

# A Taste of Linux

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Links

# Links

- Slides are at [cs50.ly/seminars/linux](https://cs50.ly/seminars/linux)
- Create a GitHub account at [github.com/join](https://github.com/join)
- Access CS50 IDE at [ide.cs50.io](https://ide.cs50.io)
- Commands are at [cs50.ly/seminars/linux/commands](https://cs50.ly/seminars/linux/commands)
- Discussion is at [cs50.ly/seminars/ed](https://cs50.ly/seminars/ed)

# What is Linux?

# What is Linux?

- Free and open source operating system
- Linux is everywhere (smartphones, cars, appliances, servers, supercomputers, ...)
- Linux is used by many software developers

# What is Linux?

- Linux distributions (aka distros):
  - Debian-based:
    - Debian
    - Ubuntu
    - ...
  - RPM-based:
    - CentOS
    - Fedora
    - ...
  - Pacman-based:
    - Arch
    - ...
  - ...

# What Is the Command Line?

# What Is the Command Line?

A way of interacting with a software by issuing textual commands



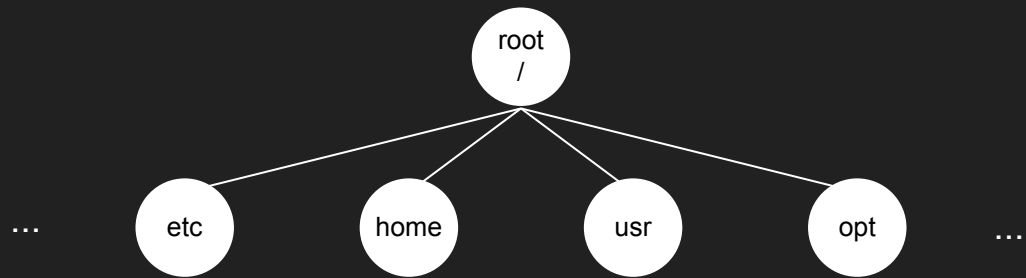
# Why Use the Command Line?

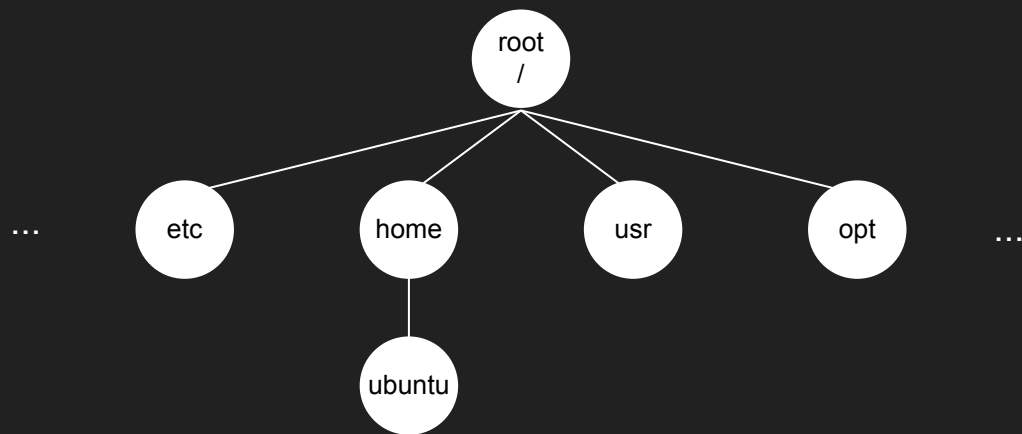
# Why Use the Command Line?

