

MODULE 20: ENCRYPTION

On completion of this module you will be able to secure your saved data and special functions such as hiding information within images.

MODULE 20: ENCRYPTION

Subject Outcome 1: Encrypting file content

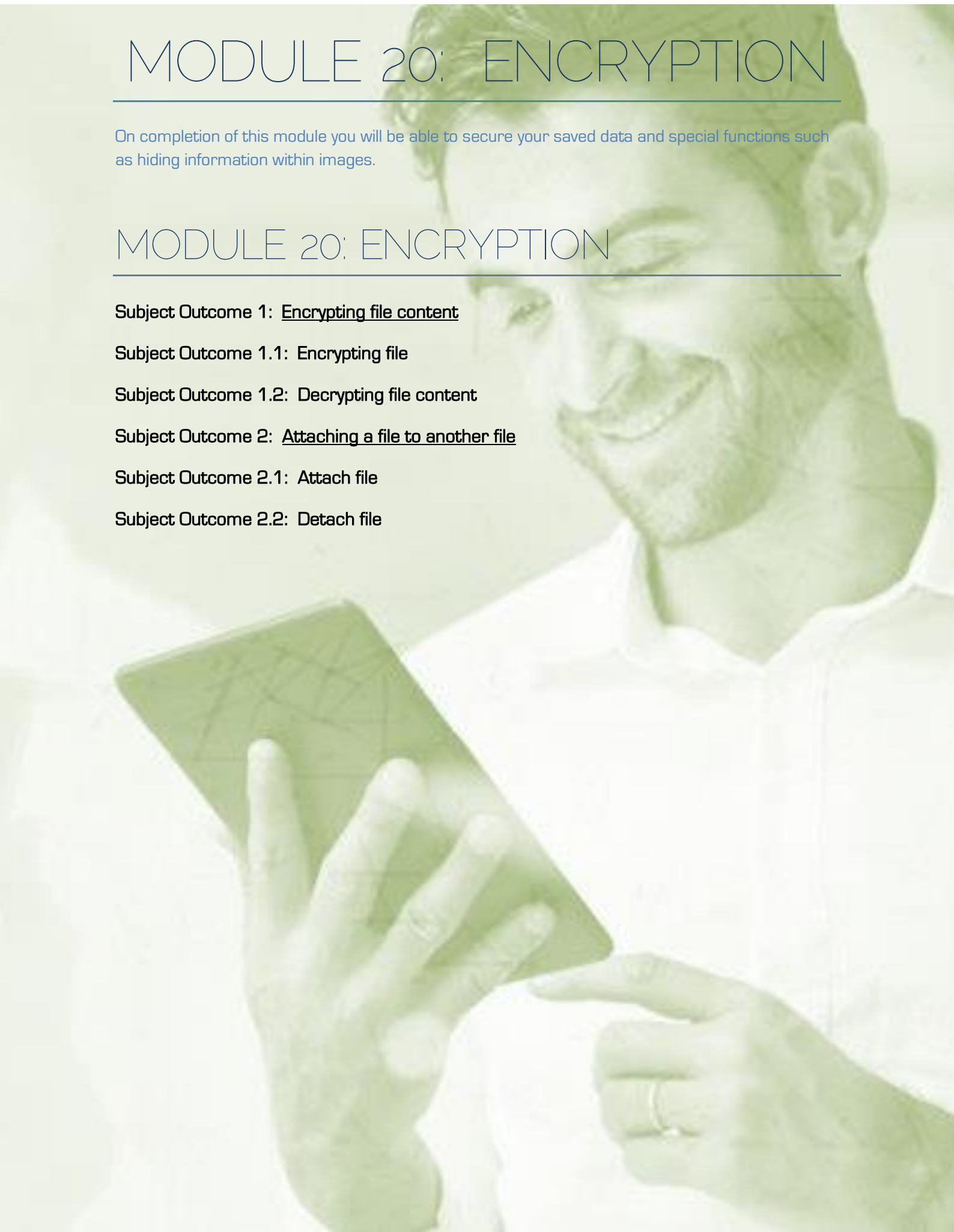
Subject Outcome 1.1: Encrypting file

Subject Outcome 1.2: Decrypting file content

Subject Outcome 2: Attaching a file to another file

Subject Outcome 2.1: Attach file

Subject Outcome 2.2: Detach file





20.1 ENCRYPTION

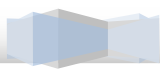
When saving information from using a QSTRINGLIST, QRICEDIT, QLISTBOX or even a BMP file (signature file), it will be saved in normal readable text. This is however not secure for confidential database programs or password data files. You therefore need to encrypt the file and then save it. When loaded, it must be decrypted.

20.1.1 ENCRYPTING A FILE

We will now code program to encrypt a password file. This is an extremely secure method of encryption as it will make use of a password key – this means that everybody will use his/her own password key for his/her programs and therefore the encryption will never be the same. We will first code the **log on screen**, then **add the password key**, **save the file** and **lastly encrypt the saved file** (re-saved as encrypted file).

