

# Notes 5

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## Commands for navigating the file system:

### ls

#### Usage

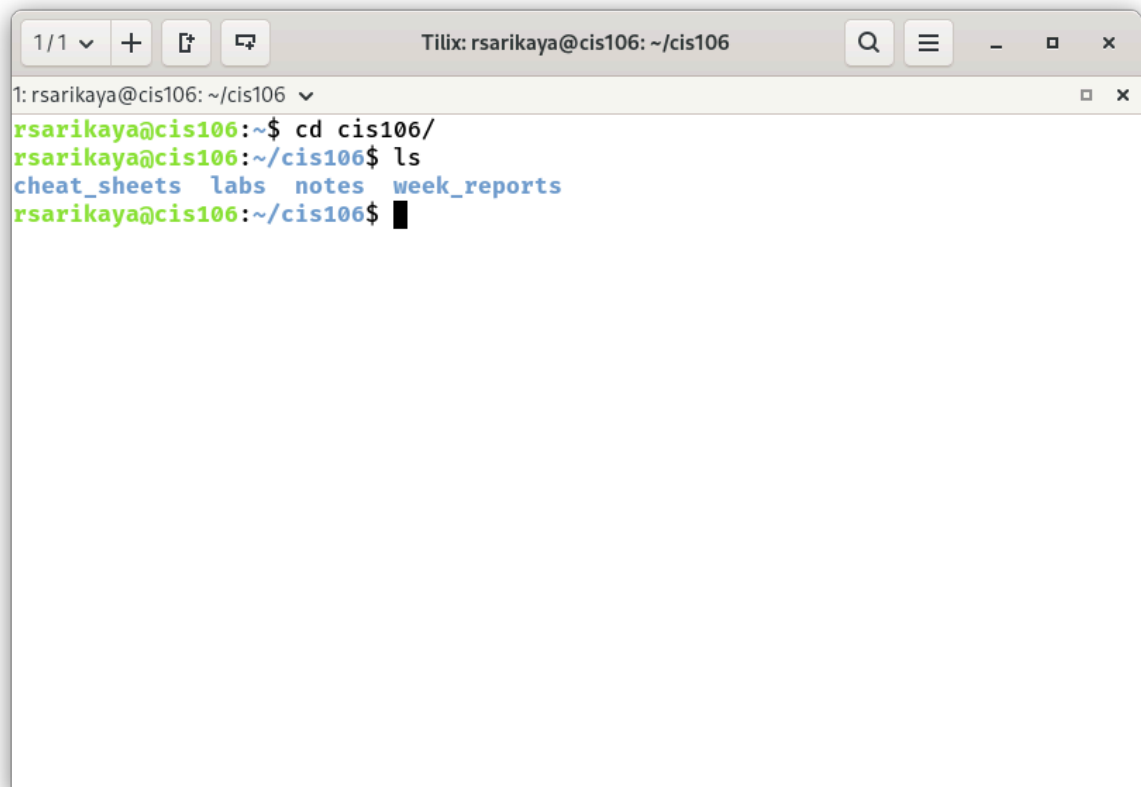
- ls is used for listing files and directories. By default it will list the current directory when no directory is specified. Listing means to see what is inside a directory.

#### Formula

- `ls + option + directory to list`

#### Examples

- See all the options of the ls command (extracted from the man page):
  - `ls --help`
- List the current directory:
  - `ls`
- List all the files including hidden files in current directory:
  - `ls -A`

A terminal window titled 'Tilix: rsarikaya@cis106: ~/cis106' showing a sequence of commands and their output. The user navigates to the 'cis106' directory and runs 'ls', which lists 'cheat\_sheets', 'labs', 'notes', and 'week\_reports'.

```
1/1 v + [icon] [icon] Tilix: rsarikaya@cis106: ~/cis106 [search] [menu] [window controls]
1: rsarikaya@cis106: ~/cis106 v
rsarikaya@cis106:~$ cd cis106/
rsarikaya@cis106:~/cis106$ ls
cheat_sheets labs notes week_reports
rsarikaya@cis106:~/cis106$
```

### pwd

#### Usage

- Print the name of the current working directory.

