

# HackerFrogs Afterschool

## Disk Image Forensics Part 2

Class:  
Digital Forensics

Workshop Number:  
AS-FOR-06

Document Version:  
1.75

Special Requirements:  
- Registered account at  
[tryhackme.com](http://tryhackme.com)



# Welcome to HackerFrogs Afterschool!

This workshop is the sixth  
class for digital forensics.

In the last workshop, we  
learned about the following  
digital forensics concepts:



# The Sleuthkit Software

The Sleuthkit is a popular program used in digital disk forensics, and it includes several useful commands for interacting with disk image files, including...



# The MmLs Command

```
theshyhat-picoctf@webshell:/tmp/...theshyhat$ mmls disk.img
DOS Partition Table
Offset Sector: 0
Units are in 512-byte sectors
```

	Slot	Start	End	Length	Description
000:	Meta	0000000000	0000000000	0000000001	Primary Table (#0)
001:	-----	0000000000	0000002047	0000002048	Unallocated
002:	000:000	0000002048	0000204799	0000202752	Linux (0x83)

The MmLs command displays the media management (Mm) of a disk image file in list (Ls) format

# The FsStat Command

```
theshyhat-picocftf@webshell:/tmp/...theshyhat$ fsstat -o 2048 disk.flag.img  
FILE SYSTEM INFORMATION  
-----  
File System Type: Ext4  
Volume Name:  
Volume ID: 8e023955b4e7dab7e04b7643076ccf0f
```

The FsStat command is used to display statistics (Stat) associated with a filesystem (Fs)

# The Fls Command

```
theshyhat-picocftf@webshell:/tmp/...theshyhat$ fls -f ext4 -o 2048 -r disk.flag.img  
d/d 11: lost+found  
r/r 12: ldlinux.sys
```

The Fls (Filesystem Ls) command is used to list out files and directories within a specified filesystem

# The lcat Command

```
theshyhat-picoctf@webshell:/tmp/...theshyhat$ lcat -f ext4 -o 360448 disk.flag.img 2371
```

picoCTF{0x7f1\_0x0f0\_0x0f0\_0x0f0}

```
theshyhat-picoctf@webshell:/tmp/...theshyhat$ █
```

The lcat (inode cat) command is used to read specific files in a disk partition according to its inode number

# This Workshop's Topics

- Digital Disk Forensics with Autopsy
- Advent of Cyber 2023: Day 24 Challenge
  - Disk Analysis & Autopsy Challenge



# Autopsy Forensics Software

Autopsy is the GUI Implementation of the Sleuthkit, and it allows users to view the contents of disk image files in a much more intuitive manner