SNO	CODING	EXPLANATION
1	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> declare sub logonnow dim font as qfont:font.size=20:font.addstyles(fsbold) font.name="arial rounded" CREATE Form AS QFORM Caption = "LOG ON":Width = 300:Height = 200:Center color=16728642:borderstyle=4 create lab1 as qlabel left=10:top=20:caption="Enter Password":font=font end create create pass as qedit left=10:top=60:width=250 end create create btnlog as qbutton left=200:top=120:caption="LOG ON" onclick=logonnow end create END CREATE SetWindowLong[Form.Handle, -8, 0] SetWindowLong[Application.Handle, -8, Form.Handle] Form.ShowModal sub logonnow end sub </pre>	<p>Sub program to execute log on. Assign a font</p> <p>Enter password in here.</p> <p>Button to log on.</p> <p>Sub program for log on execution.</p>
2	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> dim blank as qstringlist DIM pw\$ AS STRING:pw\$="bothae28" DIM s(0 TO 255):DIM k5(0 TO 255) DIM filename AS STRING DIM file1 AS QFILESTREAM DIM n\$ AS STRING:DIM d\$ AS STRING:DIM i AS INTEGER DIM x AS INTEGER:DIM y AS INTEGER:DIM j AS INTEGER DIM b AS BYTE:DIM a AS SINGLE:DIM t AS SINGLE DIM wordwrap AS SINGLE </pre>	<p>Establish password key and assign it. It can be absolutely any word or combination of letters and characters (BOTHAE28). The rest of this coding is used to create the encryption. Ensure that the variables used are not already used within your program.</p>

SNO	CODING	EXPLANATION
	<pre> declare sub logonnow dim font as qfont:font.size=20:font.addstyles(fsbold) font.name="arial rounded" CREATE Form AS QFORM Caption = "LOG ON":Width = 300:Height = 200:Center color=16728642:borderstyle=4 create lab1 as qlabel left=10:top=20:caption="Enter Password":font=font end create create pass as qedit left=10:top=60:width=250 end create create btnlog as qbutton left=200:top=120:caption="LOG ON" onclick=logonnow end create END CREATE SetWindowLong[Form.Handle, -8, 0] SetWindowLong[Application.Handle, -8, Form.Handle] Form.ShowModal sub logonnow end sub </pre>	<p>When the user clicks the button and no password file exist, then we will create that file and encrypt it.</p>
3	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> dim blank as qstringlist DIM pw\$ AS STRING:pw\$="bothae28" DIM s[0 TO 255]:DIM k5[0 TO 255] DIM filename AS STRING DIM file1 AS QFILESTREAM DIM n\$ AS STRING:DIM d\$ AS STRING:DIM i AS INTEGER DIM x AS INTEGER:DIM y AS INTEGER:DIM j AS INTEGER DIM b AS BYTE:DIM a AS SINGLE:DIM t AS SINGLE DIM wordwrap AS SINGLE declare sub logonnow declare sub saveasclick[filename5 as string] dim font as qfont:font.size=20:font.addstyles(fsbold) font.name="arial rounded" CREATE Form AS QFORM Caption = "LOG ON":Width = 300:Height = 200:Center color=16728642:borderstyle=4 create lab1 as qlabel left=10:top=20:caption="Enter Password":font=font end create create pass as qedit left=10:top=60:width=250 end create create btnlog as qbutton left=200:top=120:caption="LOG ON" onclick=logonnow end create END CREATE SetWindowLong[Form.Handle, -8, 0] SetWindowLong[Application.Handle, -8, Form.Handle] Form.ShowModal sub logonnow if blank.itemcount=0 then blank.clear:blank.additems pass.text end if </pre>	<p>Call the name of the file being saved (filename5) and encrypt it here within this sub program. Remember that it is not the information being encrypted, the file is saved in normal text, the actual file is then encrypted.</p> <p>If no information has been loaded as no Password file exist, then add the password to BLANK to save the first password file.</p>



SNO	CODING	EXPLANATION
	<pre> if pass.text=blank.item(0) then blank.savetofile "c:\ms3\mybis\pass.txt" saveasclick("c:\ms3\mybis\pass.txt") run "notepad.exe c:\ms3\mybis\pass.txt" showmessage "correct password" end if end sub SUB saveasclick(filename5 as string) d\$ = "":filename = filename5:n\$ = blank.Text:i = 0:j = 0 FOR i = 0 TO 255 s(i) = i NEXT i j = 1 FOR i = 0 TO 255 IF j > LEN(pw\$) THEN j = 1 k5(i) = ASC(MID\$(pw\$, j , 1)):j = j + 1 NEXT i j = 0 FOR i = 0 TO 255 j = (j + s(i) + k5(i)) MOD 256:SWAP s(i) , s(j) NEXT i FOR x = 1 TO LEN(n\$) a = ASC(MID\$(n\$, x , 1)):i = (i + 1) MOD 256:j = (j + s(i)) MOD 256:SWAP s(i) , s(j) t = (s(i) + (s(j) MOD 256)) MOD 256:y = s(t):d\$ = d\$ + CHR\$(a XOR y) NEXT x file1.open(filename , fmCreate):file1.Write(d\$):file1.Close END SUB </pre>	<p>If the password entered and the loaded/first time password is the same then save the entered password and run the encryption on the file. (display the result in notepad - you will not do this with your actual program, it is only for demonstration purpose).</p> <p>The entire SAVEASCLICK may be pasted within your program. It will simply open your file and reorder the text according to your password key. It will then resave the password data file using the same name, thus encrypting the entire file.</p>

20.1.2 DECRYPTING A FILE

You now have an encrypted file that stores the password. You must now load the file into the program, decrypt it so to confirm/use the data in readable format.

