Activity X: Computer Forensics

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สามารถดู Resource เต็ม ๆ ได้ที่ 2110413-COMP-SECURITY Activity 10

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Part I File Carving

1

Look at the data on the file system (Click on Data Sources and look at the hex values on the right). The file system has no files, but why are we able to find items on the disk image? Explain why the file system has no files but there are items that can be found on the disk image.

Answer

เพราะหลาย ๆ file ที่ถูกลบ ถูกลบด้วยวิธี Quick format ซึ่งมันจะทำการลบไฟล์ด้วยวิธี mark ว่าพื้นที่ตรงนั้นสามารถเขียนทับได้ แต่ไม่มีการ write ให้ที่ตรงนั้นเป็นค่าว่าง ดังนั้นเราจึงยังสามารถดูไฟล์ที่ถูกลบได้

2

How many objects can you find?

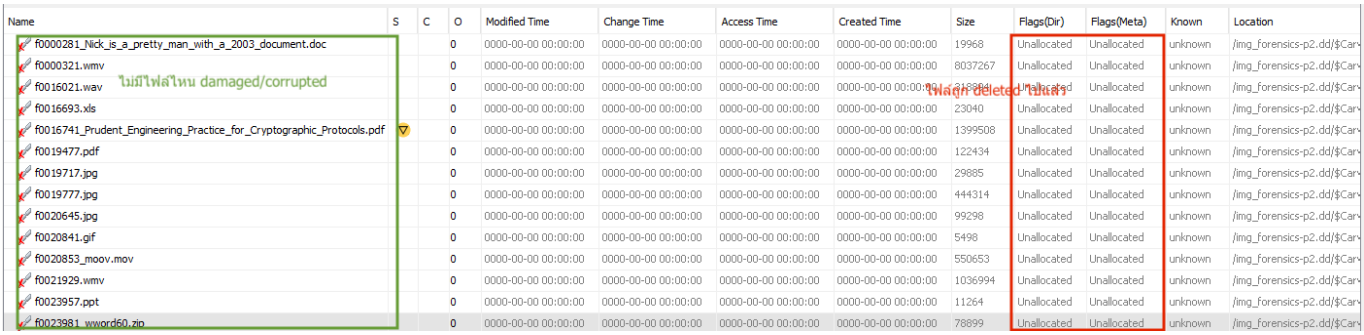
Answer

14 Objects

3

List all the objects here and report on whether or not the content is accessible or damaged/corrupted. Also note which files were actually already deleted.

Answer



Name	S	C	O	Modified Time	Change Time	Access Time	Created Time	Size	Flags(Dir)	Flags(Meta)	Known	Location
f0000281_Nick_is_a_pretty_man_with_a_2003_document.doc			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	19968	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0000321.wmv			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	8037267	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0016021.wav			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	2138884	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0016693.xls			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	23040	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0016741_Prudent_Engineering_Practice_for_Cryptographic_Protocols.pdf			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1399508	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0019477.pdf			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	122434	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0019717.jpg			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	29885	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0019777.jpg			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	444314	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0020645.jpg			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	99298	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0020841.gif			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	5498	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0020853_moov.mov			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	550653	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0021929.wmv			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1036994	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0023957.ppt			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	11264	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car
f0023981_wword60.zip			0	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	78899	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/$Car

4

Think securely: If we want to delete files on a magnetic hard disk and not have them be recovered by any tool, what do we need to do? And how much time do you think you need to wipe a 1TB magnetic hard disk?

Answer

Overwrite hard disk อย่างน้อย 1-3 ครั้งเพื่อให้มั่นใจว่าทุก bad sector ถูกเขียนทับแล้ว โดยเราสามารถคำนวณเวลาที่ใช้ได้โดยการ สมมติว่า hard disk 1TB และ write speed ของ hard disk คือ 100MB/s ดังนั้นใช้เวลา 10,000s = 2.78 ชั่วโมง ต่อการ write 1 ครั้ง

5

Will file carving be able to recover deleted files on an SSD? Why or why not?

