m}^3$   $V_2 = 5 \, \, \text{m}^3$ . Calculate the work done:
' "&chr(10)&"
' "&chr(10)&"           $W=P_1V_1 \ln(V_2/V_1)$ ,  $W = P_1$ 

    Selection.MoveDown Unit:=wdLine, Count:=173
End Sub
Sub Macro64()
'
' Macro64 Macro
'  $Z=R^2+(X_L-X_C)^2$ ,  $Z = \sqrt{R^2 + (X_L - X_C)^2}$ ,
' "&chr(10)&"          where  $X_L=2\pi fL$   $X_L = 2\pi fL$  and  $X_C=1/2\pi fC$   $X_C = \frac{1}{2\pi fC}$ .
' "&chr(10)&"          · Use phasor diagrams to analyze voltage and current relationships.

```

```
' "&chr(10)&"      · Pow
```

```
End Sub
```

```
Sub Macro65()
```

```
' Macro65 Macro
```

```
' o Resistance (RR) = 10 010 \, \Omega,
' "&chr(10)&"      o Inductive Reactance (XLX_L) = 15 015 \, \Omega,
' "&chr(10)&"      o Capacitive Reactance (XCX_C) = 5 05 \, \Omega:
' "&chr(10)&"
' "&chr(10)&"      Z=R2+(XL-XC)2=102+(15
```

```
End Sub
```

```
Sub Macro66()
```

```
' Macro66 Macro
```

```
' "&chr(10)&"      Z=R2+(XL-XC)2=102+(15-5)2=100+100=14.14 0.Z = \sqrt{R^2 + (X_L - X_C)^2} = \sqrt{10^2 + (15 - 5)^2} = \sqrt{100 + 100} = 14.14 \, \Omega.
' "&chr(10)&"      General Assessment Guidelines
' "&chr(10)&"      1. Practical Applications:
```

```
Selection.MoveDown Unit:=wdLine, Count:=61
```

```
End Sub
```

```
Sub Macro67()
```

```
' Macro67 Macro
```

```
' Z=R2+(XL-XC)2,XL=2pfL,XC=12pfC.Z = \sqrt{R^2 + (X_L - X_C)^2}, \quad X_L = 2\pi fL, \quad X_C = \frac{1}{2\pi fC}.
' "&chr(10)&"      3. Resonance:
' "&chr(10)&"      o Achieved when XL=XCX_L = X_C. Use:
' "&chr(10)&"
```

```
Selection.MoveDown Unit:=wdLine, Count:=24
```

```
End Sub
```

```
Sub Macro68()
```

```
' Macro68 Macro
```

```
' "&chr(10)&"      Example Problem: A convection heater operates with 2 kW2 \, \text{kW}. Find the energy used in 5 hours5 \, \text{hours}:
```

```
' "&chr(10)&"
' "&chr(10)&"      E=P·t=2·5=10 kWh.E = P \cdot t = 2 \cdot 5 = 10 \, \text{kWh}.
```

```
Selection.MoveDown Unit:=wdLine, Count:=21
```

```
End Sub
```

```
Sub Macro69()
```

```
' Macro69 Macro
```

```
' Example Problem: An LED lamp uses 10 W10 \, \text{W} and operates for 4 hours/day4 \, \text{hours/day}. Calculate energy consumption in one month:
```

```
' "&chr(10)&"
' "&chr(10)&"      E=P·t·days=10·4·30=1.2 kWh.E = P \cdot t \cdot \text{days}
```

```
Selection.MoveDown Unit:=wdLine, Count:=28
```

```
Selection.MoveUp Unit:=wdLine, Count:=37
```

```
Selection.Copy
```

```
End Sub
```

```
Sub Macro70()
```

```
' Macro70 Macro
```

```
' Module 4: Programmable Logic Controllers (PLCs)
```

```
' "&chr(10)&"      Key Topics:
```

```
' "&chr(10)&"      · Define PLCs, their components, and their programming languages (e.g., ladder logic).
```

```
' "&chr(10)&"      Practical Insights: PLC applications
```

```
Selection.MoveDown Unit:=wdLine, Count:=23
```

```
Selection.Copy
```

```
End Sub
```

```
Sub Macro71()
```

```
Attribute Macro71.VB_Description = "
```

```
\r\n      o Calculate back emf:
```

```

\
\
Eb=V-IaRa.E_b = V - I_aR_a.
\
\
2. Motor Torque:
\
o Use: _
\
\
T=kIa?.T = k I_a \ph"
\
Macro71 Macro
\
" &chr(10) & " o Calculate back emf:
" &chr(10) & "
" &chr(10) & " Eb=V-IaRa.E_b = V - I_aR_a.
" &chr(10) & " 2. Motor Torque:
" &chr(10) & " o Use:
" &chr(10) & "
" &chr(10) & " T=kIa?.T = k I_a \ph
\
Selection.MoveDown Unit:=wdLine, Count:=17
Selection.Copy
End Sub
Sub Macro72()
\
Macro72 Macro
\
Example Problem: Find the torque of a DC motor with Ia=10 AI_a = 10 \, \text{A}, ?=0.02 Wb\phi = 0.0
2 \, \text{Wb}, and k=1k = 1:
" &chr(10) & "
" &chr(10) & " T=kIa?.T = k I_a \phi = 1 \cdot 10 \cdot 0.02 = 0.2 Nm.T = k I_a \phi = 1 \cdot 10 \cdot 0.02 = 0.2 \, \text{Nm}
\
Selection.MoveRight Unit:=wdCharacter, Count:=1
Selection.MoveDown Unit:=wdLine, Count:=26
Selection.Copy
End Sub
Sub Macro73()
\
Macro73 Macro
\
" &chr(10) & " S=ns-nrns,ns=120fP.S = \frac{n_s - n_r}{n_s}, \quad n_s = \frac{120f}{P}.
" &chr(10) & " Example Problem: For a motor with f=50 Hzf = 50 \, \text{Hz} and P=4P = 4, calculate synchronous speed:
" &chr(10) & "
\
Selection.MoveDown Unit:=wdLine, Count:=31
Selection.Copy
End Sub
Sub Macro74()
\
Macro74 Macro
\
" &chr(10) & " Example Problem: A transformer has Pcore=200 WP_{core} = 200 \, \text{W} and Pcopper=300 WP_{copper} = 300 \, \text{W}. Calculate efficiency when delivering Pout=1000 WP_{out} = 1000 \, \text{W}:
" &chr(10) & "
" &chr(10) & " ?
\
Selection.MoveDown Unit:=wdLine, Count:=20
Selection.Copy
End Sub
Sub Macro75()
\
Macro75 Macro
\
" &chr(10) & " \cdot System earthing for safety and fault detection.
" &chr(10) & " \cdot Earthing networks and neutral conductor importance.
" &chr(10) & " Practical Insights: Proper earthing prevents hazards such as electric shocks and equipment failures.
\
Selection.MoveDown Unit:=wdLine, Count:=39
Selection.MoveUp Unit:=wdLine, Count:=1

```

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    Selection.MoveDown Unit:=wdLine, Count:=25
    Selection.Copy
End Sub
Sub Macro76()
'
' Macro76 Macro
'
' "&chr(10)&"      Enhanced Example: A geyser thermostat heats 50 kg50 \, \text{kg} of water from 25°C
C25^\circ \text{C} to 80°C80^\circ \text{C}. Find the energy required if the specific heat capacity of
water is 4200 J/kg°C4200 \, \text{J/kg}^\circ \text{C}:
'
    Selection.MoveDown Unit:=wdLine, Count:=22
    Selection.Copy
End Sub
Sub Macro77()
'
' Macro77 Macro
'
' "&chr(10)&"      E=50·4200·55=11,550,000 J or 11.55 MJ.E = 50 \cdot 4200 \cdot 55 = 11,550,000 \, \,
\text{J} \, \, \text{or} \, \, 11.55 \, \, \text{MJ}.
' "&chr(10)&"      Module 3: Lighting Systems
' "&chr(10)&"      Expanded Example: A compact f
'
    Selection.Copy
    Selection.Copy
End Sub
Sub Macro78()
'
' Macro78 Macro
' Expanded Example: A compact fluorescent lamp operates at 15 W15 \, \text{W} for 10 hours/day10 \, \,
\text{hours/day}. Calculate energy consumption for 30 days30 \, \text{days}.
' "&chr(10)&"      Solution:
' "&chr(10)&"      1. Daily Energy:
'
End Sub
Sub Macro79()
'
' Macro79 Macro
' Edaily=P·t=15·10=150 Wh.E_{\text{daily}} = P \cdot t = 15 \cdot 10 = 150 \, \, \text{Wh}.
' "&chr(10)&"      2. Monthly Energy:
' "&chr(10)&"
' "&chr(10)&"      Emonthly=150·30=4500 Wh=4.5 kWh.E_{\text{monthly}} = 150 \cdot 30 = 4500 \, \,
'
    Selection.Copy
End Sub
Sub Macro80()
'
' Macro80 Macro
' Advanced Torque Calculation: A DC motor draws Ia=15 A I_a = 15 \, \, \text{A} with a magnetic flux of ?=
0.03 Wb\phi = 0.03 \, \, \text{Wb}. Find the armature torque if k=1.2k = 1.2.
' "&chr(10)&"      Solution:
' "&chr(10)&"      1. Torque:
'
    Selection.Copy
End Sub
Sub Macro81()
'
' Macro81 Macro
' T=kIa?=1.2·15·0.03=0.54 Nm.T = k I_a \phi = 1.2 \cdot 15 \cdot 0.03 = 0.54 \, \, \text{Nm}.
' "&chr(10)&"      Module 6: Alternating Current Machines
' "&chr(10)&"      Speed Analysis Example: For a three-phase induction motor with f=60 Hzf = 60 \, \,
'
    Selection.Copy
End Sub
Sub Macro82()
'
' Macro82 Macro
'
' "&chr(10)&"      ns=120fP=120·604=1800 RPM.n_s = \frac{120f}{P} = \frac{120 \cdot 60}{4} = 1800 \, \,
\text{RPM}.
' "&chr(10)&"      2. Rotor Speed:
' "&chr(10)&"
' "&chr(10)&"      nr=ns(1-S)=1800(1-0.05)=1710 RPM.n_r = n_s (1 - S) = 1800 (

