

ภาคผนวก 1

โปรแกรมย่อย Variable และเมทริกซ์

ภาคผนวก 1.1 โปรแกรมย่อย Module Variable

```
Attribute VB_Name = "variable"
Option Explicit
' Data Type
Global DataInputDes, FileName, Xname, Yname, Xunit, Yunit As String
Global mesOverWrite As String
' CMD Font
Global FontName$, FontSize%
' Data
Global NPoint, NoDec, Mode, NType, NOrder As Integer
Global X(50), SigmaX(50), Y(50), sigmaY(50) As Double
' Menu Mode
Public ModeFitted, ModeThai, ModeOpen, modeGraph As Boolean
' Matrix
Global Free1 As Integer
Global PcError As Double
Global Delta, FreeN, Freej, Weight(50) As Currency
Global Arry(20, 20), R(50), Sigma0, SigmaA(50) As Double
Global Sum, YMean, WMean, Mean(50), ChiSq, ChiSqr, RMul, Sigma, X1(50), y1(50) As
Double
Global YFit(50), YCompare(50), XPlot(105), YPlot(105), XMean(50) As Double
Global AFunc1, AFunc2, A0, A(50) As Double
' Graph Parameter
Global Xmin, Xmax, Ymin, Ymax As Double
Global Symbol, LineStyle, GType, ColorType, LogCycle As Integer
Global PositY As Double
' Gaussian Function
Global Amplitude, Mew, Sig As Double
```

ภาคผนวก 1.2 โปรแกรมย่อยใน Module CallMatrix

Attribute VB_Name = "CallMatrix"

Option Explicit

1) สร้างเมทริกซ์

Sub AccumulateMatrix()

Dim DelX1, DelY1, DelX As Double

Dim i%, j%, k%

Sum = 0#: YMean = 0#: ChiSq = 0#

RMul = 0#: Sigma = 0#: Sigma0 = 0#

For i% = 1 To 20

YFit(i%) = 0#

XMean(i%) = 0#

SigmaX(i%) = 0#

R(i%) = 0#

A(i%) = 0#

SigmaA(i%) = 0#

For j% = 1 To 20

Arry(i%, j%) = 0#

Next j%

Next i%

For i% = 1 To NPoint

y1(i%) = Y(i%)

X1(i%) = X(i%)

If (NType < 0) Or (NType > 7) Then winFunction.Show

If (NType = 2) Then

If X1(i%) = 0 Then X1(i%) = 0.00001

If y1(i%) = 0 Then y1(i%) = 0.00001

X(i%) = Log(X1(i%))

Y(i%) = Log(y1(i%))

End If

If (NType = 3) Or (NType = 5) Then

If X1(i%) = 0 Then X1(i%) = 0.00001

```
If y1(i%) = 0 Then y1(i%) = 0.00001
X(i%) = Log(X1(i%)) / Log(10)
Y(i%) = Log(y1(i%)) / Log(10)
End If
If (NType = 4) Then X(i%) = Cos(X1(i%) * 3.1415926 / 180#)
If (NType = 6) Or (NType = 7) Then
  If Y(i%) = 0 Then Y(i%) = 0.0001
  Y(i%) = Log(Y(i%))
End If
Next i%
For i% = 1 To NPoint
  If (Mode < 0) Or (Mode > 3) Then winParameter.Show
  Weight(i%) = 1
  If Y(i%) <> 0 Then
    If (Mode = 1) Then Weight(i%) = 1 / Sqr(Y(i%))
    If (Mode = 2) Then Weight(i%) = 1 / (Y(i%) * PcError / 100#)
  End If
  If (Mode = 3) Then
    If (sigmaY(i%) <> 0#) Then Weight(i%) = 1 / sigmaY(i%)
  End If
  Sum = Sum + Weight(i%)
  YMean = YMean + Weight(i%) * Y(i%)
  For j% = 1 To NOrder
    AFunc1 = AnyFunc(j%, Val(X(i%)))
    XMean(j%) = XMean(j%) + Weight(i%) * AFunc1
  Next j%
Next i%
YMean = YMean / Sum
For j% = 1 To NOrder
  XMean(j%) = XMean(j%) / Sum
Next j%
WMean = Sum / NPoint
For i% = 1 To NPoint
```

