



Topaz Systems, Inc. SigID Verification Demo (ACCESS)

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For use with TF-LBK(460-462)-HSB

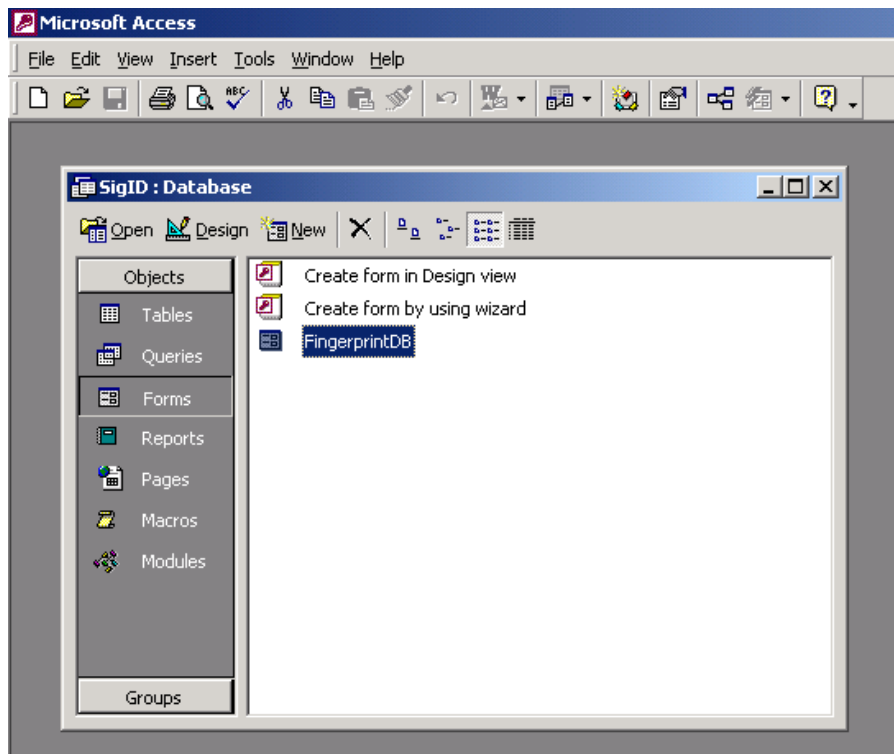
Welcome to the Topaz SigID Verification System Demo. This demonstration captures a fingerprint in an Access database, and verifies your fingerprint upon request. This is a demo only and should be used as a blueprint for creating your ID verification applications.



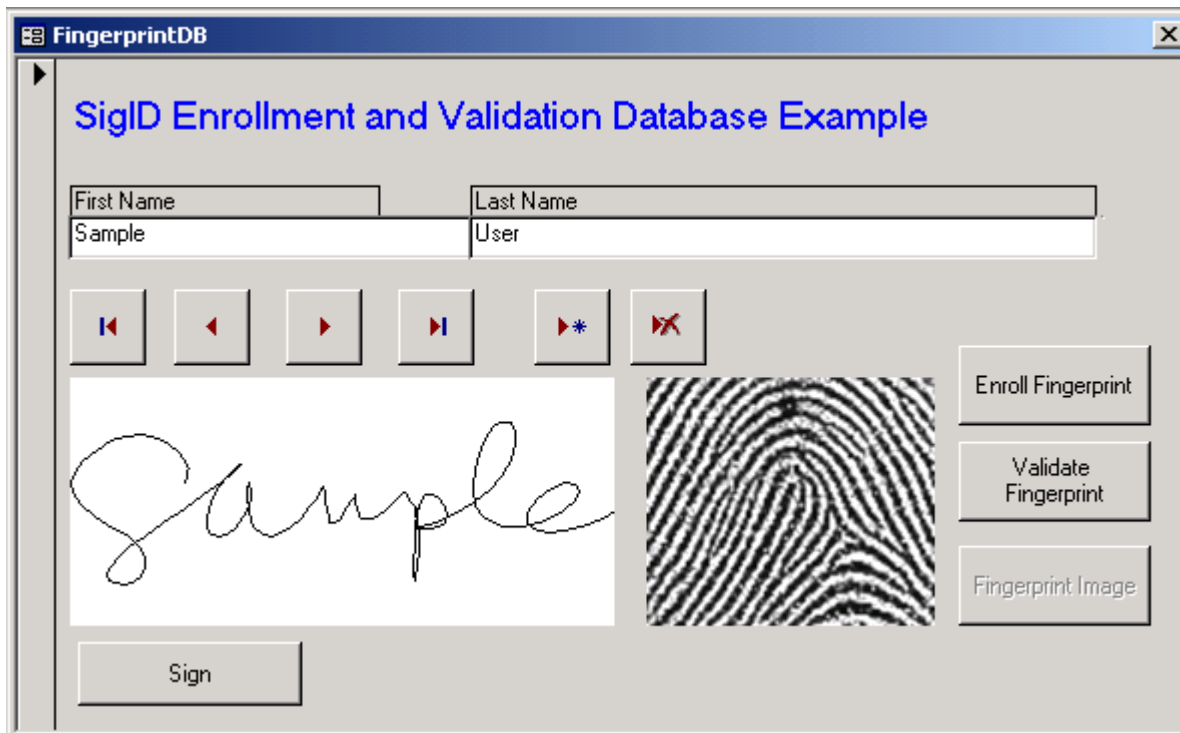
To download the demo go to:


http://www.topazsystems.com/software/download/access/sigid_demo_access.zip

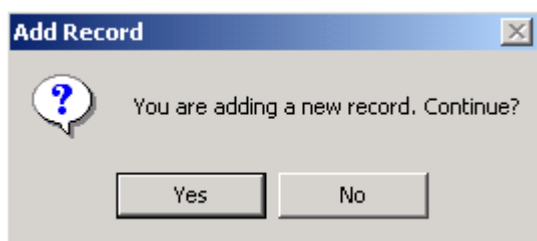
Begin by opening “sigID.mdb” It will be located in the .zip file you downloaded from topazsystems.com. You will see the screen below.



