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# The Console Toolkit

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## HS 2018

# Why the console? It's already current year!

- People ask for it
- Still an excellent interface for complex tasks
- Many advanced tools only available on the command line
- Can be much faster than GUI tools
- Allows easy remote access to other computers
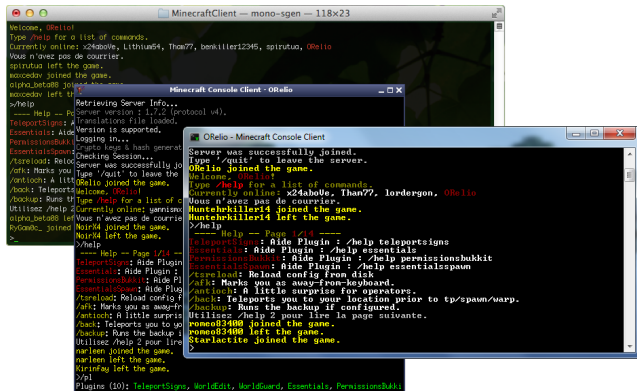- Skills portable to every Unix-like system

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## Course outline

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# What is the console

- Keyboard-only interface to your computer
- Related terms: *console*, *terminal*, *shell*, *bash*, *command prompt*, *command line interface*

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# The 70s were interesting times, or so I'm told

**Unix dogma: *Everything is a file!***

- Data files
- Directories (or "folders")
- Storage devices
- Keyboards
- Printers
- Cameras
- *But not network sockets . . .*

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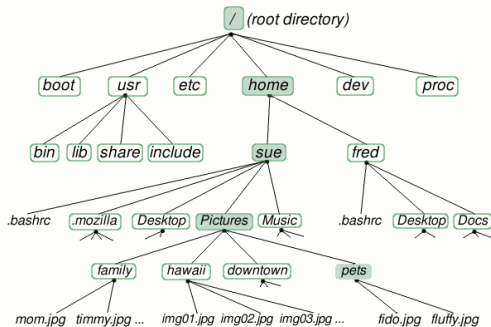
# File system



- File system organized as tree
- Everything under /, the root directory
- In the console, you will be at some point in the tree, the *working directory*

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# Working directory

- Where am I? → `pwd`
- Present working directory
- Also sometimes directly shown in the prompt
- The tilde ~ means: *this user's home directory* (abbreviation)

```
[luke@host ~]$ pwd
/home/luke
[luke@host ~]$
```

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# Listing files

- What is in here? → `ls`
- "list"

```
[luke@host ~]$ ls
Desktop
Documents
Downloads
Music
Pictures
Videos
cat1.jpg
cat2.jpg
[luke@host ~]$
```

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# Go somewhere else

- I want to go to some other directory!
  → `cd`
- "Change directory"
- Absolute path: Whole path from the root, like:
  `/home/luke/pictures/cat1.png`
- Relative path: Path relative to the current working directory, like
  `pictures/cat1.png`

```
[luke@host ~]$ cd
[luke@host ~]$ pwd
/home/luke
[luke@host ~]$ cd /sys
[luke@host sys]$ pwd
/sys
[luke@host sys]$ cd ~
[luke@host ~]$ pwd
/home/luke
[luke@host ~]$ cd pictures/
[luke@host pictures]$ pwd
/home/luke/pictures
```

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## Commands & arguments

`ls -a --human-readable /home/luke/pictures`

command

single letter option

long option

arguments

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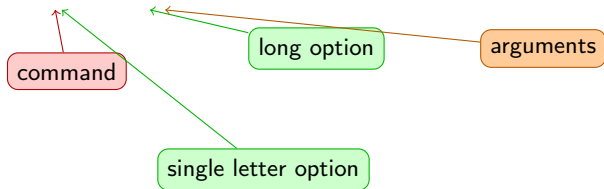
# Getting help

- Where can I find out what options are available?
- Manual pages!
- `man`
- E.g.: `man ls`

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```
LS(1)                        User Commands                        LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List information about the FILEs (the current directory by
       default). Sort entries alphabetically if none of -cftuvSUX
       nor --sort is specified.

       Mandatory arguments to long options are mandatory for short
       options too.
```

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```
      -a, --all
            do not ignore entries starting with .

      -A, --almost-all
            do not list implied . and ..

      --author
            with -l, print the author of each file

      -b, --escape
            print C-style escapes for nongraphic characters

      --block-size=SIZE
            with -l, scale sizes by SIZE when printing them; e.g.,
            '--block-size=M'; see SIZE format below
```

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# Tab completion

- Hit ⟶ to automatically complete a word you are typing (Command, file, ...)
- Hit ⟶ twice to show all possible options
- Extremely useful terminal feature! Use always!

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# Command History

- Scroll up in your command history by pressing the ↑ key
- Press ctrl + r to search the history

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# Showing text files

- Output a file's contents to the console with cat
- Used to stand for "concatenate"

```
[luke@host ~]$ cat diary
Dear diary, today I downloaded
cat pictures from the internet.
[luke@host ~]$
```

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# Reading long files

- What if the text doesn't fit on the terminal?
- Use the `less` file browser
- Scroll up and down with ⎡↑⎤, ⎡↓⎤
- Exit with ⎡q⎤

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# Copying files

- Copy command: `cp`
- Syntax: `cp source destination`

```
[luke@host ~]$ cp diary diary_copy
[luke@host ~]$ cat diary_copy
Dear diary, today I downloaded
cat pictures from the internet.
[luke@host ~]$
```

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# Moving files

- Move command: `mv`
- Syntax: `mv source destination`
- Useful to rename files

```
[luke@host ~]$ mv diary secret_diary
[luke@host ~]$ cat secret_diary
Dear diary, today I downloaded
cat pictures from the internet.
[luke@host ~]$
```