Weight(i%) = Weight(i%) / WMean

Next i%

ConStruction Matrix

For i% = 1 To NPoint

Delta = Y(i%) - YMean

Sigma = Sigma + Weight(i%) * Delta ^ 2

For j% = 1 To NOrder

AFunc1 = AnyFunc(j%, Val(X(i%)))

SigmaX(j%) = SigmaX(j%) + Weight(i%) * (AFunc1 - XMean(j%)) *
(AFunc1 - XMean(j%))

R(j%) = R(j%) + Weight(i%) * (AFunc1 - XMean(j%)) * (Y(i%) - YMean)

For k% = 1 To j%

AFunc1 = AnyFunc(j%, Val(X(i%)))

AFunc2 = AnyFunc(k%, Val(X(i%)))

Arry(j%, k%) = Arry(j%, k%) + Weight(i%) * (AFunc1 - XMean(j%)) *
(AFunc2 - XMean(k%))

Next k%

Next j%

Next i%

Free1 = NPoint - 1

If (Free1 = 0) Then Free1 = 1

Sigma = Sqr(Sigma / Free1)

For j% = 1 To NOrder

SigmaX(j%) = Sqr(SigmaX(j%) / Free1)

R(j%) = R(j%) / (Free1 * SigmaX(j%) * Sigma)

For k% = 1 To j%

Arry(j%, k%) = Arry(j%, k%) / (Free1 * SigmaX(j%) * SigmaX(k%))

Arry(k%, j%) = Arry(j%, k%)

Next k%

Next j%

End Sub

2) ฟังก์ชัน

```
Function AnyFunc(n1 As Integer, XX As Double) As Double
    AnyFunc = 0#
    AnyFunc = XX ^ n1
End Function
```

3) หาสัมประสิทธิ์

```
Sub CalCoeff()
    Dim Varance As Double
    Dim i%, j%, k%
    On Error GoTo OnError
    A0 = YMean
    For j% = 1 To NOrder
        For k% = 1 To NOrder
            A(j%) = A(j%) + R(k%) * Arry(j%, k%)
        Next k%
        A(j%) = A(j%) * Sigma / SigmaX(j%)
        A0 = A0 - A(j%) * XMean(j%)
        If (NType = 5) Then A0 = 10 ^ (A0)
        If (NType = 6) Then A0 = Exp(A0)
        For i% = 1 To NPoint
            AFunc1 = AnyFunc(j%, Val(X(i%)))
            YFit(i%) = YFit(i%) + A(j%) * AFunc1
        Next i%
    Next j%
    If (NType = 7) Then
        Mew = A(1) / (-A(2) * 2)
        Amplitude = Exp(A0 - (A(2) * Mew ^ 2))
        Sig = Sqr(-1 / (2 * A(2)))
    End If
    For i% = 1 To NPoint
        YFit(i%) = YFit(i%) + A0
        X(i%) = X1(i%)
    Next i%
```

$Y(i\%) = y1(i\%)$

If (NType = 2) Then $YFit(i\%) = \text{Exp}(YFit(i\%))$

If (NType = 3) Then $YFit(i\%) = 10 \wedge YFit(i\%)$

If (NType = 4) Then $YFit(i\%) = YFit(i\%)$

If (NType = 5) Then $YFit(i\%) = A0 * (X(i\%) \wedge A(1))$

If (NType = 6) Then $YFit(i\%) = A0 * \text{Exp}(A(1) * X(i\%))$

If (NType = 7) Then $YFit(i\%) = \text{Amplitude} * \text{Exp}(A(2) * (X(i\%) - \text{Mew}) \wedge 2)$

$\text{ChiSq} = \text{ChiSq} + \text{Weight}(i\%) * (Y(i\%) - YFit(i\%)) * (Y(i\%) - YFit(i\%))$