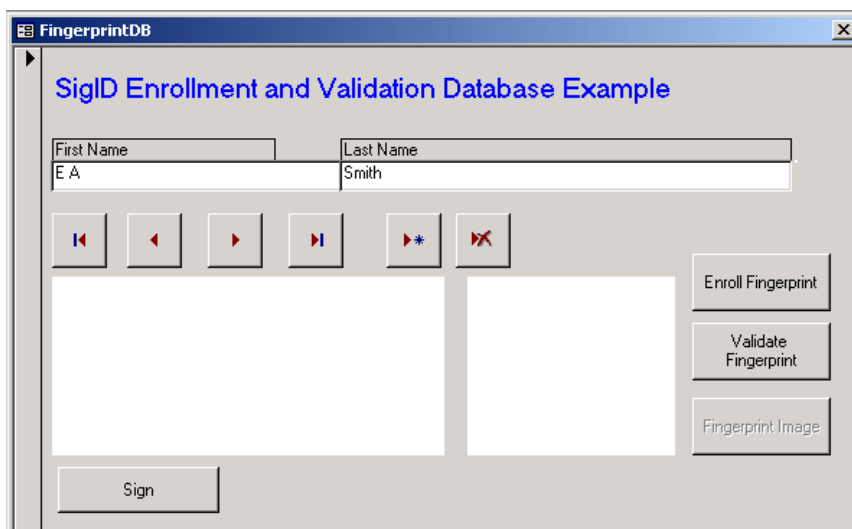
Open the FingerprintDB, shown above, and you will open the fingerprint database.



To add a new user click . You will be prompted to verify that you want to create a new record as shown below. Click “Yes”.

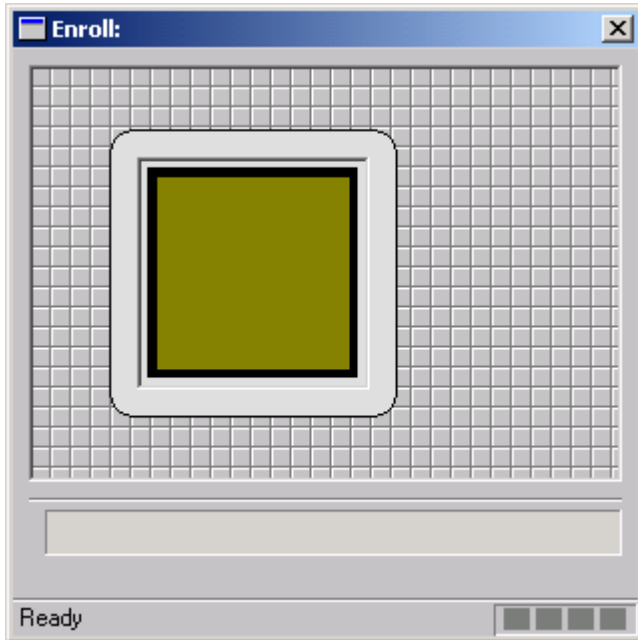


Enter your name information, and then click “Enroll Fingerprint.”



The window below will then appear. Press your finger against the ID scanner of your Topaz tablet. This process will need to be repeated three times so a template for later comparison can be created. Please try to place the swirl of your fingerprint in the center of the scanner, and wait a few seconds between scans.

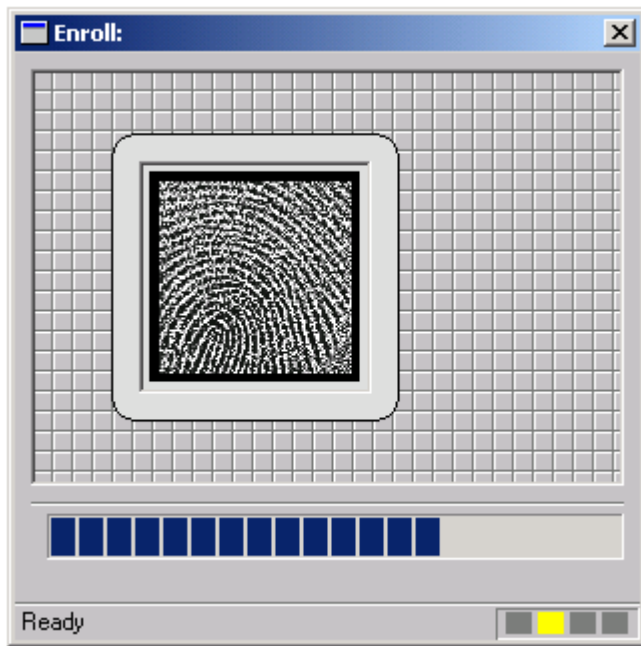
Prompt Screen:



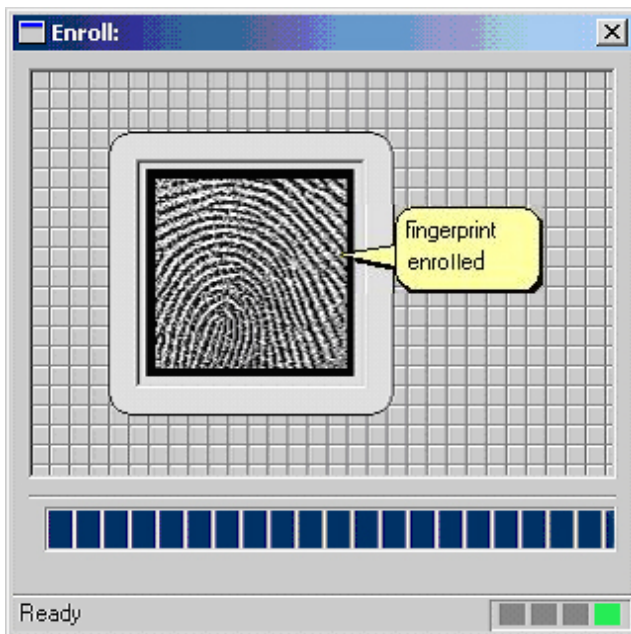
First Time:



Second Time:

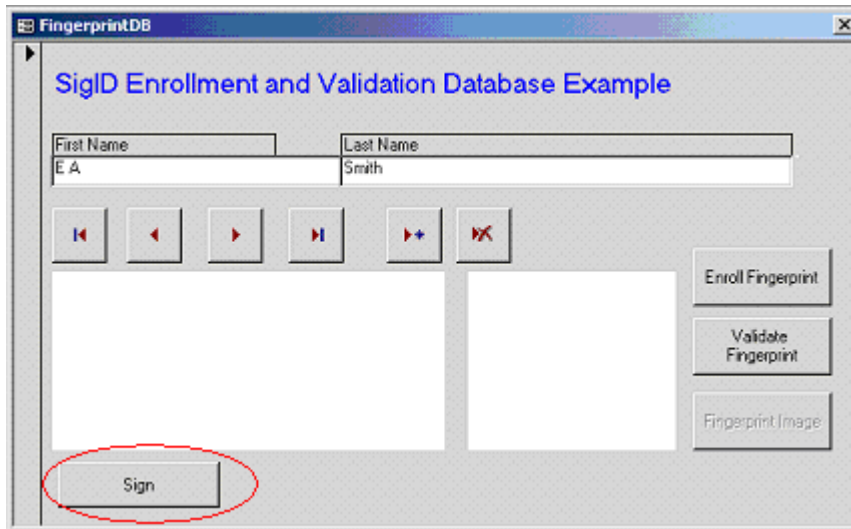


Final Time:

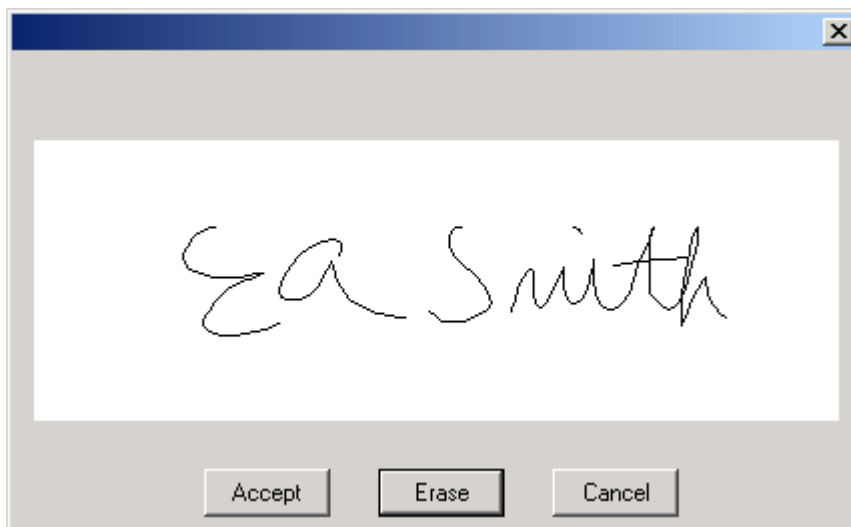


When the program has sufficient data to create an entry, you will return to the screen below. If not, you will receive an error and be prompted to try again.

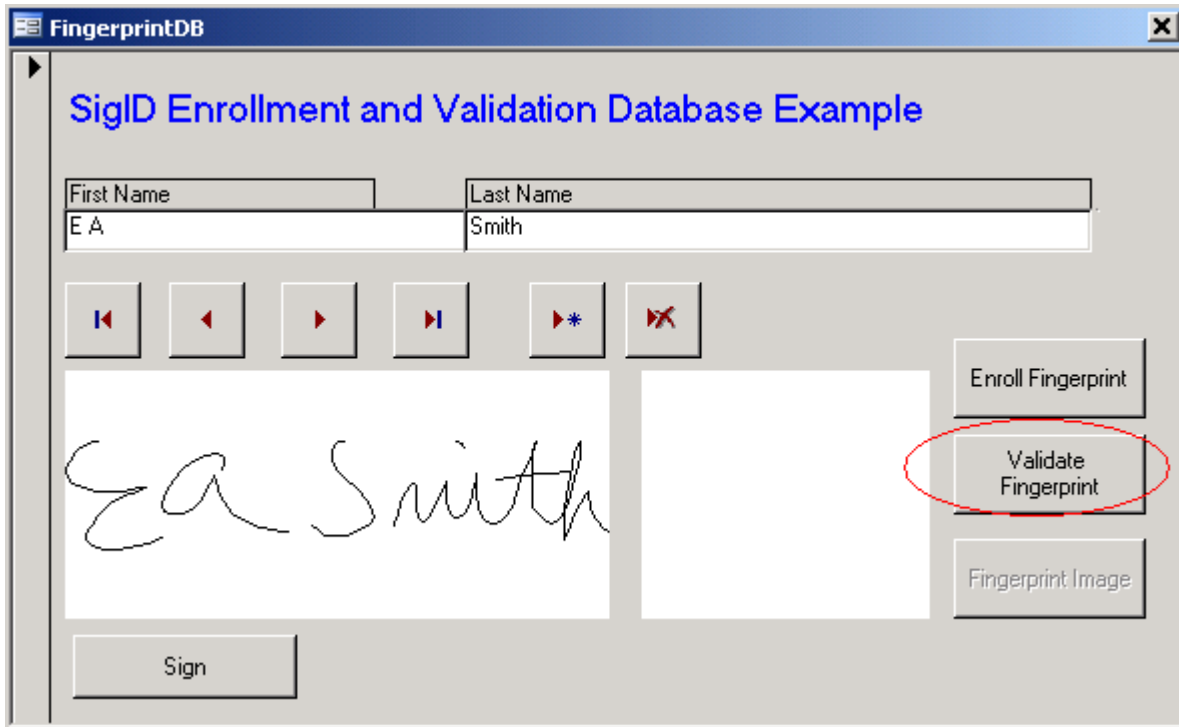
Once you have captured your fingerprint you will be returned to the screen below. Click “Sign” to save your signature as part of the database.



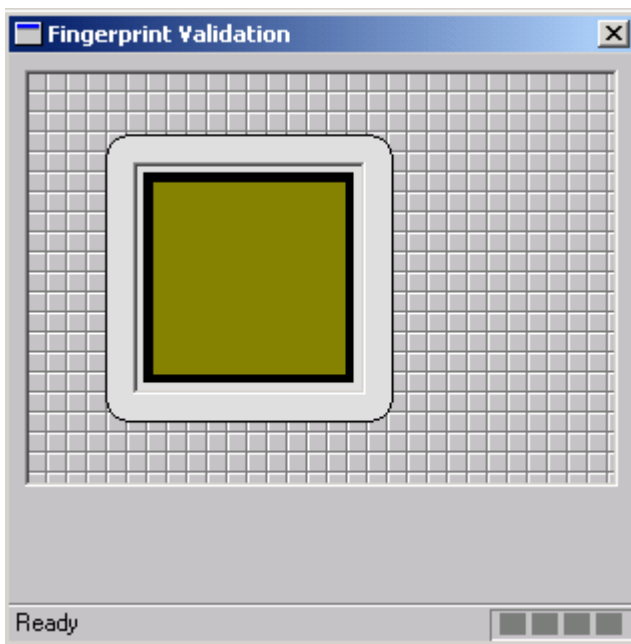
You will be prompted to sign by the window below. If you make a mistake, you can click “Erase” to clear the tablet, and then resign. When you are finished signing, click “Accept” to add your signature to the database.