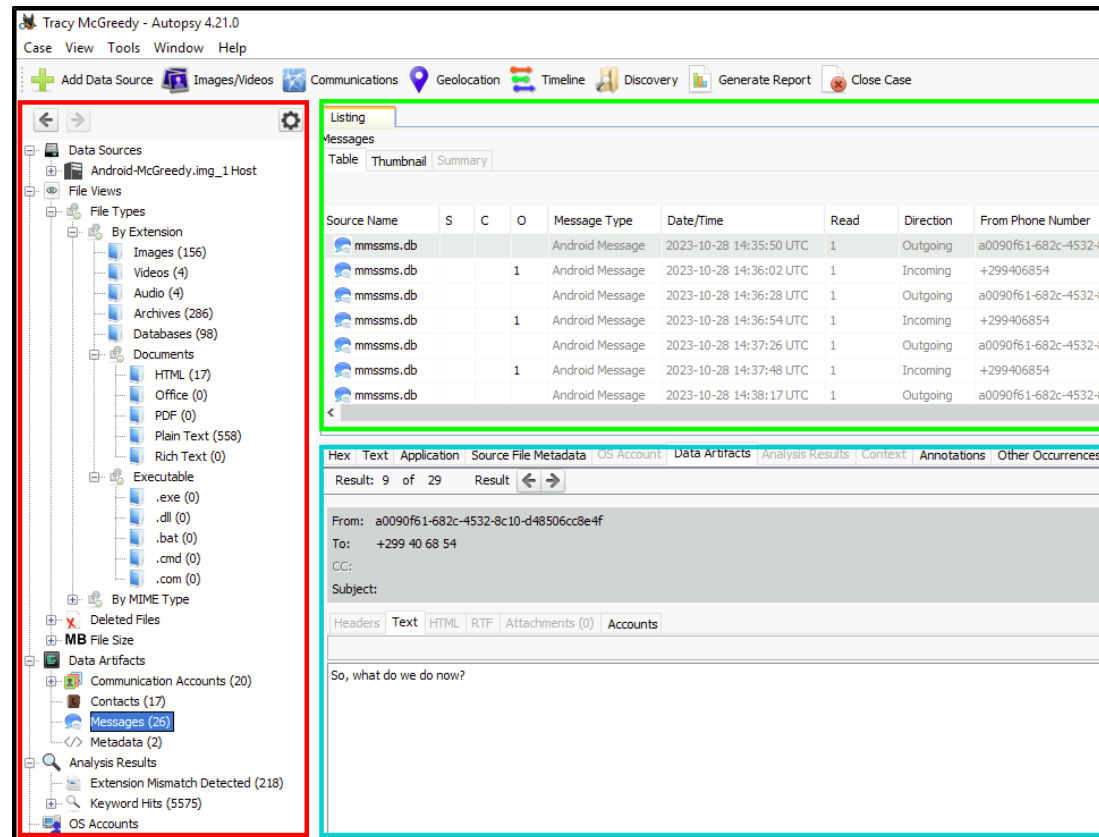


# TryHackMe Advent 2023 Challenge

Let's start our look at Autopsy with an easy challenge from the TryHackMe Advent 2023 event:

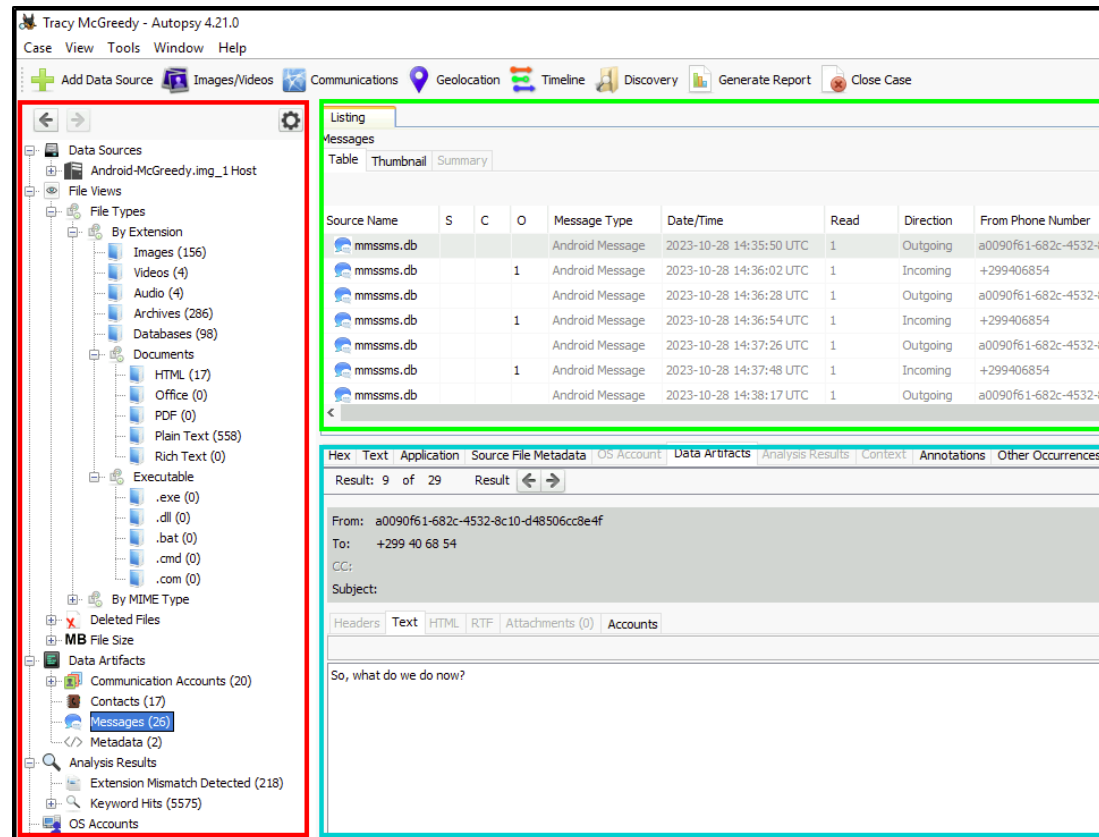
<https://tryhackme.com/room/adventofcyber2023>

