

Part 1

1. Although the metadata of each file is marked as deleted, Autopsy ignores the metadata and reads everything as long as the files have not been overwritten.

2. 14 files.

The screenshot shows the Autopsy 4.21.0 interface. The left sidebar contains navigation options: Data Sources, File Views, Data Artifacts, Analysis Results, Keyword Hits, User Content Suspected, OS Accounts, Tags, Score, and Reports. The main pane displays a table of file details for the directory /img_forensics-p2.dd/CarvedFiles/1. The table has columns for Name, S, C, O, Modified Time, Change Time, Access Time, Created Time, Size, Flags(Dir), Flags(Meta), Known, and Location. There are 14 files listed, all marked as deleted (S=0) and with a location of /img_forensics-p2.dd/SCa.

Name	S	C	O	Modified Time	Change Time	Access Time	Created Time	Size	Flags(Dir)	Flags(Meta)	Known	Location
✓ #0000281_Nick_is_a_pretty_man_with_a_2003_docur	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/SCa
✓ #0000221_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	8037257	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/SCa
✓ #0016021_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	318094	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/SCa
✓ #0016053.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/SCa
✓ #0016741_Prudent_Engineering_Practice_for_Crypto	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/SCa
✓ #0019477.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/SCa
✓ #0019717.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/SCa
✓ #0019777.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	44414	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/SCa
✓ #0020645.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	99286	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/SCa
✓ #0020841.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	5409	Unallocated	Unallocated	unknown	/img_forensics-p2.dd/SCa
✓ #0020851_mooov.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/SCa
✓ #0021929.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/SCa
✓ #0023957.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/SCa
✓ #0023981_wword802.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/SCa

3.

File name	Status
f0000281_Nick_is_a_pretty_man_with_a_2003_document.doc	Accessible (Deleted)
f0000321.wmv	Accessible (Deleted)
f0016021.wav	Accessible (Deleted)
f0016693.xls	Accessible (Deleted)
f0016741_Prudent_Engineering_Practice_for_Cryptographic_Protocols.pdf	Accessible (Deleted)
f0019477.pdf	Accessible (Deleted)
f0019717.jpg	Accessible (Deleted)
f0019777.jpg	Accessible (Deleted)
f0020645.jpg	Accessible (Deleted)
f0020841.gif	Accessible (Deleted)
f0020853_moov.mov	Accessible (Deleted)
f0021929.wmv	Accessible (Deleted)
f0023957.ppt	Accessible (Deleted)
f0023981_wword60.zip	Accessible (Deleted)

4. I need to delete everything and write random data to a 1 TB hard disk. Assuming the disk speed is 160 MB/s, it will take around 100 minutes to fully write 1 TB. Since it is recommended to overwrite at least 3 times, this process will take approximately 5 hours.
5. Mostly no, since garbage collection will typically remove unused block content, and newly written files will randomly access these blocks. This is because each SSD block can only be overwritten a few times before it becomes unusable.

Part 2

1. design, PRICIN~1, progress, proposal, TECHNI~1

2. All accessed files:

/\$OrphanFiles/amalfi.bmp	/\$OrphanFiles/wat.gif
/\$OrphanFiles/BAMBOO~1.GIF	/\$OrphanFiles/design
/\$OrphanFiles/barn.gif	/\$OrphanFiles/design/winter_storm.amr
/\$OrphanFiles/blini.gif	/\$OrphanFiles/design/winter_whether_a dvisory.zip
/\$OrphanFiles/boudicca.bmp	/\$OrphanFiles/PRICIN~1
/\$OrphanFiles/cactus.png	/\$OrphanFiles/PRICIN~1/my_favorite_c ars.db
/\$OrphanFiles/cave.png	/\$OrphanFiles/PRICIN~1/my_favorite_ movies.7z
/\$OrphanFiles/CUTTY~1.JPG	/\$OrphanFiles/PRICIN~1/new_years_da y.jpg
/\$OrphanFiles/eggs.gif	/\$OrphanFiles/PRICIN~1/super_bowl.av i
/\$OrphanFiles/FORSYT~1.PNG	/\$OrphanFiles/progress/my_friends.svg
/\$OrphanFiles/injera.gif	/\$OrphanFiles/progress/my_smartphon e.png
/\$OrphanFiles/JACK-O~1.TIF	/\$OrphanFiles/progress/new_year_cale ndar.one
/\$OrphanFiles/jump.jpg	/\$OrphanFiles/proposal/a_gift_from_you .gif
/\$OrphanFiles/leaf.jpg	/\$OrphanFiles/proposal/landscape.png
/\$OrphanFiles/oak-snow.jpg	/\$OrphanFiles/TECHNI~1/diary_#1d.txt
/\$OrphanFiles/orchid.png	/\$OrphanFiles/TECHNI~1/diary_#1p.txt
/\$OrphanFiles/PIAZZA~1.JPG	/\$OrphanFiles/TECHNI~1/diary_#2d.txt
/\$OrphanFiles/pisa.JPG	/\$OrphanFiles/TECHNI~1/diary_#2p.txt

/\$OrphanFiles/SPQR.JPG	/\$OrphanFiles/TECHNI~1/diary_#3d.txt
/\$OrphanFiles/STONEH~1.JPG	/\$OrphanFiles/TECHNI~1/diary_#3p.txt
/\$OrphanFiles/tapas.gif	/\$OrphanFiles/desktop.ini
/\$OrphanFiles/tomatoes.gif	