Next i%

$\text{FreeN} = \text{NPoint} - \text{NOrder} - 1$

If ($\text{FreeN} = 0$) Then $\text{FreeN} = 1$

$\text{ChiSqr} = \text{ChiSq} * \text{WMean} / \text{FreeN}$

$\text{Variance} = \text{ChiSqr}$

If ($\text{Mode} \neq 1$) Then $\text{Variance} = 1 / \text{WMean}$

If (NType \neq 99) Then

For j% = 1 To NOrder

$\text{SigmaA}(j\%) = \text{Arry}(j\%, j\%) * \text{Variance} / (\text{Free1} * \text{SigmaX}(j\%) * \text{SigmaX}(j\%))$

$\text{SigmaA}(j\%) = \text{Sqr}(\text{SigmaA}(j\%))$

$\text{RMul} = \text{RMul} + \text{A}(j\%) * \text{R}(j\%) * \text{SigmaX}(j\%) / \text{Sigma}$

Next j%

$\text{Freej} = \text{NOrder}$

$\text{RMul} = \text{Sqr}(\text{RMul})$

$\text{Sigma0} = \text{Variance} / \text{NPoint}$

For j% = 1 To NOrder

For k% = 1 To NOrder

$\text{Sigma0} = \text{Sigma0} + \text{Variance} * \text{XMean}(j\%) * \text{XMean}(k\%) * \text{Arry}(j\%, k\%) / (\text{Free1} * \text{SigmaX}(j\%) * \text{SigmaX}(k\%))$

$\text{SigmaX}(j\%) * \text{SigmaX}(k\%)$

Next k%

$\text{Sigma0} = \text{Sqr}(\text{Abs}(\text{Sigma0}))$

Next j%

End If

Exit Sub

OnError:

```
If ModeThai = True Then
    MsgBox (" ข้อมูลไม่สามารถปรับด้วยสมการนี้ได้!")
Else
    MsgBox (" These datas can not fitting with Equation !")
End If
End Sub
```

4) คำนวณค่าจากสมการแนวโน้ม

```
Function calYfit(ByVal xp As Double) As Double
    Dim Yval#, Xval#
    Dim k%
    Xval = xp
    If (NType = 2) Then Xval = Log(xp)
    If (NType = 3) Then Xval = Log(xp) / Log(10)
    If (NType = 4) Then Xval = Cos(xp) * 3.1415926 / 180#
    Yval = A0
    For k = 1 To NOrder
        Yval = Yval + A(k) * Xval ^ k%
    Next k
    If (NType = 2) Then Yval = Exp(Yval)
    If (NType = 3) Then Yval = 10 ^ (Yval)
    If (NType = 5) Then Yval = A0 * (Xval ^ A(1))
    If (NType = 6) Then Yval = A0 * Exp(A(1) * Xval)
    If (NType = 7) Then Yval = Amplitude * Exp(A(2) * (Xval - Mew) ^ 2)
    calYfit = Yval
End Function
```

5) Inverse Matrix

```
Sub MatrixInverse()
    Dim Amax, Save, Det As Double
    Dim ik(50), jk(50) As Integer
    Dim i%, j%, k%, l%
```

Det = 1

For k% = 1 To NOrder

Amax = 0#

Do

Do

For i% = k% To NOrder

For j% = k% To NOrder

If ((Abs(Amax) - Abs(Arry(i%, j%))) < 0#) Then

Amax = Arry(i%, j%)

ik(k%) = i%

jk(k%) = j%

End If

Next j%

Next i%

i% = ik(k%)

Loop Until (i% >= k%) Or (Amax = 0#)

If (i% > k%) Then

For j% = 1 To NOrder

Save = Arry(k%, j%)

Arry(k%, j%) = Arry(i%, j%)

Arry(i%, j%) = -Save

Next j%

End If

j% = jk(k%)

Loop Until (i% >= k%) Or (Amax = 0#)

If (Amax = 0#) Then

Det = 0#

Else

If (j% > k%) Then

For i% = 1 To NOrder

Save = Arry(i%, k%)

Arry(i%, k%) = Arry(i%, j%)

