

Welcome to maXbox [Code \(Blog\)](#)

maXbox

EKON 25 – PyPas

Posted on September 3, 2021September 3, 2021 by maxbox4



Imagine you need a 512bit hash (or another master of reality procedure) and you don't have the available function. This time with a small effort to compare Pascal with Python. SHA256 or SHA512 is a secure hash algorithm which creates a fixed length one way string from any input data. OK you start the Python-engine in your maXbox script and load the DLL.

```

1  eng:= TPythonEngine.Create(Nil);
2  eng.pythonhome:= PYHOME;
3  eng.opendll(PYDLL)
4  //eng.IO:= pyMemo;
5  try
6      eng.Execstring('with open(r'+exepath+'maXbox4.exe","rb") as afile:'+
7                      ' fbuf = afile.read()');
8      println(eng.evalstr('__import__("hashlib").sha512('+
9                      'fbuf).hexdigest().upper()'));
10 except
11     eng.raiseError;
12 finally
13     eng.Free;
14     aPythonVersion.Free;
15 end;

```

So we open with `with open()` 🤗 a file to pass `fbuf` to the `hashlib` function, or a bit shorter:

```

1  println(eng.evalstr('__import__("hashlib").sha1(fbuf).hexdigest().upper()'))
2  >>> 3E38A48072D4F828A4BE4A52320F092FE50AE9C3

```

It may be important to notice the `read` function. When it is called with no arguments, like in this case, it will read all the contents of the file and load them into memory. If you need a list of supported hash algorithms in your system use `hashlib.algorithms_available`.

```

1  println(eng.evalstr('__import__("hashlib").algorithms_available'));

```

```

>>> {'SHA256', 'SHA384', 'md5', 'sha3_384', 'SHA512', 'blake2s', 'blake2b', 'MD5', 'SHA224',
'dsaWithSHA', 'md4', 'MD4', 'sha1', 'sha3_512', 'sha512', 'sha256', 'whirlpool', 'sha384', 'ecdsa-with-
SHA1', 'RIPEMD160', 'sha', 'sha224', 'DSA', 'DSA-SHA', 'sha3_224', 'dsaEncryption', 'shake_256',
'SHA1', 'shake_128', 'ripemd160', 'SHA', 'sha3_256'}