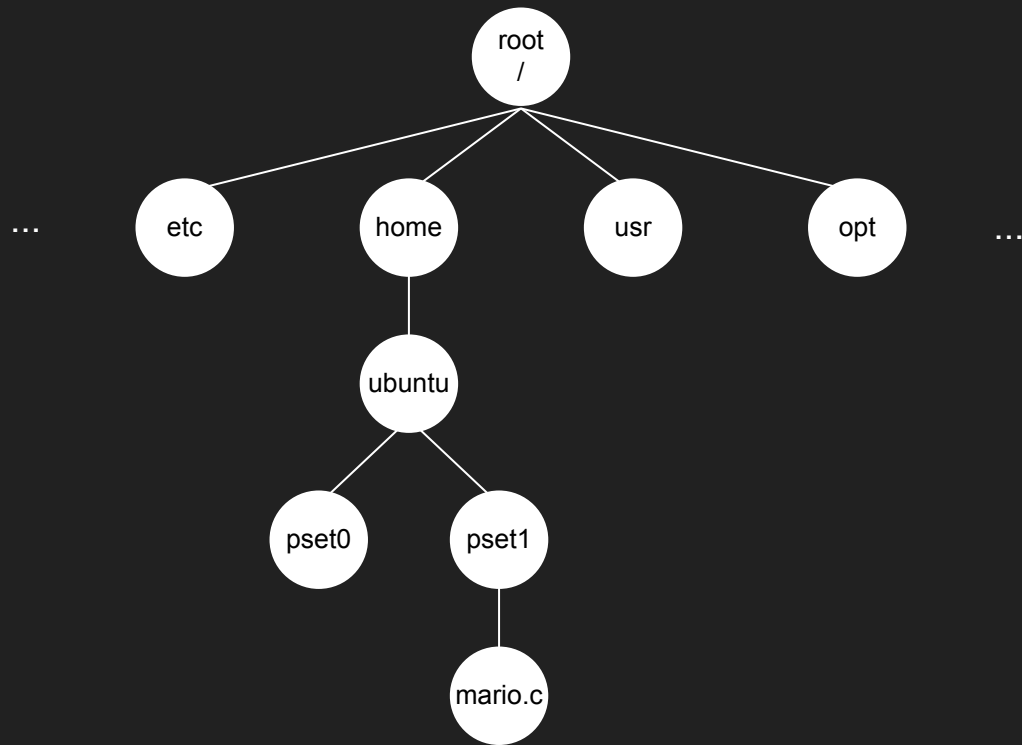
More efficient, more powerful

# Linux Filesystem Hierarchy









# Paths



# Paths

Paths are how we refer to file and folder locations

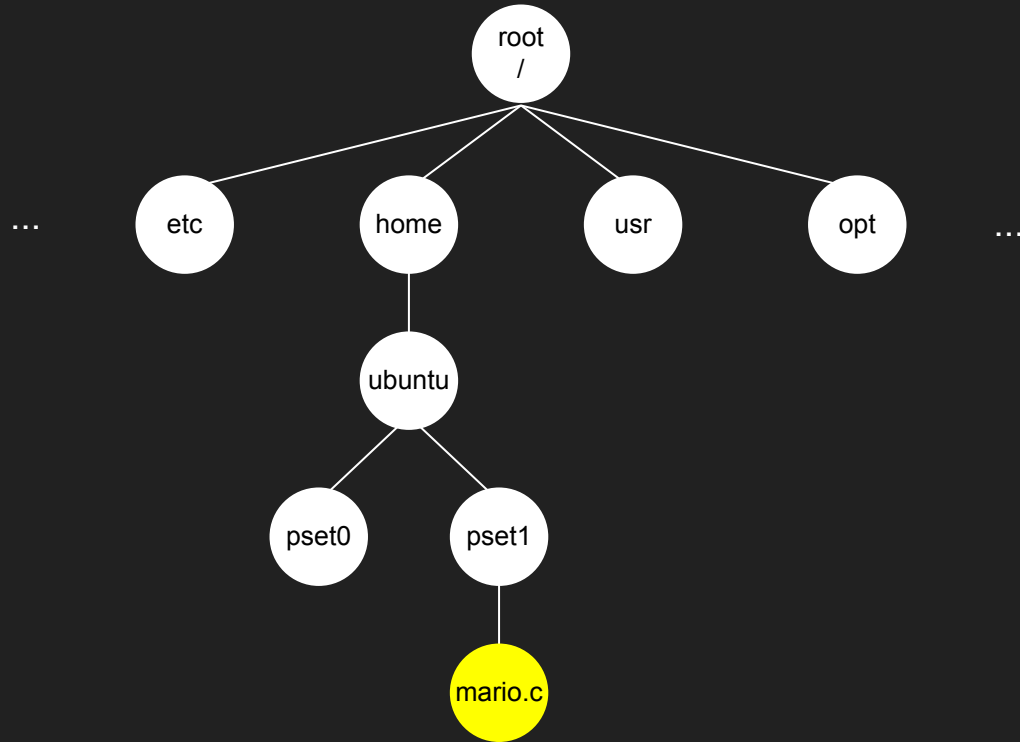
# Paths

A path consists of names of directories, leading to a particular file or directory, separated by a forward slash (/)

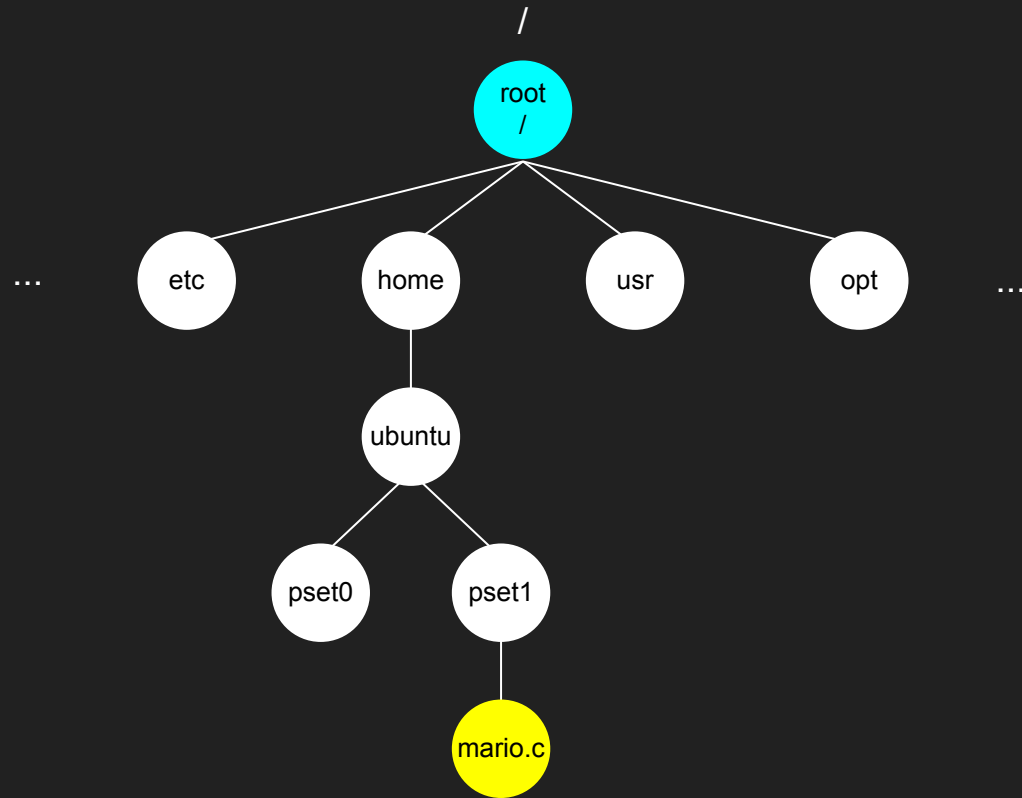
# Paths

- Absolute path
  - Starts with root folder (aka /)
  - Doesn't matter where we are
- Relative path
  - Relative to where we are

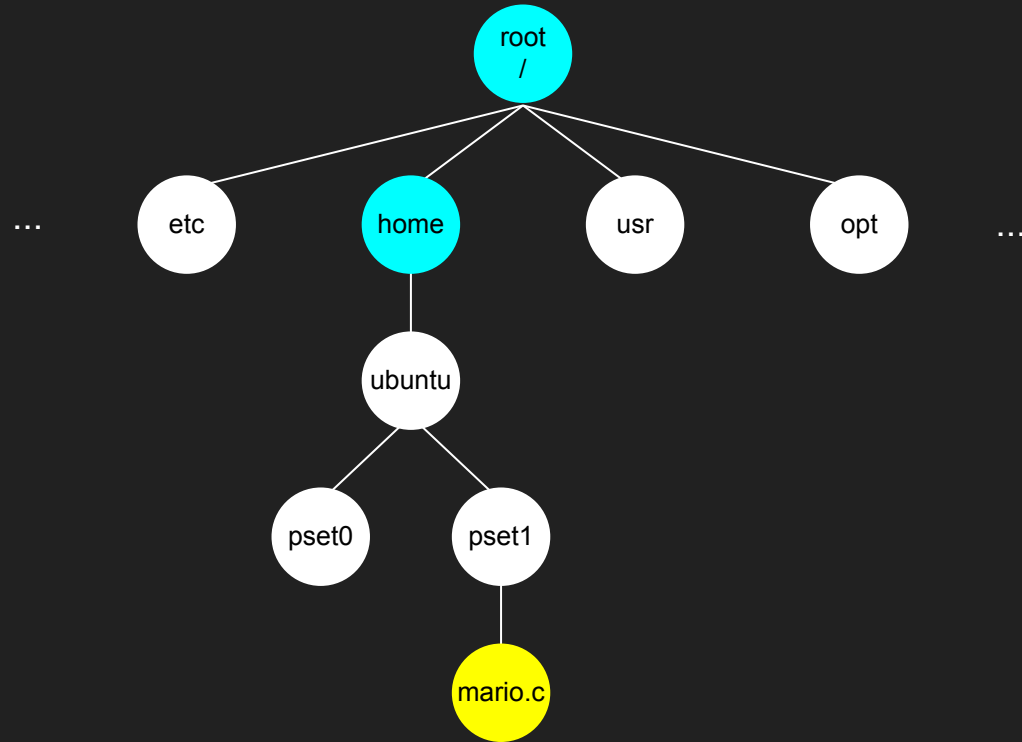
Absolute path of mario.c?