Answer

กู้ได้ ถ้าหากว่า data ที่โดน TRIM ไปแล้วยังไม่ถูกเขียนทับด้วยข้อมูลอื่น

Part II Investigation

1

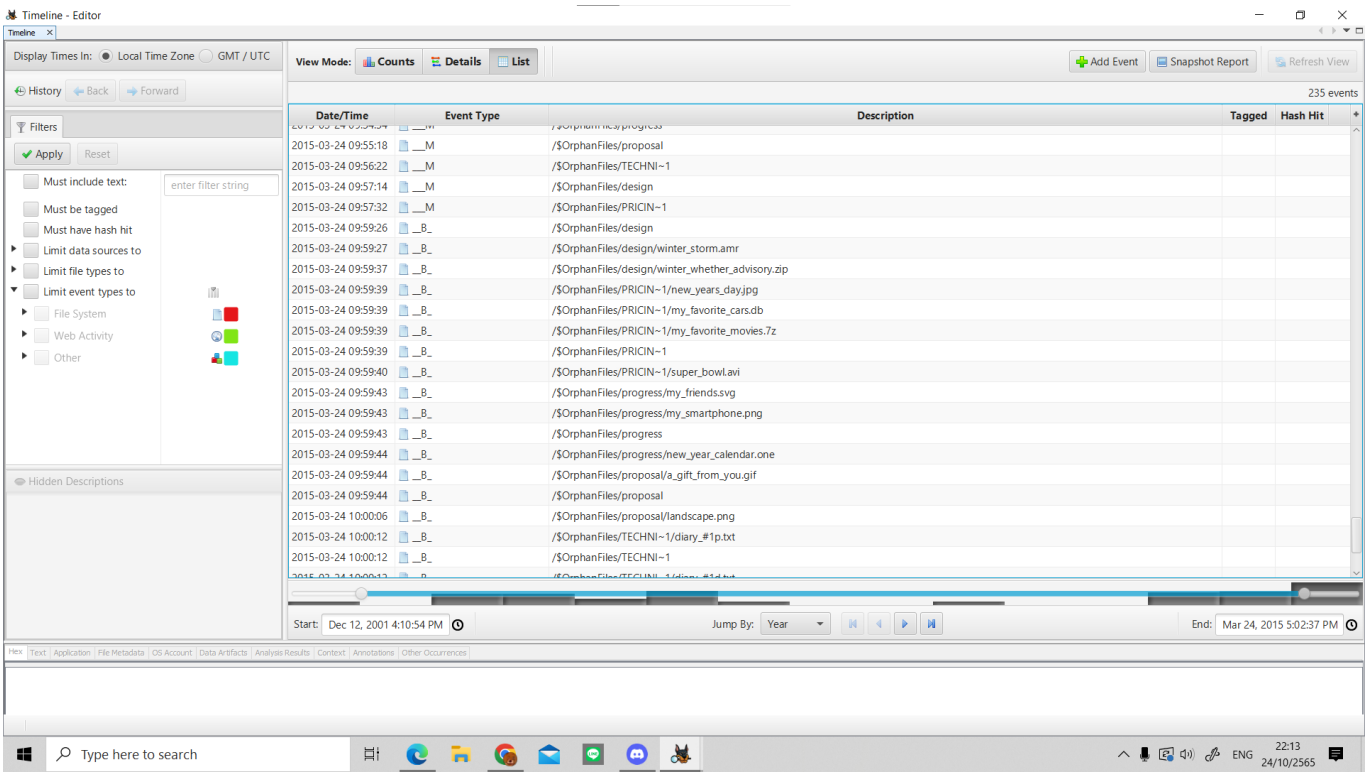
List all directories that were traversed in 'RM#2'.

Answer

2

List all files that were opened in 'RM#2'.

Answer



3

Recover deleted files from USB drive 'RM#2'. What files were you able to recover?