```



```

'
    Selection.MoveDown Unit:=wdLine, Count:=198
    Selection.Copy
End Sub
Sub Macro83()
'
' Macro83 Macro
' Promotional Mark: 40% ICASS + 60% Exam marks (minimum 40% required for exam qualification).
' "&chr(10)&"      Exam Setup:
' "&chr(10)&"      · Duration: 3 hours.
' "&chr(10)&"      · Closed book, formula sheet included.
'
    Selection.Copy
End Sub
Sub Macro84()
'
' Macro84 Macro
'
' "&chr(10)&"      o Application: 30-40%.
' "&chr(10)&"      o Analysis/Evaluation: 20-25%.
' "&chr(10)&"      Mark Allocation by Module
' "&chr(10)&"      Module Weighting (%)
' "&chr(10)&"      Principles of Electricity    30
'
'
    Selection.MoveDown Unit:=wdLine, Count:=43
    Selection.Copy
End Sub
Sub Macro85()
Attribute Macro85.VB_Description = "                                \r\n
    B= $\mu I^2 pr$ , B =  $\frac{\mu I^2}{2 \pi r}$ ,                                \r\n

    \r\n      where  $\mu$  is permeability.

    \r\n      3. Inductance in DC Circuits:

        \r\n      o Find inductance:

    \r\n _
                                \r\n
    L= $N^2 \mu A l$ , L "
'
' Macro85 Macro
'
' "&chr(10)&"      B= $\mu I^2 pr$ , B =  $\frac{\mu I^2}{2 \pi r}$ ,
' "&chr(10)&"      where  $\mu$  is permeability.
' "&chr(10)&"      3. Inductance in DC Circuits:
' "&chr(10)&"      o Find inductance:
' "&chr(10)&"
' "&chr(10)&"      L= $N^2 \mu A l$ , L
'
    Selection.MoveDown Unit:=wdLine, Count:=65
    ActiveWindow.ActivePane.VerticalPercentScrolled = -103
    Selection.Copy
End Sub
Sub Macro86()
'
' Macro86 Macro
'
' "&chr(10)&"      To calculate the energy dissipated in resistive circuits over time, use:
' "&chr(10)&"
' "&chr(10)&"       $E = \int_0^T P(t) dt$ ,  $P(t) = I(t)^2 R$ .  $E = \int_0^T P(t) dt$ ,  $\quad P(t) = I(t)^2 R$ .
' "&chr(10)&"      Example: A resistor
'
    Selection.Copy
End Sub
Sub Macro87()
'
' Macro87 Macro
'
' "&chr(10)&"      1. Substitute  $I(t)$ 
' "&chr(10)&"

```





```

\
\
Rs=15-5.60.05=188 O.R_s = \frac{15 - 5.6}{0.05} = 188 \, \Omega.

\
2. Power Dissipation:

\
P=5.6 \cdot 0.

,
Macro98 Macro
,
" &chr(10) &"      1. Series Resistance:
" &chr(10) &"
" &chr(10) &"      Rs=15-5.60.05=188 O.R_s = \frac{15 - 5.6}{0.05} = 188 \, \Omega.
" &chr(10) &"      2. Power Dissipation:
" &chr(10) &"
" &chr(10) &"      P=5.6 \cdot 0.
,
Selection.MoveDown Unit:=wdLine, Count:=28
Selection.Copy
End Sub
Sub Macro99()
,
Macro99 Macro
f0=12pLC.f_0 = \frac{1}{2\pi\sqrt{LC}}.
" &chr(10) &"      Example: For L=5 mHL = 5 \, \text{mH} and C=200 \mu FC = 200 \, \mu\text{F}, calculat
e f0f_0:
" &chr(10) &"
" &chr(10) &"      f0=12p5\times 10^{-3} \cdot 200\times 10^{-6}.f_0 = \frac{1}{2\pi\sqrt{5 \,
,
Selection.MoveDown Unit:=wdLine, Count:=83
Selection.Copy
End Sub
Sub Macro100()
,
Macro100 Macro
,
" &chr(10) &"      Calculate the rate of change of input voltage dVdt\frac{dV}{dt}, capacitance (CC),
resistance (RR), and time constant for an RC integrator given:
" &chr(10) &"      \cdot R=2 \, kOR = 2 \, \text{k}\Omega,
" &chr(10) &"      \cdot C=50 \, \mu FC = 5
,
Selection.Copy
End Sub
Sub Macro101()
Attribute Macro101.VB_Description = "1. Time Constant:

\
t=RC=2\times 10^3 \cdot 50\times 10^{-6}=0.1 \, s.\tau = RC = 2 \times 10^3 \cdot 50 \times 10^{-6} = 0.1 \, s, \text{t{s}}.

2. Rate of Change:

\
dV"
,
Macro101 Macro
1. Time Constant:
" &chr(10) &"
" &chr(10) &"      t=RC=2\times 10^3 \cdot 50\times 10^{-6}=0.1 \, s.\tau = RC = 2 \times 10^3 \cdot 50 \times 10^{-6} = 0.1 \,
, \text{t{s}}.
" &chr(10) &"      2. Rate of Change:
" &chr(10) &"
" &chr(10) &"      dV
,
Selection.Copy
End Sub
Sub Macro102()
,
Macro102 Macro
,

```

```

' "&chr(10)&"      Calculation Example: If R=100 OR = 100 \, \Omega, L=0.1 HL = 0.1 \, \text{H}, and
Vin(t)=20sin?(10t)V_{in}(t) = 20 \sin(10t), calculate:
' "&chr(10)&"      1. Time Constant:
' "&chr(10)&"
' "&chr(10)&"      t=LR=0.1100=0.0
'
' Selection.MoveDown Unit:=wdLine, Count:=29
' Selection.Copy
End Sub
Sub Macro103()
'
' Macro103 Macro
' Analysis Using Complex Numbers:
' "&chr(10)&"      In an RLC circuit:
' "&chr(10)&"      1. Impedance:
' "&chr(10)&"
' "&chr(10)&"      Z=R+j(XL-XC), XL=?L, XC=1?C.Z = R + j(X_L - X_C), \quad X_L = \omega L, \quad X_C =
\frac{1}{\omega
'
' Selection.Copy
End Sub
Sub Macro104()
'
' Macro104 Macro
' Z=R+j(XL-XC), XL=?L, XC=1?C.Z = R + j(X_L - X_C), \quad X_L = \omega L, \quad X_C = \frac{1}{\omega
C}.
' "&chr(10)&"      2. Power Factor:
' "&chr(10)&"
' "&chr(10)&"      cos??=R|Z|.\cos\phi = \frac{R}{|Z|}.
' "&chr(10)&"      E
'
' Selection.Copy
End Sub
Sub Macro105()
'
' Macro105 Macro
'
' "&chr(10)&"      Example:
' "&chr(10)&"      For R=10 OR = 10 \, \Omega, L=0.05 HL = 0.05 \, \text{H}, C=20 \mu\text{F} = 20 \, \mu\text{F}, and f=1 kHzf = 1 \, \text{kHz}:
' "&chr(10)&"      1. Calculate XLX_L and XCX_C:
' "&chr(10)&"
'
' Selection.Copy
End Sub
Sub Macro106()
'
' Macro106 Macro
'
' "&chr(10)&"      Z=R^2+(XL-XC)^2=10^2+(314-8)^2306 \Omega.Z = \sqrt{R^2 + (X_L - X_C)^2} = \sqrt{10^2 + (314
- 8)^2} \approx 306 \, \Omega.
' "&chr(10)&"      Resonance in RLC Circuits
' "&chr(10)&"      Key Formulas:
' "&chr(10)&"      1. Resonance Fr
'
' ActiveWindow.ActivePane.VerticalPercentScrolled = -147
' Selection.MoveDown Unit:=wdLine, Count:=1
' Selection.Copy
End Sub
Sub Macro107()
'
' Macro107 Macro
' Industrial Electronics N4 syllabus focuses on building a strong foundation in electrical and electro
nic principles through key modules like Network Theorems, Alternating Current Theory, Electronic Power
Control, and others. Here's a breakdown of the core
'
' Selection.MoveDown Unit:=wdLine, Count:=31
' Selection.Copy
End Sub
Sub Macro108()
'
' Macro108 Macro
'

```

```

' "&chr(10)&"      ?Iin=?Iout.\sum I_{\text{in}} = \sum I_{\text{out}}.
' "&chr(10)&"      2. Second Law (Voltage Law):
' "&chr(10)&"      o The sum of voltage drops in a closed loop equals the sum of EMFs:
' "&chr(10)&"
'
      Selection.Copy
End Sub
Sub Macro109()
'
' Macro109 Macro
'
' "&chr(10)&"      ?V=0.\sum V = 0.
' "&chr(10)&"      Example: For a loop with V1=10 VV_1 = 10 \, \text{V}, R1=2 OR_1 = 2 \, \Omega, and
R2=3 OR_2 = 3 \, \Omega:
' "&chr(10)&"      1. Apply Kirchhoff's Voltage Law:
' "&chr(10)&"
'
      Selection.MoveDown Unit:=wdLine, Count:=20
      Selection.Copy
End Sub
Sub Macro110()
'
' Macro110 Macro
' o Any linear circuit can be simplified to a single voltage source (VthV_{th}) and a series resistance (RthR_{th}).
' "&chr(10)&"      2. Steps:
' "&chr(10)&"      o Remove the load.
' "&chr(10)&"      o Calculate VthV_{th} across the open t
'
      Selection.Copy
End Sub
Sub Macro111()
'
' Macro111 Macro
' o Determine RthR_{th} by deactivating all sources (replace voltage sources with short circuits and current sources with open circuits).
' "&chr(10)&"      Example: For a circuit with Vs=12 VV_s = 12 \, \text{V}, R1=4 OR_1 = 4 \, \Omega, and R2=6 OR_2
'
      Selection.MoveDown Unit:=wdLine, Count:=33
      Selection.Copy
End Sub
Sub Macro112()
'
' Macro112 Macro
' Example: For Rth=10 OR_{th} = 10 \, \Omega, calculate maximum power if Vth=20 VV_{th} = 20 \, \text{V}:
' "&chr(10)&"
' "&chr(10)&"      Pmax=Vth24Rth=20^2\cdot10=10 W.P_{\text{max}} = \frac{V_{th}^2}{4R_{th}} = \frac{20^2}{4\cdot10} = 10 \,
'
      Selection.Copy
End Sub
Sub Macro113()
'
' Macro113 Macro
'
' "&chr(10)&"      Z=R+j(XL-XC), XL=?L, XC=1?C.Z = R + j(X_L - X_C), \quad X_L = \omega L, \quad X_C =
\frac{1}{\omega C}.
' "&chr(10)&"      \cdot Parallel Circuit:
' "&chr(10)&"
' "&chr(10)&"      1Z=1R^2+(1XC-1XL)^2.\frac{1}{Z} = \sqrt{\frac{1}{R
'
      Selection.Copy
End Sub
Sub Macro114()
'
' Macro114 Macro
' Example: For R=10 OR = 10 \, \Omega, L=0.1 HL = 0.1 \, \text{H}, C=10 \mu FC = 10 \, \mu\text{F}, and f
=50 Hzf = 50 \, \text{Hz}:
' "&chr(10)&"      1. Inductive Reactance:
' "&chr(10)&"
' "&chr(10)&"      XL=2\pi fL=2\pi\cdot50\cdot0.1=31.4 O.X_L =

```



```

'
' Selection.MoveDown Unit:=wdLine, Count:=20
' Selection.Copy
End Sub
Sub Macro120()
'
' Macro120 Macro
' 3.2 Electronic Power Control Devices
' "&chr(10)&"      · SCR (Silicon Controlled Rectifier):
' "&chr(10)&"      o Conducts when triggered by a gate signal, and blocks when reversed.
' "&chr(10)&"      · DIAC:
' "&chr(10)&"      o Bidi
'
' Selection.MoveDown Unit:=wdLine, Count:=35
End Sub
Sub Macro121()
Attribute Macro121.VB_Description = "Transformer Ratios:

        \r\n                · Voltage Ratio:

        \r\n

        Vs=Vp·NsNp.V_s = V_p \cdot \frac{N_s}{N_p}.

        \r\n                · Current Ratio: _
        \r\n

        Is=Ip·NpNs."
'
' Macro121 Macro
' Transformer Ratios:
' "&chr(10)&"      · Voltage Ratio:
' "&chr(10)&"
' "&chr(10)&"      Vs=Vp·NsNp.V_s = V_p \cdot \frac{N_s}{N_p}.
' "&chr(10)&"      · Current Ratio:
' "&chr(10)&"
' "&chr(10)&"      Is=Ip·NpNs.
'
' Selection.Copy
End Sub
Sub Macro122()
'
' Macro122 Macro
'
' "&chr(10)&"      Is=Ip·NpNs.I_s = I_p \cdot \frac{N_p}{N_s}.
' "&chr(10)&"      Example Calculation: Given Np=300N_p = 300, Ns=100N_s = 100, and Vp=240 V RMSV_p =
240 \, \text{V RMS}:
' "&chr(10)&"      1. Secondary Voltage:
' "&chr(10)&"
'
' Selection.Copy
End Sub
Sub Macro123()
'
' Macro123 Macro
' RF=(VACVDC)2-1.RF = \sqrt{\left(\frac{V_{AC}}{V_{DC}}\right)^2 - 1}.
' "&chr(10)&"      2. Full-Wave Rectifier:
' "&chr(10)&"      o Utilizes both cycles, reducing ripple.
' "&chr(10)&"      Efficiency:
' "&chr(10)&"
'
' Selection.Copy
End Sub
Sub Macro124()
Attribute Macro124.VB_Description = "
        \r\n

        \r\n                Module 5: Amplifiers

        \r\n                Transistor Amplifier Configurations