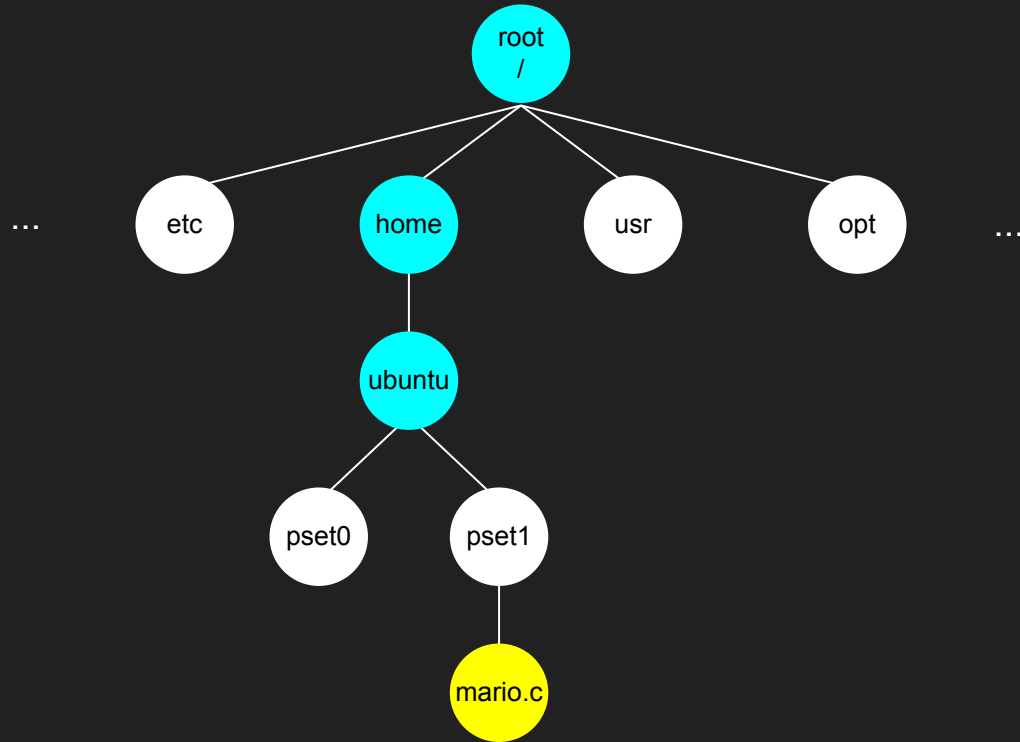
Absolute path of mario.c:



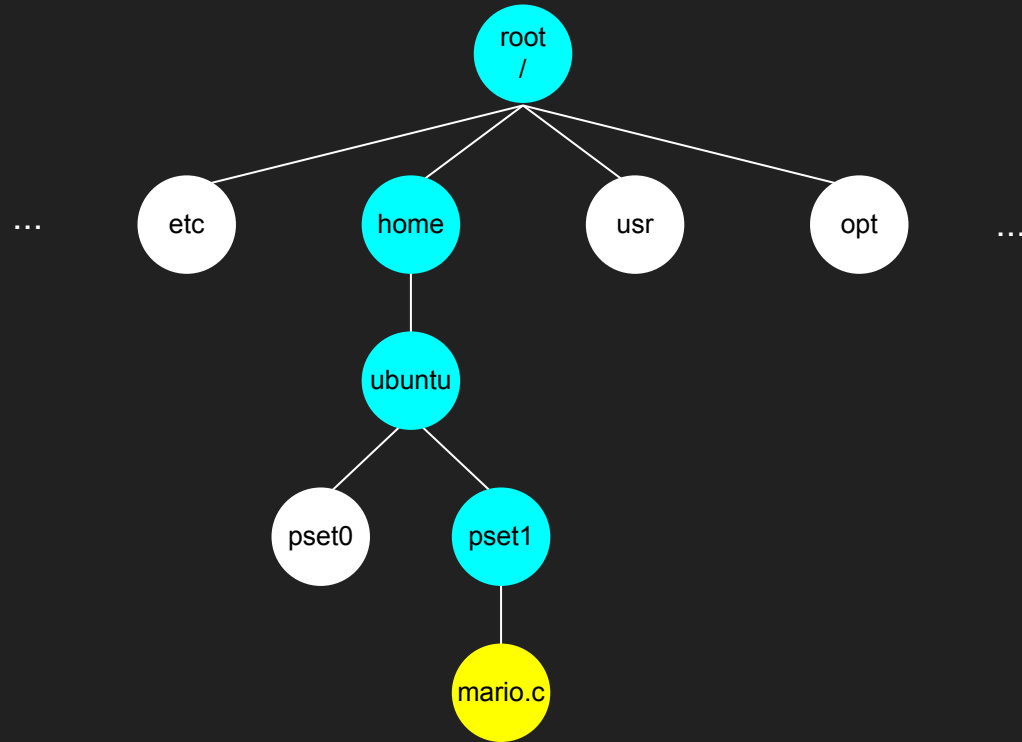
Absolute path of mario.c:  
/home



Absolute path of mario.c:  
/home/ubuntu

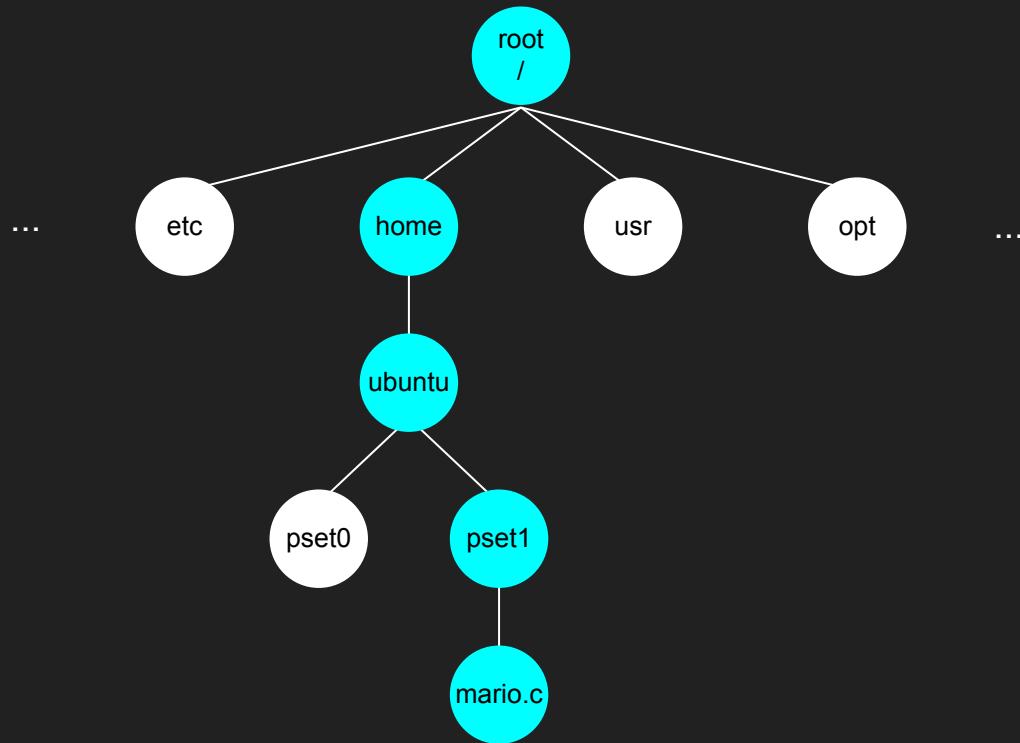


Absolute path of mario.c:  
/home/ubuntu/pset1

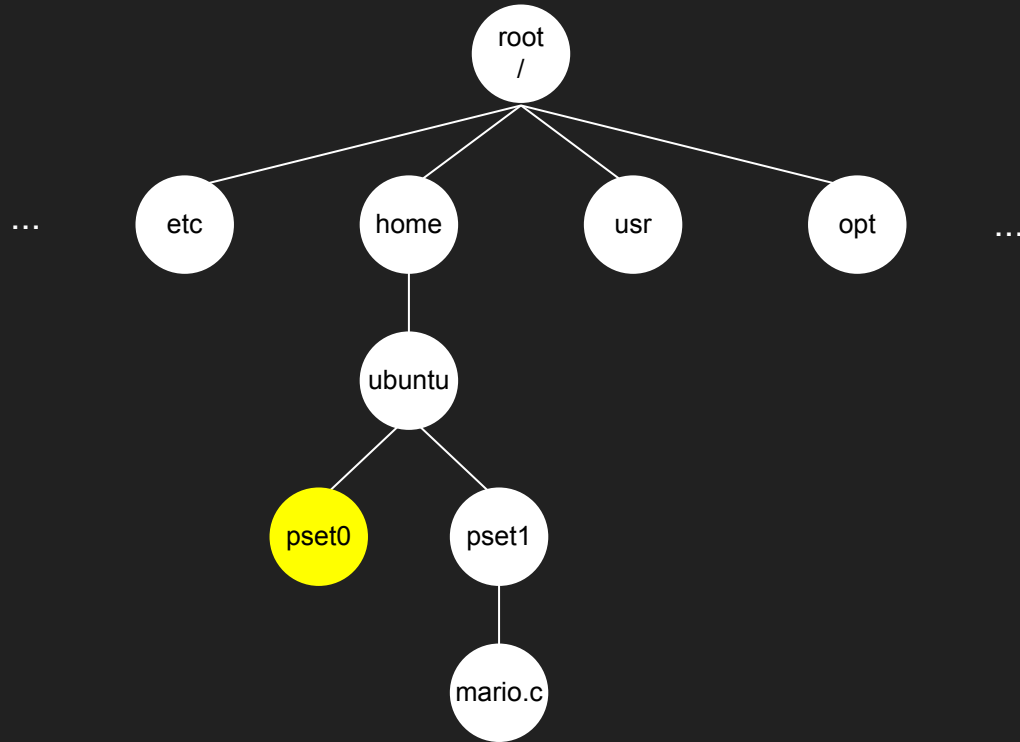




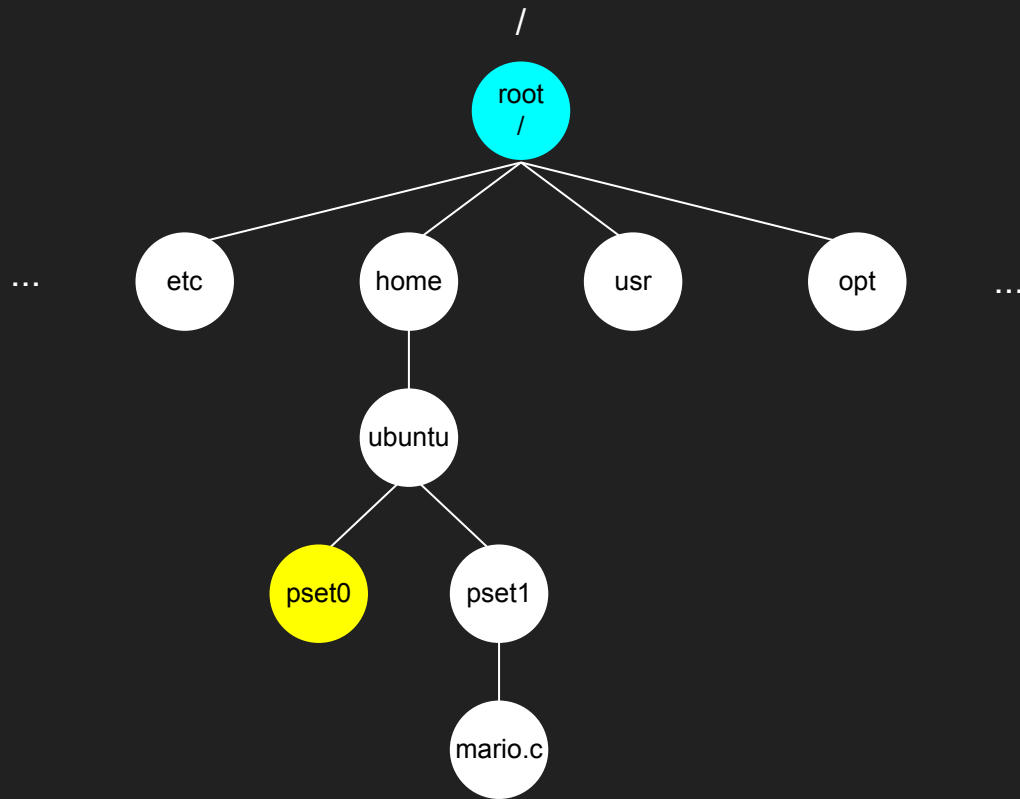
Absolute path of mario.c:  
/home/ubuntu/pset1/mario.c



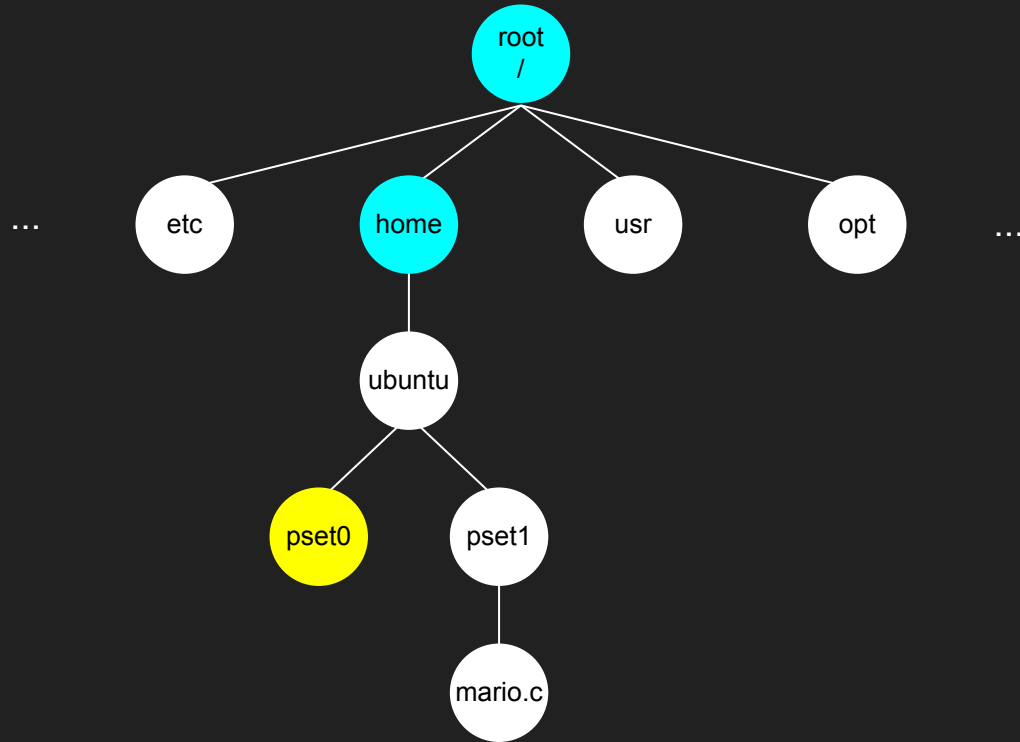
Absolute path of pset0?