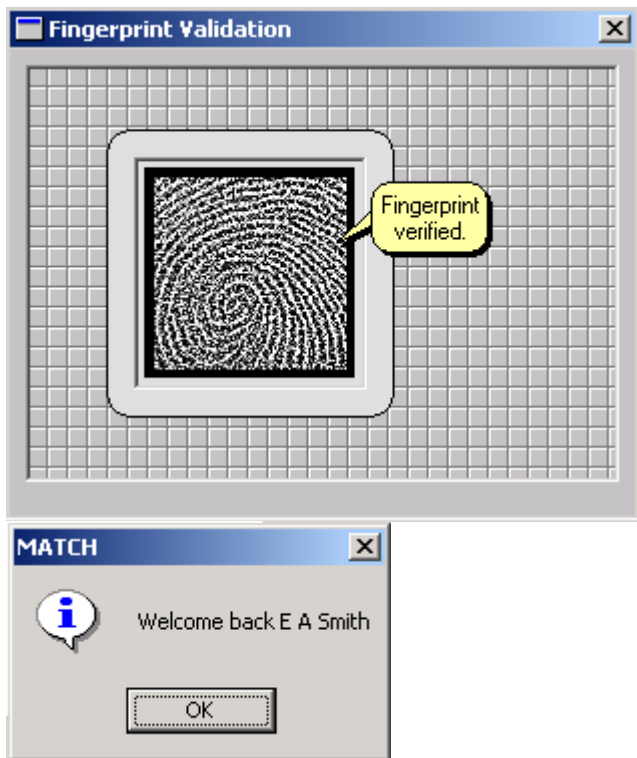
You will once again be navigated back to the main menu, however, now your signature will be added to your records. Click validate fingerprint in order to verify your identity and access the fingerprint image menu (shown below).



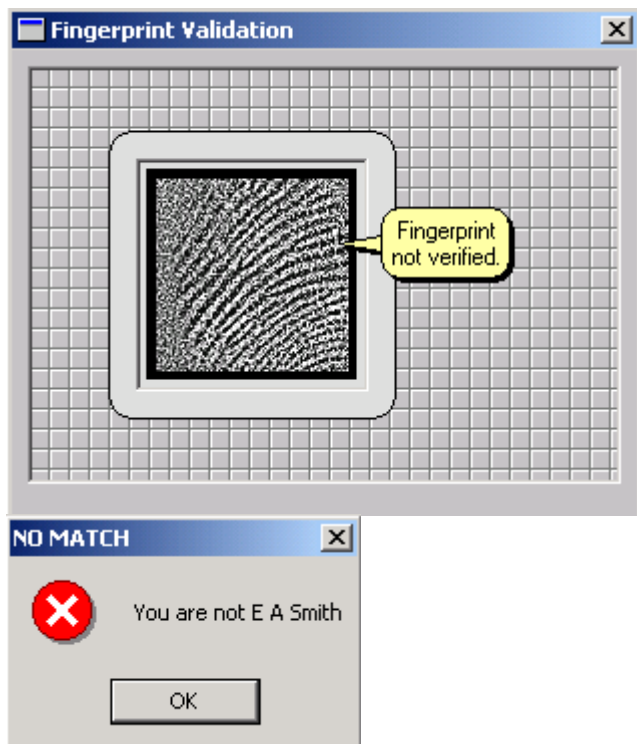
Once you have clicked "Validate Fingerprint" you will be prompted to do so with the window below. Press the same finger you used to create your fingerprint template against the fingerprint scanner, once again making sure the swirl of your finger is centered on the scanner.



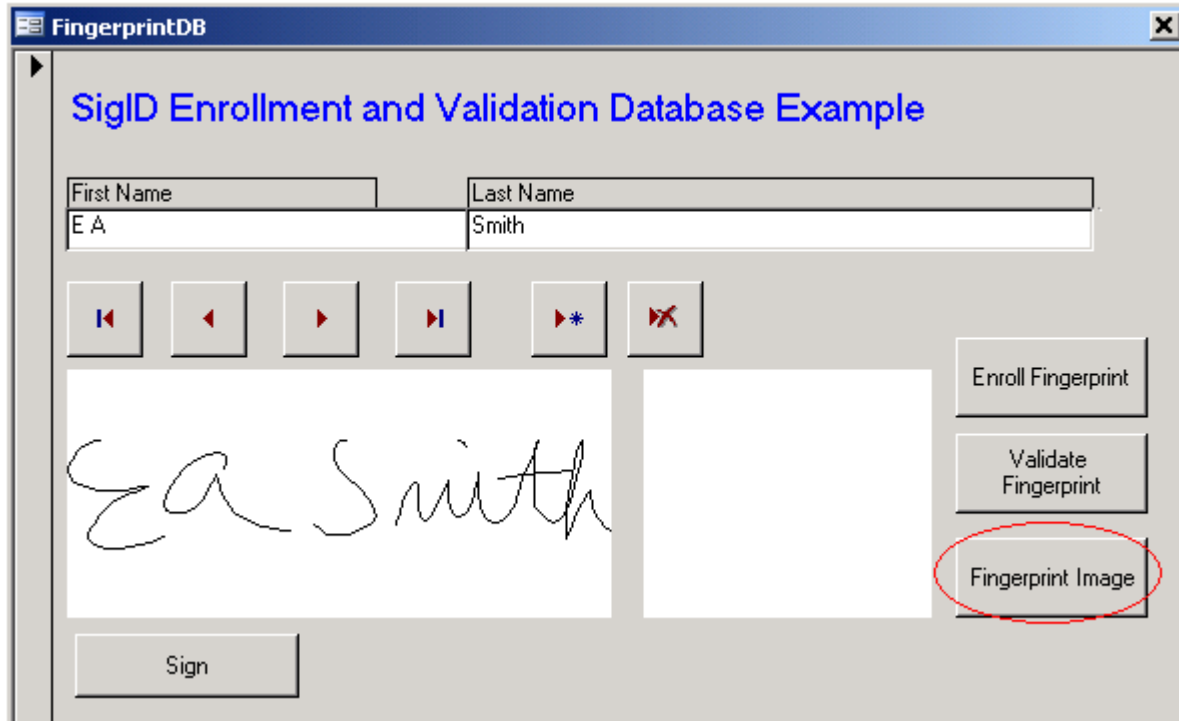
If your fingerprint is validated, you will see the two messages shown below.



