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- ▶ The standard interactive shell is `bash`.
- ▶ There are others, though! `zsh` and `fish` are both popular.

# Navigating the filesystem

- ▶ `ls` **List** files. You can give it a directory to list.
  - ▶ `-l` Display the output in a detailed **list**, one line per file.
  - ▶ `-h` Display file sizes in a **human-readable** format.
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- ▶ `cd DIRECTORY` **C**hange **d**irectory.
  - ▶ `cd` without a directory takes you `$HOME`.
  - ▶ `cd -` takes you to the previous directory you were in.

# Rearranging files

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- ▶ `rm FILE` **R**emove one or more files.
  - ▶ `-f` **F**orcibly remove nonexistent files.
- ▶ `mkdir DIRECTORY` **M**akes a **d**irectory.
  - ▶ `-p` Makes every missing directory in the given **p**ath

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- ▶ `head [FILE]` Print lines from the top of a file or STDIN.
- ▶ `tail [FILE]` Print lines from the end of a file or STDIN.
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- ▶ `diff FILE1 FILE2` Shows **differences** between files.
  - ▶ **a/d/c** Added/Deleted/Changed.

# Redirecting IO

- ▶ Each program has three default IO streams:
  - ▶ STDIN: input, by default from the keyboard (`cin`).
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- ▶ `cmd1 | cmd2` Pipe STDOUT from `cmd1` into STDIN for `cmd2` .
- ▶ `cmd < input.txt` Funnel data from `input.txt` to STDIN for `cmd` .
- ▶ `cmd > output.txt` Funnel STDOUT from `cmd` into `output.txt` .

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- ▶ `cmd 2>&1` Funnel `STDERR` from `cmd` into `STDOUT`.

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- ▶ `cmd 2> err.txt` Funnel `STDERR` from `cmd` into `err.txt`.
- ▶ `cmd 2>&1` Funnel `STDERR` from `cmd` into `STDOUT`.
- ▶ `cmd &> all-output.txt` Funnel all output from `cmd` into `all-output.txt`
- ▶ Common usage: `cmd &> /dev/null` dumps all output to the bit bucket.

# Environment Variables

- ▶ Shells keep track of a lot of information in variables.
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- ▶ `echo $VAR` prints the value of a variable in the shell.
- ▶ You can get environment variable values in C++ with `getenv()`

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- ▶ `$EDITOR` Tells which editor you would prefer programs to launch for you.
- ▶ `$PS1` Customize your shell prompt!
- ▶ `~/.bashrc` runs every time you start `bash`, so you can `export` customizations there.

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- ▶ `alias sl=ls` runs `ls` when you type `sl`.

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  - ▶ `jobs` shows your running jobs.
  - ▶ `fg %2` starts job 2 in the foreground.
  - ▶ `kill PID` Kills a process. (You can do `kill %1 !`)
  - ▶ `killall command` Kills every process running `command`.

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- ▶ `man man` gives you the manual for the manual!