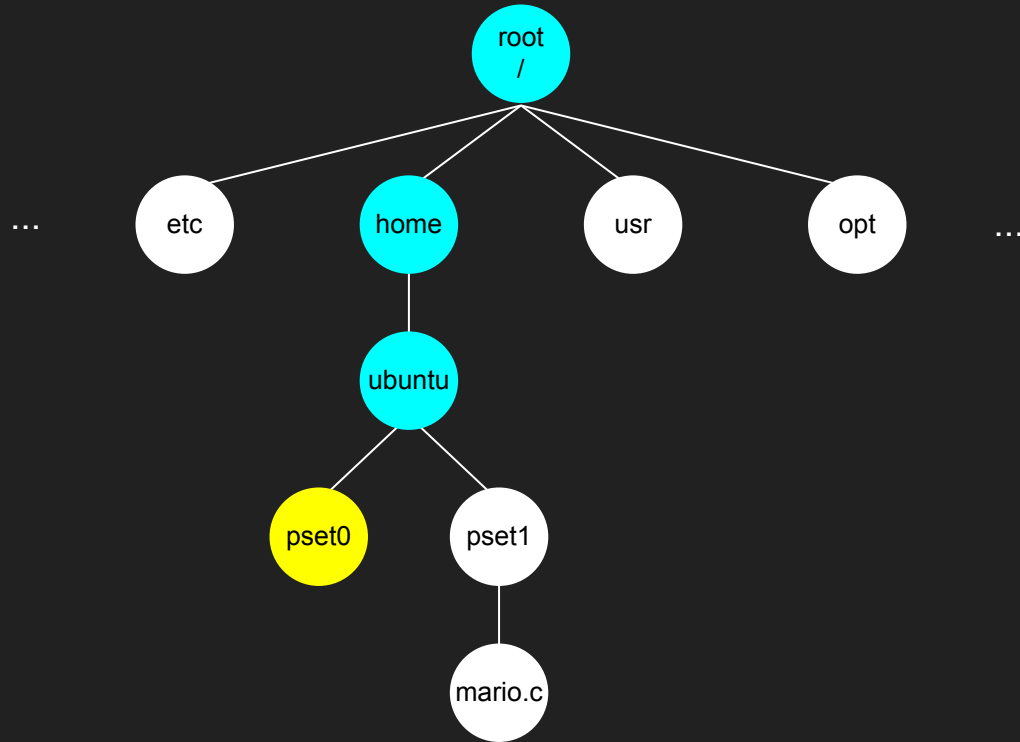
Absolute path of pset0:



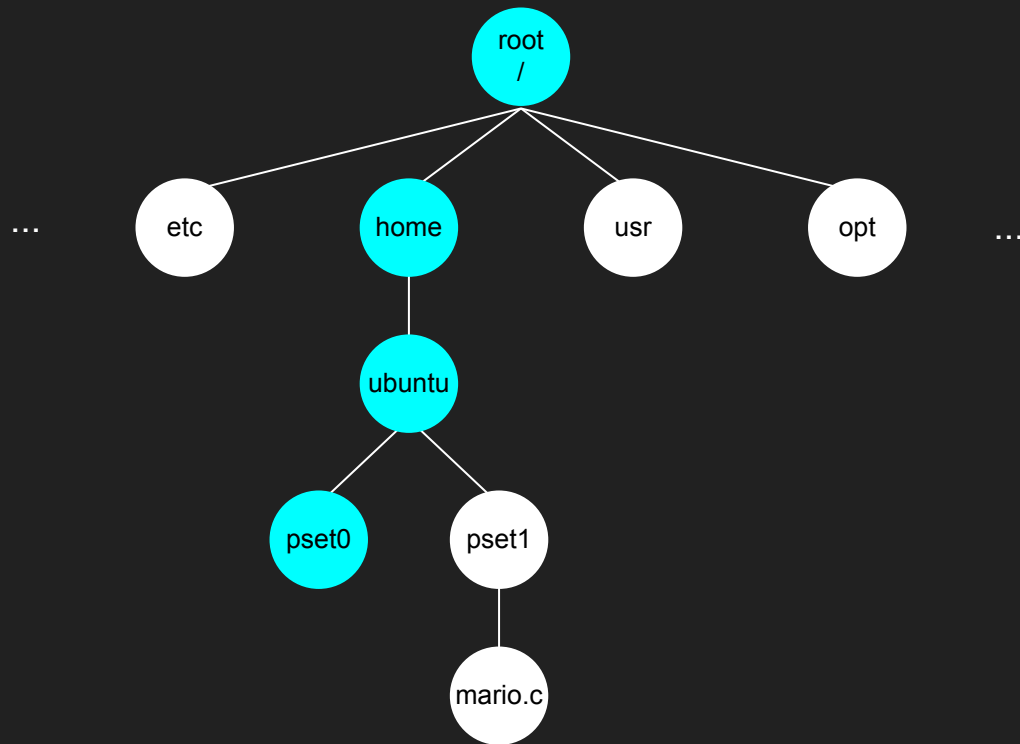
Absolute path of pset0:  
/home



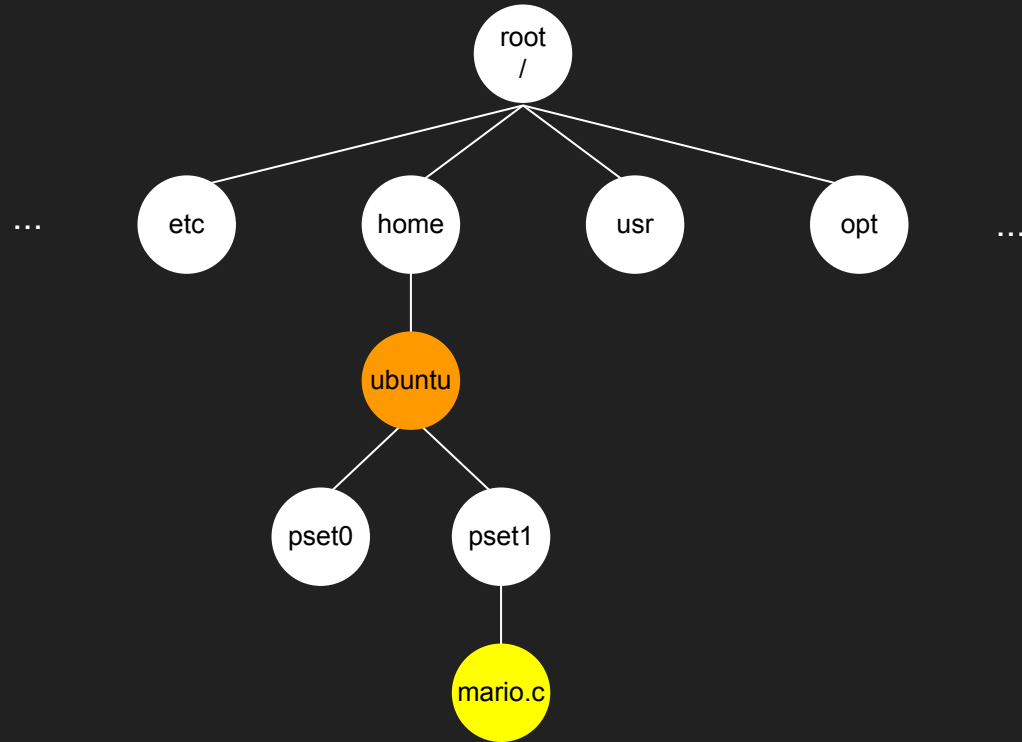
Absolute path of pset0:  
/home/ubuntu



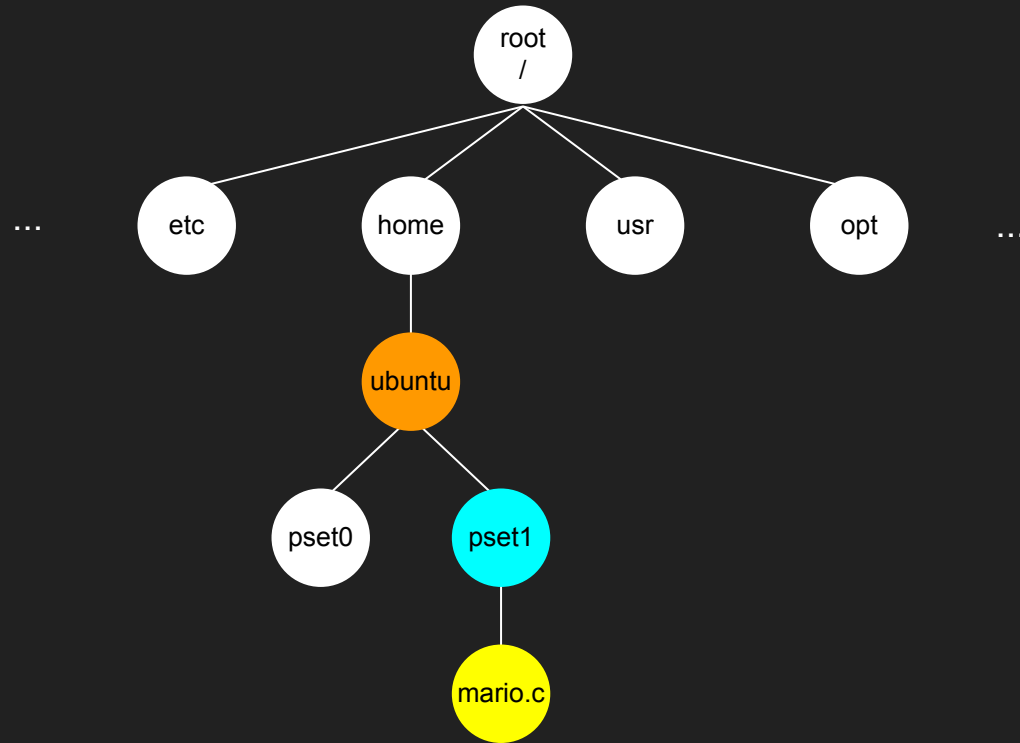
Absolute path of pset0:  
/home/ubuntu/pset0



Relative path of mario.c from ubuntu?