```

Now lets compare the hash lib with the Advapi32 Dll of Windows:

```

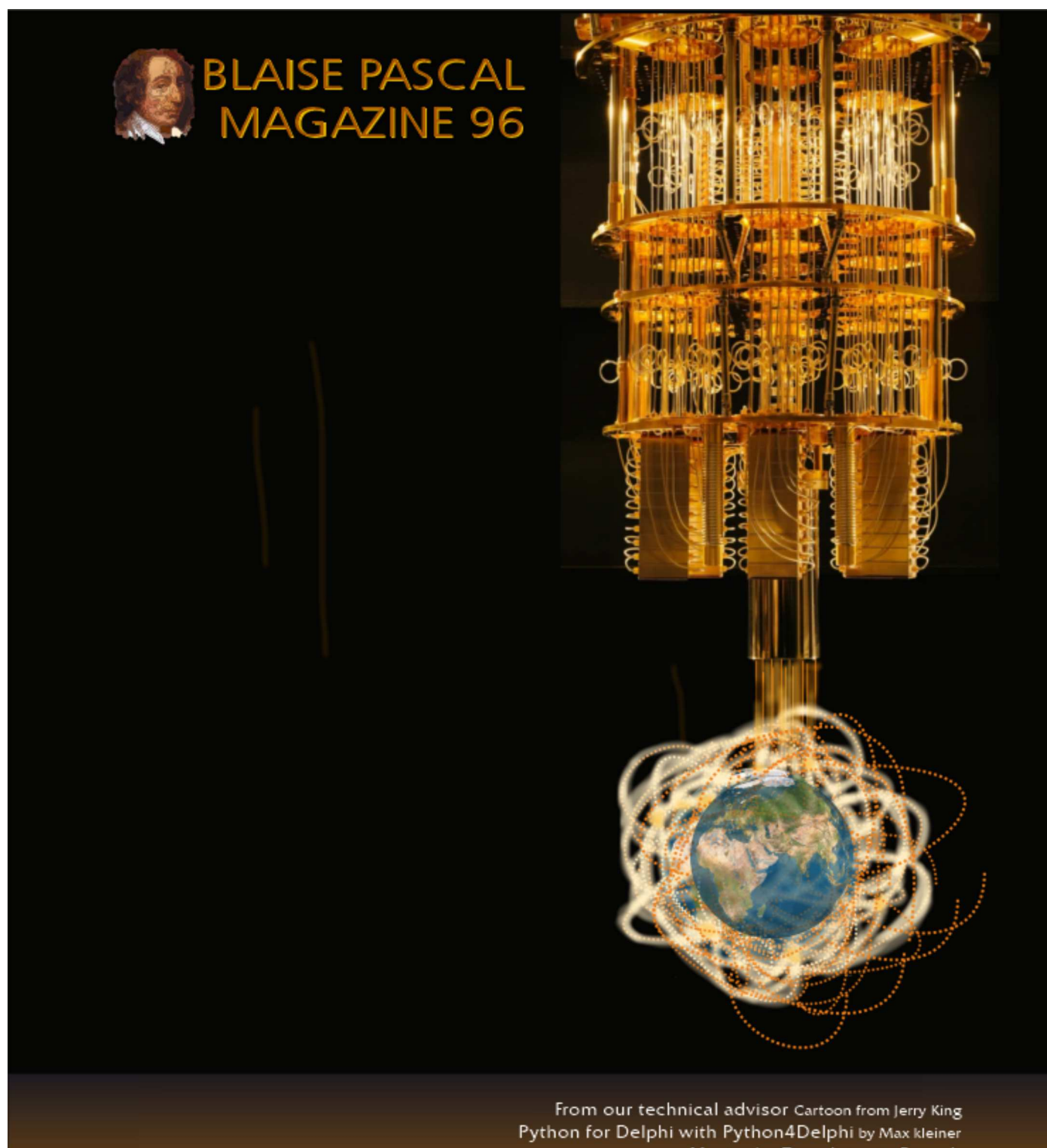
1  function Advapi32_SHA512: string;
2  var shaStr: string;
3  begin
4      writeln('cryptcontext: '+botostr(CryptAcquireContext(hProv, '', '',
5                      PROV_RSA_AES, CRYPT_VERIFYCONTEXT)));
6      writeln('cryptcreate: '+
7          botostr(CryptCreateHash(hProv, CALG_SHA512, hkey, 0, hHash)));
8      sr:= fileToString(exepath+'maXbox4.exe');
9      writeln('cryptdata: '
10          +botostr(CryptHashData(hhash, sr, length(sr), 0)));
11
12      cbHashDataLen:= 64;
13      if (CryptGetHashParam512(hHash, HP_HASHVAL, shares4, cbHashDataLen, 0))
14          then begin
15              for it:= 1 to cbHashDataLen do
16                  shaStr:= shaStr +UpperCase(IntToHex((shares4[it]), 2));
17              result:= shaStr;
18          end;
19
20      println('destroy cryphash-hndl: '+botostr(CryptDestroyHash(hhash)));
21      println('cryp_ReleaseContext: '+botostr(CryptReleaseContext(hProv, 0)));
22      writeln('SHA512 posttest: '+binToHEX_Str(shares4));
23  end;

```


More work but also more versatile. This code assumes that the handle of a cryptographic context has been acquired and that a hash object has been created and its handle (*hHash*) is available. Of course in maXbox or Delphi you can use LockBox.

The routines are unit tested and it compiles and works almost flawlessly on all versions from XE7. All you need is just to adjust the TPLB3.Common.inc file (if required). And one more thing you would probably need is adding {Q-, R-} in the INC file – as if you are testing your projects with **range** (http://docwiki.embarcadero.com/RADStudio/Berlin/en/Range_checking) and **overflow** ([http://docwiki.embarcadero.com/RADStudio/Berlin/en/Overflow_checking_\(Delphi\)](http://docwiki.embarcadero.com/RADStudio/Berlin/en/Overflow_checking_(Delphi))) check (which should be enabled for debugging).

LockBox3 is a Delphi library for cryptography. It provides support for AES, DES, 3DES, Blowfish, Twofish, SHA, MD5, a variety of chaining modes, RSA digital signature and verification. For Lazarus I installed correctly CryptoLib4Pascal; but I don't know exactly how to use this library.