We will code the program to confirm if the password data file exists and if so, load the file, decrypt and load into memory for usage (compare password with entered password). You may encrypt entire files (qrichedit, listbox lists and even images this way).

SNO	CODING	EXPLANATION
1	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> dim blank as qstringlist DIM pw\$ AS STRING:pw\$="bothae28" DIM s(0 TO 255):DIM k5(0 TO 255) DIM filename AS STRING DIM file1 AS QFILESTREAM DIM n\$ AS STRING:DIM d\$ AS STRING:DIM i AS INTEGER DIM x AS INTEGER:DIM y AS INTEGER:DIM j AS INTEGER DIM b AS BYTE:DIM a AS SINGLE:DIM t AS SINGLE DIM wordwrap AS SINGLE:dim ija as single declare sub logonnow declare sub saveasclick(filename5 as string) declare SUB openclick(filename6 as string) dim font as qfont:font.size=20:font.addstyles(fsbold) font.name="arial rounded" CREATE Form AS QFORM Caption = "LOG ON":Width = 300:Height = 200:Center </pre>	<p>We will load the encrypted file, decrypt it and assign the readable values to the memory variables (blank, etc.)</p> <p>Used by decoding process (variable)</p> <p>Load the filename and decrypt it sub program.</p>

SNO	CODING	EXPLANATION
2	<pre> color=16728642:borderstyle=4 create lab1 as qlabel left=10:top=20:caption="Enter Password":font=font end create create pass as qedit left=10:top=60:width=250 end create create btnlog as qbutton left=200:top=120:caption="LOG ON":onclick=logonnow end create END CREATE SetWindowLong(Form.Handle, -8, 0) SetWindowLong(Application.Handle, -8, Form.Handle) if fileexists("c:\ms3\mybis\pass.txt") = 1 then openclick("c:\ms3\mybis\pass.txt") end if Form.ShowDialog sub logonnow if blank.itemcount=0 then blank.clear:blank.additems pass.text end if if pass.text<>blank.item(0) then showmessage "wrong password" end if if pass.text=blank.item(0) then blank.savetofile "c:\ms3\mybis\pass.txt" saveasclick("c:\ms3\mybis\pass.txt") run "notepad.exe c:\ms3\mybis\pass.txt" showmessage "correct password" end if end sub SUB saveasclick(filename5 as string) d\$ = "".filename = filename5:n\$ = blank.Text:i = 0:j = 0 FOR i = 0 TO 255 s(i) = i NEXT i j = 1 FOR i = 0 TO 255 IF j > LEN(pw\$) THEN j = 1 k5(i) = ASC(MID\$(pw\$, j, 1)):j = j + 1 NEXT i j = 0 FOR i = 0 TO 255 j = (j + s(i) + k5(i)) MOD 256:SWAP s(i), s(j) NEXT i FOR x = 1 TO LEN(n\$) a = ASC(MID\$(n\$, x, 1)):i = (i + 1) MOD 256:j = (j + s(i)) MOD 256:SWAP s(i), s(j) t = (s(i) + (s(j) MOD 256)) MOD 256:y = s(t):d\$ = d\$ + CHR\$(a XOR y) NEXT x file1.open(filename, fmCreate):file1.Write(d\$):file1.Close END SUB SUB openclick(filename6 as string) d\$ = "".filename = filename6:ija = 0:j = 0 FOR ija = 0 TO 255 s(ija) = ija NEXT ija j = 1 FOR ija = 0 TO 255 IF j > LEN(pw\$) THEN j = 1 </pre>	<p>If the password file exist, load the file and decrypt it within the sub program file.</p> <p>If the password and entry BLANK.zero is not the same then indicate wrong password.</p> <p>Load the indicated file and decrypt it. Use this sub program as is.</p>



SNO	CODING	EXPLANATION
	<pre> k5(ija) = ASC(MID\$(pw\$, j, 1));j = j + 1 NEXT ija j = 0 FOR ija = 0 TO 255 j = (j + s(ija) + k5(ija)) MOD 256:SWAP s(ija), s(j) NEXT ija file1.open(filename, fmOpenRead) cc2 : IF file1.eof = - 1 THEN file1.close : goto aa file1.Read(b) ija = (ija + 1) MOD 256 j = (j + s(ija)) MOD 256 SWAP s(ija), s(j) t = (s(ija) + (s(j) MOD 256)) MOD 256 y = s(t) d\$ = d\$ + CHR\$(b XOR y) : goto cc2 aa : blank.Text = d\$ form.caption=blank.item(0) END SUB </pre>	<p>The entire result (D\$) is assigned to BLANK.TEXT (each line entry is recorded - item(0), item(1), etc I will display the decrypted password as the form heading (you probably won't be don't this ☺ - it is just for display purposes.</p>

20.2 ATTACHING A FILE TO ANOTHER FILE

For in-depth securing a file, you may hide a file (document) within another file (BMP). With the same program you may extract that hidden file from the photo for instance. Obviously the sender and receiver must both have the same encryption program.