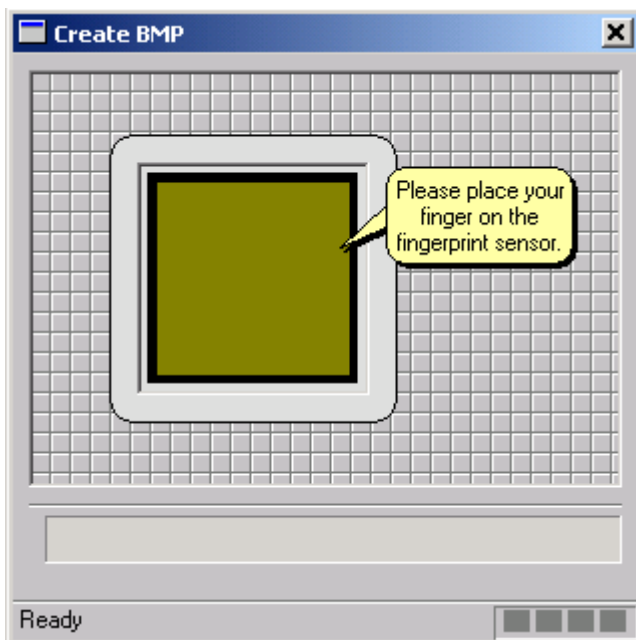
However if the scan taken to validate your identity does not match your fingerprint on record, you will see the messages below. If you think you received this message in error, please ensure you have already enrolled your fingerprint and that you used the same finger for validation, and try again.



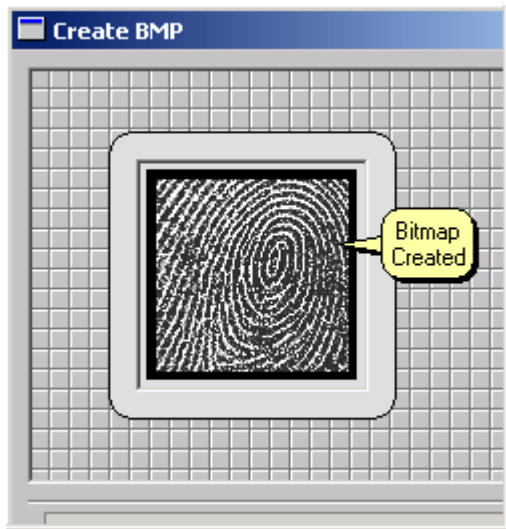
Once you have validated your fingerprint, you are now able to save a image of your fingerprint. To do so, click “Fingerprint Image.”



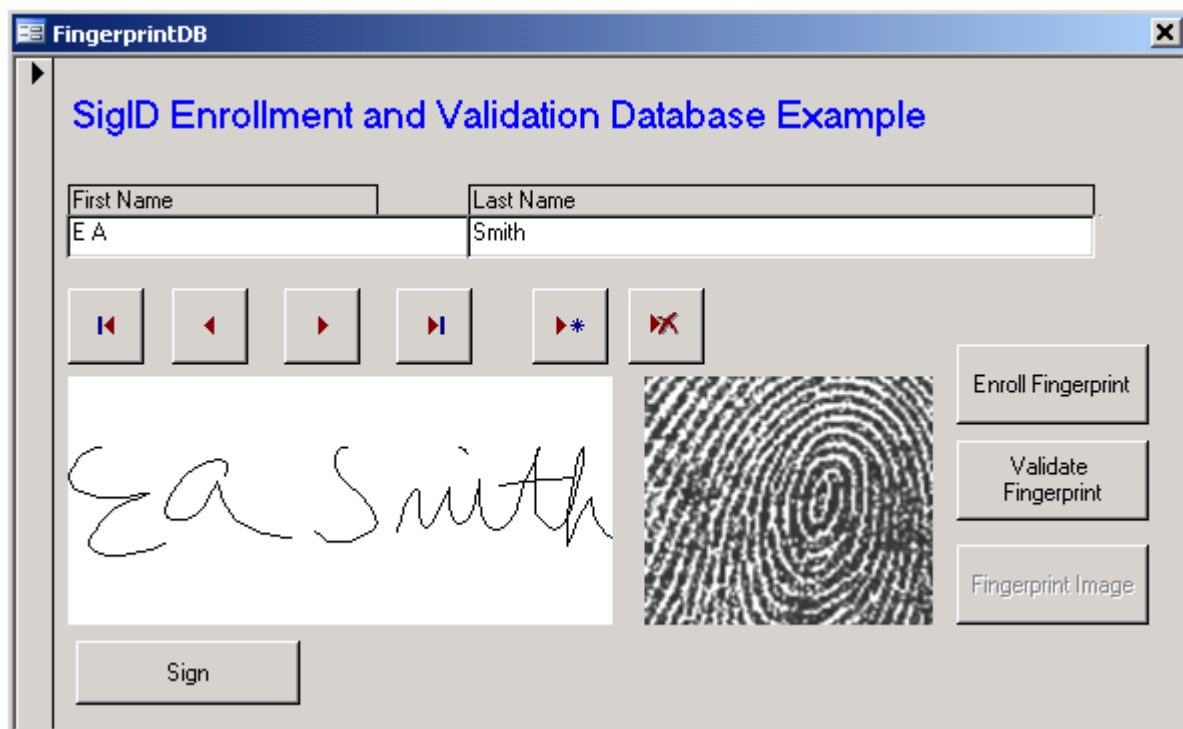
You will be prompted by the window below to place your finger on the sensor. Once again make sure that the swirl of your finger is centered on the scanner.



If the process was successful, you will receive the message below. If you encounter a problem, try this step again, ensuring the swirl of your fingerprint is centered on the scanner and that you press down firmly.



After creating a Bitmap of your fingerprint, you will return to the window below. All of your information will be on record, and you should be able to view your signature and fingerprint along with your other information all at once.