Arry(i%, j%) = -Save


```
Next i%
End If
For i% = 1 To NOrder
  If (i% <> k%) Then
    Arry(i%, k%) = -Arry(i%, k%) / Amax
  End If
Next i%
For i% = 1 To NOrder
  For j% = 1 To NOrder
    If (i% <> k%) Then
      If (j% <> k%) Then
        Arry(i%, j%) = Arry(i%, j%) + Arry(i%, k%) * Arry(k%, j%)
      End If
    End If
  Next j%
Next i%
For j% = 1 To NOrder
  If (j% <> k%) Then
    Arry(k%, j%) = Arry(k%, j%) / Amax
  End If
Next j%
Arry(k%, k%) = 1# / Amax
Det = Det * Amax
End If
Next k%
If (Det <> 0#) Then
  For l% = 1 To NOrder
    k% = NOrder - l% + 1
    j% = ik(k%)
    If (j% > k%) Then
      For i% = 1 To NOrder
        Save = Arry(i%, k%)
        Arry(i%, k%) = -Arry(i%, j%)

```

```
    Arry(i%, j%) = Save
  Next i%
End If
i% = jk(k%)
If (i% > k%) Then
  For j% = 1 To NOrder
    Save = Arry(k%, j%)
    Arry(k%, j%) = -Arry(i%, j%)
    Arry(i%, j%) = Save
  Next j%
End If
Next l%
End If
End Sub
```

THAMMASAT UNIVERSITY

สำนักหอสมุด

ภาคผนวก 2

โมดูล ControlGraph

Attribute VB_Name = "ControlGraph"

ภาคผนวก 2.1 โปรแกรมย่อย DrawGraph

Sub DrawSymbol(ByVal xp, yp As Double)

Dim Xnow, Ynow As Double

winGraph.DrawWidth = 1

Select Case Symbol

Case 0 ' Cross

winGraph.Line (xp - 1.2, yp + 1.2)-(xp + 1.2, yp - 1.2), QBColor(ColorType)

winGraph.Line (xp - 1.2, yp - 1.2)-(xp + 1.2, yp + 1.2), QBColor(ColorType)

Case 1 ' Plus

winGraph.Line (xp - 1.2, yp)-(xp + 1.2, yp), QBColor(ColorType)

winGraph.Line (xp, yp + 1.5)-(xp, yp - 1.5), QBColor(ColorType)

Case 2 'Light Circle

winGraph.Circle (xp, yp), 0.7, QBColor(ColorType)

Case 3 'Light Square

winGraph.Line (xp - 1, yp - 1.2)-(xp - 1, yp + 1.2), QBColor(ColorType)

winGraph.Line (xp - 1, yp + 1.2)-(xp + 1, yp + 1.2), QBColor(ColorType)

winGraph.Line (xp + 1, yp + 1.2)-(xp + 1, yp - 1.2), QBColor(ColorType)

winGraph.Line (xp + 1, yp - 1.2)-(xp - 1, yp - 1.2), QBColor(ColorType)

Case 4 'Fill Square

winGraph.Line (xp - 1#, yp + 1.2)-(xp + 1, yp - 1.2), QBColor(ColorType), BF

Case 5 'Light Triangle

winGraph.Line (xp, yp + 1.2)-(xp - 1.115, yp - 1.2), QBColor(ColorType)

winGraph.Line -(xp + 1.115, yp - 1.2), QBColor(ColorType)

winGraph.Line -(xp, yp + 1.2), QBColor(ColorType)

End Select

End Sub

ภาคผนวก 2.2 โปรแกรมย่อย PlotData

```
Sub PlotData()  
    ShowLegendText  
    If winParameter.chkPlotType(1).Value = 1 Then  
        For i% = 1 To NPoint  
            If (X(i%) >= Xmin) And (X(i%) <= Xmax) And (Y(i%) >= Ymin) And (Y(i%)  
                <= Ymax) Then  
                Call DrawSymbol(PlotX(X(i%)), PlotY(Y(i%)))  
                If winParameter.chkPlotType(2).Value = 1 Then  
                    winGraph.Print "(" + Str(X(i%)) + "," + Str(Y(i%)) + ")"  
                End If  
            End If  
        Next i%  
    End If  
End Sub
```

ภาคผนวก 2.3 โปรแกรมย่อย Plotx

```
Function PlotX(ByVal xp As Double) As Double  
    Dim XX#  
    If xp < Xmin Then xp = Xmin  
    If xp > Xmax Then xp = Xmax  
    PlotX = (xp - Xmin) * 100 / (Xmax - Xmin)  
    Exit Function  
ErrorPlot:  
    If ModeThai = True Then  
        MsgBox ("ผิดพลาดเนื่องจากการเขียนกราฟ โปรดตรวจสอบข้อมูล")  
    Else  
        MsgBox (" Error Plot Graph, Please check Input Data")  
    End If  
End Function
```