Nobody would ever know that there is a hidden file within an “innocent” photo. You may send this file any method, via e-mail, even with FB. People will look at a photo for instance, but meanwhile there is an entire secret document within it.

SNO	CODING	EXPLANATION
1	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> dim f\$ as string:dim ff\$ as string DIM Nfile as QFileStream DIM mem as QMemorystream DIM MemF as QMemoryStream DIM OpenBmp AS QOPENDIALOG DIM bmp as QBitmapex dim i as single:DIM sz as integer dim a\$ as string:DIM Sfile\$ as string DIM SF_f\$ as STRING:dim filext\$ as string DIM SaveF as QFileStream dim nameFs\$ as string:DIM nameF\$ as string DIM file\$ as string:DIM F_f\$ as STRING dim nuwenaam as string:dim imagenaam5 as string:dim nuwedeel as string dim dh as integer:dim dw as integer:dh=25:dw=25 dim font as qfont:font.size=14:font.name="arial rounded":font.addstyles=fsbold declare sub FreeF declare sub openf </pre>	<p>Create form with FILE to be attached and photo to attach to. All of these variables are required to create this function. Ensure the names don't clash with your existing coding.</p> <p>Clear memory Load image file.</p>

SNO	CODING	EXPLANATION
	<pre> declare sub OpenS declare sub createf declare sub paint \$INCLUDE "XP_Manifest.inc":\$XP_MANIFEST CREATE Form AS QFORMex Caption = "MS3SECFILE":Width = 900:Height = 460:Center color=8881987 create lab1 as qlabel left=20:top=50:caption="Doc?" font=font end create create lab2 as qlabel left=20:top=20:caption="Photo?":font=font end create create but as qbutton left=50:top=100:caption="LOAD IMAGE":height=20:width=150 onclick=openf:cursor=-21 end create create but2 as qbutton left=70:top=140:caption="Load Doc":height=20:width=150 onclick=OpenS:cursor=-21 end create create but3 as qbutton left=90:top=180:caption="Attach-Save":height=20 onclick=createf:width=150:cursor=-21 end create create StatusBar as QStatusBar AddPanels "Image to complete : ","File to incorporate : " Panel(0).Width = form.width/2 Panel(0).Alignment = taCenter:Panel(1).Alignment = taCenter end create create panel as QPanel top = 85:left = 400:height = 300:width = 470 BevelOuter = bvLowered create canvas as QCanvas top = 5:left = 5:height = 285:width = 450 cursor = crCross:onClick = paint end create end create END CREATE xpbutton(but.handle) xpbutton(but2.handle) xpbutton(but3.handle) SetWindowLong(Form.Handle, -8, 0) SetWindowLong(Application.Handle, -8, Form.Handle) Form.ShowModal sub openf OpenBmp.Filter = "Images[*BMP & *JPG]*.bmp;*.jpg" OpenBmp.FilterIndex = 1 OpenBmp.Caption = "Select File BMP/JPG" openbmp.initialdir="c:\ms3\mybis\gx" OpenBmp.FileName = "c:\ms3\mybis\gx\beauty.bmp" IF OpenBmp.Execute THEN ff\$="" f\$ = OpenBmp.FileName imagenaam5=openbmp.filename Nfile.Open(ff\$, FmOpenRead) for i = len(f\$) to 1 step -1 a\$ = mid\$(f\$,i,1) if a\$ = "\" then exit for </pre>	<p>Load document file. Create the new image file. Preview image.</p> <p>The photo image file name after loaded.</p> <p>Load image button.</p> <p>Load document button.</p> <p>Attach the file button. If you run an automated program that will do all these steps automatically, then you will simply call the sub-programs in sequence without any halts or interruptions.</p> <p>Image preview screen – will only display BMP.</p> <p>Call the image to be used to hide the document within. If you wish to auto use a specific file, avoid the OPENBMP.EXECUTE function and simply name the OPENBMP.FILENAME to the file you wish to use. The rest, use as is.</p>



SNO	CODING	EXPLANATION
	<pre> ff\$ = ff\$a\$ next i file\$ = reverse\$(ff\$) END IF if ff\$ = "" then FreeF end if sz = Nfile.Size MemF.CopyFrom(NFile,sz) MemF.Position = 0 NFile.Position = 0 F_f\$ = MemF.ReadStr(sz) NFile.Close lab2.caption=imagenaam5 StatusBar.Panel(0).Caption = "Image in memory : "+file\$+" - "+str\$(sz)+ " bytes"+ " - "+str\$(bmp.width)+"x"+str\$(bmp.height)+" to complete" Bmp.BMP = file\$ canvas.repaint Canvas.Draw (0,0,bmp.Bmp) end sub Sub FreeF MemF.Close:filext\$="" end sub sub paint canvas.repaint Canvas.Draw (0,0,bmp.Bmp) end sub </pre>	<p>Note the use of centering of the PANEL's info.</p> <p>Display the image if it is a BMP file.</p> <p>Free the memory, to avoid the program from hanging.</p> <p>Refresh the preview BMP screen.</p>

We will now code the load document function.

