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IS 3423 – Network Security
Lab 4: Data and Network Security
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Project 1: Use an Online Rainbow Table Cracker

Although brute force and dictionary attacks were once the primary tools used by attackers to crack stolen digest passwords, more recently attackers have used rainbow tables. Rainbow tables make password attacks easier by creating a large pre-generated data set of candidate digests. In this project, I will create a hash on a password and then crack it with an online rainbow table cracker to demonstrate the speed of using rainbow tables.

1. The first step is to use a general-purpose hash algorithm to create a password hash. Used my web browser to go to www.fileformat.info/tool/hash.htm.
2. Under **String hash**, entered the simple password **apple123** in the **Text:** line.
3. Clicked **Hash**.
4. Scrolled down the page and took a screen shot of the results:

Results	
Original text	apple123
Original bytes	61:70:70:6c:65:31:32:33 (length=8)
Adler32	0d9a02a9
CRC32	b91a851b
Haval	6ef9300729b53c67341ee3fcb0ddbe92
MD2	9b234957629deea4b37e4145fe9b0245
MD4	97e55bc24d3ee06ca11c1fd17199a999
MD5	75a593a34aa5ba8e5e5788b7c899802e
RipeMD128	ffee20b915207ea9d8faf78bd6931bf3
RipeMD160	7c7c94a5ca20ac195b547d4ab5eccd254413a92d
SHA-1	ec1e7fb8656dba32737acabc2e5a1fb2d02a973f
SHA-256	599a4410e2af69d1585f16d82d4b5f0abf3ad09fa42b9d55d7b7a50671ccf8c1
SHA-384	e61297a3737a8173df994831e65bc76d0f421330792f21498038e8c5ce4ab4f6fa2d9826ed90b0c6dc39cf2fcd2f6bdf
SHA-512	495de00fcb22e9b508aa937bb7d248501fe480d2bf1f191905ab8c8752ec515f84aed4a1254b6651a5f5db22aa6b796d252aa6eaa96794b305c9163b97fb4ce2
Tiger	9bd6a9691a639e2d3aeab0ed77bbbc292df834761014f8c7
Whirlpool-0	d71d0a2ba0525d37f95d20b149c56bca585f5c5482da77d520e733cc7ae964a2a900d0525eb008011ac4f85b87fc566c1a8bba66aa2950599eda6940c6f76aa4 null
Whirlpool-T	d3e649364bd23dfffcd7cea29b5e902f247c43badd25b473f89b62dce5f26428b20027da6ee053ff40f1c37053cea5181c95e0cea39fb7e51746afdfa3e52c3e
Whirlpool	69ba48b6840c52457aae6e6d99e814d4f4aa26b629fad46c4798912cc9ac07a3fb4f6dd91e3a6a5d733e70e91c49d0f03099e514779e9551cb361728011eb9fb

5. Copied the MD4 hash of this password to my Clipboard by selecting the text, right-clicking, and choosing **Copy**.
6. Opened a new tab on my web browser.
7. Went to https://crackstation.net/.
8. Pasted the MD4 hash of *apple123* into the text box beneath.
9. In the RECAPTCHA box, entered the current value displayed in the box that said **Type the text**.
10. Clicked **Crack Hashes**.
11. Took a screenshot of my results:

Enter up to 20 non-salted hashes, one per line:

```
97e55bc24d3ee06ca11c1fd17199a999
```
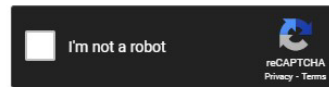
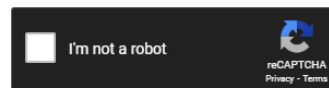☐ I'm not a robot — reCAPTCHA — Privacy - Terms

Crack Hashes

Supports: LM, NTLM, md2, md4, md5, md5(md5_hex), md5-half, sha1, sha224, sha256, sha384, sha512, ripeMD160, whirlpool, MySQL 4.1+ (sha1(sha1_bin)), QubesV3.1BackupDefaults

Hash	Type	Result
97e55bc24d3ee06ca11c1fd17199a999	md4	apple123

Color Codes: Green: Exact match, Yellow: Partial match, Red: Not found.

12. Clicked the browser tab to return to FileFormat.Info.
13. Under **String hash**, entered the longer password **12applesauce** in the **Text:** line.
14. Clicked **Hash**.
15. Scrolled down the page and copied the MD4 hash of the password to my Clipboard.
16. Clicked to browser tab to return to the CrackStation site.
17. Pasted the MD4 hash of *12applesauce* into the text box beneath.
18. Clicked **Crack Hashes.** Take a screenshot of the results:

```
97222e560f720976485dd8d24c5d71b4
```

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Crack Hashes

Supports: LM, NTLM, md2, md4, md5, md5(md5_hex), md5-half, sha1, sha224, sha256, sha384, sha512, ripeMD160, whirlpool, MySQL 4.1+ (sha1(sha1_bin)), QubesV3.1BackupDefaults

Hash	Type	Result
97222e560f720976485dd8d24c5d71b4	md4	12applesauce

Color Codes: Green: Exact match, Yellow: Partial match, Red: Not found.