# Views in the Autopsy UI



There are three major views to pay attention to in Autopsy

# Views in the Autopsy UI



The Tree Viewer (red)

# Views in the Autopsy UI

Tracy McGreedy - Autopsy 4.21.0

Case View Tools Window Help

Add Data Source Images/Videos Communications Geolocation Timeline Discovery Generate Report Close Case

**Data Sources**

- Android-McGreedy.img\_1 Host
- File Views
  - By Extension
    - Images (156)
    - Videos (4)
    - Audio (4)
    - Archives (286)
    - Databases (98)
    - Documents
      - HTML (17)
      - Office (0)
      - PDF (0)
      - Plain Text (558)
      - Rich Text (0)
    - Executable
      - .exe (0)
      - .dll (0)
      - .bat (0)
      - .cmd (0)
      - .com (0)
  - By MIME Type
  - Deleted Files
  - MB File Size
- Data Artifacts
  - Communication Accounts (20)
  - Contacts (17)
  - Messages (26)
  - Metadata (2)
- Analysis Results
  - Extension Mismatch Detected (218)
  - Keyword Hits (5575)
- OS Accounts

**Listing**

Messages

Table Thumbnail Summary

Source Name	S	C	O	Message Type	Date/Time	Read	Direction	From Phone Number
mmssms.db				Android Message	2023-10-28 14:35:50 UTC	1	Outgoing	a0090f61-682c-4532-8c10-d48506cc8e4f
mmssms.db			1	Android Message	2023-10-28 14:36:02 UTC	1	Incoming	+299406854
mmssms.db				Android Message	2023-10-28 14:36:28 UTC	1	Outgoing	a0090f61-682c-4532-8c10-d48506cc8e4f
mmssms.db			1	Android Message	2023-10-28 14:36:54 UTC	1	Incoming	+299406854
mmssms.db				Android Message	2023-10-28 14:37:26 UTC	1	Outgoing	a0090f61-682c-4532-8c10-d48506cc8e4f
mmssms.db			1	Android Message	2023-10-28 14:37:48 UTC	1	Incoming	+299406854
mmssms.db				Android Message	2023-10-28 14:38:17 UTC	1	Outgoing	a0090f61-682c-4532-8c10-d48506cc8e4f

**Hex Text Application Source File Metadata OS Account Data Artifacts Analysis Results Context Annotations Other Occurrences**

Result: 9 of 29 Result

From: a0090f61-682c-4532-8c10-d48506cc8e4f

To: +299 40 68 54

CC:

Subject:

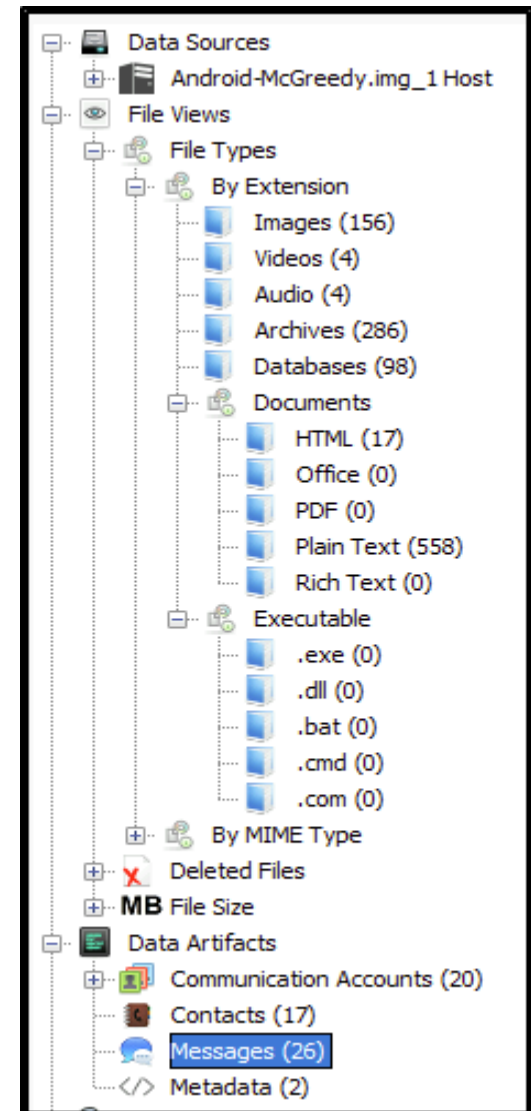
Headers Text HTML RTF Attachments (0) Accounts

So, what do we do now?