ภาคผนวก 2.4 โปรแกรมย่อย PlotY

```
Function PlotY(ByVal yp As Double) As Double
    Dim y1#, ymin1#, ymax1#
    On Error GoTo ErrorPlot
    If yp < Ymin Then yp = Ymin
    If yp > Ymax Then yp = Ymax
    PlotY = (yp - Ymin) * 100 / (Ymax - Ymin)
    If GType = 1 Then
        If yp <= 0 Then y1 = Log(Ymin) Else y1 = Log(yp) / Log(10)
        ymin1 = Log(Ymin) / Log(10)
        ymax1 = Log(Ymax) / Log(10)
        PlotY = (y1 - ymin1) * 100 / (ymax1 - ymin1)
    End If
    Exit Function
ErrorPlot:
    If ModeThai = True Then
        MsgBox ("ค่าพารามิเตอร์ไม่เหมาะสม !")
        Exit Function
    Else
        MsgBox (" Error Plot Graph, Please check Input Data")
        Exit Function
    End If
End Function
```

ภาคผนวก 2.5 โปรแกรมย่อย PlotYfit

```
Sub plotYfit()
    Dim PXVal#, PYVal#, Xold#, Yold#, Xstep#
    Dim IBegin%, IFinal%
    PXVal = Xmin
    IBegin = Int(PlotX(Xmin) + 1)
    Xstep = ((Xmax - Xmin) / 100#)
    IFinal = 100
```

```
If ((NType = 2) Or (NType = 3) Or (NType = 5)) And (Xmin <= 0) Then
    PXVal = 0.1
    IBegin = Int(PlotX(Xmin + PXVal) + 1)
End If
winGraph.DrawWidth = 1
If Style = 0 Then
    winGraph.DrawStyle = 0
Else
    winGraph.DrawStyle = 2
End If
Xold = PXVal
Yold = calYfit(PXVal)
For i% = IBegin To IFinal
    PXVal = PXVal + Xstep
    PYVal = calYfit(PXVal)
    If PXVal < Xmax And PXVal > Xmin And PYVal > Ymin And PYVal < Ymax Then
        winGraph.Line (PlotX(Xold), PlotY(Yold))-(PlotX(PXVal), PlotY(PYVal)), QBColor(0)
    End If
    Xold = PXVal
    Yold = PYVal
Next i%
End Sub
```