Answer

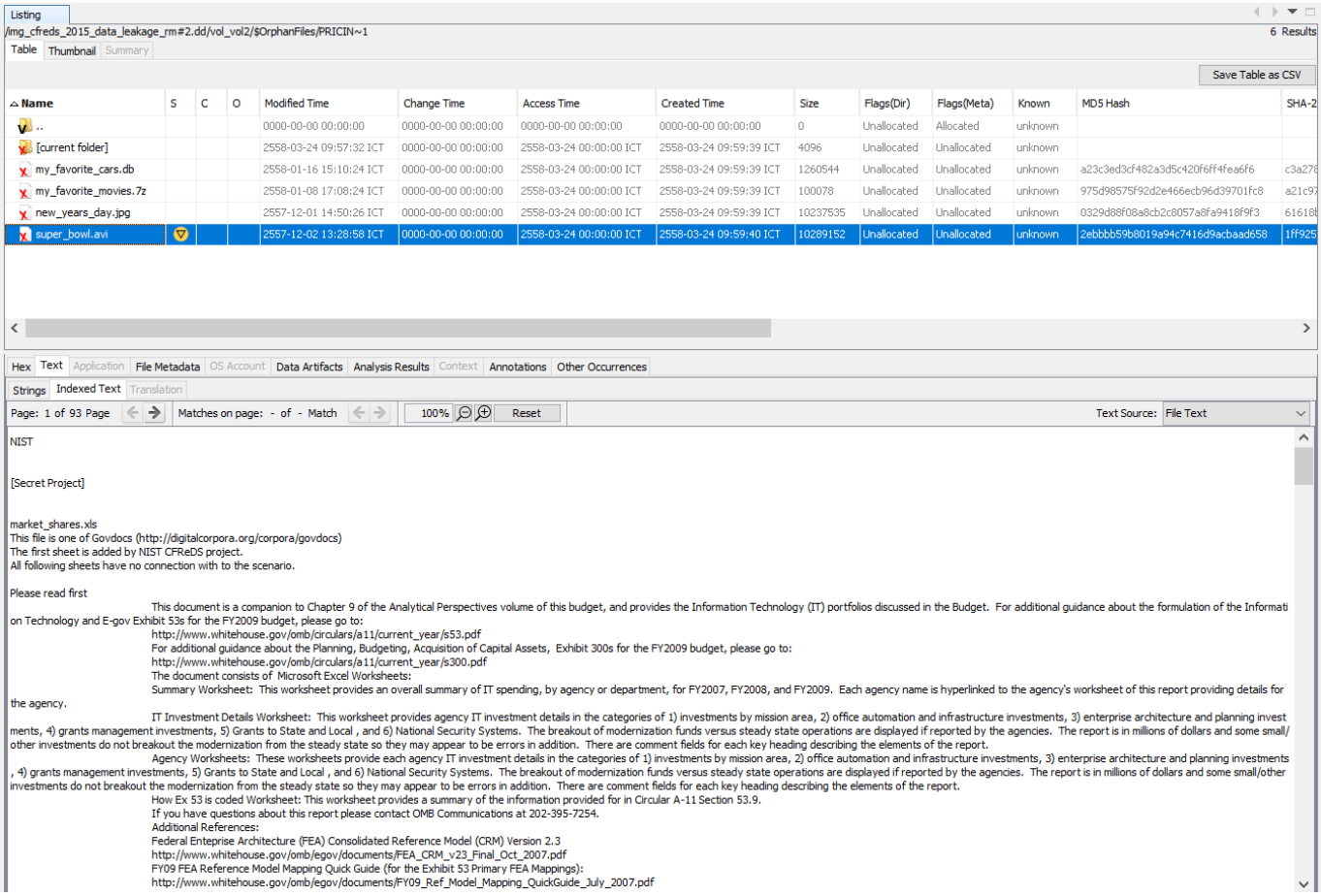
ทุกไฟล์ใน `CarvedFiles` และ `OrphanFiles` folder

4

What actions were performed for anti-forensics on USB drive 'RM#2'?

[Hint: this can be inferred from the results of the above question]