SNO	CODING	EXPLANATION
2	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> dim f\$ as string:dim ff\$ as string DIM Nfile as QFileStream DIM mem as QMemorystream DIM MemF as QMemoryStream DIM OpenBmp AS QOPENDIALOG DIM bmp as QBitmapex dim i as single:DIM sz as integer dim a\$ as string:DIM Sfile\$ as string DIM SF_f\$ as STRING:dim filext\$ as string DIM SaveF as QFileStream dim nameFs\$ as string:DIM nameF\$ as string DIM file\$ as string:DIM F_f\$ as STRING dim nuwenaam as string:dim imagenaam5 as string dim nuwedeel as string dim dh as integer dim dw as integer dh=25:dw=25 dim font as qfont:font.size=14:font.name="arial rounded" font.addstyles=fsbold DECLARE SUB FreeF declare sub openf declare sub OpenS DECLARE sub createF declare sub paint \$INCLUDE "XP_Manifest.inc":\$XP_MANIFEST CREATE Form AS QFORMex </pre>	<p>Sub program to call document.</p>

SNO	CODING	EXPLANATION
	<pre> Caption = "MS3SECFILE":Width = 900:Height = 460:Center color=8881987 create lab1 as qlabel left=20:top=50:caption="Doc?" font=font end create create lab2 as qlabel left=20:top=20:caption="Photo?":font=font end create create but as qbutton left=50:top=100:caption="LOAD IMAGE":height=20:width=150 onclick=openf:cursor=-21 end create create but2 as qbutton left=70:top=140:caption="Load Doc":height=20:width=150 onclick=OpenS:cursor=-21 end create create but3 as qbutton left=90:top=180:caption="Attach-Save":height=20 onclick=createf:width=150:cursor=-21 end create create StatusBar as QStatusBar AddPanels "Image to complete : ","File to incorporate : " Panel(0).Width = form.width/2 Panel(0).Alignment = taCenter:Panel(1).Alignment = taCenter end create create panel as QPanel top = 85:left = 400:height = 300:width = 470 BevelOuter = bvLowered create canvas as QCanvas top = 5:left = 5:height = 285:width = 450 cursor = crCross:onClick = paint end create end create END CREATE xbutton(but.handle) xbutton(but2.handle) xbutton(but3.handle) SetWindowLong(Form.Handle, -8, 0) SetWindowLong(Application.Handle, -8, Form.Handle) Form.ShowModal sub openf OpenBmp.Filter = "Images(*BMP & *JPG)*.bmp;*.jpg" OpenBmp.FilterIndex = 1 OpenBmp.Caption = "Select File BMP/JPG" openbmp.initialdir="c:\ms3\mybis\gx" OpenBmp.FileName = "c:\ms3\mybis\gx\beauty.bmp" IF OpenBmp.Execute THEN ff\$="" f\$ = OpenBmp.FileName imagenaam5=openbmp.filename Nfile.Open(f\$, FmOpenRead) for i = len(f\$) to 1 step -1 a\$ = mid\$(f\$,i,1) if a\$ = "\" then exit for ff\$ = ff\$+a\$ next i file\$ = reverse\$(ff\$) END IF </pre>	



SNO	CODING	EXPLANATION
	<pre> if f\$ = "" then FreeF end if sz = Nfile.Size MemF.CopyFrom(NFile,sz) MemF.Position = 0 NFile.Position = 0 F_f\$ = MemF.ReadStr(sz) NFile.Close lab2.caption=imagenaam5 StatusBar.Panel(0).Caption = "Image in memory : "+file\$+" - "+str\$(sz)+ " bytes"+ " - "+str\$(bmp.width)+"x"+str\$(bmp.height)+" to complete" Bmp.BMP = file\$ canvas.repaint Canvas.Draw (0,0,bmp.Bmp) end sub Sub FreeF MemF.Close:filext\$="" end sub SUB OpenS OpenBmp.Filter = "All Files*. *" OpenBmp.FilterIndex = 1 OpenBmp.Caption = "Select Document to attach" openbmp.initialdir="c:\ms3\mybis" OpenBmp.FileName = "c:\ms3\mybis\secret.pdf" IF OpenBmp.Execute THEN ff\$="" f\$ = openbmp.filename Nfile.Open(f\$, FmOpenRead) for i = len(f\$) to 1 step -1 a\$ = mid\$(f\$,i,1) if a\$ = "\" then exit for ff\$ = ff\$+a\$ next i Sfile\$ = reverse\$(ff\$) if f\$ = "" then FreeF end if sz = Nfile.Size Mem.CopyFrom(NFile,sz) Mem.Position = 0 NFile.Position = 0 SF_f\$ = Mem.ReadStr(sz) NFile.Close lab1.caption=f\$ StatusBar.Panel(1).Caption = "File in memory : "+sfile\$+" - "+str\$(sz)+ " bytes"+ " - "+ " to incorporate" end if end sub sub paint canvas.repaint Canvas.Draw (0,0,bmp.Bmp) end sub </pre>	<p>Request document file. If you want to assign yourself, then avoid the OPENBMP.EXECUTE command and assign the filename directly to the OPENBMP.FILENAME.</p> <p>Use the rest as is.</p>



We will now code the attachment of the document to the image.