19. Closed all windows.

Project 2: Use an EULA (End-User License Agreement) Analyzer (30 points)

Although malicious attackers are often considered to be the only enemies that view user's data without their permission, there are several examples of commercial software that can also invade a user's privacy by tracking or monitoring their activities. Software companies often "bury" the approval of these actions in their end-user license agreements, or EULA. In this project I will use tools to analyze EULA agreements.

1. Opened my Web browser and enter the URL https://www.microsoft.com/en-us/useterms
2. Under How is the software acquired? selected **Pre-Installed on your computer** from the computer manufacturer? from the pull-down menu.
3. Under Product Name, selected **Windows** from the pull-down menu.
4. Under Version, selected **11** from the pull-down menu.
5. Under Language, select **English** from the pull-down menu.
6. Click **Go**.
7. Under Search Results clicked on the **htm file**.
8. Opened a new browser tab

9. Selected the contents with in the htm file within the new tab by clicking CTRL + a.
10. Copied the contents of the selected text to the clipboard by clicking CTRL + c.
11. Used a search engine to search for "Spyware Guide License Analyzer." It too me to the web site http://www.spywareguide.com/analyze/analyzer.php
12. Under Title entered **Windows 11**.
13. Under Paste license here, clicked in the box and then pasted the contents of the clipboard by clicking CTRL + v.
14. Under **Display Results** as … ensured that detailed analysis was selected.
15. Clicked **Start Analyzer**. Took a screenshot of my results:

Input

Title: Windows 11
Submitted:

Scoring Metrics

Number of characters: 37294
Number of words: 6434
Number of sentences: 258
Average words per sentence: 24.94
Flesch Score: 28.23 ?
Flesch Grade: 16 : Beyond Twelfth Grade reading level ?
Automated Readability Index: 18 : Beyond Twelfth Grade reading level ?
Coleman-Liau Index: 20 : Beyond Twelfth Grade reading level ?
Gunning-Fog Index: 41 : Beyond Twelfth Grade reading level ?

Summary

11 characteristics flagged:

Characteristic	Sentences Flagged
Reference to tracking or monitoring.	1
Reference to settlement of claims by arbitration.	10

16. Close all windows.

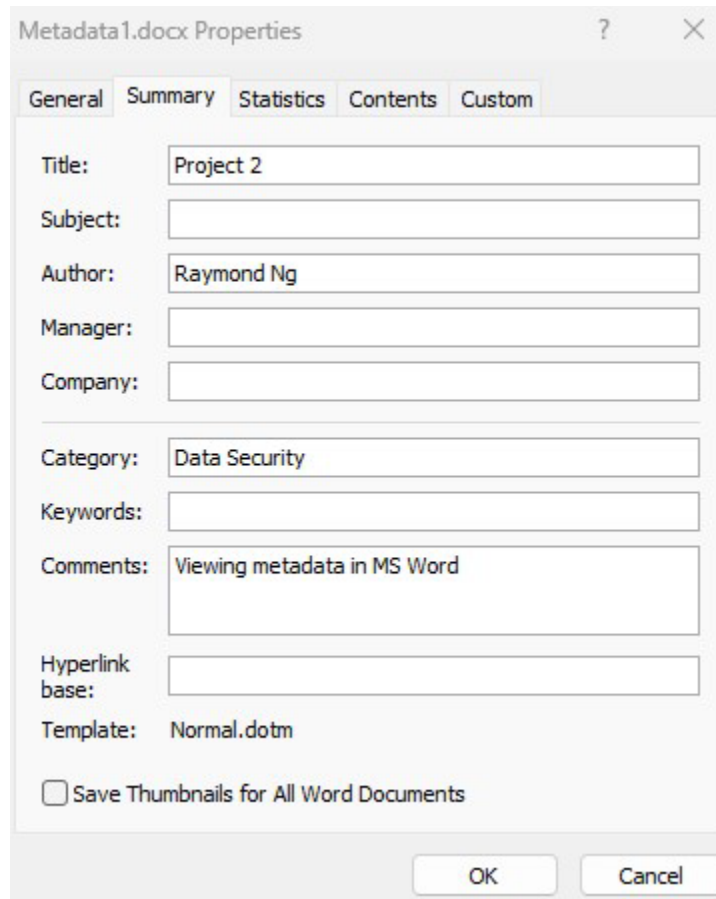## Project 3: Entering and Viewing Metadata (30 points)

Although most file's metadata are not accessible to users, with some types of metadata, users can enter and change it. In this project, I will view and enter metadata in a Microsoft Word document. Clicked **Start**.

