Clue 2: The Lay of the Land

`pwd`

What if we get lost and need to know where we are? Just type `pwd` (print working directory). This should print something like this:

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`/home/user/scavenger-hunt/clues/123456`

We are five folders deep, in a folder named `123456`.

`cd`

Change directory is extremely useful, but it can also be confusing. We already saw how you can move up one directory (`cd ..`) or down one directory (`cd [dir]`). You can move up or down any number of directories in a single command like this (won't actually work here):

```
cd ../../../one/two/
```

You would navigate up 3 directories relative to where you are, then down into directory one and then two. This is known as a relative path: it depends on where you start where you will end up. The other way to change directories is with absolute paths. Try this:

```
cd /
```

Explore the file system from the root path using `ls` and `cd`.

Find Clue 3

To find the next clue, go to the `/usr` directory and count the number of subdirectories. Use this as your hint to locate the next clue. Type:

```
python3 next_clue.py [secret number] [next clue number] [hint]
```

`less`

Less is a program that allows you to view files in a terminal. Unlike `cat`, you can scroll through the file using up, down, page up, *etc*. Use `less` to navigate clue 3.

Clue 3: Humans vs. Machines

Binary vs. Text

Binary is a number system using only 0 and 1. Eight bits make a byte, and there are 256 possible bytes. Hexadecimal (`hex`) uses sixteen digits, including A-F. For example, 42 is `0x2A` in hex.

`/bin` and `/etc`

`/bin` contains binaries. You can explore these with `cat`, `less`, or `hexdump`. `/etc` is mainly for configuration files, such as `/etc/fstab`.

Find Clue 4

Your next hint is found in the file `/etc/hostname`. The hostname of your computer is your hint.

Clue 4: Moving Day

Making Space

Create a new directory and save clues here:

```
mkdir saved-clues
cp clues/09269/clue saved-clues/clue2
cp clues/12345/clue saved-clues/clue3
```

`mv` and Options

Rename directories using `mv` without overwriting existing folders.

Find Clue 5

Use the `mv` manpage to find an option that prevents overwriting.

Clue 5: Is There an Echo in Here?

`echo`

Use `echo` to display messages or environment variables like `PATH`.

Redirect

You can redirect output to create or modify files:

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```
echo My text > filename.txt
```

Find Clue 6

Your next hint is the first path listed in your `PATH`.

Clue 6: Which `which` is which?

`which`

Use `which` to locate binaries in your `PATH`, like:

```
which mv
```

Find Clue 7

The next hint is the location of the `touch` program.

Clue 7: Make Me a Sandwich

`sudo`

Use `sudo` for root permissions. Try installing `vim` with:

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```
sudo apt-get install vim
```

Getting the Password

The password is found among bad credentials in the Mirai malware source. Another option is to check the Dockerfile.

Find Clue 8

Your hint is in `/root/secret`. If you can't access it, use `denied`.

Clue 8: Counting Words

`wc`

Use `wc` to count lines, words, or characters in a file:

```
wc README.md
```

Find Clue 9

Your next clue is the number of words in `/usr/share/dict/words`.

Clue 9: Searching High and Low

`grep`

Use `grep` to search files:

```
grep keyword filename
```

Regular Expressions

Regular expressions allow flexible pattern matching. For example:

```
grep ^sand /usr/share/dict/words | wc -l
```

Clue 10: Pipes

Piping Information

Pipe output from one command as input to another:

```
ls | wc -w
```

Sort

Sort data with `sort`, and try reverse sorting with `-r`.

Find Clue 11

List files in `/bin` and sort them by size in descending order. Use the options you find as the hint.

Clue 11: The Final Frontier

Finding the Final Clue

Use everything you've learned to find the final clue.

Clue 12: Success!

Congratulations on finding all clues! This is the beginning of your Linux learning journey.

Challenges

1. **Challenge 0.1**: Find the password for `ubnt`.
2. **Challenge 0.2**: Submit your bash history to show you found all clues.
3. **Challenge 0.3**: Write a script to find all clues automatically.