```



```

Macro124 Macro
'
' "&chr(10)&"
' "&chr(10)&"      ?=PDCPAC.\eta = \frac{P_{DC}}{P_{AC}}.
' "&chr(10)&"      Module 5: Amplifiers
' "&chr(10)&"      Transistor Amplifier Configurations
' "&chr(10)&"      1. Common Emitter (CE):
' "&chr(10)&"
'
'      Selection.Copy
End Sub
Sub Macro125()
'
' Macro125 Macro
'
' "&chr(10)&"      1. AM Signal Equation:
' "&chr(10)&"
' "&chr(10)&"      m(t)=Ac(1+macos??mt)cos??ct,m(t) = A_c(1 + m_a \cos \omega_m t) \cos \omega_c t,
' "&chr(10)&"      where mam_a: modulation index, AcA_c: carrier amplitude, ?c\ome
'
'      Selection.Copy
End Sub
Sub Macro126()
'
' Macro126 Macro
'
' "&chr(10)&"      2. FM Signal Equation:
' "&chr(10)&"
' "&chr(10)&"      f(t)=cos?(?ct+βsin??mt),f(t) = \cos (\omega_c t + \beta \sin \omega_m t),
' "&chr(10)&"      where β\beta: modulation index.
'
'      Selection.Copy
End Sub
Sub Macro127()
'
' Macro127 Macro
' · Demodulation:
' "&chr(10)&"      o Reverse process to recover original information from modulated signals.
' "&chr(10)&"      o Methods include envelope detection (AM) and phase-lock loops (FM).
' "&chr(10)&"      2. Antenna Systems
'
'      Selection.MoveDown Unit:=wdLine, Count:=89
'      Selection.Copy
End Sub
Sub Macro128()
'
' Macro128 Macro
' Advanced Calculations in Signal Modulation
' "&chr(10)&"      1. Amplitude Modulation (AM):
' "&chr(10)&"      The transmitted AM signal is given by:
' "&chr(10)&"
' "&chr(10)&"      m(t)=Ac[1+macos?(?mt)]cos?(?ct),m(t) = A_c [1
'
'      Selection.MoveDown Unit:=wdLine, Count:=27
'      Selection.Copy
End Sub
Sub Macro129()
'
' Macro129 Macro
'
' "&chr(10)&"      · mam_a: Modulation index, calculated as ma=AmAcm_a = \frac{A_m}{A_c},
' "&chr(10)&"      · ?c=2pfc\omega_c = 2\pi f_c: Carrier angular frequency,
' "&chr(10)&"      · ?m=2pfm\omega_m = 2\pi f_m: Message angular frequency.
'
'      Selection.Copy
End Sub
Sub Macro130()
'
' Macro130 Macro

```

```

'
' "&chr(10)&"      Example Calculation: For Ac=5 VA_c = 5 \, \text{V}, Am=2 VA_m = 2 \, \text{V}, fc=
100 kHzf_c = 100 \, \text{kHz}, fm=1 kHzf_m = 1 \, \text{kHz}:
' "&chr(10)&"      1. Modulation Index:
' "&chr(10)&"
' "&chr(10)&"      ma=AmAc=25
'
' Selection.Copy
End Sub
Sub Macro131()
'
' Macro131 Macro
' 2. AM Signal Equation:
' "&chr(10)&"
' "&chr(10)&"      m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"      2. Frequency Modulation (FM):
'
' Selection.Copy
End Sub
Sub Macro132()
'
' Macro132 Macro
'
' "&chr(10)&"      Example Calculation: For ?f=5 kHz\Delta f = 5 \, \text{kHz}, fm=1 kHzf_m = 1 \, \t
ext{kHz}, and Ac=10 VA_c = 10 \, \text{V}:
' "&chr(10)&"      1. Modulation Index:
' "&chr(10)&"
' "&chr(10)&"      B=?ffm=50001000=5.\b
'
' ActiveWindow.ActivePane.VerticalPercentScrolled = -173
' Selection.Copy
End Sub
Sub Macro133()
'
' Macro133 Macro
' o Testing electrical wiring.
' "&chr(10)&"      o Fault-finding in electrical machines.
' "&chr(10)&"      o Renewable energy system maintenance.
' "&chr(10)&"      5. Practical Career Applications
' "&chr(10)&"      · Learners apply s
'
' ActiveWindow.ActivePane.VerticalPercentScrolled = -173
' Selection.Copy
End Sub
Sub Macro134()
'
' Macro134 Macro
'
' "&chr(10)&"      Key Role: Integrals help analyze energy storage, system behavior over time, and po
wer distribution in circuits.
' "&chr(10)&"      · Energy Stored in Capacitors: $$ E = \frac{1}{2} C V^2 $$ Example: For a capacito
r with C=10μFC = 10 \m
'
' Selection.Copy
End Sub
Sub Macro135()
'
' Macro135 Macro
'
' "&chr(10)&"      · Total Energy in a Time Period (AC Systems): Calculate energy consumption using:
$$ E = \int P(t) \, dt $$ . If P(t)=5sin?(2pt)P(t) = 5 \sin(2\pi t), solve: $$ E = \int_0^1 5 \sin(2\
\pi t) \, dt. $$
' "&chr(10)&"      2. Derivative Calc
'
' Selection.Copy
End Sub
Sub Macro136()
'
' Macro136 Macro
'
' "&chr(10)&"      · Induced Voltage in Inductors: Voltage across an inductor is: $$ V(t) = L \frac{d
i(t)}{dt} $. $$ Example: With L=5HL = 5H and i(t)=t^2i(t) = t^2: $$ V(t) = 5 \times \frac{d(t^2)}{dt} = 10t

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0t. \$\$ At \ ( t = 2s, V(2) = 10 \times 2 = 20V. \$\$

```

'
    Selection.MoveDown Unit:=wdLine, Count:=102
    Selection.Copy
End Sub
Sub Macro137()
'
' Macro137 Macro
'
' "&chr(10)&"      · Resistance Testing:
' "&chr(10)&"      o Verifying earth resistance must ensure values below 2 O, calculated using Ohm's
law: $$ R = \frac{V}{I} $$
' "&chr(10)&"      · Insulation Resistance:
' "&chr(10)&"      o This should exceed
'
End Sub
Sub Macro138()
'
' Macro138 Macro
'
' "&chr(10)&"      o Verifying earth resistance must ensure values below 2 O, calculated using Ohm's
law: $$ R = \frac{V}{I} $$
' "&chr(10)&"      · Insulation Resistance:
' "&chr(10)&"      o This should exceed 1 MO, confirming isolation standards
'
    Selection.MoveDown Unit:=wdLine, Count:=57
End Sub

```



```

' "&chr(10)&"180 END IF ` IF (S1=0)+(S2=0)+(S3=0)+(S4=0)+(S5=0)+(S6=0)+(S7=0)+(S8=0) THEN "` OR "SUB"_"
" CLICK
' "&chr(10)&"EXECU
'
    Application.Run MacroName:="frm1"
End Sub
Sub Macro4()
'
' Macro4 Macro
' 170.{ "` IF (X1=0)+(X2=0)+(X3=0)+(X4=0)+(X5=0)+(X6=0)+(X7=0)+(X8=0) THEN "` OR "SUB"_" CLICK"
' "&chr(10)&" SELECT REGISTER .ELSE , CPU ,
' "&chr(10)&"180 END IF ` IF (S1=1)+(S2=1)+(S3=1)+(S4=1)+(S5=1)+(S6=1)+(S7=1)+(S8=1) THEN "` OR "SUB"_"
" CLICK
' "&chr(10)&"EXECUTION LOOP
'
'
    Application.Run MacroName:="frm1"
    ActiveWindow.ActivePane.VerticalPercentScrolled = 119
    Selection.Copy
    Application.Run MacroName:="frm1"
End Sub
Sub Macro5()
'
' Macro5 Macro
' 10.INPUT X1
' "&chr(10)&"20. INPUT .X2
' "&chr(10)&"30. INPUT X3
' "&chr(10)&"40. INPUT X4
' "&chr(10)&"50,IN[UT X5
' "&chr(10)&"60. INPUT X6
' "&chr(10)&"60.INPUT .X7.
'
'
' "&chr(10)&" 70.OUTPUT S1
' "&chr(10)&"80.OUTPUT.S2
' "&chr(10)&"90,OUTPUT S3
' "&chr(10)&"100.OUTPUT S4
' "&chr(10)&"110.OUTPUT S5
' "&chr(10)&"120 OUTPUT S6
' "&chr(10)&"130.OUTPUT S7
' "&chr(10)&"140.OUTPUT
' "&chr(10)&"150 SELECT REGISTER
' "&chr(10)&"150 OUTPUT HARDW
'
'
    Application.Run MacroName:="frm1"
End Sub
Sub frm1()
'
' frm1 Macro
'
'
End Sub
Sub Macro6()
'
' Macro6 Macro
' if cmd =true show next step " frm1, user form 1=true - and show user form2=true, user form 3=true
' _user form 4=true _user form 5=true _user form 6=true _user form 7=true, user form 8=true ,user form cl
' ick () cmd ok user form 9 =true, user form 10 = user
'
End Sub
Sub Macro7()
'
' Macro7 Macro
' "user form 8 =true and button cmd ok =true show next user form 9, "sub" user form 10=true button cmd
' = true ", user form 11 =true button com =true , if user form frm 1 =false and cmd button cancell , wh
' il string .. "txt =false and lbl user frm 1 =false
'
    Application.Run MacroName:="Macro1"
    ActiveWindow.ActivePane.VerticalPercentScrolled = -36
End Sub
Sub Macro8()

```

