# HackerFrogs Afterschool Disk Image Forensics Part 1

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Class:
Digital Forensics
```

Workshop Number: AS-FOR-05

Document Version: 1.75

Special Requirements:

- Registered account at tryhackme.com



## Welcome to HackerFrogs Afterschool!

This workshop is the fifth class for digital forensics.

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



### What is Digital Disk Forensics?



Digital disk forensics is the examination and analysis of information stored on digital disks, such as hard drives (HDD), USB drives, or any other type of storage media.

## Digital Disk Forensics

Disk forensics is often used in cybersecurity incident response to analyze and identify devices that may have been compromised in security incidents.



## **Autopsy Forensics Software**

The Sleuth Kit is a popular program used in digital disk forensics, and we can access it from the PicoCTF webshell



## **Autopsy Forensics Software**

We'll be learning some basic operations of The Sleuth Kit in this workshop to learn digital disk forensics



#### PicoCTF: Sleuthkit Intro

Let's get acquainted with the Sleuthkit with this PicoCTF challenge

https://play.picoctf.org/practice/challenge/301? page=1&search=sleuth

#### 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
                                          Length
                                                       Description
                             End
                                                       Primary Table (#0)
               0000000000
000:
     Meta
                                          0000000001
                             000000000
                                                       Unallocated
               000000000
                             0000002047
                                          0000002048
001:
               0000002048
                             0000204799
                                          0000202752
                                                       Linux (0x83)
002:
      000:000
```

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

#### The MnLs Command

```
theshyhat-picoctf@webshell:/tmp/...theshyhat$ mmls disk.img
DOS Partition Table
Offset Sector: 0
Units are in 512-byte sectors
      Slot
                Start
                                          Length
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                             0000002047
                                          0000002048
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               0000002048
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                                          0000202752
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002:
     000:000
```

We can see where the partition starts (offset in bytes), where the partition ends, and the length (size in bytes) of the partition

## PicoCTF: Sleuthkit Apprentice

Let's learn more Sleuthkit commands with this PicoCTF challenge

https://play.picoctf.org/practice/challenge/300? page=1&search=sleuth

#### The FsStat Command

```
theshyhat-picoctf@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 FsStat Command

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

To use this command, we'll need to supply the byte offset of the disk partition (-o), and the name of the disk image

#### The Fls Command

```
theshyhat-picoctf@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 Fls Command

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

To run this command, we need the format of the disk partition (-f), the offset of the disk partition (-o), run it recursively (-r), and supply the disk image name

#### The Icat Command

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

#### The Icat Command

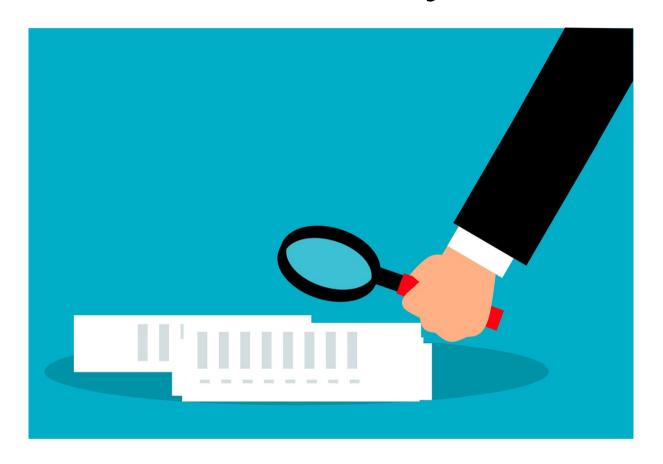
To use the command, we need to supply the format of the disk partition (-f), the offset of the disk partition (-o), and finally, the name of the disk image and the inode number (disk.flag.img 2371)

## PicoCTF: Operation Orchid

Let's use all the Sleuthkit command we've learned so far with this PicoCTF challenge

https://play.picoctf.org/practice/challenge/285? page=1&search=orc

## Summary



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

## **Autopsy Forensics Software**

The Sleuth Kit 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

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Offset Sector: 0
Units are in 512-byte sectors
      Slot
               Start
                                          Length
                                                       Description
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               0000000000
000:
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------File System Type: Ext4
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The FsStat command is used to display statistics (Stat) associated with a filesystem (Fs)

#### What's Next?

In the next HackerFrogs Afterschool digital forensics workshop, we'll use a different program to look at disk image files, in a more intuitive way!



#### 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!

