

Intro to Bash, CTFs

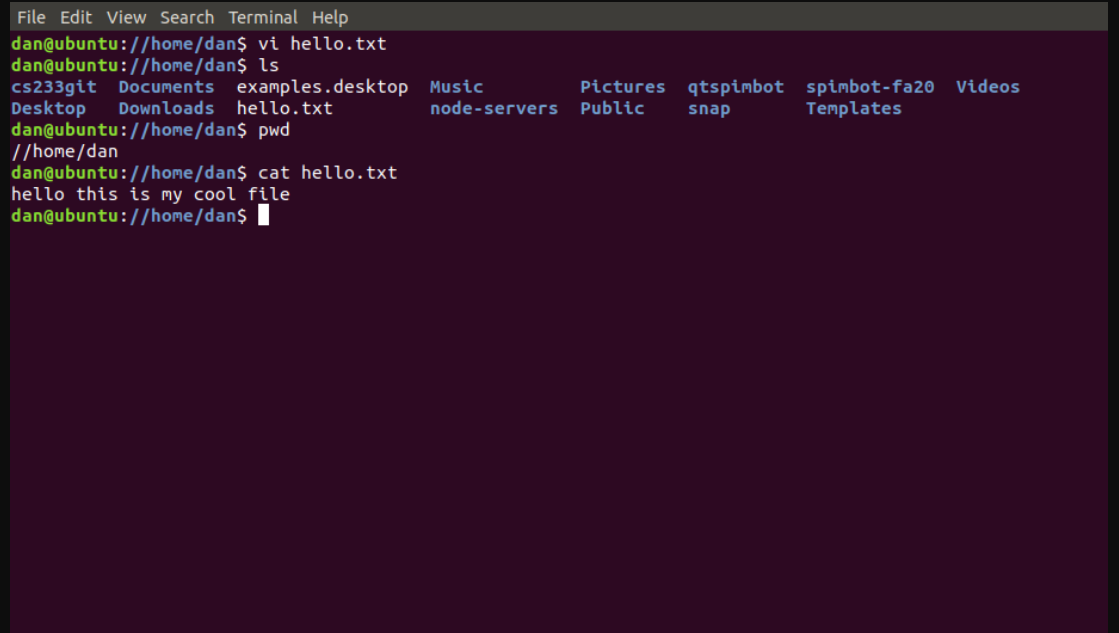
WiCyS Illinois

Workshop overview

- Learn a little about what Bash/the command line is
- Walk through intro CTF problems teaching you some useful Bash commands

The command-line interface (CLI): what is it?

- Text-based way to interact with a computer
- Can be to interact with your operating system
- Can be application-based
 - Ex: could download SQL shell

A screenshot of a terminal window with a dark purple background. The window has a menu bar at the top with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The terminal shows a series of commands and their outputs. The prompt is 'dan@ubuntu: //home/dan\$'. The commands and outputs are: 'vi hello.txt' (no output), 'ls' (output: 'cs233git Documents examples.desktop Music Pictures qtspimbot spimbot-fa20 Videos Desktop Downloads hello.txt node-servers Public snap Templates'), 'pwd' (output: '//home/dan'), and 'cat hello.txt' (output: 'hello this is my cool file'). The final prompt is 'dan@ubuntu: //home/dan\$' followed by a cursor.

```
File Edit View Search Terminal Help
dan@ubuntu: //home/dan$ vi hello.txt
dan@ubuntu: //home/dan$ ls
cs233git Documents examples.desktop Music Pictures qtspimbot spimbot-fa20 Videos
Desktop Downloads hello.txt node-servers Public snap Templates
dan@ubuntu: //home/dan$ pwd
//home/dan
dan@ubuntu: //home/dan$ cat hello.txt
hello this is my cool file
dan@ubuntu: //home/dan$
```

The command-line interface (CLI): what is it?

- Some things you will probably use the CLI for:
 - Editing code
 - Compiling code
 - Making new files
 - Automating something to run
 - Downloading new packages
 - Watching movies (`telnet towel.blinkenlights.nl`)
 - Hacking

The command-line interface (CLI): what is it?

- **Not all CLIs use the same language.**
- Some common shells used
 - Bash
 - Powershell
 - Zsh

Basic Bash commands

`ssh -p <port_number> <username>@<address>`

- Used to log in to a remote machine

`pwd` (print working directory)

- Prints path to current directory

`ls` (list)

- Lists files in the current directory
- Variations: `ls -a` (list all)

`cd <path_name>` (change directory)

- Variations: `cd ..`

`cat <file_name>` (short for concatenation)

- Prints content of the file

Bash commands for searching

* (wildcard)

- e.g. *.txt

find

- eg. find -name *filename*.txt

grep (global regular expression print)

- grep <string> <file_name>
- e.g. grep "member" member_list.txt

Editing files

- Different editors exist
- Two popular ones: vim*, emacs
 - Vim cheatsheet: <https://www.fprintf.net/vimCheatSheet.html>
 - Emacs
cheatsheet: <https://www.gnu.org/software/emacs/refcards/pdf/refcard.pdf>

*To make vim have more features/better UX, you can edit your vimrc or look at other work like <https://github.com/amix/vimrc>

A terminal you can play with: EWS

- SSH: you can log into a remote machine and access its command-line, if you don't have a local place to use Bash
- To SSH into your UIUC-issued machine:
 - `ssh OUR_NETID@linux.ews.illinois.edu`
- Alternatively, try the shell at <https://cs-education.github.io/sys/#VM>

Bandit wargames

- Progressive levels to learn to apply Bash commands
- Each level's solution gives the key for the next level

<https://overthewire.org/wargames/bandit/>

Level 0

The goal of this level is for you to log into the game using SSH. The host to which you need to connect is **bandit.labs.overthewire.org**, on port **2220**. The username is **bandit0** and the password is **bandit0**. Once logged in, go to the Level 1 page to find out how to beat Level 1.

Level 0 --> Level 1

The password for the next level is **stored in a file called `readme` located in the home directory**. Use this password to log into bandit1 using SSH. Whenever you find a password for a level, use SSH (on port 2220) to log into that level and continue the game.

Level 1 --> Level 2

The password for the next level is **stored in a file called "-"** located in the **home directory**.

Level 2 --> Level 3

The password for the next level is **stored in a file called spaces** in this filename located in the **home directory**.

Level 3 --> Level 4

The password for the next level is stored in a **hidden file** in the **inhere directory**.

Level 4 --> Level 5

The password for the next level is **stored in the only human-readable file** in the **inhere directory**. Tip: if your terminal is messed up, try the “reset” command.