```

'
' Macro8 Macro
' input kfrm, kfrm2,kfr3,kfrm4,kfrm5, ka1,ka2,,k1,k2,k3,k4,k5,k6,k7,k8,k9,k10,k11,k12,k13,k15,k17,k18,k19,k20k20,s1,s2,s3,s4,s5,s6,s7,s8,s9,s10, and input , output cmd if sltos10=0 show next step call
frm lor kfrm 2,kfrm4,kfr5,,
' "&chr(10)&"s1-frm1,km1,k1=kfm1=0
'
End Sub
Sub Macro9()
'
' Macro9 Macro
' s1-fm1,km1,k1-kfm1=s1*kfrm1) (sumk1to k17)=true
'
' Application.Run MacroName:="Macro1"
End Sub
Sub Macro1()
'
' Macro1 Macro
' visual basic atm program .sten object by system .event )hand
' "&chr(10)&"public class transaction box
' "&chr(10)&"const service as decimal =6.5
' "&chr(10)&"const pin as integer +9343
' "&chr(10)&"dim balance as decimal =150
' "&chr(10)&"private sub label 12_click (by sender System.object event arg handles labe
'
End Sub
Sub Macro10()
'
' Macro10 Macro
' Legend :
' "&chr(10)&" Modulator socket CCP
' "&chr(10)&" Modulator FTT
' "&chr(10)&" Coaxial sock NTD
' "&chr(10)&" Coaxial plui PC
' "&chr(10)&"OPTIC
'
'
' ActiveWindow.ActivePane.VerticalPercentScrolled = -112
' ActiveDocument.Shapes.Range(Array("Text Box 280")).Select
End Sub
Sub Macro11()
'
' Macro11 Macro
' Module phase PsK ,
' "&chr(10)&"M(t)=cos(wot+fi.o)
' "&chr(10)&"Sin a(t)=0 then m ot+k)g(kt
' "&chr(10)&"Modulation phase shift keying signal module psk ,
' "&chr(10)&"m(t)=sum = infi to k =-infinty .
' "&chr(10)&"A.cos(w
'
'
End Sub
Sub Macro12()
'
' Macro12 Macro
' Ir(t)=Vrfcos(w0t)=I(t)variation V1
' "&chr(10)&"Qr=(t)Vrf.sin(wot)=Q(t)+variation V2
' "&chr(10)&"Insulation in receptor conversion case we cree out mixage voice Iand Q, voltage 2 voice
qadra insulation mean level power block in case of component
'
'
End Sub
Sub Macro13()
'
' Macro13 Macro
' Control organism file component installation device system installation low test , high voltage
'
' "&chr(10)&"-radio-technical

```

```

' "&chr(10)&"
' "&chr(10)&"Power amplificatory tv  sound basic oscillator line petode tube
' "&chr(10)&"Characteristic
' "&chr(10)&"1. Eat
' "&chr(10)&"2. Indirect cathode insulated wire
'
End Sub
Sub Macro14()
'
' Macro14 Macro
' Generation station , generation set up transform, transmission , transmission customer 138kvor , sub
mission , submission 26kv and 69kv , primary customer 13kv, and 4kv, secondary customer
'
End Sub
Sub Macro15()
'
' Macro15 Macro
' esys tltmr, motor management controller , installation guide , d0ca, hazard categorie , introduction
motor, installation , commission , maintenance , configuration parameter ,wiring diagraph,, ,
'
' "&chr(10)&"1 .clearence zone ,  danger, warning , dimension  mm/in ,
'
End Sub
Sub Macro16()
'
' Macro16 Macro
' Power xld dgl/dhl, seie
' "&chr(10)&"framesize  Ct kw  cthp  vthp  cto catalog
' "&chr(10)&"
' "&chr(10)&"
' "&chr(10)&"
'
' "&chr(10)&"Description  Catlog number  480v  600 number
' "&chr(10)&"Man fan kit
' "&chr(10)&"Control fan
' "&chr(10)&"Bus igbrt module
' "&chr(10)&"Outer house
' "&chr(10)&"Type 12
'
End Sub
Sub Macro17()
'
' Macro17 Macro
' ster , motor and application, motor and application , item ,
' "&chr(10)&"Power grid , configuration input output voltage , breakers , fuse , cable, cross. Section
' "&chr(10)&"-Protection person, and animals, input disconnector frequence disconnect , inverter mount
ing , out
'
End Sub
Sub Macro18()
'
' Macro18 Macro
' Electrical power network , input configuration , energy supplier deviation rated value, deviation ph
ase balance max 3%,
' "&chr(10)&"Description ,1 supplies 1,12,13 input voltage iln , internal frequency , smps switch resi
stor , inverter dc /ac , motor , key pad but
'
End Sub
Sub Macro19()
'
' Macro19 Macro
' Normal
' "&chr(10)&"-power /phase and alarm are energetizer under connection
' "&chr(10)&"Legend
' "&chr(10)&"-cb -circuiy breaker
' "&chr(10)&"Ct current transformer
' "&chr(10)&"Mis main isolating switch
' "&chr(10)&"Msh manual start micro
' "&chr(10)&"R -run contactor

```

```

' "&chr(10)&"S starting contactor
' "&chr(10)&"Y ,wy , ,
' "&chr(10)&"Revision ,date drawing note
,
End Sub
Sub Macro20()
,
' Macro20 Macro
' ASE THREE PHASE SMART POWER :
' "&chr(10)&"-CONTENT
' "&chr(10)&"INTRODUCTION
' "&chr(10)&"SERIES MKM35512 SERIES
' "&chr(10)&"BASIC THEORY
' "&chr(10)&"HARDWARE DESIGN
' "&chr(10)&"SOFTWARE DESIGN
' "&chr(10)&"APPLICATION SETUP
' "&chr(10)&"ACCURACY AND PERFORMANCE
' "&chr(10)&"METERING BOARD ELECTRONIC
' "&chr(10)&"MEERING BOARD LAYOUT
' "&chr(10)&"BILL OF MATERIALS OF THE METE
,
End Sub
Sub Macro21()
,
' Macro21 Macro
' BASIC THEORY
' "&chr(10)&"-ACTIVE ENERGY , WH
' "&chr(10)&"-Reactive energy varh =
' "&chr(10)&"-Active power , , P=1/T
' "&chr(10)&"-Reactive power :Q=1/t
' "&chr(10)&"-Irm=.dt
' "&chr(10)&"urm=.dt
' "&chr(10)&"S=IRMSXURMS, , , S=
,
' "&chr(10)&"HARDWARE DESIGN , POWER SUPPLY, DIGITAL CIRCUIT , ANANLOGICAL SIGNAL CONDITION
End Sub
Sub Macro22()
,
' Macro22 Macro
' 1.TYPE OF MEASUREMENT
' "&chr(10)&"2.METERING ALGORITHM
' "&chr(10)&"3.ACCRACY
' "&chr(10)&"4. NOMIL VOLTAGE
' "&chr(10)&"5. CURRENT RANGE
' "&chr(10)&"6.NOMINAL FREQUENCE
' "&chr(10)&"7.METER CONST (IMP/KWH,M /K KVARH
' "&chr(10)&"8.FUNCTINALITY
' "&chr(10)&"9.VOLTAGE SENSOR
' "&chr(10)&"10.CURRENT SENSORS
' "&chr(10)&"11.ENERGY OUTPUT PULSE
' "&chr(10)&"12.ENERGY OUTPUT PULSE
,
End Sub
Sub Macro23()
,
' Macro23 Macro
' our quadran
' "&chr(10)&"-low power real time based (
' "&chr(10)&"-1514697 class,0,5(0,5%)
' "&chr(10)&"-240 vac +20%
' "&chr(10)&"-0-60a(10 a is nominal current , dynamic range is up to 72a
' "&chr(10)&"-50hz+5%
' "&chr(10)&"1600
' "&chr(10)&"V,a,kw,nar,va,kwh.import export kvah , import,export voltage
' "&chr(10)&"Current transformer ct with 25
,
End Sub
Sub Macro24()
,
' Macro24 Macro
' 3. Signal Processing

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```

' "&chr(10)&"?      Fourier Transforms: Transforming signals from time domain to frequency domain
' "&chr(10)&"
' "&chr(10)&"?      Laplace Transforms: For analyzing linear time-invariant systems
' "&chr(10)&"
' "&chr(10)&"?      Z-Transforms: Used in digital signal processing for disc
'
End Sub
Sub Macro25()
'
' Macro25 Macro
' ?      Impedance and Reactance: Calculating the impedance (ZZ) of AC circuits, inductive reactance
(XL=2pfLX_L = 2\pi fL), and capacitive reactance (XC=12pfCX_C = \frac{1}{2\pi fC})
' "&chr(10)&"
' "&chr(10)&"2. Electromagnetics
' "&chr(10)&"?      Coulomb's Law:  $F=k_e q_1 q_2 r^2 F = k_e \frac{q_1 q_2}{r^2}$ 
'
End Sub
Sub Macro26()
'
' Macro26 Macro
' 1. Circuit Analysis
' "&chr(10)&"?      Ohm's Law:  $V=IR$ 
' "&chr(10)&"
' "&chr(10)&"?      Power Calculations:  $P=VI$ 
' "&chr(10)&"
' "&chr(10)&"?      Kirchhoff's Laws: Kirchhoff's Voltage Law (KVL) and Kirchhoff's Current Law (KCL)
' "&chr(10)&"
' "&chr(10)&"?      Impedance and Reactance: Calculating
'
End Sub
Sub Macro27()
'
' Macro27 Macro
' Step 2: Develop the Mathematical Model
' "&chr(10)&"?      Use the power flow equations:  $P_i = V_i \sum_{j=1}^n V_j (G_{ij} \cos \theta_{ij} + B_{ij} \sin \theta_{ij})$ 
 $Q_i = V_i \sum_{j=1}^n V_j (G_{ij} \sin \theta_{ij} - B_{ij} \cos \theta_{ij})$  Where
'
End Sub
Sub Macro28()
'
' Macro28 Macro
' Key Topics:
' "&chr(10)&"?      Machine Learning Integration: Combining ML algorithms with RPA for advanced automation.
' "&chr(10)&"
' "&chr(10)&"?      Predictive Maintenance: Using ML and RPA for proactive maintenance strategies.
' "&chr(10)&"
' "&chr(10)&"?      Enhanced Decision-Making: Improving decision-making processes.
'
End Sub

```

```

Sub Macro1()
'
' Macro1 Macro
' Background on Radio and TV Systems
' "&chr(10)&"      · Radio Systems:
' "&chr(10)&"      o Focus on transmitting and receiving electromagnetic signals using frequencies in
the AM/FM spectrum.
' "&chr(10)&"      o Applications: Communicatio
'
End Sub

Sub frm1()
'
' frm1 Macro
' VERSION 5.00
' "&chr(10)&"Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm1
' "&chr(10)&"      Caption          = "UserForm1"
' "&chr(10)&"      ClientHeight     = 9792
' "&chr(10)&"      ClientLeft      = 108
' "&chr(10)&"      ClientTop       = 456
' "&chr(10)&"      ClientWidth    = 20004
' "&chr(10)&"      OleObjectBlob   = "UserForm
'
End Sub

Sub Macro2()
'
' Macro2 Macro
' VERSION 5.00
' "&chr(10)&"Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm1
' "&chr(10)&"      Caption          = "UserForm1"
' "&chr(10)&"      ClientHeight     = 9792
' "&chr(10)&"      ClientLeft      = 108
' "&chr(10)&"      ClientTop       = 456
' "&chr(10)&"      ClientWidth    = 20004
' "&chr(10)&"      OleObjectBlob   = "UserForm
'
End Sub

Sub Macro3()
'
' Macro3 Macro
'  $m(t) = A_c(1 + m_a \cos(\omega_m t)) \cos(\omega_c t)$ ,
' "&chr(10)&"      where  $m_a$ : modulation index,  $A_c$ : carrier amplitude,  $\omega_c$ : carrier frequ
ency,  $\omega_m$ : message frequency.
' "&chr(10)&"      2. FM S
'
End Sub