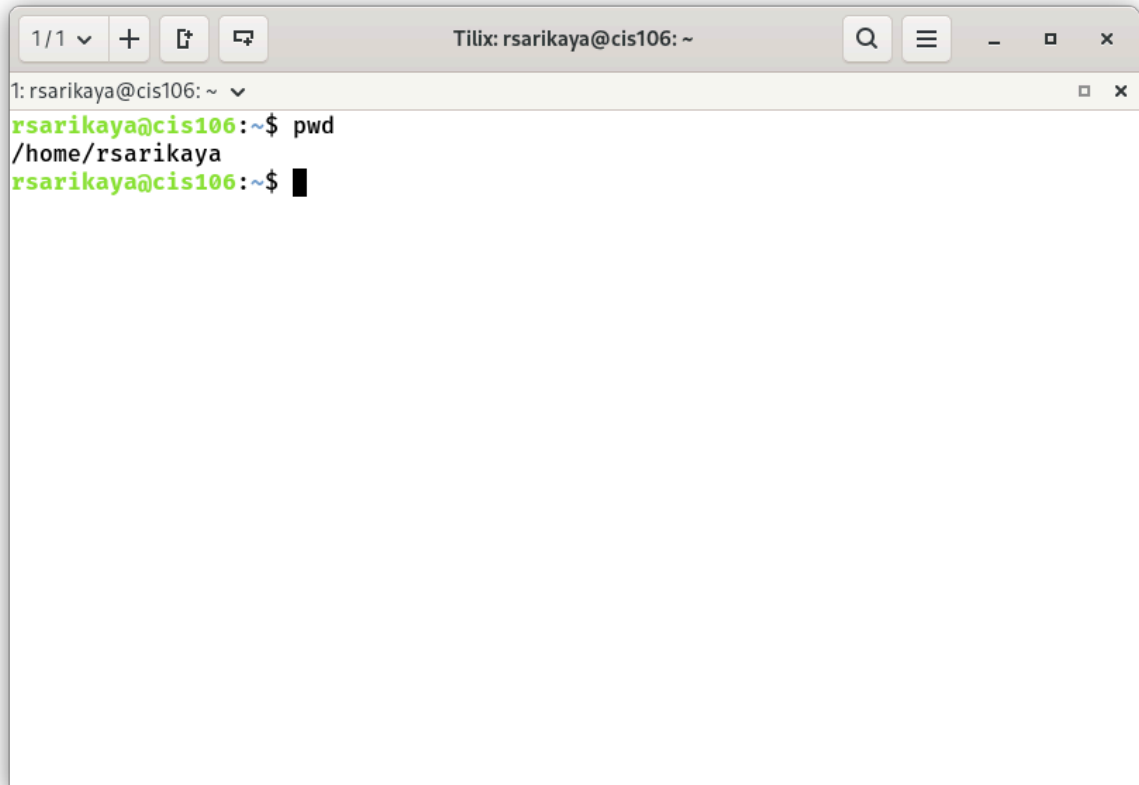
## Formula

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- `pwd`

### Examples

- Print the absolute path of current working directory
  - `pwd`



```
1/1 + [ ] [ ] Tmux: rsarikaya@cis106: ~ [ ] [ ] [ ] [ ]
1: rsarikaya@cis106: ~
rsarikaya@cis106: ~$ pwd
/home/rsarikaya
rsarikaya@cis106: ~$
```

## cd

### Usage

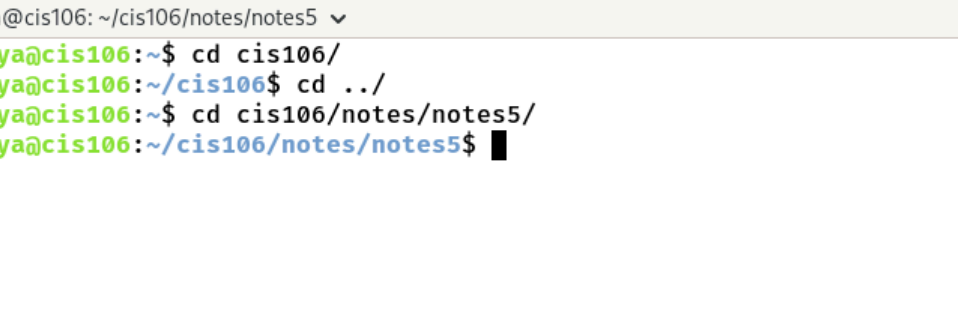
- Changes the current working directory. In other words, it moves you from one directory to another. By default, it will always send you to your home directory.

