CS-143A
Principles of Operating Systems
Discussion 01

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In this episode...

- Connecting with Andromeda.
- Linux. A survival guide.

Andromeda

- Server with Linux managed by the ICS.
- You must have an “@ics.uci.edu” account.
- Your server number is:

```
ser_num = (<ucinetid>%75)+1
```

- The server you will connect is:

```
andromeda-<ser_num>.ics.uci.edu
```

How to connect to it

We need a **s**ecure **sh**ell client (ssh).

- In Linux: integrated.
- In Windows: integrated (win10), or Putty.
- In Mac-OS: integrated.

```
ssh username@andromeda-XX.ics.uci.edu
```

Welcome to Linux, now what?

A couple of notes:

- `/` is the root directory, everything is under it.
- `~/` is your home directory, it is an alias for `/home/yourUsername/`
- `./` is the current directory.
- `../` is the parent directory.
- Passwords are invisible.
- Case matters, “A” and “a” are different.

Some commands

`ls [options] [dir]`

- List information about the FILEs (the current directory by default).
- `-R`: recursive.
- `-l`: long format, shows info of each file
- `-a`: show all files, including hidden files, those that start with a “.”
- `-h`: file sizes in a nice way

Some commands

`cd [dir]`

Change the shell working directory.

- If no directory is given, it changes to the home directory.

Some commands

pwd

Print the name of the current working directory.

Some commands

`mkdir <dir_name>`

Create the directory <dir_name>, if it does not already exist.

Some commands

```
touch -c <filename>
```

Creates a new empty file.

Some commands

`cp <source> <dest>`

Copy the source file to the destination.

- Example:

```
cp myFile.txt ./aDirectory/newFile.txt
```

Some commands

`mv <source> <dest>`

Move or rename the source file to the destination file.

- Example moving:

```
mv myFile.txt ./aDirectory/newFile.txt
```

- Example renaming:

```
mv myFile.txt newName.txt
```

Some commands

```
rm [op] <filename>
    <dir>
```

delete a file in the specified directory. If no directory is given, uses the current one.

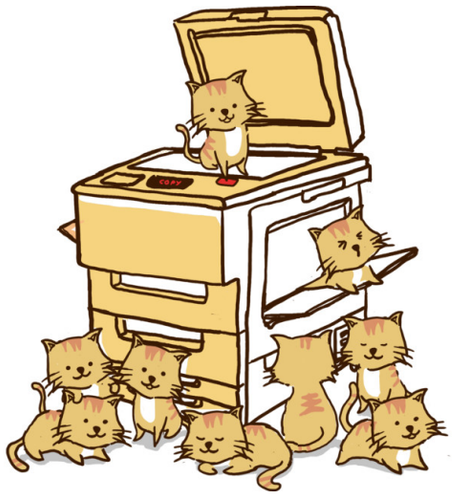
- `-r`: recursive.
- `-d`: remove empty directories.
- `-i`: interactive, ask before each file.

DO NOT TRY THIS: `rm -rd ./`

Some commands

`cat [filename]`

Print the content of a file to standard output. If no file is given, then prints what comes from standard input (most of the cases the keyboard)



Some commands

`head <filename>`

Print the first 10 lines of the filename to standard output.

- `-n X`: prints the first X lines

Some commands

`tail <op> <filename>`

Print the last 10 lines of the filename to standard output.

- `-n X`: prints the last `X` lines

Some commands

`grep <pattern> [file]`

Search for <pattern> in the given file.

- If no file is given, grep searches recursively in the working directory.
- Using `-e <pattern>`, grep interprets the pattern as an extended regular expression.

Some commands

```
find -name <filename>
     <dir>
```

Find a file named <filename> in the directory <dir>

- There is a lot of other options.

Some commands

`echo “<message>”`

Print the <message> in the standar output

- -e: enable interpretation of backslash escapes, example:

```
echo -e “first line\nsecond line”
```

Other useful tools

“>” and “<”

Redirect the standard input or output.

- Example: `ls -l > myContent.txt`
- Example: `cat < myContent.txt`

Other useful tools

“>>”

Append.

- Example:

```
echo “Dear diary” > log.txt
echo “Today I...” >> log.txt
```

Other useful tools

“ | ”

Pipe, passes the output of a command to another as input.

- Example:

```
ls -R | grep “myFile”
```

Editors

emacs

- C = Ctrl, M = Alt
- C-x C-f visit (open) a file
- C-n next line
- C-p previous line
- C-b back (move left)
- C-f forward (move right)
- C-a beginning of line
- C-e end of line
- C-x C-s save
- C-z suspend (minimize)
- C-x C-c close (exit)
- C-space toggle selection
- M-w copy
- C-w kill (cut)
- C-y yank (paste)
- C-/ undo
- C-s search
- C-x 2 split windows horizontally
- C-x 3 split windows vertically
- C-x 0 clear this splitting
- C-x 1 clear all splitting
- C-h getting help

Copying things

```
scp <source> <destination>:<dir>
```

Copy files from one machine to another through ssh. Easier if you run it in your local machine

Example local to remote:

```
scp ~/localFile peter@andromeda-XX.ics.uci.edu:~/remoteFile
```

Example remote to local:

```
scp peter@andromeda-XX.ics.uci.edu:~/remoteFile ~/localFile
```