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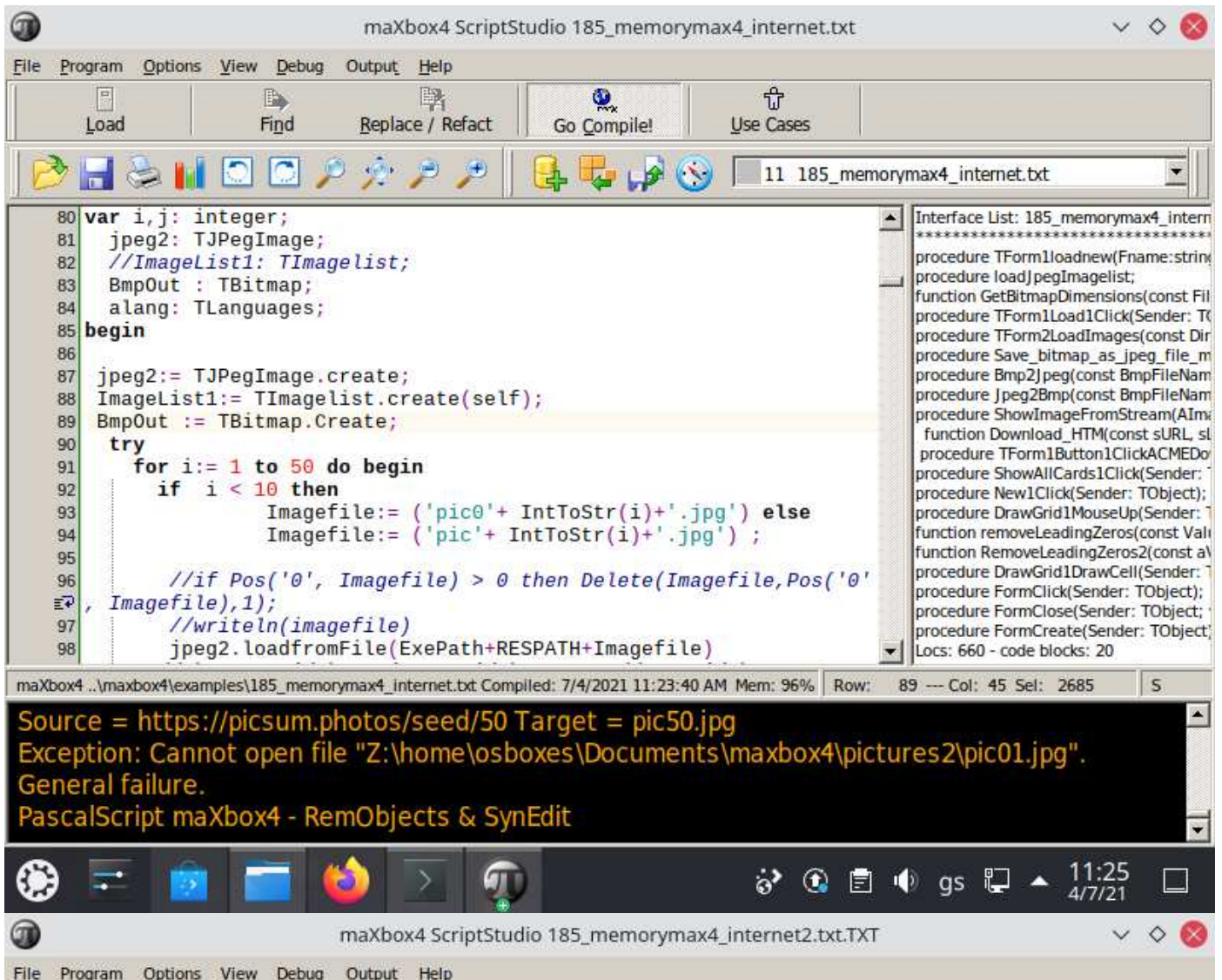


SESSION

Python4Delphi

Max Kleiner | kleiner kommunikation

EKON 25 Die Konferenz für Delphi & More | 8. – 10. November 2021 | Düsseldorf



maXbox4 ScriptStudio 185_memorymax4_internet.txt

File Program Options View Debug Output Help

Load Find Replace / Refact Go Compile! Use Cases

11 185_memorymax4_internet.txt

```

80 var i,j: integer;
81 jpeg2: TJpegImage;
82 //ImageList1: TImageList;
83 BmpOut : TBitmap;
84 alang: TLanguages;
85 begin
86
87 jpeg2:= TJpegImage.create;
88 ImageList1:= TImageList.create(self);
89 BmpOut := TBitmap.Create;
90 try
91   for i:= 1 to 50 do begin
92     if i < 10 then
93       Imagefile:= ('pic0'+ IntToStr(i)+'.jpg') else
94       Imagefile:= ('pic'+ IntToStr(i)+'.jpg') ;
95
96       //if Pos('0', Imagefile) > 0 then Delete(Imagefile,Pos('0'
97 , Imagefile),1);
98       //writeln(imagefile)
99       jpeg2.loadFromFile(ExePath+RESPATH+Imagefile)