Sub Macro4()
'
' Macro4 Macro
' 2. FM Signal Equation:
' "&chr(10)&"
' "&chr(10)&"       $f(t) = \cos(\omega_c t + \beta \sin \omega_m t)$ ,
' "&chr(10)&"      where  $\beta$ : modulation index.
' "&chr(10)&"      · Demodulation:
'
End Sub

Sub Macro5()
'
' Macro5 Macro
' 2. FM Signal Equation:
' "&chr(10)&"
' "&chr(10)&"       $f(t) = \cos(\omega_c t + \beta \sin \omega_m t)$ ,
' "&chr(10)&"      where  $\beta$ : modulation index.
' "&chr(10)&"      · Demodulation:
'
End Sub

Sub Macro6()
'
' Macro6 Macro
'
' "&chr(10)&"      Example Calculation: For  $A_c = 5 \text{ V}$ ,  $A_m = 2 \text{ V}$ ,  $f_c =$ 
100 kHz  $f_m = 1 \text{ kHz}$ :
' "&chr(10)&"      1. Modulation Index:

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' "&chr(10)&"
' "&chr(10)&"      ma=AmAc=25
'
End Sub
Sub Macro7()
'
' Macro7 Macro
'
' "&chr(10)&"      m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"      2. Frequency Modulation (FM):
' "&chr(10)&"      The FM signal is expressed as:
'
End Sub
Sub Macro8()
'
' Macro8 Macro
'
' "&chr(10)&"      m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"      2. Frequency Modulation (FM):
' "&chr(10)&"      The FM signal is expressed as:
'
End Sub
Sub Macro9()
'
' Macro9 Macro
'
' "&chr(10)&"      m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"      2. Frequency Modulation (FM):
' "&chr(10)&"      The FM signal is expressed as:
'
End Sub
Sub Macro10()
'
' Macro10 Macro
'
' "&chr(10)&"      m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"      2. Frequency Modulation (FM):
' "&chr(10)&"      The FM signal is expressed as:
'
End Sub
Sub Macro11()
'
' Macro11 Macro
'
' "&chr(10)&"      m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"      2. Frequency Modulation (FM):
' "&chr(10)&"      The FM signal is expressed as:
'
End Sub
Sub Macro12()
'
' Macro12 Macro
'
' "&chr(10)&"      m(t)=5[1+0.4cos?(2p·1000t)]cos?(2p·100000t).m(t) = 5 [1 + 0.4 \cos(2\pi \cdot 1000
t)] \cos(2\pi \cdot 100000 t).
' "&chr(10)&"      2. Frequency Modulation (FM):
' "&chr(10)&"      The FM signal is expressed as:
'
End Sub
Sub Macro13()
'
' Macro13 Macro
'
' "&chr(10)&"      The intensity of colors is calculated as:
' "&chr(10)&"
' "&chr(10)&"      I_{\text{display}} = R \cdot \text{gain}_R + G \cdot \text{gain}_G + B \cdot \text{gain}_B.
'

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Selection.Copy
End Sub
Sub Macro14()
'
' Macro14 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
End Sub
Sub Macro15()
'
' Macro15 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
End Sub
Sub Macro16()
'
' Macro16 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
Selection.MoveDown Unit:=wdLine, Count:=203
End Sub
Sub Macro17()
'
' Macro17 Macro
' Video Signals:
' "&chr(10)&"      · Luminance (YY) is:
' "&chr(10)&"
' "&chr(10)&"      Y=0.299R+0.587G+0.114B.Y = 0.299R + 0.587G + 0.114B.
' "&chr(10)&"      · Chrominance (CC) represents color differences.
'
End Sub
Sub Macro18()
'
' Macro18 Macro
'
' "&chr(10)&"      Ft=aDt-1+(1-a)Ft-1,F_t = \alpha D_{t-1} + (1 - \alpha) F_{t-1},
' "&chr(10)&"      where:
' "&chr(10)&"      · FtF_t: Forecast for current period,
' "&chr(10)&"      · a\alpha: Smoothing constant,
' "&chr(10)&"      · Dt-1
'
End Sub
Sub Macro19()
'
' Macro19 Macro
'
' "&chr(10)&"      Ft=aDt-1+(1-a)Ft-1,F_t = \alpha D_{t-1} + (1 - \alpha) F_{t-1},
' "&chr(10)&"      where:
' "&chr(10)&"      · FtF_t: Forecast for current period,
' "&chr(10)&"      · a\alpha: Smoothing constant,
' "&chr(10)&"      · Dt-1
'
End Sub
Sub Macro20()
'
' Macro20 Macro
'
' "&chr(10)&"      Ft=aDt-1+(1-a)Ft-1,F_t = \alpha D_{t-1} + (1 - \alpha) F_{t-1},
' "&chr(10)&"      where:
' "&chr(10)&"      · FtF_t: Forecast for current period,
' "&chr(10)&"      · a\alpha: Smoothing constant,