And the Contents Viewer (blue)

# The Tree Viewer

The Tree Viewer is the most general view, and allows us to browse the disk image contents by directory tree or by sorted categories created by Autopsy plugins










# The Results Viewer

Listing									
Messages									
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The Results Viewer is where we look after we've selected an item from the Tree Viewer, and it provides more information in a list

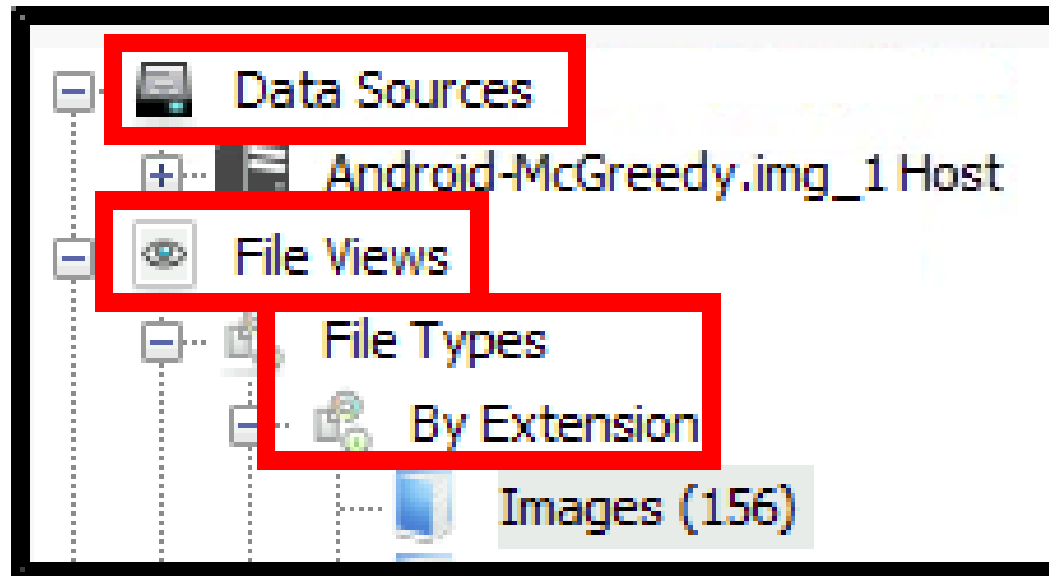
# The Contents Viewer

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The Contents Viewer is where we can inspect individual files