The Code

First we will look at the code behind “**sigid_demo.mdb**”.

The “Enroll” button is used to capture the biometric fingerprint template, not the fingerprint image. This template is used later to validate the user.

When you click the “Enroll” button, the code below ensures that before you can enroll a fingerprint you have inputted your name in the name field. It first checks the first name. If the first name field is blank, the sub is exited. If there is data in the first name field and not in the last name field, the sub is exited and a message prompting the user to complete the record is displayed. If both fields are filled out, the code continues. If successful the fingerprint template string is placed in the fingerprint text box, which in turn is bound to a field in the database.

```
Private Sub cmdEnroll_Click()
.....
'Create a SigIDString (ASCII hex string) of fingerprint
.....
First_Name.SetFocus
If First_Name.Text = "" Then
    MsgBox "Please enter a First and Last name before continuing", vbOKOnly +
vbExclamation, "Complete Record"
    Exit Sub
End If

Last_Name.SetFocus
If Last_Name.Text = "" Then
    MsgBox "Please enter a First and Last name before continuing", vbOKOnly +
vbExclamation, "Complete Record"
    Exit Sub
End If

fingerprint.Value = SigID1.prGetFingerprintString
If fingerprint.Value & "" = "" Then
    MsgBox "No fingerprint captured!", vbOKOnly + vbExclamation, "No Capture"
    Exit Sub
End If
cmdFingImg.Enabled = False
End Sub
```

The Sub cmdFingImg() shown below creates the fingerprint image to place on the form, as opposed to the biometric fingerprint. A byte array is created and the BitmapBufferBytes() method is called. This will bring up the fingerprint capture dialogue which will return an array holding the bitmap fingerprint image if successful.

```
Private Sub cmdFingImg_Click()
On Error GoTo EH
Dim ByteValue() As Byte
Dim intVal As Integer

SigID1.BmpResolution 1
ByteValue = SigID1.GetBitmapBufferBytes
""SIGPLUS.OCX ALSO HAS A GET BITMAP BUFFER BYTES METHOD...THE CODE
WOULD BE SOMETHING LIKE
'Dim Size As Long
```

```

'Dim ByteValue() As Byte
'SigPlus1.BitMapBufferWrite
'Size = SigPlus1.BitMapBufferSize 'use this SIZE value to
'ReDim ByteValue(Size)
'ByteValue = SigPlus1.GetBitmapBufferBytes ""USE THIS IN PLACE OF ByteValue =
SigID1.GetBitmapBufferBytes
'Close #1
'SigPlus1.BitMapBufferClose
.....

```

Next the image is placed temporarily into the picture clip control, then the background of a SigPlus object for display. The fingerprint image byte array is then placed into the database using the AppendChunk() method.

```

PictureClip0.Picture = PictureFromBits(ByteValue) 'get image into PicClip object
SigPlus2.DisplayWindowRes = True
SigPlus2.SetBackgroundHandle PictureClip0.Picture.Handle, 0 'display image in SigPlus
object

Dim db As Object
Dim rst As Object
Set db = CurrentDb
Set rst = db.OpenRecordset("FingerprintDB")
txtRec.SetFocus
txtRec.Text = Me.CurrentRecord

rst.Move txtRec.Text - 1

rst.Edit
rst("fingerprinting").AppendChunk ByteValue() 'dump bmp byte array into database
rst.Update
rst.Close
Set db = Nothing
Set rst = Nothing
cmdFingImg.Enabled = False
Exit Sub
EH:
If Err.Number = 13 Then
    MsgBox "Be sure to press firmly on the fingerprint device", vbOKOnly + vbInformation,
    "Image Capture Unsuccessful"
    Exit Sub
End If
MsgBox Err.Number & " " & Err.Description
'cmdFingImg_Click
End Sub

```

This event moves the record set to the first record, displaying the correct signature and fingerprint image, provided they have already been saved into the database.

```

Private Sub cmdGoFirst_Click()
On Error GoTo Err_cmdGoFirst_Click

    DoCmd.GoToRecord , , acFirst
SigPlus1.ClearTablet
SigPlus2.SetBackground "" , 0
If Signature.Value <> "" Then
    SigPlus1.SigString = Signature.Value
End If

```

```

Dim byt() As Byte

txtRec.SetFocus
txtRec.Text = Me.CurrentRecord

Dim db As Object
Dim rst As Object
Set db = CurrentDb
Set rst = db.OpenRecordset("FingerprintDB")
rst.Move txtRec.Text - 1
'rst.Edit
Dim getoutbytes
Dim cmem As Long
getoutbytes = rst("fingerprinting")
cmem = UBound(getoutbytes) + 1
byt() = rst("fingerprinting").GetChunk(0, cmem)
'rst.Update
rst.Close
Set db = Nothing
Set rst = Nothing

PictureClip0.Picture = PictureFromBits(byt)
SigPlus2.DisplayWindowRes = True
SigPlus2.SetBackgroundHandle PictureClip0.Picture.Handle, 0
cmdFingImg.Enabled = False

Exit_cmdGoFirst_Click:
Exit Sub

Err_cmdGoFirst_Click:
MsgBox Err.Description
Resume Exit_cmdGoFirst_Click

End Sub

```

This event moves the record set to the previous record, displaying the correct signature and fingerprint image, provided they have already been saved into the database.

```

Private Sub cmdGoPrevious_Click()
On Error GoTo Err_cmdGoPrevious_Click

DoCmd.GoToRecord , , acPrevious
SigPlus1.ClearTablet
SigPlus2.SetBackground "", 0
If Signature.Value <> "" Then
SigPlus1.SigString = Signature.Value
End If

Dim byt() As Byte
txtRec.SetFocus
txtRec.Text = Me.CurrentRecord

Dim db As Object
Dim rst As Object
Set db = CurrentDb
Set rst = db.OpenRecordset("FingerprintDB")
rst.Move txtRec.Text - 1
'rst.Edit
Dim getoutbytes
Dim cmem As Long