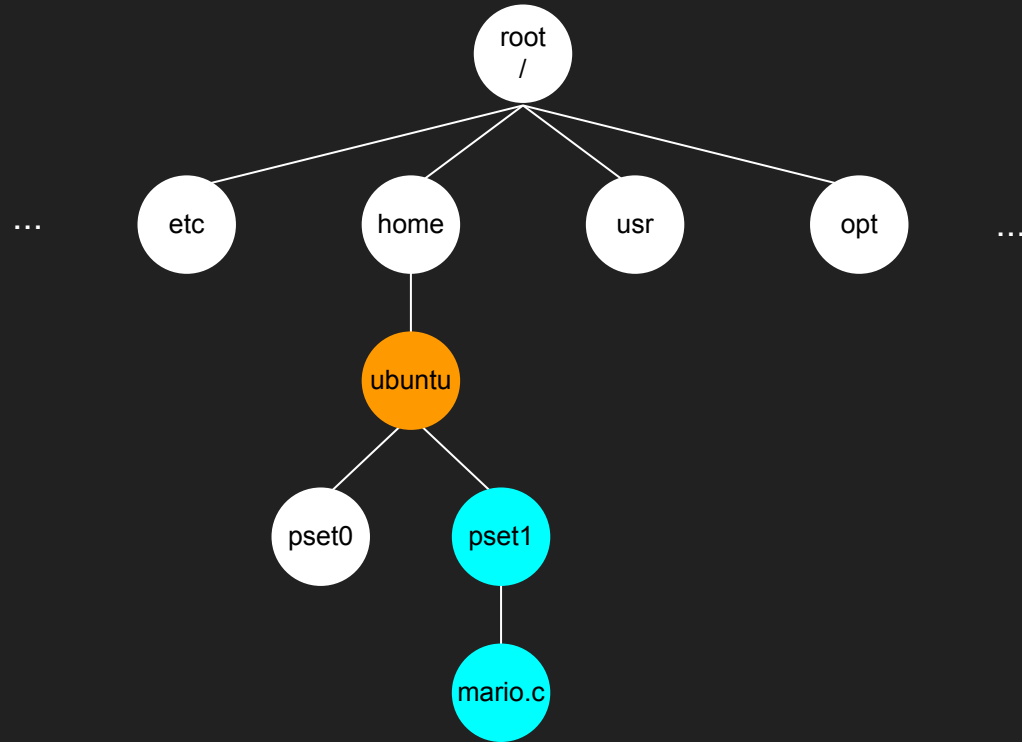


Relative path of mario.c from ubuntu:  
pset1

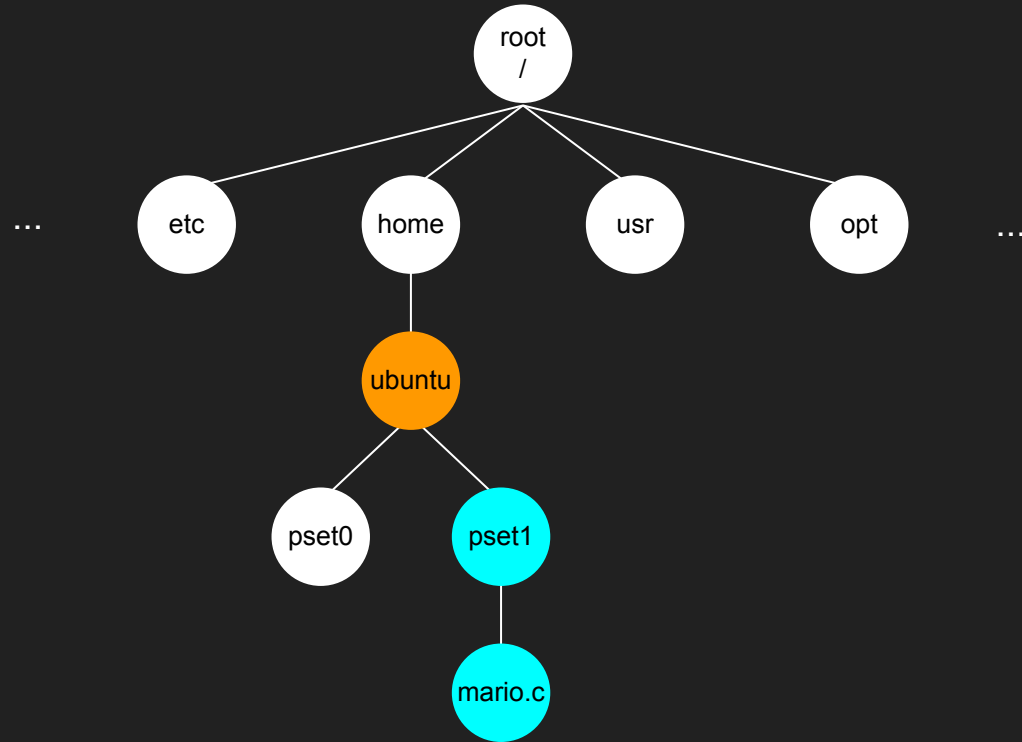




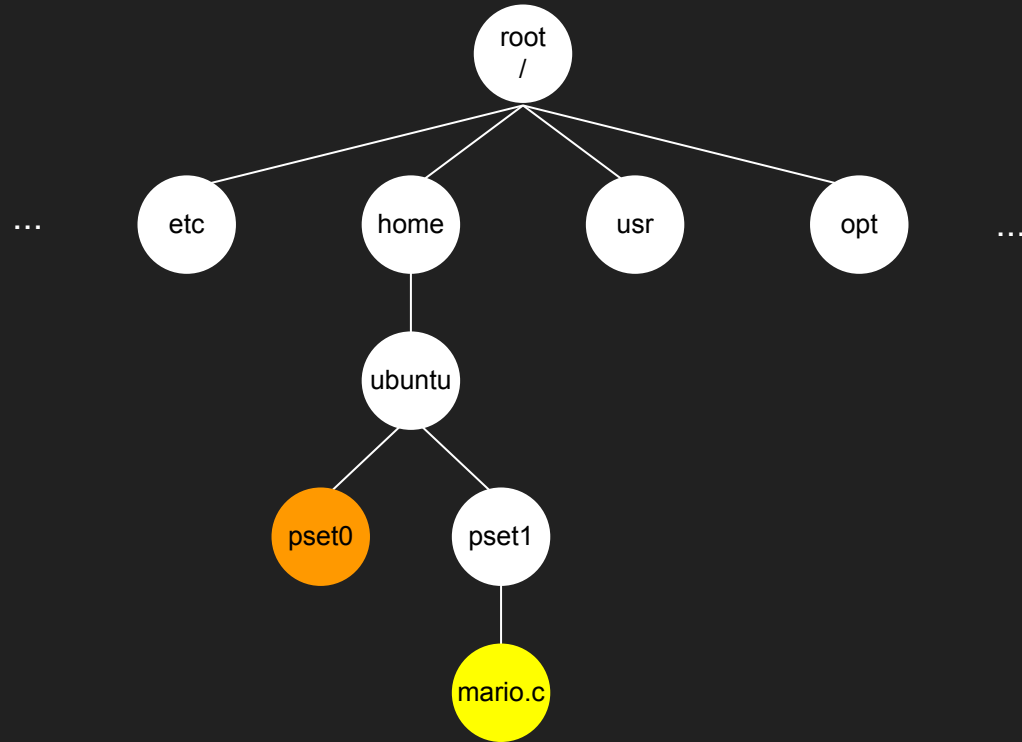
Relative path of mario.c from ubuntu:  
pset1/mario.c



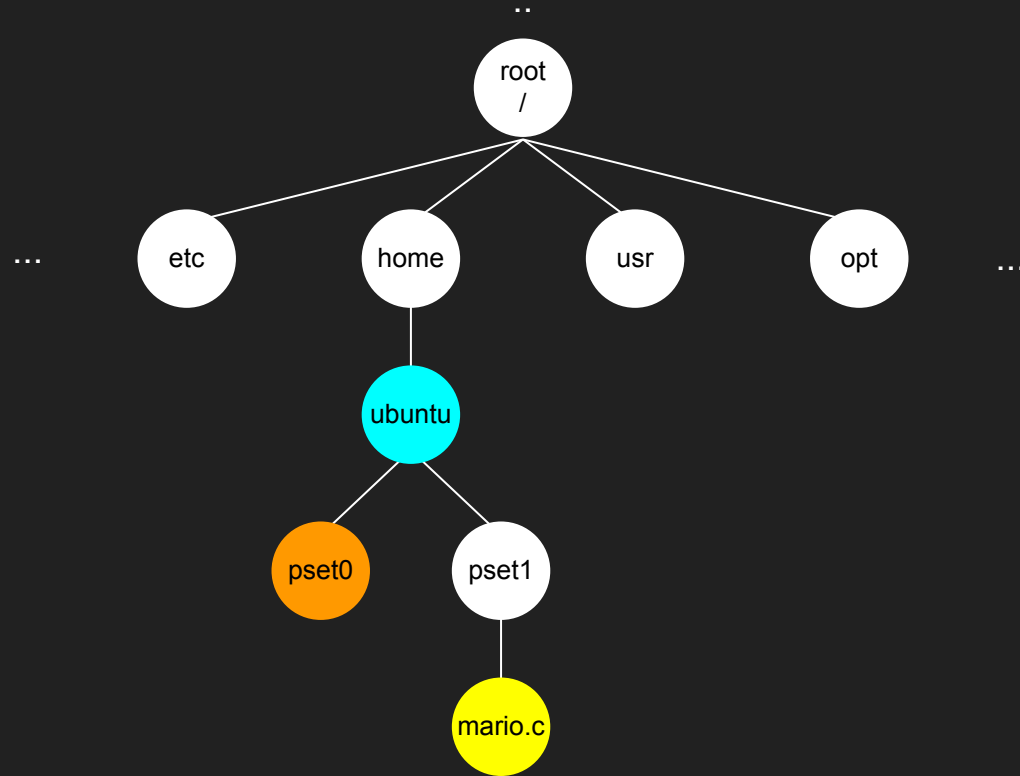
Relative path of mario.c from ubuntu:  
../pset1/mario.c