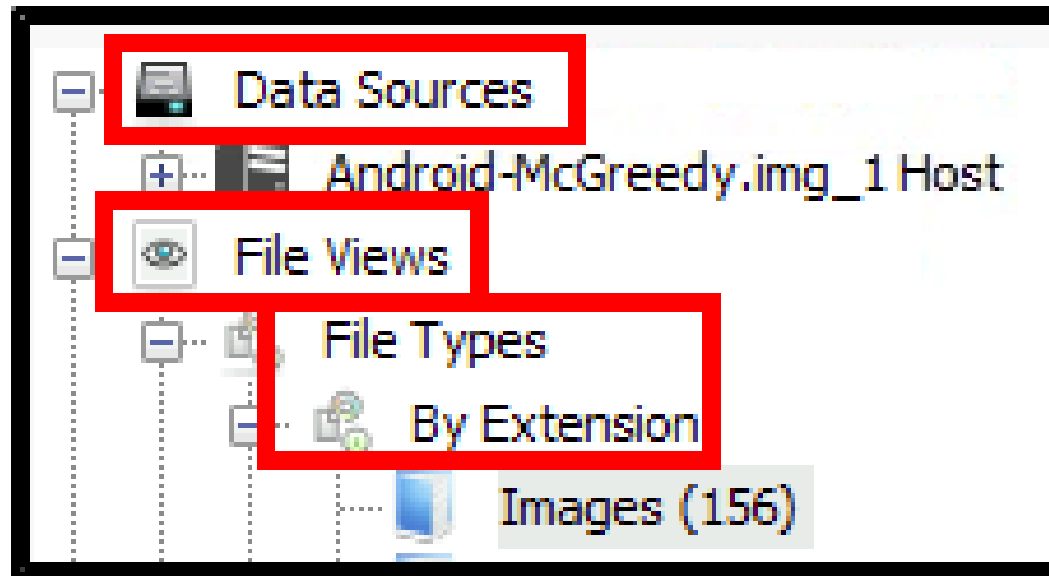


# Inspecting Photos



The first question from the task requires us to look at photo files

# Inspecting Photos



We can access photos in Autopsy by selecting **Data Sources -> File View -> File Types -> By Extension -> Images**

# Viewing Contacts



Next we need to check the contacts on the image

# Viewing Contacts



We need to access **Data Artifacts** ->  
**Communication Accounts** -> **Contacts**

# Viewing SMS Messages



We navigate to **Data Artifacts** ->  
**Communication Accounts** -> **Messages**

# TryHackMe Disk Analysis and Autopsy

We can practice more with this next TryHackMe room

<https://tryhackme.com/room/autopsy2ze0>

# Summary



Let's review the digital forensics concepts we learned in this workshop:

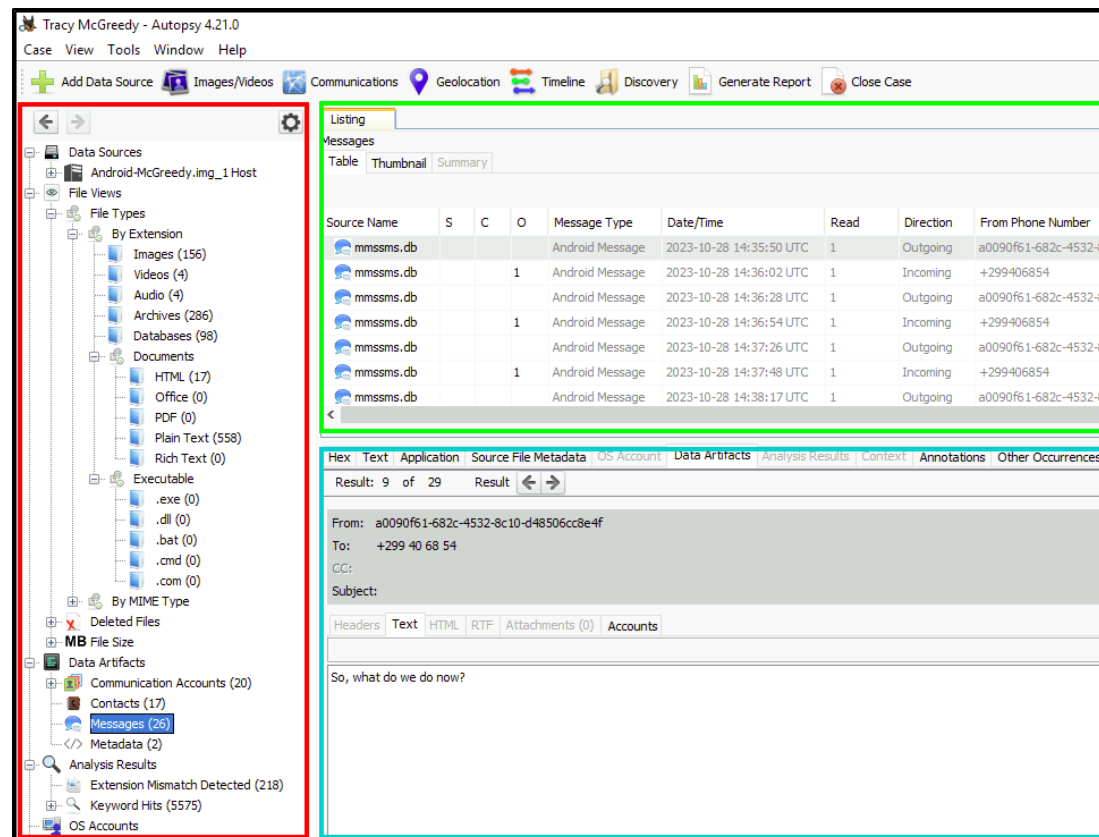
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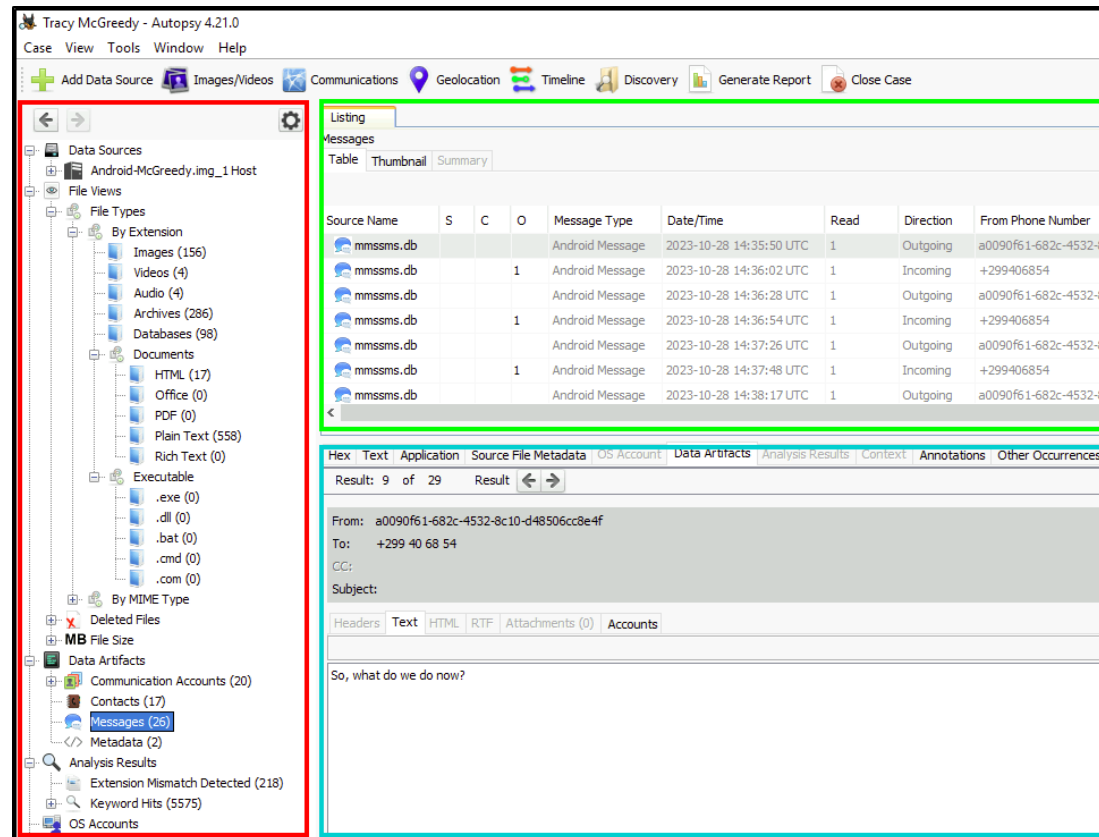