```

```

getoutbytes = rst("fingerprinting")
cmem = UBound(getoutbytes) + 1
byt() = rst("fingerprinting").GetChunk(0, cmem)
'rst.Update
rst.Close
Set db = Nothing
Set rst = Nothing

PictureClip0.Picture = PictureFromBits(byt)
SigPlus2.DisplayWindowRes = True
SigPlus2.SetBackgroundHandle PictureClip0.Picture.Handle, 0
cmdFingImg.Enabled = False
Exit_cmdGoPrevious_Click:
    Exit Sub

Err_cmdGoPrevious_Click:
    MsgBox Err.Description
    Resume Exit_cmdGoPrevious_Click

End Sub

```

This event moves the record set to the next record, displaying the correct signature and fingerprint image, provided they have already been saved into the database.

```

Private Sub cmdGoNext_Click()
    On Error GoTo Err_cmdGoNext_Click

    DoCmd.GoToRecord , , acNext
    txtRec.SetFocus
    txtRec.Text = Me.CurrentRecord

    SigPlus1.ClearTablet
    SigPlus2.SetBackground "", 0
    If Signature.Value <> "" Then
        SigPlus1.SigString = Signature.Value
    End If

    Dim byt() As Byte

    Dim db As Object
    Dim rst As Object
    Set db = CurrentDb
    Set rst = db.OpenRecordset("FingerprintDB")
    rst.Move txtRec.Text - 1
    Dim getoutbytes
    Dim cmem As Long
    getoutbytes = rst("fingerprinting")
    cmem = UBound(getoutbytes) + 1
    byt() = rst("fingerprinting").GetChunk(0, cmem)
    'rst.Update
    rst.Close
    Set db = Nothing
    Set rst = Nothing

    PictureClip0.Picture = PictureFromBits(byt)
    SigPlus2.DisplayWindowRes = True
    SigPlus2.SetBackgroundHandle PictureClip0.Picture.Handle, 0
    cmdFingImg.Enabled = False
    Exit_cmdGoNext_Click:

```

```

Exit Sub

Err_cmdGoNext_Click:
MsgBox Err.Description & " " & Err.Number
If Err.Number = 3021 And rst.EOF = True Then
Dim retval As Integer
    retval = MsgBox("You are adding a new record. Continue?", vbYesNo + vbQuestion,
"Add Record")
    If retval = vbYes Then
        '
    Else
        rst.Close
        Set db = Nothing
        Set rst = Nothing
        cmdGoLast_Click
    End If
End If
Resume Exit_cmdGoNext_Click

End Sub

```

This event moves the record set to the last record, displaying the correct signature and fingerprint image, provided they have already been saved into the database.

```

Private Sub cmdGoLast_Click()
On Error GoTo Err_cmdGoLast_Click

    DoCmd.GoToRecord , , acLast
txtRec.SetFocus
txtRec.Text = Me.CurrentRecord

SigPlus1.ClearTablet
SigPlus2.SetBackground "", 0
If Signature.Value <> "" Then
    SigPlus1.SigString = Signature.Value
End If

Dim byt() As Byte

Dim db As Object
Dim rst As Object
Set db = CurrentDb
Set rst = db.OpenRecordset("FingerprintDB")
rst.Move txtRec.Text - 1
'rst.Edit
Dim getoutbytes
Dim cmem As Long
getoutbytes = rst("fingerprinting")
cmem = UBound(getoutbytes) + 1
byt() = rst("fingerprinting").GetChunk(0, cmem)
'rst.Update
rst.Close
Set db = Nothing
Set rst = Nothing

PictureClip0.Picture = PictureFromBits(byt)
SigPlus2.DisplayWindowRes = True
SigPlus2.SetBackgroundHandle PictureClip0.Picture.Handle, 0
cmdFingImg.Enabled = False
Exit_cmdGoLast_Click:
Exit Sub

```

```

Err_cmdGoLast_Click:
    MsgBox Err.Description
    Resume Exit_cmdGoLast_Click

End Sub

```

This event adds a new record to the record set.

```

Private Sub cmdAddNew_Click()
On Error GoTo Err_cmdAddNew_Click

    DoCmd.GoToRecord , , acNewRec
    txtRec.SetFocus
    txtRec.Text = Me.CurrentRecord

SigPlus1.ClearTablet
SigPlus2.SetBackground "", 0

DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70

DoCmd.GoToRecord , , acPrevious
DoCmd.GoToRecord , , acLast
cmdFingImg.Enabled = False
Exit_cmdAddNew_Click:
    Exit Sub

Err_cmdAddNew_Click:
    MsgBox Err.Description
    Resume Exit_cmdAddNew_Click
End Sub

```

CmdDelete() deletes the current record from the record set, then moves back one record.

```

Private Sub cmdDelete_Click()
On Error GoTo Err_cmdDelete_Click

    DoCmd.DoMenuItem acFormBar, acEditMenu, 8, , acMenuVer70
    DoCmd.DoMenuItem acFormBar, acEditMenu, 6, , acMenuVer70

SigPlus1.ClearTablet
SigPlus2.SetBackground "", 0

DoCmd.GoToRecord , , acLast

If Signature.Value <> "" Then
    SigPlus1.SigString = Signature.Value
End If
txtRec.SetFocus
txtRec.Text = Me.CurrentRecord

Dim byt() As Byte
Dim db As Object
Dim rst As Object
Set db = CurrentDb
Set rst = db.OpenRecordset("FingerprintDB")
rst.Move txtRec.Text - 1
Dim getoutbytes
Dim cmem As Long

```

```

getoutbytes = rst("fingerprinting")
cmem = UBound(getoutbytes) + 1
byt() = rst("fingerprinting").GetChunk(0, cmem)
'rst.Update
rst.Close
Set db = Nothing
Set rst = Nothing
PictureClip0.Picture = PictureFromBits(byt)
SigPlus2.DisplayWindowRes = True
SigPlus2.SetBackgroundHandle PictureClip0.Picture.Handle, 0
cmdFingImg.Enabled = False
Exit_cmdDelete_Click:
    Exit Sub
Err_cmdDelete_Click:
    MsgBox Err.Description
    Resume Exit_cmdDelete_Click

End Sub

```

When you click the “Sign” button, the code below ensures that before you can sign your name you have inputted your name in the name field. It first checks the first name. If the first name field is blank, the sub is exited. Also if there is data in the first name field and not in the last name field, the sub is exited and a message prompting the user to complete the record is displayed. If both fields are filled out, the code continues.

```

Private Sub cmdSign_Click()
First_Name.SetFocus
If First_Name.Text = "" Then
    MsgBox "Please enter a First and Last name before continuing", vbOKOnly +
vbExclamation, "Complete Record"
    Exit Sub
End If

Last_Name.SetFocus
If Last_Name.Text = "" Then
    MsgBox "Please enter a First and Last name before continuing", vbOKOnly +
vbExclamation, "Complete Record"
    Exit Sub
End If