SNO	CODING	EXPLANATION
3	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> dim f\$ as string:dim ff\$ as string DIM Nfile as QFileStream DIM mem as QMemoryStream DIM MemF as QMemoryStream DIM OpenBmp AS QOPENDIALOG DIM bmp as QBitmapex dim i as single:DIM sz as integer dim a\$ as string:DIM Sfile\$ as string DIM SF_f\$ as STRING:dim filext\$ as string DIM SaveF as QFileStream dim nameFs\$ as string:DIM nameF\$ as string DIM file\$ as string:DIM F_f\$ as STRING dim nuwenaam as string:dim imagenaam5 as string dim nuwedeel as string dim dh as integer dim dw as integer dh=25:dw=25 dim font as qfont:font.size=14:font.name="arial rounded" font.addstyles=fsbold DECLARE SUB FreeF declare sub openf declare sub OpenS DECLARE sub createF declare sub paint \$INCLUDE "XP_Manifest.inc":\$XP_MANIFEST CREATE Form AS QFORMex Caption = "MS3SECFILE":Width = 900:Height = 460:Center color=8881987 create lab1 as qlabel left=20:top=50:caption="Doc?" font=font end create create lab2 as qlabel left=20:top=20:caption="Photo?":font=font end create create but as qbutton left=50:top=100:caption="LOAD IMAGE":height=20:width=150 onclick=openf:cursor=-21 end create create but2 as qbutton left=70:top=140:caption="Load Doc":height=20:width=150 onclick=OpenS:cursor=-21 end create create but3 as qbutton left=90:top=180:caption="Attach-Save":height=20 onclick=createf:width=150:cursor=-21 end create create StatusBar as QStatusBar AddPanels "Image to complete : ","File to incorporate : " Panel(0).Width = form.width/2 Panel(0).Alignment = taCenter:Panel(1).Alignment = taCenter end create create panel as QPanel top = 85:left = 400:height = 300:width = 470 BevelOuter = bvLowered create canvas as QCanvas </pre>	<p>Call the sub program to embed the document into the image file.</p>

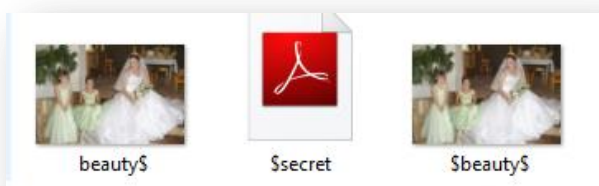
SNO	CODING	EXPLANATION
	<pre> top = 5:left = 5:height = 285:width = 450 cursor = crCross:onClick = paint end create end create END CREATE xbutton[but.handle] xbutton[but2.handle] xbutton[but3.handle] SetWindowLong[Form.Handle, -8, 0] SetWindowLong[Application.Handle, -8, Form.Handle] Form.ShowModal sub openf OpenBmp.Filter = "Images[*BMP & *JPG]*.bmp;*.jpg" OpenBmp.FilterIndex = 1 OpenBmp.Caption = "Select File BMP/JPG" openbmp.initialdir="c:\ms3\mybis\gx" OpenBmp.FileName = "c:\ms3\mybis\gx\beauty.bmp" IF OpenBmp.Execute THEN ff\$="" f\$ = OpenBmp.FileName imagenaam5=openbmp.filename Nfile.Open(f\$, FmOpenRead) for i = len(f\$) to 1 step -1 a\$ = mid\$(f\$,i,1) if a\$ = "\" then exit for ff\$ = ff\$+a\$ next i file\$ = reverse\$(ff\$) END IF if f\$ = "" then FreeF end if sz = Nfile.Size MemF.CopyFrom(NFile,sz) MemF.Position = 0 NFile.Position = 0 F_f\$ = MemF.ReadStr(sz) NFile.Close lab2.caption=imagenaam5 StatusBar.Panel(0).Caption = "Image in memory : "+file\$+" - "+str\$(sz)+ " bytes"+ " - "+str\$(bmp.width)+"x"+str\$(bmp.height)+" to complete" Bmp.BMP = file\$ canvas.repaint Canvas.Draw (0,0,bmp.Bmp) end sub Sub FreeF MemF.Close:filext\$="" end sub SUB OpenS OpenBmp.Filter = "All Files*.*)" OpenBmp.FilterIndex = 1 OpenBmp.Caption = "Select Document to attach" openbmp.initialdir="c:\ms3\mybis" OpenBmp.FileName = "c:\ms3\mybis\secret.pdf" IF OpenBmp.Execute THEN ff\$="" f\$ = openbmp.filename Nfile.Open(f\$, FmOpenRead) </pre>	



SNO	CODING	EXPLANATION
	<pre> for i = len(f\$) to 1 step -1 a\$ = mid\$(f\$,i,1) if a\$ = "\" then exit for ff\$ = ff\$+a\$ next i Sfile\$ = reverse\$(ff\$) if f\$ = "" then FreeF end if sz = Nfile.Size Mem.CopyFrom(NFile,sz) Mem.Position = 0:NFile.Position = 0 SF_f\$ = Mem.ReadStr(sz) NFile.Close lab1.caption=f\$ StatusBar.Panel(1).Caption = "File in memory : "+sfile\$+" - "+str\$(sz)+ " bytes"+ " - "+ " to incorporate" end if end sub sub createF if imagenaam5<>"" then nuwenaam=imagenaam5:nuwedeel=right\$(nuwenaam,4) nuwenaam=replacesubstr\$(nuwenaam,nuwedeel,"\$"+nuwedeel) file\$=nuwenaam:nameF\$=sfile\$+space\$(255-len(sfile\$)) filext\$=file\$-right\$(file\$,4) saveF.Open(filext\$+""+right\$(file\$,4), fmCreate) saveF.write(F_f\$) saveF.writeLine(nameF\$) saveF.write(SF_f\$) saveF.close showmessage nuwenaam+" created" FreeF end if end sub sub paint canvas.repaint:Canvas.Draw (0,0,bmp.Bmp) end sub </pre>	<p>Embed file into the image file. Use as is.</p>