# Views in the Autopsy UI



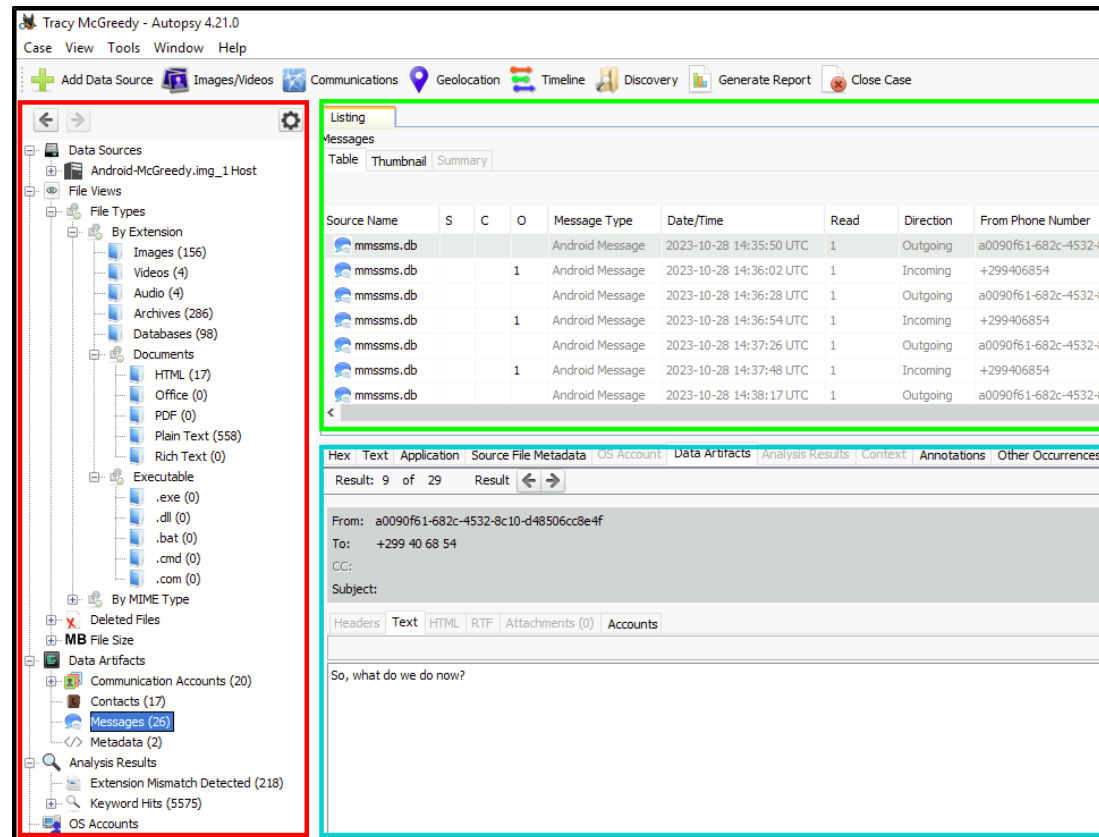
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# Views in the Autopsy UI



The Tree Viewer (red)

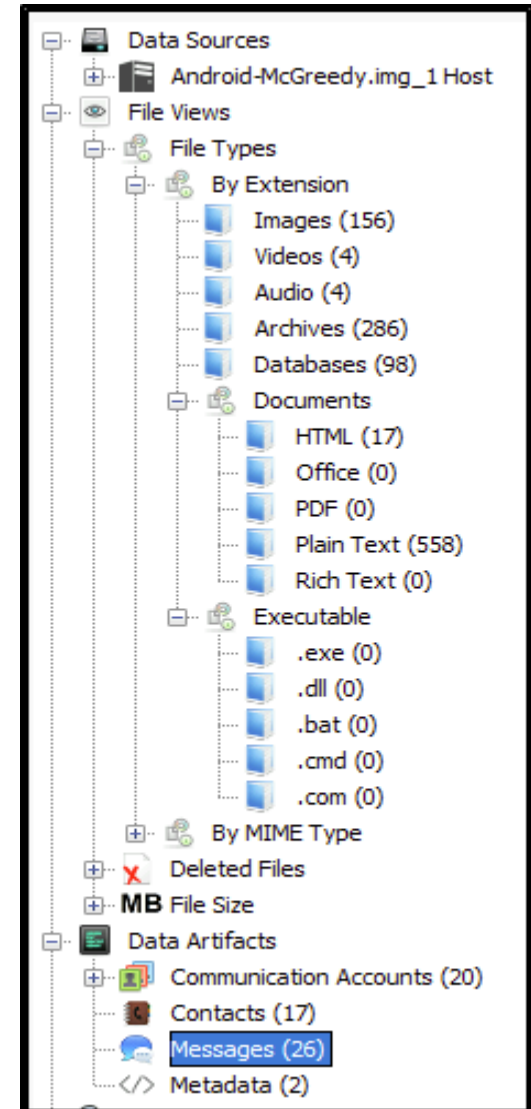
# Views in the Autopsy UI










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The Contents Viewer is where we can inspect individual files

# What's Next?

In the next HackerFrogs Afterschool digital forensics workshop, we'll learn how to investigate memory forensics files with Volatility!



# Extra Credit

Looking for more study material on this workshop's topics?

See this video's description for links to supplemental documents and exercises!





# Until Next Time, HackerFrogs!