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' "&chr(10)&"      · Dt-1
'
' Selection.Copy
End Sub
Sub Macro21()
'
' Macro21 Macro
' F1=0.3(120)+0.7(100)=36+70=106 units.F_1 = 0.3(120) + 0.7(100) = 36 + 70 = 106 \, \text{units}.
' "&chr(10)&"      Advanced Calculation: Budget Optimization
' "&chr(10)&"      Budget allocation can be modeled using linear programming to maximize
'
' Selection.Copy
End Sub
Sub Macro22()
'
' Macro22 Macro
'
' "&chr(10)&"       $a_{11}x_1 + a_{12}x_2 = b_1, x_1, x_2 = 0, a_{11}x_1 + a_{12}x_2 \leq b_1, \quad x_1, x_2 \geq 0,$ 
' "&chr(10)&"      where:
' "&chr(10)&"      ·  $c_1, c_2$ : Contribution per unit,
' "&chr(10)&"      ·  $a_{ij}$ : Resource consumption
'
' Selection.Copy
End Sub
Sub Macro23()
'
' Macro23 Macro
' 2. Supervision in Industrial Environments
' "&chr(10)&"      Efficiency Metrics
' "&chr(10)&"      Evaluate employee performance using:
' "&chr(10)&"
' "&chr(10)&"      Efficiency=OutputStandard Output×100.\text{Efficiency} = \frac{
'
' Selection.Copy
End Sub
Sub Macro24()
'
' Macro24 Macro
' Efficiency=80100×100=80%.\text{Efficiency} = \frac{80}{100} \times 100 = 80\%.
' "&chr(10)&"      3. Organization in Industrial Operations
' "&chr(10)&"      Workflow Optimization Using Queue Theory
' "&chr(10)&"      Queue theory assesses
'
' Selection.Copy
End Sub
Sub Macro25()
'
' Macro25 Macro
'
' "&chr(10)&"       $L_q = \frac{\lambda^2}{\mu(\mu - \lambda)},$ 
' "&chr(10)&"      where:
' "&chr(10)&"      ·  $\lambda$ : Arrival rate,
' "&chr(10)&"      ·  $\mu$ : Service rate.
' "&chr(10)&"      Example: Given  $\lambda=5$  jobs/hour\lambda
'
' Selection.Copy
End Sub
Sub Macro26()
'
' Macro26 Macro
'
' "&chr(10)&"       $L_q = 5^2 / (8 - 5) = 25 / 3 \approx 8.33$  jobs.L_q = \frac{5^2}{8(8-5)} = \frac{25}{24} \approx 1.04 \, \,
' \text{jobs}.
' "&chr(10)&"      4. Related Experimental Topics
' "&chr(10)&"      Quality Control: Six Sigma
' "&chr(10)&"      Calculate proces
'
' Selection.Copy
End Sub
Sub Macro27()
'
' Macro27 Macro
' Z=X-μs,Z = \frac{\text{X} - \mu}{\sigma},

```

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' "&chr(10)&"      where:
' "&chr(10)&"      · X\text{X}: Observed value,
' "&chr(10)&"      ·  $\mu$ \mu: Mean,
' "&chr(10)&"      · s\sigma: Standard deviation.
' "&chr(10)&"      Application
'
      Selection.Copy
End Sub
Sub Macro28()
'
' Macro28 Macro
' o Apply inventory models like Economic Order Quantity (EOQ):
' "&chr(10)&"
' "&chr(10)&"      EOQ=2DSH,EOQ = \sqrt{\frac{2DS}{H}},
' "&chr(10)&"      where DD: Demand, SS: Ordering cost, HH: Holding cost.
' "&chr(10)&"      Would
'
      Selection.MoveDown Unit:=wdLine, Count:=92
      Selection.Copy
End Sub
Sub Macro29()
'
' Macro29 Macro
'
' "&chr(10)&"      o Using models like Economic Order Quantity (EOQ) to optimize inventory:
' "&chr(10)&"
' "&chr(10)&"      EOQ=2DSH,EOQ = \sqrt{\frac{2DS}{H}},
' "&chr(10)&"      where DD is demand, SS is setup cost, and HH is holding cost.
'
      Selection.MoveDown Unit:=wdLine, Count:=88
      Selection.Copy
End Sub
Sub Macro30()
'
' Macro30 Macro
'
' "&chr(10)&"      1. Personality Training
' "&chr(10)&"      Background:
' "&chr(10)&"      · Focuses on developing interpersonal skills, emotional intelligence, and self-awareness.
' "&chr(10)&"      · Aims to enhance communication, leadership, and
'
      Selection.MoveDown Unit:=wdLine, Count:=226
      ActiveWindow.ActivePane.VerticalPercentScrolled = -171
      ActiveWindow.ActivePane.SmallScroll Down:=82
      Selection.Copy
End Sub
Sub Macro31()
'
' Macro31 Macro
' · Technical Drawing: Reading, interpreting, and confirming designs.
' "&chr(10)&"      · Wiring and Testing:
' "&chr(10)&"      o Installing circuits (up to 1000 volts AC/1500 volts DC).
' "&chr(10)&"      o Testing systems for compliance w
'
      Selection.Copy
End Sub
Sub Macro32()
'
' Macro32 Macro
' o Total impedance: $$ Z = \sqrt{R^2 + (X_L - X_C)^2}, \text{ where } X_L = 2\pi f L \text{ and } X_C = \frac{1}{2\pi f C}. $$
' "&chr(10)&"      · Power:
' "&chr(10)&"      o For AC systems: $$ P = VI \cos\{\phi\}, \text{ where } \cos\{\phi\} \text{ text{
'
      Selection.Copy
End Sub
Sub Macro33()
'
' Macro33 Macro
'
' "&chr(10)&"      · Energy in Capacitors:
' "&chr(10)&"      o Stored energy: $$ E = \frac{1}{2}CV^2. $$

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' "&chr(10)&"      · Fault Current:
' "&chr(10)&"      o Use Ohm's Law to compute fault current: $$ I = \frac{V}{Z}, \text{ where}
'
' Selection.MoveDown Unit:=wdLine, Count:=52
' Selection.Copy
End Sub
Sub Macro34()
'
' Macro34 Macro
' Key Role: Integrals help analyze energy storage, system behavior over time, and power distribution
' in circuits.
' "&chr(10)&"      · Energy Stored in Capacitors: $$ E = \frac{1}{2} C V^2 $$ Example: For a capacitor
' with C=10μF = 10 μF and V=230V
'
' Selection.Copy
End Sub
Sub Macro35()
'
' Macro35 Macro
' 2645 \, \text{Joules}. $$
' "&chr(10)&"      · Total Energy in a Time Period (AC Systems): Calculate energy consumption using:
$$ E = \int P(t) \, dt $$ If P(t)=5sin(2πt) P(t) = 5 \sin(2\pi t), solve: $$ E = \int_0^1 5 \sin(2\pi t) \, dt. $$
'
' Selection.Copy
End Sub
Sub Macro36()
'
' Macro36 Macro
'
' "&chr(10)&"      · Induced Voltage in Inductors: Voltage across an inductor is: $$ V(t) = L \frac{di(t)}{dt}. $$ Example: With L=5H and i(t)=t^2i(t) = t^2: $$ V(t) = 5 \times \frac{d(t^2)}{dt} = 10t. $$ At t = 2s, V(2) = 10 \times 2 = 20V. $$
'
' Selection.MoveDown Unit:=wdLine, Count:=130
End Sub
Sub Macro37()
'
' Macro37 Macro
' o Use derivatives to study transient behaviors or integrals for analyzing energy losses: $$ i(t) = C \frac{dV}{dt} $$ $$ V(t) = L \frac{di}{dt} $$
' "&chr(10)&"      4. Practical Growth Path
' "&chr(10)&"      Completing these work experiences e
'
' Selection.MoveDown Unit:=wdLine, Count:=35
' Selection.Copy
End Sub
Sub Macro38()
'
' Macro38 Macro
' Example: For a 2H inductor carrying I=5A: $$ E = \frac{1}{2} \times 2 \times 5^2 = 25 \, \text{Joules}. $$
' "&chr(10)&"      c) Cumulative Power Consumption
' "&chr(10)&"      For time-dependent power P(t), energy is: $$ E = \int_0^t P(t) \, dt
'
' Selection.Copy
End Sub
Sub Macro39()
'
' Macro39 Macro
'
' "&chr(10)&"      For time-dependent power P(t), energy is: $$ E = \int_{t_1}^{t_2} P(t) \, dt $$ If P(t)=100sin(2πt) P(t) = 100 \sin(2\pi t), calculate energy over t=0 to t=1s: $$ E = \int_0^1 100 \sin(2\pi t) \, dt = \left[-\frac{100}{2\pi} \cos(2\pi t)\right]_0^1 = 0
'
' Selection.MoveDown Unit:=wdLine, Count:=19
' Selection.Copy
End Sub
Sub Macro40()
'
' Macro40 Macro
'
' "&chr(10)&"      Example: For L=5H, i(t)=t^2i(t) = t^2: $$ V(t) = 5 \cdot \frac{d(t^2)}{dt} = 10t. $$ At t = 2s, V(2) = 10 \times 2 = 20V.

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10t. $$ At \ ( t = 3s, V = 10 \cdot 3 = 30V. $$
' "&chr(10)&"      b) Charging of a Capacitor
' "&chr(10)&"      Current through a charging capaci
,
    Selection.Copy
End Sub
Sub Macro41()
,
' Macro41 Macro
,
' "&chr(10)&"      Current through a charging capacitor: $$ i(t) = C \frac{dV(t)}{dt}. $$ For V(t)=12
(1-e^{-t/RC})V(t) = 12(1 - e^{-\frac{t}{RC}}), calculate i(t)i(t): $$ i(t) = C \cdot \frac{d}{dt}[12(1 - e
^{-\frac{t}{RC}})] = \frac{12C}{RC} e^{-\frac{t}{RC}}. $
,
    Selection.MoveDown Unit:=wdLine, Count:=54
    Selection.MoveDown Unit:=wdLine, Count:=15
    Selection.MoveUp Unit:=wdLine, Count:=1
    Selection.Copy
End Sub
Sub Macro42()
,
' Macro42 Macro
' o Perform lathe, milling, grinding, and jig boring operations (WA015-WA018).
' "&chr(10)&"      o Program and operate CNC machines (WA0113-WA0116).
' "&chr(10)&"      · Mechanical Maintenance:
' "&chr(10)&"      o Diagnose and repair mechan
,
    Selection.MoveDown Unit:=wdLine, Count:=36
    Selection.Copy
End Sub
Sub Macro43()
,
' Macro43 Macro
,
' "&chr(10)&"      o Torque: $$ T = F \cdot r, \text{ where } F \text{ is force and } r \text{ is rad
ius.} $$
' "&chr(10)&"      o Power transmitted in shafts: $$ P = \frac{2\pi \cdot T \cdot N}{60}, \text{ wher
e } N \text{ is rotational speed (RPM).} $$
,
    Selection.Copy
End Sub
Sub Macro44()
,
' Macro44 Macro
,
' "&chr(10)&"      o Use integral calculations to analyze flow rates in hydraulic systems: $$ Q = \int
v \cdot A \, dt, \text{ where } v \text{ is velocity and } A \text{ is cross-sectional area.} $$
' "&chr(10)&"      · Stress Analysis:
,
    Selection.MoveDown Unit:=wdLine, Count:=128
    Selection.Copy
End Sub
Sub Macro45()
,
' Macro45 Macro
,
' "&chr(10)&"      · Fluid Dynamics:
' "&chr(10)&"      o Analyze flow rates using integrals: $$ Q = \int v \cdot A \, dt $$
' "&chr(10)&"      · Mechanical Stress:
' "&chr(10)&"      o Stress in materials: $$ \sigma = \frac{F}{A}, \text{ wh
,
    Selection.Copy
End Sub
Sub Macro46()
,
' Macro46 Macro
,
' "&chr(10)&"      · Mechanical Stress:
' "&chr(10)&"      o Stress in materials: $$ \sigma = \frac{F}{A}, \text{ where } F = \text{force and }
A = \text{area.} $$
' "&chr(10)&"      · Torque in Systems:
' "&chr(10)&"      o Torque transmi
,

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Selection.MoveDown Unit:=wdLine, Count:=69
ActiveWindow.ActivePane.VerticalPercentScrolled = 209
Selection.Copy
End Sub
Sub Macro47()
'
' Macro47 Macro
'
' "&chr(10)&"      The NCV (National Certificate Vocational) and NATED (National Accredited Technical
Education Diploma) programs offer specialized modules in electrical engineering, focusing on practical
and theoretical knowledge in areas like electrical panels
'
Selection.MoveDown Unit:=wdLine, Count:=43
Selection.Copy
End Sub
Sub Macro48()
'
' Macro48 Macro
' o Panel design and layout.
' "&chr(10)&"      o Circuit breakers and fuses.
' "&chr(10)&"      o Safety standards and regulations.
' "&chr(10)&"      · Experimental Applications:
' "&chr(10)&"      o Assemble and test electrical panels
'
Selection.MoveDown Unit:=wdLine, Count:=134
End Sub
Sub Macro49()
'
' Macro49 Macro
'
' "&chr(10)&"      · Load Distribution: Use integrals to calculate the total load on an electrical panel:
' "&chr(10)&"
' "&chr(10)&"       $P_{total} = \int_0^T P(t) dt$ , where  $P(t)$  is the power drawn over time  $t$ .
' "&chr(10)&"      where  $P(t)$  is the power drawn over time  $t$ .
'
Selection.Copy
End Sub
Sub Macro50()
'
' Macro50 Macro
' where  $P(t)$  is the power drawn over time  $t$ .
' "&chr(10)&"      Example: For a panel supplying  $P(t) = 100 + 20t$  W, find the total energy  $W$  from  $t = 0$ 
' hrt = 0 to  $t = 5$  h:
' "&chr(10)&"      1. Compute:
'
Selection.MoveDown Unit:=wdLine, Count:=23
Selection.Copy
End Sub
Sub Macro51()
'
' Macro51 Macro
'
' "&chr(10)&"       $P_{total} = (100 \cdot 5 + 10 \cdot 25) - 0 = 750$  Wh.  $P_{total} = (100 \cdot 5 + 10 \cdot 25) - 0 = 750$  Wh.
' "&chr(10)&"      Electrical Drawing:
'
Selection.MoveDown Unit:=wdLine, Count:=28
Selection.Copy
End Sub
Sub Macro52()
'
' Macro52 Macro
' · Voltage Drop Across Cables: Voltage drop is modeled as:
' "&chr(10)&"
' "&chr(10)&"       $\Delta V = \int_0^L I R dx$ ,
' "&chr(10)&"      where  $I$ : current,  $R$ : resistance per unit length,  $L$ : total length of wire.
'
Selection.Copy
End Sub
Sub Macro53()

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'
' Macro53 Macro
' where II: current, RR: resistance per unit length, LL: total length of wire.
' "&chr(10)&"      Example: For I=10 A,R=0.5 O/mI = 10 \, \text{A}, R = 0.5 \, \Omega/\text{m}, and L
=20 m = 20 \, \text{m}:
' "&chr(10)&"      1. Compute:
'
'      Selection.Copy
End Sub
Sub Macro54()
'
' Macro54 Macro
' ?V=?02010·0.5 dx=[5x]020.\Delta V = \int_0^{20} 10 \cdot 0.5 \, dx = \left[5x\right]_0^{20}.
' "&chr(10)&"      2. Result:
' "&chr(10)&"
' "&chr(10)&"      ?V=5·20=100 V.\Delta V = 5 \cdot 20 - 0 = 100 \, \text{V}.
'
'      Selection.MoveDown Unit:=wdLine, Count:=25
'      Selection.Copy
End Sub
Sub Macro55()
'
' Macro55 Macro
' 3. Control Switch Design
' "&chr(10)&"      Application of Calculus:
' "&chr(10)&"      · Switch Response Time: The behavior of a switch under a varying load is represent
ed by its resistance R(t)R(t):
'
'
'      Selection.Copy
End Sub
Sub Macro56()
'
' Macro56 Macro
'
' "&chr(10)&"      I(t)=VR(t),where R(t)=R0+kt.I(t) = \frac{V}{R(t)}, \quad \text{where } R(t) = R_0
+ kt.
' "&chr(10)&"      Example: For V=230 V,R0=10 O,k=2 O/s,t=5 sV = 230 \, \text{V}, R_0 = 10 \, \Omega,
k = 2 \, \Omega/\text{s}, t = 5 \, \text{s}:
'
'      Selection.Copy
End Sub
Sub Macro57()
'
' Macro57 Macro
' Example: For V=230 V,R0=10 O,k=2 O/s,t=5 sV = 230 \, \text{V}, R_0 = 10 \, \Omega, k = 2 \, \Omega/\
\text{s}, t = 5 \, \text{s}:
' "&chr(10)&"      1. Resistance after 5 s:
' "&chr(10)&"
' "&chr(10)&"      R(5)=10+2·5=20 O.R(5) = 10 +
'
'      Selection.Copy
End Sub
Sub Macro58()
'
' Macro58 Macro
'
' "&chr(10)&"      I(5)=23020=11.5 A.I(5) = \frac{230}{20} = 11.5 \, \text{A}.
' "&chr(10)&"      Electrical Drawing:
' "&chr(10)&"      · Design control systems using ladder diagrams.
' "&chr(10)&"      · Include components like rela
'
'      Selection.MoveDown Unit:=wdLine, Count:=25
'      Selection.Copy
End Sub
Sub Macro59()
'
' Macro59 Macro
'
' "&chr(10)&"      · Refrigeration Cycle Efficiency: Coefficient of Performance (COP) integrates heat
transfer over a cycle:
' "&chr(10)&"

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' "&chr(10)&"      COP=?0TQcold dt?0TW dt,\text{COP} = \frac{\int_0^T Q_{\text{cold}} \, dt}{\int_0^T W \, dt}
'
' Selection.Copy
End Sub
Sub Macro60()
'
' Macro60 Macro
' where QcoldQ_{\text{cold}}: heat removed, WW: work input.
' "&chr(10)&"      Example: For Qcold=300 J/s,W=100 J/sQ_{\text{cold}} = 300 \, \text{J/s}, W = 100 \,
' \text{J/s}, T=10 sT = 10 \, \text{s}:
' "&chr(10)&"      1. Compute:
'
' Selection.Copy
End Sub
Sub Macro61()
'
' Macro61 Macro
'
' "&chr(10)&"      COP=?010300 dt?010100 dt=300 \cdot 10100 \cdot 10=3.\text{COP} = \frac{\int_0^{10} 300 \, dt}{\int_0^{10} 100 \, dt} = \frac{300 \cdot 10}{100 \cdot 10} = 3.
' "&chr(10)&"      Electrical Drawing:
' "&chr(10)&"      · Create schematics of refrigeration system.
'
' Selection.MoveDown Unit:=wdLine, Count:=93
' Selection.Copy
End Sub
Sub Macro62()
'
' Macro62 Macro
'
' "&chr(10)&"      where A(t)A(t): cross-sectional area of pipe at time tt, v(t)v(t): flow velocity.
' "&chr(10)&"      Example: For A(t)=0.05 m^2A(t) = 0.05 \, \text{m}^2 and v(t)=2+0.5t m/sv(t) = 2 + 0.5t \, \text{m/s} over t=0 st = 0 \, \text{s} to
' .5t \, \text{m/s} over t=0 st = 0 \, \text{s} to
'
' Selection.Copy
End Sub
Sub Macro63()
'
' Macro63 Macro
' \[ V = \int_0^4 0.05 \cdot (2 + 0.5t) \, dt = 0.05 \left[ 2t + 0.25t^2 \right]_0^4. \]
' "&chr(10)&"      2. Result:
' "&chr(10)&"
' "&chr(10)&"      V=0.05(8+4)=0.6 m^3.V = 0.05 (8 + 4) = 0.6 \, \text{m}^3.
' "&chr(10)&"      2. Heat
'
' Selection.MoveDown Unit:=wdLine, Count:=147
' Selection.Copy
End Sub
Sub Macro64()
'
' Macro64 Macro
'
' "&chr(10)&"      2. Undertaking Electrical Material Design
' "&chr(10)&"      · Purpose:
' "&chr(10)&"      o Select and design materials for electrical systems to ensure efficiency and safety.
' "&chr(10)&"      · Key Topics:
'
' Selection.MoveDown Unit:=wdLine, Count:=172
' Selection.Copy
End Sub
Sub Macro65()
'
' Macro65 Macro
' performance testing. Below, I detail how calculus can enhance each topic:
' "&chr(10)&"      1. Log Activity: Data Analysis
' "&chr(10)&"      · Application of Derivatives:
' "&chr(10)&"      o Tracking performance trends from logged data:
'
' Selection.Copy
End Sub
Sub Macro66()

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'
' Macro66 Macro
'
' "&chr(10)&"
' "&chr(10)&"      dPdt=rate of progress,\frac{dP}{dt} = \text{rate of progress},
' "&chr(10)&"      where PP: performance level, tt: time.
' "&chr(10)&"      Example: If  $P(t)=5t^2+2t$   $P(t) = 5t^2 + 2t$ , the rate of progress at  $t=3$   $t = 3$  h
'
' Selection.Copy
End Sub
Sub Macro67()
'
' Macro67 Macro
' dPdt=10t+2 ? dPdt=10(3)+2=32 units/hour.\frac{dP}{dt} = 10t + 2 \implies \frac{dP}{dt} = 10(3) + 2
' = 32 \, , \, \text{units/hour}.
' "&chr(10)&"      · Optimization:
' "&chr(10)&"      o Use integrals to estimate cumulative productivity:
'
' Selection.Copy
End Sub
Sub Macro68()
'
' Macro68 Macro
'
' "&chr(10)&"      Ptotal=?0T(5t^2+2t)dt.P_{\text{total}} = \int_0^T \left( 5t^2 + 2t \right) dt.
' "&chr(10)&"      2. Undertaking Electrical Material Design
' "&chr(10)&"      · Voltage Drop and Power Loss:
' "&chr(10)&"      o For a cable with r
'
' Selection.Copy
End Sub
Sub Macro69()
'
' Macro69 Macro
'
' "&chr(10)&"      o For a cable with resistance RR and current II, power loss is:
' "&chr(10)&"
' "&chr(10)&"       $P=?0LI^2R(x)dx, P = \int_0^L I^2 R(x) dx,$ 
' "&chr(10)&"      where  $R(x)$ : resistance at length  $xx$ .
'
' Selection.Copy
End Sub
Sub Macro70()
'
' Macro70 Macro
'
' "&chr(10)&"      where  $R(x)$ : resistance at length  $xx$ .
' "&chr(10)&"      Example: For  $R(x)=0.5+0.01x$   $R(x) = 0.5 + 0.01x$  and  $I=10$   $I = 10$  \, \text{A}, find t
' the power loss over  $L=10$   $L = 10$  \, \text{m}:
' "&chr(10)&"
'
' Selection.Copy
End Sub
Sub Macro71()
'
' Macro71 Macro
'  $P=?010102(0.5+0.01x)dx=100?010(0.5+0.01x)dx. P = \int_0^{10} 10^2 (0.5 + 0.01x) dx = 100 \int_0^{10}$ 
'  $(0.5 + 0.01x) dx.$ 
' "&chr(10)&"
' "&chr(10)&"       $P=100[0.5x+0.005x^2]_0^{10}=100(5+0.5)=550$  W. $P = 100 \left[ 0.5x + 0.005x^2 \right]_0^{10}$ 
'  $=$ 
'
' Selection.Copy
End Sub
Sub Macro72()
'
' Macro72 Macro
'
' "&chr(10)&"       $P=100[0.5x+0.005x^2]_0^{10}=100(5+0.5)=550$  W. $P = 100 \left[ 0.5x + 0.005x^2 \right]_0^{10}$ 

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10} = 100 (5 + 0.5) = 550 \, \text{W}.

' "&chr(10)&" 3. Inspection of Electrical Systems

' "&chr(10)&" · Insulation Resistance Testing:

' Selection.Copy  
End Sub

Sub Macro73()

' Macro73 Macro

' · Inspection of Electrical Systems

' "&chr(10)&" · Insulation Resistance Testing:

' "&chr(10)&" o Use integral-based models to assess insulation decay over time:

' "&chr(10)&"

' "&chr(10)&"  $R(t)=R_0e^{-\lambda t}, R(t) = R_0 e^{-\lambda t}$

' Selection.Copy  
End Sub

Sub Macro74()

' Macro74 Macro

' "&chr(10)&"  $R(t)=R_0e^{-\lambda t}, R(t) = R_0 e^{-\lambda t},$

' "&chr(10)&" where  $R_0$ : initial resistance,  $\lambda$ : decay constant.

' "&chr(10)&" Example: For  $R_0=100 \text{ k}\Omega$ ,  $\lambda = 0.02$ , find  $R(10)$

' Selection.Copy  
End Sub

Sub Macro75()

' Macro75 Macro

' "&chr(10)&"  $R(10)=100e^{-0.02 \cdot 10}=100e^{-0.281.87 \text{ k}\Omega. R(10) = 100 e^{-0.02 \cdot 10} = 100 e^{-0.2}$

' \approx 81.87 \, \text{k}\Omega.

' "&chr(10)&" 4. Design and Drawing of Electrical Panels

' "&chr(10)&" · Current Distribution

' Selection.Copy  
End Sub

Sub Macro76()

' Macro76 Macro

' o Use calculus to balance loads across circuits:

' "&chr(10)&"

' "&chr(10)&"  $I_{\text{total}} = \int_0^T I(t) dt, I_{\text{total}} = \int_0^T I(t) dt,$

' "&chr(10)&" where  $I(t)$ : current draw over time.

' "&chr(10)&" Example: For  $I(t)=5+t^2$

' Selection.Copy  
End Sub

Sub Macro77()

' Macro77 Macro

' "&chr(10)&" Example: For  $I(t)=5+t^2$ , the total current over  $T=4 \text{ s}$  is:

' "&chr(10)&"

' "&chr(10)&"  $I_{\text{total}} = \int_0^4 (5+t^2) dt = [5t + \frac{1}{3}t^3]_0^4 = (20 + \frac{64}{3}) - 0 = 41.33 \text{ A}.$

' "&chr(10)&"

' "&chr(10)&"  $I_{\text{total}} = \int_0^4 (5+t^2) dt = [5t + \frac{1}{3}t^3]_0^4 = (20 + \frac{64}{3}) - 0 = 41.33 \text{ A}.$

' Selection.Copy  
End Sub

Sub Macro78()

' Macro78 Macro

' 5. Wiring Design

' "&chr(10)&" · Voltage Drop Across Wiring:

' "&chr(10)&"

' "&chr(10)&"  $\Delta V = \int_0^L I R dx,$

' "&chr(10)&" where  $I$ : current,  $R$ : resistance per unit length.

' Selection.Copy  
End Sub