1. Used Microsoft word to create a document containing my name. Saved the document as **Metadata1.docx**.
2. Clicked the file tab on the Ribbon
3. Clicked the drop down arrow next to **properties** and clicked **advanced properties**.
4. Entered following information in the Advanced Properties dialog box:
   Title: **Project 2**
   Author: Raymond Ng

Category: **Data Security**
Comments: **Viewing metadata in MS Word**

5. Provided a screenshot below. Click **OK**

6. Saved **Metadata1.docx**.
7. Clicked the **file** tab on the Ribbon
8. Clicked the drop-down arrow next to **Document Properties** and then clicked **advanced properties.**
9. Clicked the **Statistics** tab on the properties dialog box and viewed the information it contained.
10. Clicked the **Custom** Tab. Observed several predefined fields that can contain metadata.
11. In the Name box, enter **Editor**.
12. Be sure the type is set to **Text**.
13. Entered my name in the **Value** field, and then press **Enter.**
14. Selected three predefined fields and enter values for each field. Provided a screenshot below. Click **OK**. Saved my document when I was finished.
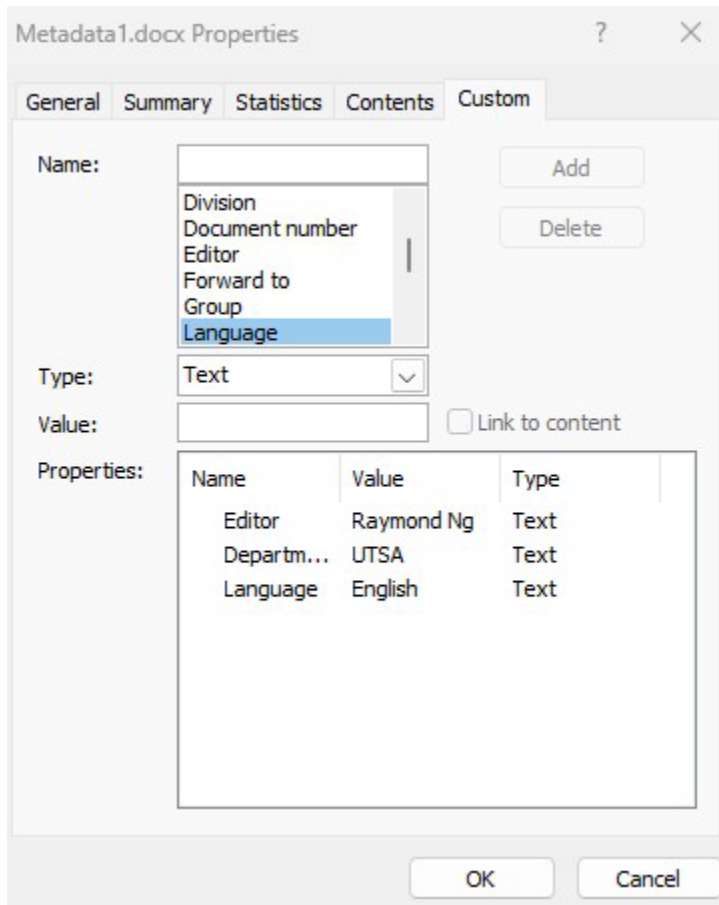
15. Closed the document properties information panel and returned to **Metadata1.docx**.
16. Erased my name from **Metadata1.docx** so I had a blank document. However, this file still has the metadata. Entered today's date and saved this as **Metadata2.docx**. Provided a screenshot:
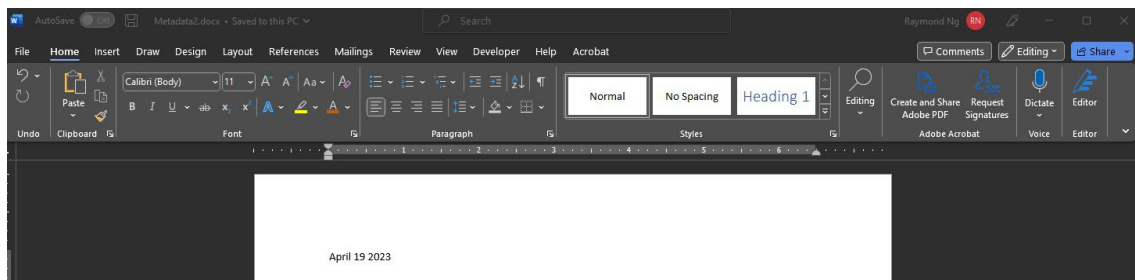
17. Closed **Metadata2.docx**.
18. Reopened **Metadata2.docx**.
19. Clicked the **file** tab on the ribbon.
20. Clicked the drop-down arrow next to **properties** and clicked **show document panel**.
21. Provided a screenshot of what properties carried over to **Metadata2.docx** from **Metadata1.docx**:

Properties ˅	
Size	12.5KB
Pages	1
Words	3
Total Editing Time	2 Minutes
Title	Project 2
Tags	Add a tag
Comments	Viewing metadata in MS ...

22. Closed all windows.