```

Below is the cmdSign() continued. Using the GetSignature function of SigSign, the signature is saved as SigSign1.SigString. That data is then transferred to SigPlus.SigString, and SigSign.SigString is cleared. If there were no tablet points collected, the user is notified that no signature was captured.

```

If SigSign1.GetSignature = True Then
    SigPlus5.SigString = SigSign1.SigString
    If SigPlus5.NumberOfTabletPoints > 0 Then
        SigPlus5.ClearTablet
        SigPlus1.SigCompressionMode = 0
        'SigPlus1.SigString = SigSign1.SigString
        SigPlus1.ClearTablet
        SigPlus1.SigString = SigSign1.SigString
        SigPlus1.SigCompressionMode = 2
        Signature.Value = SigPlus1.SigString
    Else
        SigPlus5.ClearTablet
        MsgBox "You must sign to continue...", vbOKOnly + vbExclamation, "No Signature

```

```

Captured"
    Exit Sub
End If
End If
cmdFingImg.Enabled = False
End Sub

```

CmdValidate runs to validate your identity by comparing the fingerprint on record to that taken for validation purposes. If a validation print was captured SigID1.ValidateFingerprintString is assigned to intAns. If intAns returns 1, then the validating fingerprint and the one on file did not match. 3 denotes that the user cancelled the operation, and anything else means that the user is not enrolled. However, if it returned a 0, that denotes that the fingerprint was validated. The screen then refreshes to ensure accuracy of data.

```

Private Sub cmdValidate_Click()
.....
'Validate a captured SigIDString (ASCII hex string) of fingerprint
.....
If fingerprint.Value <> "" Then
    Dim intAns As Integer
    intAns = SigID1.prValidateFingerprintString(fingerprint.Value)
    'this example validates a new fingerprint against the
    'current fingerprint string in the Text box

    If intAns = 1 Then
        MsgBox "You are not " & Me.First_Name & " " & Me.Last_Name, vbOKOnly +
vbCritical, "NO MATCH"
    ElseIf intAns = 0 Then
        MsgBox "Welcome back " & Me.First_Name & " " & Me.Last_Name, vbOKOnly +
vbInformation, "MATCH"
        SigPlus1.Visible = False
        SigPlus2.Visible = False
        pic1.Visible = True
        pic2.Visible = True

        If Me.CurrentRecord <> 1 Then
            cmdGoPrevious_Click
            cmdGoNext_Click
        Else
            cmdGoFirst_Click
        End If
        cmdFingImg.Enabled = True
        SigPlus1.Visible = True
        SigPlus2.Visible = True
        pic1.Visible = False
        pic2.Visible = False
    End If
Else
    MsgBox "You must enroll a fingerprint before validating", vbOKOnly + vbExclamation,
"Enrollment Required"
    Exit Sub
End If
End Sub

```

The below code loads upon startup of the application. The device is initialized and formatted, and the tablet is cleared. Also the database is loaded and the picture object containing the fingerprint samples is made visible.

```
Private Sub Form_Load()  
On Error GoTo EH:  
  
sizechunk = 21814 'sizechunk represents the size of the  
Dim intAns As Integer  
intAns = SigID1.SensorState(1)  
  
If intAns = 0 Then  
    MsgBox "Initialization successful!"  
ElseIf intAns = 1 Then  
    MsgBox "Error during initialization!"  
ElseIf intAns = 2 Then  
    MsgBox "Error initializing fingerprint device"  
End If  
  
SigPlus1.JustifyMode = 5  
SigPlus1.SigCompressionMode = 2  
  
SigPlus1.ClearTablet  
If Signature.Value <> "" Then  
    SigPlus1.SigString = Signature.Value  
End If  
  
txtRec.SetFocus  
txtRec.Text = Me.CurrentRecord  
  
Dim byt() As Byte  
Dim db As Object  
Dim rst As Object  
Set db = CurrentDb  
Set rst = db.OpenRecordset("FingerprintDB")  
Dim getoutbytes  
Dim cmem As Long  
getoutbytes = rst("fingerprinting")  
cmem = UBound(getoutbytes) + 1  
byt() = rst("fingerprinting").GetChunk(0, cmem)  
'rst.Update  
rst.Close  
Set db = Nothing  
Set rst = Nothing  
  
PictureClip0.Picture = PictureFromBits(byt)  
SigPlus2.DisplayWindowRes = True  
SigPlus2.SetBackgroundHandle PictureClip0.Picture.Handle, 0  
cmdFingImg.Enabled = False  
  
pic1.Height = SigPlus1.Height  
pic1.Width = SigPlus1.Width  
pic1.Left = SigPlus1.Left  
pic1.Top = SigPlus1.Top  
pic2.Height = SigPlus2.Height  
pic2.Width = SigPlus2.Width  
pic2.Left = SigPlus2.Left  
pic2.Top = SigPlus2.Top  
  
txtRec.Width = 1  
txtRec.Height = 1
```

```
pic1.Visible = False
pic2.Visible = False
Exit Sub
EH:
MsgBox Err.Number & " " & Err.Description
End Sub
```

When the window is closed, the code below will run. It simply turns off the device, and returns whether or not the close was successful.

```
Private Sub Form_Unload(Cancel As Integer)
Dim intAns As Integer

intAns = SigID1.SensorState(0)

If intAns = 0 Then
    MsgBox "Initialization successful!"
ElseIf intAns = 1 Then
    MsgBox "Error during initialization!"
ElseIf intAns = 2 Then
    MsgBox "Error initializing fingerprint device"
End If
End Sub
```

CmdAdd() adds a record to the record set. It does this by using the last and next function calls.

```
Private Sub cmdAdd_Click()
On Error GoTo Err_cmdAdd_Click

cmdGoLast_Click
cmdGoNext_Click
'DoCmd.GoToRecord , , acNewRec

Exit_cmdAdd_Click:
Exit Sub

Err_cmdAdd_Click:
MsgBox Err.Description
Resume Exit_cmdAdd_Click

End Sub
```

For more information regarding products and support
Email: support@topazsystems.com
Phone: (805) 520-8286