Answer



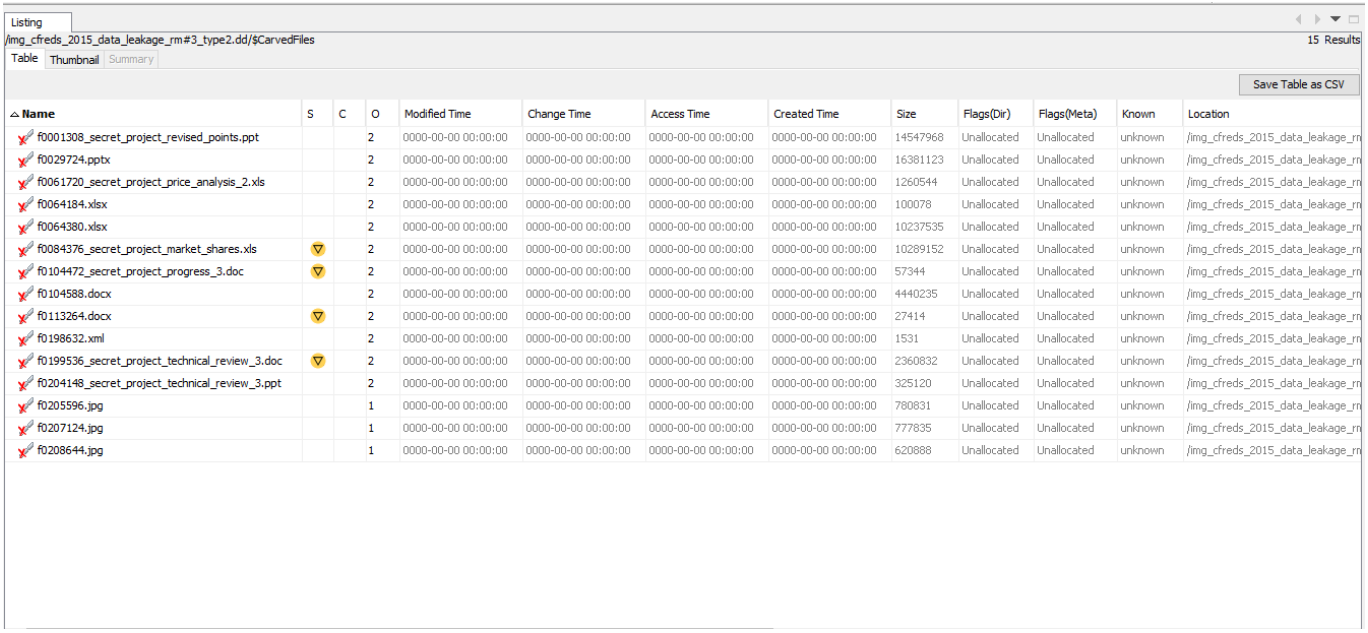
สังเกตว่าไฟล์ทั้งหลายมี Flag unallocated ซึ่งแปลว่ามีการพยายามลบข้อมูลด้วย Quick Format

5

Recover hidden files from the CD-R 'RM#3'. What files were you able to recover?

Answer

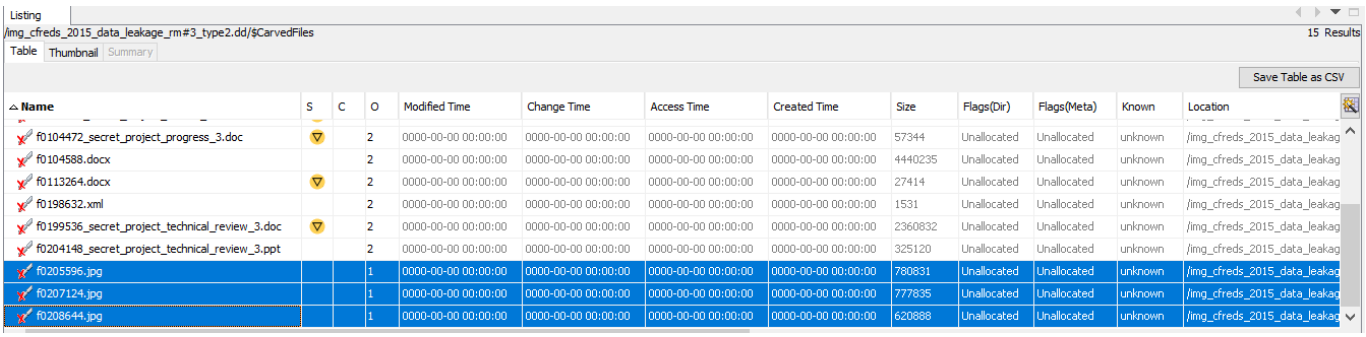
ทุกไฟล์ใน `CarvedFiles`



6

What actions were performed for anti-forensics on CD-R 'RM#3'?

Answer



สังเกตว่าไฟล์ทั้งหลายมี Flag unallocated ซึ่งแปลว่ามีการพยายาม format CD-R เพื่อซ่อนข้อมูลบางอย่าง