```

Sub Macro79()
'
' Macro79 Macro
' ?V=?05010·0.2 dx=10·0.2·50=100 V.\Delta V = \int_0^{50} 10 \cdot 0.2 \, dx = 10 \cdot 0.2 \cdot 50
= 100 \, \text{V}.
' "&chr(10)&"          6. Material Design for Components
' "&chr(10)&"          · Heat Dissipation in Components:
'
' Selection.Copy
End Sub
Sub Macro80()
'
' Macro80 Macro
' 6. Material Design for Components
' "&chr(10)&"          · Heat Dissipation in Components:
' "&chr(10)&"          o Use Fourier's law for heat transfer:
' "&chr(10)&"
' "&chr(10)&"          Q=?0TkA?T dt,Q = \int_0^T k A \Delta T \, dt,
'
' Selection.MoveDown Unit:=wdLine, Count:=22
' Selection.Copy
End Sub
Sub Macro81()
'
' Macro81 Macro
'
' "&chr(10)&"          2. Analysis: Evaluate system behavior under changing conditions.
' "&chr(10)&"          3. Validation: Ensure designs meet performance and safety standards.
'
'
' Selection.MoveDown Unit:=wdLine, Count:=40
' Selection.Copy
End Sub
Sub Macro82()
'
' Macro82 Macro
' o Offered by the Department of Higher Education and Training (DHET) in South Africa.
' "&chr(10)&"          o Combine theoretical knowledge and practical application in disciplines like engi
neering, natural sciences, and business studies.
'
' Selection.Copy
End Sub
Sub Macro83()
'
' Macro83 Macro
' 2. ICASS (Internal Continuous Assessment):
' "&chr(10)&"          o Designed to monitor student progress through class tests, assignments, and pract
ical work.
' "&chr(10)&"          o Contributes to a semester or final mark.
' "&chr(10)&"          o Re
'
' Selection.Copy
End Sub
Sub Macro84()
'
' Macro84 Macro
' 1. Marksheet Records:
' "&chr(10)&"          o Capture detailed records of student performance over time.
' "&chr(10)&"          o Include theoretical, practical, and project components.
' "&chr(10)&"          2. Tools for Assessment:
'
' ActiveWindow.ActivePane.SmallScroll Down:=41
' Selection.Copy
End Sub
Sub Macro85()
'
' Macro85 Macro
' Grade Scales:
' "&chr(10)&"          $ Marks are recorded using weighted percentages:
' "&chr(10)&"          $ 70%-100%: Excellent
' "&chr(10)&"          $ 60%-69%: Good
' "&chr(10)&"          $ 50%-59%: Satisfactory