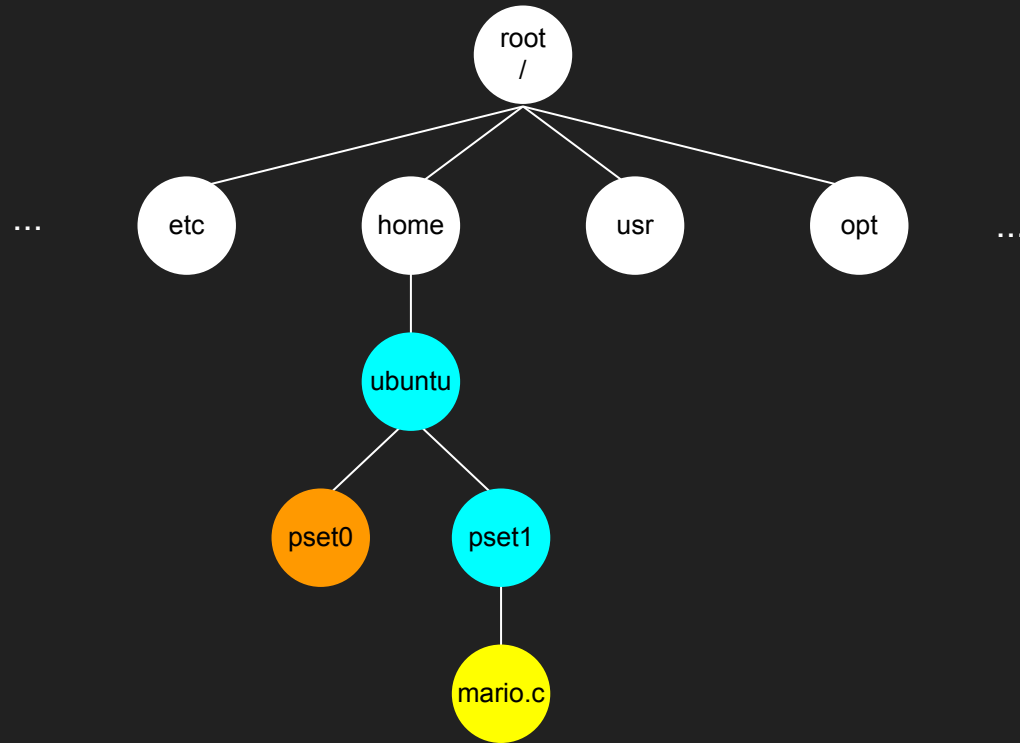
Relative path of mario.c from pset0?



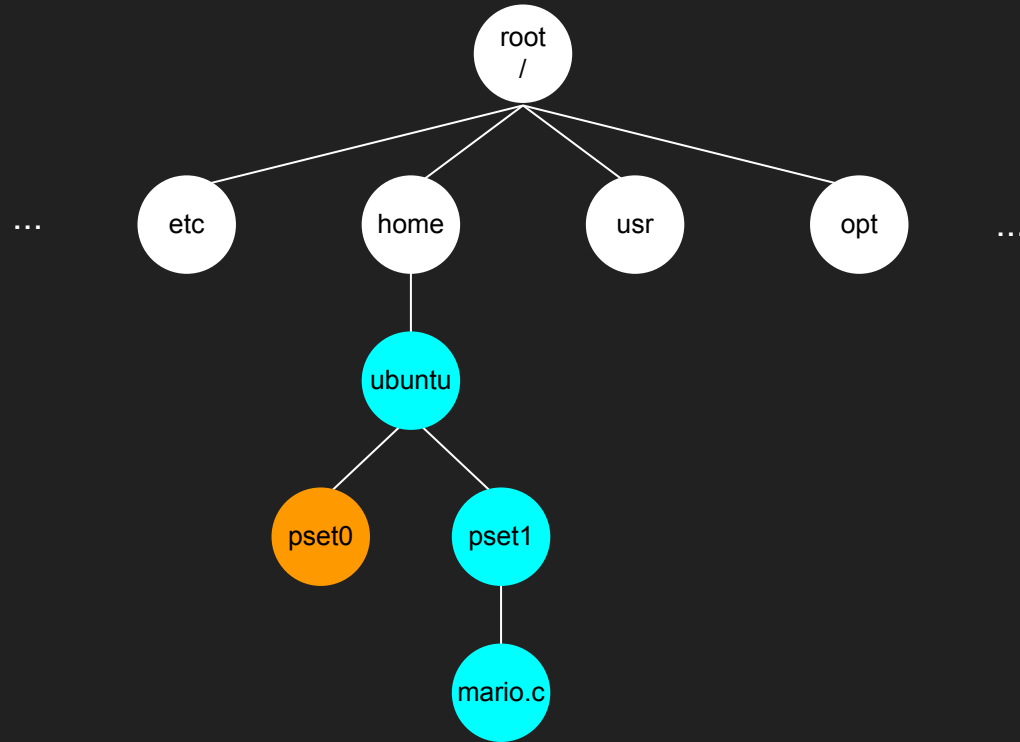
Relative path of mario.c from pset0:



Relative path of mario.c from pset0:  
../pset1



Relative path of mario.c from pset0:  
../pset1/mario.c



# Paths

. (dot) means current folder

.. (dot dot) means parent folder

# Basic Commands



# Basic Commands

- `cd`: change directory
- `ls`: list files and directories
- `pwd`: print working directory

# Basic Commands

- `man`: show program man page
- `--help` or `-h` (option): show program help

# Basic Commands

- touch: create empty files
- mkdir: create new directories
- rmdir: remove empty directories
- rm: remove files and directories
- cp: copy files/directories
- mv: move/rename files and directories

# Basic Commands

- curl: transfer data
- wget: download files

# Basic Commands

- cat: print/add file contents
- head: print first n lines
- tail: print last n lines
- less: view file contents
- diff: compare files line by line
- uniq: report or omit repeated lines
- sort: sort lines of text files

# Basic Commands

- grep: print lines that match patterns
- sed: transforming text
- cut: print selected parts of lines
- wc: count chars, lines in a file

# Basic Commands

- `find`: search for files and directories
- `which`: locate a command

# Basic Commands

- alias: create an alias for a command
- history: show command history



# I/O Redirection

# I/O Redirection

By default, most commands take input from stdin (your terminal) and send output to stdout and stderr (your terminal too)...

# I/O Redirection

I/O redirection makes it possible for commands to take input from and send output to other sources (e.g., a file or a device)

# Pipes

# Pipes

A pipe is having a command take the output of another command as input

# Activity 0

## Activity 0 (5 minutes)

1. Create a directory called “activity0” in your home directory (~)
2. Change your current directory to your “activity0” directory
3. Write “hello, world!” to a file called “hello”
4. Print the contents of your “hello” file to the terminal

# Activity 1



## Activity 1 (10 minutes)

1. Create a directory called “activity1” in your home directory (~)
2. Change your current directory to your “activity1” directory
3. Download <https://cdn.cs50.net/2021/x/seminars/linux/shows.csv>
4. Using a pipe, print the year “Mr. Robot” aired on standard out
5. Where does “libc50.a” live in /usr?

Try Ubuntu in a VM  
[ubuntu.com/appliance/vm](https://ubuntu.com/appliance/vm)

# The Linux Command Line for Beginners

[ubuntu.com/tutorials/command-line-for-beginners](https://ubuntu.com/tutorials/command-line-for-beginners)

CS50

[cs50.edx.org](https://cs50.edx.org)

Feedback

[cs50.ly/feedback](https://cs50.ly/feedback)

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