20.3 DETACHING THE DOCUMENT FROM IMAGE FILE

We have now attached a file to another file (document to an image file) during Module 20.2 - You will now send the file (via e-mail, FB, download, etc. – remember you cannot compress or re-save the image from an image editor as it will then loose the document file). The user receiving the file must now detach the document from the image file. We will use the same program just add a DETACH function. When done you will see the following created on the same location as the encrypted image:



\$secret.pdf hidden in IMAGE, extracted onto HDD ...
 \$beauty\$.bmp rebuilt as ordinary BMP file

SNO	CODING	EXPLANATION
1	<pre> \$TYPECHECK ON \$INCLUDE <RapidQ2.inc> \$include <qrun.inc> dim runme as qrun dim f\$ as string:dim ff\$ as string DIM Nfile as QFileStream DIM mem as QMemorystream DIM MemF as QMemoryStream DIM OpenBmp AS QOPENDIALOG DIM OpenBmpD AS QOPENDIALOG dim r as single:dim d\$ as string dim fsz\$ as string:dim t\$ as string dim c as single:dim c\$ as string dim h\$ as string:dim difsz as single dim logs\$ as string DIM bmp as QBitmapex dim i as single:DIM sz as integer dim a\$ as string:DIM Sfile\$ as string DIM SF_f\$ as STRING:dim filext\$ as string DIM SaveF as QFileStream dim nameFs\$ as string:DIM nameF\$ as string DIM file\$ as string:DIM F_f\$ as STRING dim nuwenaam as string:dim imagenaam5 as string dim nuwedeel as string dim dh as integer dim dw as integer dh=25:dw=25 dim font as qfont:font.size=14:font.name="arial rounded" font.addstyles=fsbold DECLARE SUB FreeF declare sub openf declare sub OpenS DECLARE sub createF declare sub paint declare sub decod declare sub callwebber \$INCLUDE "XP_Manifest.inc":\$XP_MANIFEST CREATE Form AS QFORMex Caption = "MS3SECFILE © by MS³ Systems" Width = 900:Height = 460:Center color=8881987 create lab1 as qlabel left=20:top=50:caption="Doc?" font=font end create create lab2 as qlabel left=20:top=20:caption="Photo?":font=font end create create but as qbutton left=50:top=100:caption="LOAD IMAGE":height=20:width=150 onclick=openf:cursor=-21 end create create but2 as qbutton left=70:top=140:caption="Load Doc":height=20:width=150 onclick=OpenS:cursor=-21 end create create but3 as qbutton left=90:top=180:caption="Attach-Save":height=20 onclick=createf:width=150:cursor=-21 end create </pre>	<p>Some more variables for decoding and extracting the file.</p>

SNO	CODING	EXPLANATION
	<pre> create but4 as qbutton left=20:top=300:caption="DECODE":height=25 onclick=decod:width=150:cursor=-21 end create create but5 as qbutton left=10:top=form.height-80:caption="Visit MS³ WWW" width=250:height=18:onclick=callwebber end create create StatusBar as QStatusBar AddPanels "Image to complete : ","File to incorporate : " Panel(0).Width = form.width/2 Panel(0).Alignment = taCenter:Panel(1).Alignment = taCenter end create create panel as QPanel top = 85:left = 400:height = 300:width = 470:BevelOuter = bvLowered create canvas as QCanvas top = 5:left = 5:height = 285:width = 450:cursor = crCross:onClick = paint end create end create END CREATE xbutton(but.handle) xbutton(but2.handle) xbutton(but3.handle) xbutton(but5.handle) SetWindowLong(Form.Handle, -8, 0) SetWindowLong(Application.Handle, -8, Form.Handle) Form.ShowModal sub openf OpenBmp.Filter = "Images[*BMP & *JPG]*.bmp;*.jpg" OpenBmp.FilterIndex = 1 OpenBmp.Caption = "Select File BMP/JPG" openbmp.initialdir="c:\ms3\mybis\gx" OpenBmp.FileName = "c:\ms3\mybis\gx\beauty.bmp" IF OpenBmp.Execute THEN ff\$="":f\$ = OpenBmp.FileName:imagenaam5=openbmp.filename Nfile.Open(f\$, FmOpenRead) for i = len(f\$) to 1 step -1 a\$ = mid\$(f\$,i,1) if a\$ = "\" then exit for ff\$ = ff\$+a\$ next i file\$ = reverse\$(ff\$) END IF if f\$ = "" then FreeF end if sz = Nfile.Size MemF.CopyFrom(Nfile,sz) MemF.Position = 0:Nfile.Position = 0 :F_f\$ = MemF.ReadStr(sz) Nfile.Close lab2.caption=imagenaam5 StatusBar.Panel(0).Caption = "Image in memory : "+file\$+" - "+str\$(sz)+ " bytes"+ " - "+str\$(bmp.width)+"x"+str\$(bmp.height)+" to complete" Bmp.BMP = file\$ canvas.repaint Canvas.Draw (0,0,bmp.Bmp) end sub Sub FreeF MemF.Close:filext\$="" end sub </pre>	