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' "&chr(10)&"          $ Below 50
'
' Selection.Copy
End Sub
Sub Macro86()
'
' Macro86 Macro
' $ Below 50%: Needs Improvement.
' "&chr(10)&"          3. Guidelines for Reporting:
' "&chr(10)&"          o Final marksheets must integrate ICASS results with exam marks.
' "&chr(10)&"          o Include:
' "&chr(10)&"          $ Semester Marks (e.g.
'
' Selection.Copy
End Sub
Sub Macro87()
'
' Macro87 Macro
'
' "&chr(10)&"          · Marksheet Example:
' "&chr(10)&"          o Theoretical Tests: 30%
' "&chr(10)&"          o Practical Assignments: 50%
' "&chr(10)&"          o Portfolio: 20%
' "&chr(10)&"          2. Natural Sciences:
' "&chr(10)&"          · ICASS Structu
'
' Selection.Copy
End Sub
Sub Macro88()
'
' Macro88 Macro
'
' "&chr(10)&"          o Lab experiments and fieldwork reports evaluated continuously.
' "&chr(10)&"          o Emphasis on scientific method application.
' "&chr(10)&"          · Tools:
' "&chr(10)&"          o Lab evaluation rubrics to assess experimental pre
'
' Selection.Copy
End Sub
Sub Macro89()
'
' Macro89 Macro
'
' "&chr(10)&"          · ICASS Structure:
' "&chr(10)&"          o Case studies, presentations, and business plans.
' "&chr(10)&"          o Grading focus on decision-making and analysis skills.
' "&chr(10)&"          · Assessment Example:
'
' ActiveWindow.ActivePane.SmallScroll Down:=27
' Selection.Copy
End Sub
Sub Macro90()
'
' Macro90 Macro
'
' "&chr(10)&"          o Group Projects: 50%
' "&chr(10)&"          Final Statement Reports
' "&chr(10)&"          · Provide a summary of semester achievements.
' "&chr(10)&"          · Include:
' "&chr(10)&"          o ICASS mark breakdown.
'
' ActiveWindow.ActivePane.SmallScroll Down:=6
' ActiveWindow.ActivePane.LargeScroll Down:=1
' Selection.Copy
End Sub
Sub Macro91()
'
' Macro91 Macro
'
' "&chr(10)&"          1. Calculating Semester Marks Using Weighted Averages
' "&chr(10)&"          The semester mark combines the theoretical and practical components:
' "&chr(10)&"
' "&chr(10)&"          
$$M_{\text{sem}} = w_t T + w_p P$$


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'
' Selection.Copy
End Sub
Sub Macro92()
'
' Macro92 Macro
'
' "&chr(10)&"      where:
' "&chr(10)&"      · TT: Theoretical component score,
' "&chr(10)&"      · PP: Practical component score,
' "&chr(10)&"      · wt,wpw_t, w_p: Weights for theoretical and practical marks.
' "&chr(10)&"      Example: If wt
'
' Selection.Copy
End Sub
Sub Macro93()
'
' Macro93 Macro
' Example: If wt=0.6w_t = 0.6, wp=0.4w_p = 0.4, T=75T = 75, and P=85P = 85:
' "&chr(10)&"
' "&chr(10)&"      Msem=(0.6·75)+(0.4·85)0.6+0.4=45+34=79.M_{\text{sem}} = \frac{(0.6 \cdot 75) + (0.
' "&chr(10)&"      4 \cdot 85)}{0.6 + 0.4} = \frac{45 + 34}{1} = 79
'
' Selection.Copy
End Sub
Sub Macro94()
'
' Macro94 Macro
' Msem=(0.6·75)+(0.4·85)0.6+0.4=45+34=79.M_{\text{sem}} = \frac{(0.6 \cdot 75) + (0.4 \cdot 85)}{0.6
' "&chr(10)&"      + 0.4} = \frac{45 + 34}{1} = 79.
' "&chr(10)&"      2. Total Final Mark Calculation
' "&chr(10)&"      The final mark combines semester marks (SS
'
' Selection.Copy
End Sub
Sub Macro95()
'
' Macro95 Macro
' F=0.4S+0.6E.F = 0.4S + 0.6E.
' "&chr(10)&"      Example: If S=79S = 79 and E=82E = 82:
' "&chr(10)&"
' "&chr(10)&"      F=0.4·79+0.6·82=31.6+49.2=80.8.F = 0.4 \cdot 79 + 0.6 \cdot 82 = 31.6 + 49.2 = 80.
' "&chr(10)&"      8.
' "&chr(10)&"      3. St
'
' Selection.Copy
End Sub
Sub Macro96()
'
' Macro96 Macro
'
' "&chr(10)&"      · Grade Distribution Analysis: Analyze how grades are distributed across students
' using measures like mean ( $\mu$ ), variance ( $s^2$ ), and standard deviation ( $s$ ):
' "&chr(10)&"
' "&chr(10)&"       $\mu = \frac{\sum x_i}{N}$ ,  $s^2 = \frac{\sum (x_i - \mu)^2}{N}$ 
'
' Selection.Copy
End Sub
Sub Macro97()
'
' Macro97 Macro
'
' "&chr(10)&"      Example: Grades: [75,80,85,70,90][75, 80, 85, 70, 90], N=5N = 5:
' "&chr(10)&"      1. Mean:
' "&chr(10)&"
' "&chr(10)&"       $\mu = \frac{75+80+85+70+90}{5} = 80.$ 
' "&chr(10)&"      2. Vari
'
' Selection.Copy
End Sub
Sub Macro98()
'
' Macro98 Macro

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'      s2=(75-80)^2+(80-80)^2+(85-80)^2+(70-80)^2+(90-80)^2=50.\sigma^2 = \frac{(75-80)^2 + (80-80)^2 + (85-80)^2 + (70-80)^2 + (90-80)^2}{5} = 50.
' "&chr(10)&"          3. Standard Deviation:
' "&chr(10)&"
' "&chr(10)&"          s=507.07.\sigma = \sqrt{s}
'
'      Selection.Copy
End Sub
Sub Macro99()
'
'      Macro99 Macro
'
' "&chr(10)&"
' "&chr(10)&"          s=507.07.\sigma = \sqrt{50} \approx 7.07.
' "&chr(10)&"          4. Integrals for Continuous Assessment Analysis
' "&chr(10)&"          · Cumulative Marks Distribution: Use integrals to model cumulative performance
'
'      Selection.Copy
End Sub
Sub Macro100()
'
'      Macro100 Macro
'
' "&chr(10)&"          Mc=?\int_0^T f(t) dt, M_c = \int_0^T f(t) dt,
' "&chr(10)&"          where f(t) represents marks obtained at time t.
' "&chr(10)&"          Example: If f(t)=10+2t, compute M_c over [0,5]:
'
'      Selection.Copy
End Sub
Sub Macro101()
'
'      Macro101 Macro
'
' "&chr(10)&"          · Project Grades: Model project grading as a function of effort over time using derivatives:
' "&chr(10)&"
' "&chr(10)&"          dP/dt=kE(t), \frac{dP}{dt} = kE(t),
' "&chr(10)&"          where E(t): effort, k: a scaling factor
'
'      Selection.Copy
End Sub
Sub Macro102()
'
'      Macro102 Macro
'      Natural Sciences:
' "&chr(10)&"          · Lab Precision: Evaluate experiment repeatability using statistical deviation:
' "&chr(10)&"
' "&chr(10)&"          CV=s\cdot 100. CV = \frac{\sigma}{\mu} \cdot 100.
'
'
'      Selection.Copy
End Sub
Sub Macro103()
'
'      Macro103 Macro
'      Business Studies:
' "&chr(10)&"          · Case Study Success: Analyze assignment success using regression models to predict trends:
' "&chr(10)&"
' "&chr(10)&"          y=mx+b. y = mx + b.
' "&chr(10)&"          Purpose of Calculus and Statistics
'
'      Selection.MoveDown Unit:=wdLine, Count:=197
'      Selection.Copy
End Sub
Sub Macro104()
'
'      Macro104 Macro
'      M' = \frac{M - M_{\text{min}}}{M_{\text{max}} - M_{\text{min}}} \cdot 100, M' = \frac{M - M_{\text{min}}}{M_{\text{max}} - M_{\text{min}}} \cdot 100,
' "&chr(10)&"          where M': scaled marks, M_{\text{min}}, M_{\text{max}}: minimum and maximum raw marks.
'
'      Selection.MoveDown Unit:=wdLine, Count:=197
'      Selection.Copy
End Sub

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'
    Selection.MoveDown Unit:=wdLine, Count:=36
    ActiveWindow.ActivePane.VerticalPercentScrolled = 175
    Selection.Copy
End Sub
Sub Macro105()
'
' Macro105 Macro
'
' "&chr(10)&"    · Timetable Functionality:
' "&chr(10)&"    o The timetable systems used in vocational training programs need to be assessed for t
heir ability to provide functional, outcome-oriented schedules for both academic and practical trainin
g in engin
'
    Selection.MoveDown Unit:=wdLine, Count:=35
    Selection.Copy
End Sub
Sub Macro106()
'
' Macro106 Macro
' focusing on time management, outcomes, and practical application of skills.
' "&chr(10)&"    · Outcome-Based Design:
' "&chr(10)&"    The research will focus on outcome-oriented systems, where the success of students in
engineering (particul
'
    Selection.MoveDown Unit:=wdLine, Count:=40
    ActiveWindow.ActivePane.LargeScroll Down:=3
    ActiveWindow.ActivePane.VerticalPercentScrolled = 155
    Selection.Copy
End Sub
Sub Macro107()
'
' Macro107 Macro
' · Are you interested in how industry collaborations can further improve the electrical engineering
curriculum?
' "&chr(10)&"    · How can technology (e.g., AI, IoT, machine learning) enhance learning in electrical
engineering education?
'
    Selection.MoveDown Unit:=wdLine, Count:=61
    ActiveWindow.ActivePane.VerticalPercentScrolled = 105
    Selection.Copy
End Sub
Sub Macro108()
'
' Macro108 Macro
' Histogram & Statistical Analysis of Training & Power Systems
' "&chr(10)&"    ?? Histogram & Droitegre Equation in Module Analysis
' "&chr(10)&"    · Mathematical Representation of Learning & Power Distribution
' "&chr(10)&"    o Hist
'
    Selection.Copy
End Sub
Sub Macro109()
'
' Macro109 Macro
'
' "&chr(10)&"    Model    Variance Analysis    X1    X2    X3    X5    X6    X7    X8
' "&chr(10)&"    Y1    Variance in student training hours    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"    Y2    Variance in attendance    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"    Y3    Energy demand in workplace training    ?    ?    ?    ?    ?    ?    ?
'
    Selection.Copy
End Sub
Sub Macro110()
'
' Macro110 Macro
'
' "&chr(10)&"    Y2    Variance in attendance    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"    Y3    Energy demand in workplace training    ?    ?    ?    ?    ?    ?    ?
' "&chr(10)&"    Y4    Energy supply fluctuations    ?    ?    ?    ?    ?    ?    ?
'

```

```
'
    ActiveWindow.ActivePane.VerticalPercentScrolled = 115
End Sub
Sub Macro111()
'
' Macro111 Macro
' o Determine RthR_{th} by deactivating all sources (replace voltage sources with short circuits and c
current sources with open circuits).
'
End Sub
```