```

Interface List: 185_memorymax4_intern

procedure TForm1loadnew(Fname:string
function loadJpegImageList;
function GetBitmapDimensions(const Fil
procedure TForm1Load1Click(Sender: T
procedure TForm2LoadImages(const Dir
procedure Save_bitmap_as_jpeg_file_m
procedure Bmp2Jpeg(const BmpFileNam
procedure Jpeg2Bmp(const BmpFileNam
procedure ShowImageFromStream(AIm
function Download_HTML(const sURL, sl
procedure TForm1Button1ClickACMEDo
procedure ShowAllCards1Click(Sender: T
procedure New1Click(Sender: TObject);
procedure DrawGrid1MouseUp(Sender: T
function removeLeadingZeros(const Val
function RemoveLeadingZeros2(const a
procedure DrawGrid1DrawCell(Sender: T
procedure FormClick(Sender: TObject);
procedure FormClose(Sender: TObject);
procedure FormCreate(Sender: TObject;
Locs: 660 - code blocks: 20

maXbox4 ..\maxbox4\examples\185_memorymax4_internet.txt Compiled: 7/4/2021 11:23:40 AM Mem: 96% Row: 89 --- Col: 45 Sel: 2685 S

Source = https://picsum.photos/seed/50 Target = pic50.jpg
Exception: Cannot open file "Z:\home\osboxes\Documents\maxbox4\pictures2\pic01.jpg".
General failure.
PascalScript maXbox4 - RemObjects & SynEdit

maXbox4 ScriptStudio 185_memorymax4_internet2.txt.TXT

File Program Options View Debug Output Help

```

78 procedure loadJpegImagelist;
79 var i, j: integer;
80 jpeg2: TJpegImage;
81 //ImageList1: TImagelist;
82 BmpOut: TBitmap;
83 alang: TLanguages;
84 begin
85   jpeg2 := TJpegImage.create;
86   Imagelist1 := TImagelist.create(self);
87   BmpOut := TBitmap.Create;
88   try
89     for i:= 1 to 50 do begin
90       if i < 10 then
91         Imagefile:= ('pic0'+ IntToStr(i)+'.jpg') else
92         Imagefile:= ('pic'+ IntToStr(i)+'.jpg') ;
93       //if Pos('0', Imagefile) > 0 then Delete(Imagefile,Pos('0', Imagefile),1);
94       //writeln(imagefile)
95       jpeg2.loadFromFile(RESPath+Imagefile)
96       // bmpout.Width := jpeg2.Width;      //set width same as jpg
97       // bmpout.Height:= jpeg2.Height;      //set height same as jpg
98     end;
99   except
100     on E do
101       writeln('Exception: ' + E.Message);
102   end;
103 end;

```

load DIALOG cancelled Row: 78 Col: 29 Sel: 2468 S

Source = https://picsum.photos/seed/49 Target = pic49.jpg
Source = https://picsum.photos/seed/50 Target = pic50.jpg
Exception: Cannot open file "Z:\home\osboxes\Documents\maxbox4\home\osboxes\Documents\maxbox4\pic01.jpg". General failure.

maXbox4 on Kubuntu with Wine

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One thought on “EKON 25 – PyPas”

1. [maxbox4](#) says:
September 4, 2021 at 7:48 am [Edit](#)
For checking your Python installation:
//if PythonVersionFromPath(PYHOME, aPythonVersion, false) then begin
if GetLatestRegisteredPythonVersion(aPythonVersion) then begin
aPythonVersion.AssignTo(eng) ;
writeln('APIVersion: '+itoa(TPythonEngine(eng).APIVersion));
writeln('RegVersion: '+TPythonEngine(eng).RegVersion);
writeln('RegVersion: '+TPythonEngine(eng).DLLName);
//TPythonEngine(PythonEngine).LoadDLL;
end;

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