3. I can recover 62 deleted files which are listed in \$CravedFiles.

The screenshot shows the SecurityAct 5 - Autopsy 4.21.0 interface. The left sidebar displays the file system tree, including 'Data Sources', 'File Views', 'Deleted Files', 'MB File Size', 'Data Artifacts', 'Analysis Results', 'OS Accounts', 'Tags', and 'Reports'. The main pane shows a table of 62 deleted files, with columns for Name, S, C, O, Modified Time, Change Time, Access Time, Created Time, Size, Flags(Di), Flags(Meta), Known, and Location. The files are listed in a table with 11 columns: Name, S, C, O, Modified Time, Change Time, Access Time, Created Time, Size, Flags(Di), Flags(Meta), Known, and Location. The files are listed in a table with 11 columns: Name, S, C, O, Modified Time, Change Time, Access Time, Created Time, Size, Flags(Di), Flags(Meta), Known, and Location. The files are listed in a table with 11 columns: Name, S, C, O, Modified Time, Change Time, Access Time, Created Time, Size, Flags(Di), Flags(Meta), Known, and Location.

4. In \$OrphanFiles have files that edited their file extension name ex. secret_project.docx >> my_smartphone.png

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5. These 15 files in \$CravedFiles:

The screenshot shows the SecurityAct5 - Autopsy 4.21.0 interface. The left sidebar displays the file tree structure, including 'Data Sources', 'File Views', 'Data Artifacts', 'Analysis Results', 'Keyword Hits', 'OS Accounts', 'Tags', and 'Reports'. The main pane shows a list of 15 files in the '\$CravedFiles' directory. The files are listed with their names, sizes, and various timestamps. The file names are: R001308_secret_project_revised_points.ppt, R002724.pptx, R0061720_secret_project_price_analysis_2.xls, R0064184.xlsx, R0064380.xlsx, R0084378_secret_project_market_shares.xls, R0104472_secret_project_progress_3.doc, R0104588.docx, R0113264.docx, R0198632.xml, R0199538_secret_project_technical_review_3.doc, R0204148_secret_project_technical_review_3.ppt, R0205596.jpg, R0207124.jpg, and R0208644.jpg. The file names are highlighted in red. The interface also shows a 'Keyword Search' bar and a 'Save Table as CSV' button.

Name	S	C	O	Modified Time	Change Time	Access Time	Created Time	Size	Flags(Dir)	Flags(Meta)	Known	Location
R001308_secret_project_revised_points.ppt				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	14547968	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R002724.pptx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	16381123	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0061720_secret_project_price_analysis_2.xls				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1260544	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0064184.xlsx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1000778	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0064380.xlsx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	10237355	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0084378_secret_project_market_shares.xls				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	10239152	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0104472_secret_project_progress_3.doc				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	57344	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0104588.docx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	4440235	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0113264.docx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	27414	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0198632.xml				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1531	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0199538_secret_project_technical_review_3.doc				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	2360832	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0204148_secret_project_technical_review_3.ppt				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	325120	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0205596.jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	78031	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0207124.jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	777835	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0208644.jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	620888	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1

6. Try to change files name from a critical name to some random name ex.

The screenshot shows the SecurityAct5 - Autopsy 4.21.0 interface. The left sidebar displays the file tree structure, including 'Data Sources', 'File Views', 'Data Artifacts', 'Analysis Results', 'Keyword Hits', 'OS Accounts', 'Tags', and 'Reports'. The main pane shows a list of 15 files in the '\$CravedFiles' directory. The files are listed with their names, sizes, and various timestamps. The file names are: R001308_secret_project_revised_points.ppt, R002724.pptx, R0061720_secret_project_price_analysis_2.xls, R0064184.xlsx, R0064380.xlsx, R0084378_secret_project_market_shares.xls, R0104472_secret_project_progress_3.doc, R0104588.docx, R0113264.docx, R0198632.xml, R0199538_secret_project_technical_review_3.doc, R0204148_secret_project_technical_review_3.ppt, R0205596.jpg, R0207124.jpg, and R0208644.jpg. The file names are highlighted in red. The interface also shows a 'Keyword Search' bar and a 'Save Table as CSV' button.

Name	S	C	O	Modified Time	Change Time	Access Time	Created Time	Size	Flags(Dir)	Flags(Meta)	Known	Location
R001308_secret_project_revised_points.ppt				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	14547968	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R002724.pptx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	16381123	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0061720_secret_project_price_analysis_2.xls				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1260544	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0064184.xlsx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1000778	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0064380.xlsx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	10237355	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0084378_secret_project_market_shares.xls				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	10239152	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0104472_secret_project_progress_3.doc				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	57344	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0104588.docx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	4440235	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0113264.docx				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	27414	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0198632.xml				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	1531	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0199538_secret_project_technical_review_3.doc				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	2360832	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0204148_secret_project_technical_review_3.ppt				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	325120	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0205596.jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	78031	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0207124.jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	777835	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1
R0208644.jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	620888	Unallocated	Unallocated	unknown	/img_cfreds_2015_data_leakage_mm#3_type2.dd/\$CravedFiles/1