### Formula

- `cd + destination absolute path or relative path`

### Examples

- Change the current directory in shell.
  - `cd cis106/notes/notes5/`



The screenshot shows a terminal window with a title bar that reads "Tilix: rsarikaya@cis106: ~/cis106/notes/notes5". The terminal content shows a series of directory navigation commands and their outputs:

```
rsarikaya@cis106:~$ cd cis106/
rsarikaya@cis106:~/cis106$ cd ../
rsarikaya@cis106:~$ cd cis106/notes/notes5/
rsarikaya@cis106:~/cis106/notes/notes5$
```

The prompt changes from ~\$ to ~/cis106\$ after the first command, and back to ~\$ after the second command. The third command returns to the ~\$ prompt. The fourth line shows the prompt in the subdirectory ~/cis106/notes/notes5\$.

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## What is a variable?

- A variable is a named container that stores a value. Think of it like a labeled box. The label is the variable's name, and whatever you put inside the box is its value. This value can be text, a number, a file path, or other types of data. The power of a variable is that you can refer to its name in a script or command, and the system will use the value stored inside it.

## How do I use a variable?

- Using a variable typically involves two steps: setting it and referencing it.
  - Setting a Variable: You assign a value to a name.
    - In Linux/macOS Bash: `my_name="Alice"`
  - Referencing a Variable: You use the variable's name to retrieve its value. This is often called "variable expansion."
    - In Linux/macOS Bash: Use the `$` symbol. `echo $my_name` will output Alice.

## What is an environment variable?

- An environment variable is a special type of variable that is set in the shell (command-line environment) and is inherited by any programs or scripts that you start from that shell. They are used to configure the system's behavior and provide information to running processes.

### What is a user defined variable?

- A user-defined variable is any variable that you, the user, create in your script or command-line session for your own purposes. They are typically temporary and only available in the session or script where they were created.

## What is the root directory?

- The root directory is the top-most directory in a file system hierarchy. It is the starting point from which all other files and directories branch out. It is represented by a single forward slash (/).
  - On Linux and macOS: The entire file system has one root directory: /.

## What does “Parent Directory” mean?

- The parent directory is the directory that contains the current item (which could be a file or another directory). In a path, it is the directory one level up in the hierarchy.
  - Example: If the path is /home/user/Documents/report.txt, then the parent directory of report.txt is Documents. The parent directory of Documents is user.

## What does “Current working directory” mean?

- The current working directory (often abbreviated as CWD) is the directory in which you are currently working in your command-line terminal. Any commands you run (like creating a file or listing files) will be executed in the context of this directory, unless you specify a full path.
  - Command to check it: pwd (Linux/macOS/PowerShell) or cd (Windows Command Prompt).
  -

## What is an absolute path? Include an example

- An absolute path is the full, unambiguous address of a file or directory, starting from the root directory (/). It always points to the same location, regardless of your current working directory.
  - Example: /home/alice/Pictures/vacation.jpg
    - It starts from the root (/).
    - It specifies every directory leading to the file.
    - You can use this path from anywhere in the system to uniquely identify vacation.jpg.

## What is a relative path? Include an example

- A relative path is a path that is relative to your current working directory. It does not start with a root directory (/ or C:\). It uses special symbols:
  - . (a single dot): Represents the current directory.
  - .. (two dots): Represents the parent directory.
  - Example: Let's say your current working directory is /home/alice.
    - The relative path to vacation.jpg would be: Pictures/vacation.jpg or ../Pictures/vacation.jpg.

- To go up one level to the `/home` directory, you would use `...`

## What is the difference between “Your home directory” and “The home directory”?

- “Your home directory”: This refers specifically to the home directory of the user who is currently logged in. It's a personal workspace for that user.
  - Path: On Linux/macOS, it's typically `/home username` or `/Users/username`. On Windows, it's `C:\Users\Username`.
  - In Command Line: It is often represented by the tilde symbol (`~`). The command `cd ~` will always take you to your home directory.
- “The home directory”: This is a more general term that can be ambiguous without context. It could mean:
  1. The same as “your home directory.”
  2. The home directory of another specific user (e.g., “the home directory of the website's server user is `/var/www`”).
  3. The concept of a home directory in general.
- In summary: “Your home directory” is personal and specific to you. “The home directory” is a generic term that needs context to be precise. In most casual conversations, they are used interchangeably to mean your home directory. “Your home directory”: This refers specifically to the home directory of the user who is currently logged in. It's a personal workspace for that user.