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	<pre> SUB OpenS OpenBmp.Filter = "All Files *.*" OpenBmp.FilterIndex = 1 OpenBmp.Caption = "Select Document to attach" openbmp.initialdir="c:\ms3\mybis" OpenBmp.FileName = "c:\ms3\mybis\secret.pdf" IF OpenBmp.Execute THEN ff\$="" f\$ = openbmp.filename Nfile.Open(f\$, FmOpenRead) for i = len(f\$) to 1 step -1 a\$ = mid\$(f\$,i,1) if a\$ = "\" then exit for ff\$ = ff\$+a\$ next i Sfile\$ = reverse\$(ff\$) if f\$ = "" then FreeF end if sz = Nfile.Size Mem.CopyFrom(NFile,sz) Mem.Position = 0 NFile.Position = 0 SF_f\$ = Mem.ReadStr(sz) NFile.Close lab1.caption=f\$ StatusBar.Panel(1).Caption = "File in memory : "+sfile\$+" - "+str\$(sz)+ " bytes"+ " - "+ " to incorporate" end if end sub sub createF if imagenaam5<>"" then nuwenaam=imagenaam5 nuwedeel=right\$(nuwenaam,4) nuwenaam=replacesubstr\$(nuwenaam,nuwedeel,""+nuwedeel) file\$=nuwenaam nameF\$=sfile\$+space\$(255-len(sfile\$)) filext\$=file\$-right\$(file\$,4) saveF.Open(filext\$+""+right\$(file\$,4), fmCreate) saveF.write(F_f\$) saveF.writeLine(nameF\$) saveF.write(SF_f\$) saveF.close showmessage nuwenaam+" created" FreeF end if end sub sub paint canvas.repaint Canvas.Draw (0,0,bmp.Bmp) end sub sub callwebber runme.filerun("https://www.ms3system.co.za/"",2) end sub sub decod r=0 OpenBmpd.Filter = "Image\$[*bmp; *JPG]*.bmp;*.jpg" </pre>	



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	<pre> OpenBmpd.FilterIndex = 1:OpenBmpd.Caption = "Select File Image\$" OpenBmpd.FileName = "" IF OpenBmpD.Execute THEN ff\$="" :d\$ = OpenBmpd.FileName:Nfile.Open(d\$, FmOpenRead) for i = len(d\$) to 1 step -1 a\$ = mid\$(d\$,i,1) if a\$ = "\" then exit for ff\$ = ff\$+a\$ next i file\$ = reverse\$(ff\$) END IF if d\$ = "" then FreeF end if sz = Nfile.Size:MemF.CopyFrom(NFile,sz) MemF.Position = 0:NFile.Position = 0 F_ f\$ = MemF.ReadStr(sz) NFile.Close:MemF.position = 2 fsz\$=MemF.readStr(4) for i = len(fsz\$) to 1 step -1 t\$ = mid\$(fsz\$,i,1) c = asc(t\$) IF t\$ > CHR\$(0) then c\$ = c\$ + right\$(hex\$(c),2) h\$ = h\$ + t\$ end if next i r=val(convbase\$(c\$,16,10)) difsz=sz-r if sz = r then showmessage "no file inside - select a BMP\$" exit sub end if MemF.position = r nameFs\$=MemF.readLine MemF.position = r+257 :logs\$=MemF.readStr(difsz-257) saveF.Open("\$"+rtrim\$(nameFs\$), fmCreate) saveF.write(logs\$) saveF.close FreeF Nfile.Open(d\$, FmOpenRead) sz = Nfile.Size :MemF.CopyFrom(NFile,sz) MemF.Position = 0:NFile.Position = 0 F_ f\$ = MemF.ReadStr(sz-difsz) NFile.Close Bmp.BMP = file\$:form.Caption = "image/BMP : \$" + file\$ paint saveF.Open("\$"+File\$, fmCreate) saveF.write(F_ f\$) saveF.close FreeF showmessage "\$"+rtrim\$(nameFs\$)+ " hidden in IMAGE, extracted onto HDD ..."&chr\$(13) + "\$"+File\$ + " rebuilt as ordinary BMP file" StatusBar.Panel[1].Caption = " - "\$"+rtrim\$(nameFs\$)+" / extracted file size "+str\$(difsz-257) StatusBar.Panel[0].Caption = "Recovered IMAGE : \$"&file\$+" - "+str\$(sz-difsz)+ "bytes"+ " - "+str\$(bmp.width)+"x"+str\$(bmp.height) F_ f\$="" end sub </pre>	<p>Load the selected file and decode it. It will firstly detect if an attachment file is present, then it will detach it, resaving the IMAGE without the attachment and extracting the document and saving it. The documents will be saved within the same path as the file loaded for decoding.</p>