ภาคผนวก 2.1 โปรแกรมย่อย SetAxis

```
Sub SetAxis()
    Dim ival, IOrder, Blog, Flog, Slog As Double
    Dim chkThick As Boolean
    Dim Xmajor, Xminor, Xnow As Double
    Dim Ymajor, Yminor, Ynow As Double
    chkThick = True
    Xmin = Val(winParameter.txtXmin.Text)
    Xmax = Val(winParameter.txtXmax.Text)
```

```
Xmajor = Val(winParameter.txtXMajor.Text)
Xminor = Val(winParameter.txtXMinor.Text)
Ymin = Val(winParameter.txtYmin.Text)
Ymax = Val(winParameter.txtYmax.Text)
Ymajor = Val(winParameter.txtYMajor.Text)
Yminor = Val(winParameter.txtYMinor.Text)
LogCycle = Val(winParameter.cmbCycle.Text)
If GType = 1 Then
    ival = Int(Log(Ymax) / Log(10) + 0.99)
    IOrder = ival - LogCycle
    Ymax = 10 ^ (ival)
    Ymin = 10 ^ (IOrder)
    MsgBox (Str(ival) + " Ymin 1 =" + Str(Ymin) + "Ymax : " + Str(Ymax))
End If
winGraph.Scale (-40, 140)-(130, -50)
winGraph.DrawWidth = 1
winGraph.DrawStyle = 0
If GType = 1 Then
    If (Xmin > 0) Then
        winGraph.Line (PlotX(Xmin), PlotY(Ymin))-(PlotX(Xmax), PlotY(Ymin)), QBColor(1)
        winGraph.Line (PlotX(Xmin), PlotY(Ymin))-(PlotX(Xmin), PlotY(Ymax)), QBColor(1)
    Else
        winGraph.Line (PlotX(0), PlotY(Ymin))-(PlotX(Xmax), PlotY(Ymin)), QBColor(1)
        winGraph.Line (PlotX(0), PlotY(Ymin))-(PlotX(0), PlotY(Ymax)), QBColor(1)
    End If
Else
    If (Xmin > 0) And (Ymin > 0) Then
        winGraph.Line (PlotX(Xmin), PlotY(Ymin))-(PlotX(Xmax), PlotY(Ymin)),
            QBColor(1)
        winGraph.Line (PlotX(Xmin), PlotY(Ymin))-(PlotX(Xmin), PlotY(Ymax)),
```

```
    QBColor(1)
End If
If (Xmin > 0) And Ymin <= 0 Then
    winGraph.Line (PlotX(Xmin), PlotY(0))-(PlotX(Xmax), PlotY(0)), QBColor(1)
    winGraph.Line (PlotX(Xmin), PlotY(Ymin))-(PlotX(Xmin), PlotY(Ymax)), QBColor(1)
End If
If (Xmin <= 0) And Ymin > 0 Then
    winGraph.Line (PlotX(Xmin), PlotY(0))-(PlotX(Xmax), PlotY(0)), QBColor(1)
    winGraph.Line (PlotX(0), PlotY(Ymin))-(PlotX(0), PlotY(Ymax)), QBColor(1)
End If
If (Xmin <= 0) And (Ymin <= 0) Then
    winGraph.Line (PlotX(Xmin), PlotY(0))-(PlotX(Xmax), PlotY(0)), QBColor(1)
    winGraph.Line (PlotX(0), PlotY(Ymin))-(PlotX(0), PlotY(Ymax)), QBColor(1)
End If
If (Ymin > 0) Then
    Ynow = PlotY(Ymin)
Else
    Ynow = PlotY(0)
End If
End If
For ival = Xmin To Xmax Step Xmajor
    Xnow = PlotX(ival)
    If winParameter.chkShowGrid(1).Value = 1 Then
        winGraph.Line (Xnow, 0)-(Xnow, 100), QBColor(1)
    End If
    winGraph.Line (Xnow, Ynow + 4)-(Xnow, Ynow - 4), QBColor(1)
    winGraph.CurrentX = Xnow - 5
    winGraph.CurrentY = Ynow - 5
    winGraph.Print ival
Next ival
For ival = Xmin To Xmax Step Xminor
    Xnow = PlotX(ival)
```



```
winGraph.Line (Xnow, Ynow + 2)-(Xnow, Ynow - 2), QBColor(1)
Next ival
If (Xmin > 0) Then
    Xnow = PlotX(Xmin)
Else
    Xnow = PlotX(0)
End If
If (GType = 0) Then
    For ival = Ymin To Ymax Step Ymajor
        Ynow = PlotY(ival)
        If winParameter.chkShowGrid(0).Value = 1 Then
            winGraph.Line (0, Ynow)-(100, Ynow), QBColor(1)
        End If
        winGraph.Line (Xnow + 2, Ynow)-(Xnow - 2, Ynow), QBColor(1)
        winGraph.CurrentX = Xnow - 20
        winGraph.CurrentY = Ynow + 2
        winGraph.Print ival
    Next ival
    For ival = Ymin To Ymax Step Yminor
        Ynow = PlotY(ival)
        winGraph.Line (Xnow + 1, Ynow)-(Xnow - 1, Ynow), QBColor(1)
    Next ival
Else
    winGraph.CurrentX = Xnow - 20
    winGraph.CurrentY = PlotY(Ymin) + 2
    winGraph.Print "10^" + Str(IOrder)
    For i% = 1 To LogCycle
        Blog = Ymin * (10 ^ (i% - 1))
        Flog = Ymin * (10 ^ i%)
        Slog = Ymin * (10 ^ (i% - 1))
        IOrder = IOrder + 1
        For ival = Blog To Flog Step Slog
```

```
Ynow = PlotY(ival)
If winParameter.chkShowGrid(0).Value = 1 Then
    winGraph.Line (0, Ynow)-(100, Ynow), QBColor(1)
End If
winGraph.Line (Xnow + 2, Ynow)-(Xnow - 2, Ynow), QBColor(1)
Next ival
winGraph.CurrentX = Xnow - 20
winGraph.CurrentY = PlotY(Flog) + 2
winGraph.Print "10^" + Str(IOOrder)
Next i%
End If
End Sub
```

ภาคผนวก 2.6 โปรแกรมย่อย ShowGraph

```
Sub ShowGraphText()
    Dim GraphName, LegendName, XAxisName, YAxisName As String
    GraphName = winParameter.txtGraphName.Text
    LegendName = winParameter.txtLegend.Text
    XAxisName = winParameter.txtXAxis.Text
    YAxisName = winParameter.txtYAxis.Text
    winGraph.CurrentX = 30
    winGraph.CurrentY = 120
    If winParameter.optGraphName(1).Value = True Then
        winGraph.Print GraphName
    Else
        If ModeThai = True Then
            winGraph.Print " กราฟระหว่าง " & Xname & " and " & Yname & "."
        Else
            winGraph.Print " Graph Between " & Xname & " and " & Yname & "."
        End If
    End If
End Sub
winGraph.CurrentX = -20
```

```
winGraph.CurrentY = 120
If winParameter.chkYAxis(2).Value = 1 Then
    winGraph.Print Yname & "(" & Yunit & ")"
Else
    winGraph.Print YAxisName
End If
winGraph.CurrentX = 60
winGraph.CurrentY = -20
If winParameter.chkXAxis(2).Value = 1 Then
    winGraph.Print Xname & "(" & Xunit & ")"
Else
    winGraph.Print XAxisName
End If
End Sub
```

ภาคผนวก 2.7 โปรแกรมย่อย ShowLegendText

```
Sub ShowLegendText()
    Dim Leg As String
    If winParameter.optGraphText(1).Value = True Then
        Leg = Yname + "(Unfitted)"
        Call DrawSymbol(102, 80)
        winGraph.CurrentX = 106
        winGraph.CurrentY = 82
        winGraph.Print Leg
        If ModeFited = True Then
            winGraph.Line (102, 70)-(107, 70), QBColor(ColorType)
            winGraph.CurrentX = 109
            winGraph.CurrentY = 70
            Leg = Yname + "(fitted)"
            winGraph.Print Leg
        End If
    End If
End Sub
```

```
If winParameter.optGraphText(2).Value = True Then
  Leg = winParameter.txtLegend.Text + "(Unfitted)"
  Call DrawSymbol(105, 80)
  winGraph.CurrentX = 106
  winGraph.CurrentY = 82
  winGraph.Print Leg
  If ModeFited = True Then
    winGraph.Line (102, 70)-(106, 70), QBColor(ColorType)
    winGraph.CurrentX = 108
    winGraph.CurrentY = 70
    Leg = winParameter.txtLegend.Text + "(fitted)"
    winGraph.Print Leg
  End If
End If
End Sub
```

THAMMASAT UNIVERSITY

สำนักหอสมุด

ภาคผนวก 3

โปรแกรมย่อย ReadWriteFile

Attribute VB_Name = "ReadWriteFile"

ภาคผนวก 3.1 SaveFile

```
Sub SaveFile(n As String)
    Dim f As Integer
    f = FreeFile
    If n <> "" Then
        Open n For Output As f
        Print #f, NPoint
        Print #f, Xname
        Print #f, Xunit
        Print #f, Yname
        Print #f, Yunit
        For i% = 1 To NPoint + 5
            Print #f, X(i%), Y(i%), sigmaY(i%)
        Next i%
        Close #f
    End If
End Sub
```

ภาคผนวก 3.2 PrintFile

```
Sub Printout()
    Dim xp%, yp%
    Printer.Scale (0, 0)-(100, 100)
    ' Printer.Fonts "Angsana New"
    xp = 10
    yp = 10
    Printer.CurrentY = yp - 5
    Printer.CurrentX = xp + 5
```

```
Printer.Print "Data File Name :" & FileName
For i% = 0 To NPoint
    winData.DataGrid.Row = i%
    For j% = 0 To winData.DataGrid.Cols - 1
        Printer.CurrentY = yp + i% * 2
        winData.DataGrid.Col = j%
        Printer.CurrentX = xp + j% * 15 - Len(winData.DataGrid.Text)
        Printer.Print winData.DataGrid.Text
    Next j%
Next i%
Printer.CurrentY = yp + NPoint * 2 + 4
Printer.CurrentX = xp + 5
Printer.Print "Fitted Equation : " & winData.txtEqOut.Text
Printer.CurrentY = yp + NPoint * 2 + 6
Printer.CurrentX = xp + 5
Printer.Print "Correlation : " & Str(Format(RMul, "000.####"))
End Sub
```

ภาคผนวก 3.3 SaveParameter

```
Sub SaveParameter(n As String)
    Dim f, i As Integer
    f = FreeFile
    If n <> "" Then
        Open n For Output As f
        Print #f, NoDec
        Print #f, PcError
        Print #f, Mode
        If ModeThai = True Then i = 0
        If ModeThai = False Then i = 1
        Print #f, i
        Print #f, Symbol
        Print #f, LineStyle
    End If
End Sub
```

```
Print #f, GType
Print #f, ColorType
Print #f, LogCycle
Print #f, NOrder
For i = 0 To 3
    Print #f, winParameter.chkDataOut(i%).Value
Next i
For i% = 0 To 1
    Print #f, winParameter.chkShowGrid(i%).Value
Next i%
For i% = 0 To 2
    Print #f, winParameter.chkPlotType(i%).Value
Next i%
For i% = 0 To 2
    Print #f, winParameter.chkXaxis(i%).Value
Next i%
For i% = 0 To 2
    Print #f, winParameter.chkYAxis(i%).Value
Next i%
For i% = 0 To 1
    Print #f, winParameter.optGraphName(i%).Value
Next i%
Close #f
End If
End Sub
```

ภาคผนวก 3.4 ReadParameter

```
Sub ReadParameter(n As String)
```

```
    Dim f, ival As Integer
```

```
    Dim un As String
```

```
    f = FreeFile
```

```
    If n <> "" Then
```

Open n For Input As f

Input #f, NoDec

Input #f, PcError

Input #f, Mode

Input #f, ival

If ival = 0 Then ModeThai = True

If ival = 1 Then ModeThai = False

Input #f, Symbol

Input #f,LineStyle

Input #f, GType

Input #f, ColorType

Input #f, LogCycle

Input #f, NOrder

For i = 0 To 3

Input #f, ival: winParameter.chkDataOut(i).Value = ival

Next i

For i = 0 To 1

Input #f, ival: winParameter.chkShowGrid(i).Value = ival

Next i

For i = 0 To 2

Input #f, ival: winParameter.chkPlotType(i).Value = ival

Next i

For i = 0 To 2

Input #f, ival: winParameter.chkXaxis(i).Value = ival

Next i

For i = 0 To 2

Input #f, ival: winParameter.chkYAxis(i).Value = ival

Next i

For i = 0 To 1

Input #f, un: winParameter.optGraphName(i).Value = un

Next i

Close #f


```
End If  
End Sub
```

ภาคผนวก 3.5 SteDataZero

```
Sub SetDataZero()  
    Xname = "": Xunit = ""  
    Yname = "": Yunit = ""  
    For i% = 1 To 50  
        X(i%) = 0#: Y(i%) = 0#: sigmaY(i%) = 0#  
    Next i%  
    NPoint = 0  
End Sub
```

ภาคผนวก 3.6 ReadFile

```
Sub ReadFile(n As String)  
    Dim f, ii As Integer  
    Dim Xmax, Xmin, Ymin, Ymax As Double  
    f = FreeFile  
    If n <> "" Then  
        Open n For Input As f  
        Input #f, NPoint  
        Input #f, Xname  
        Input #f, Xunit  
        Input #f, Yname  
        Input #f, Yunit  
        For i% = 1 To NPoint  
            Input #f, X(i%), Y(i%), sigmaY(i%)  
        Next i%  
        Close #f  
        FindMinMax  
    End If  
End Sub
```