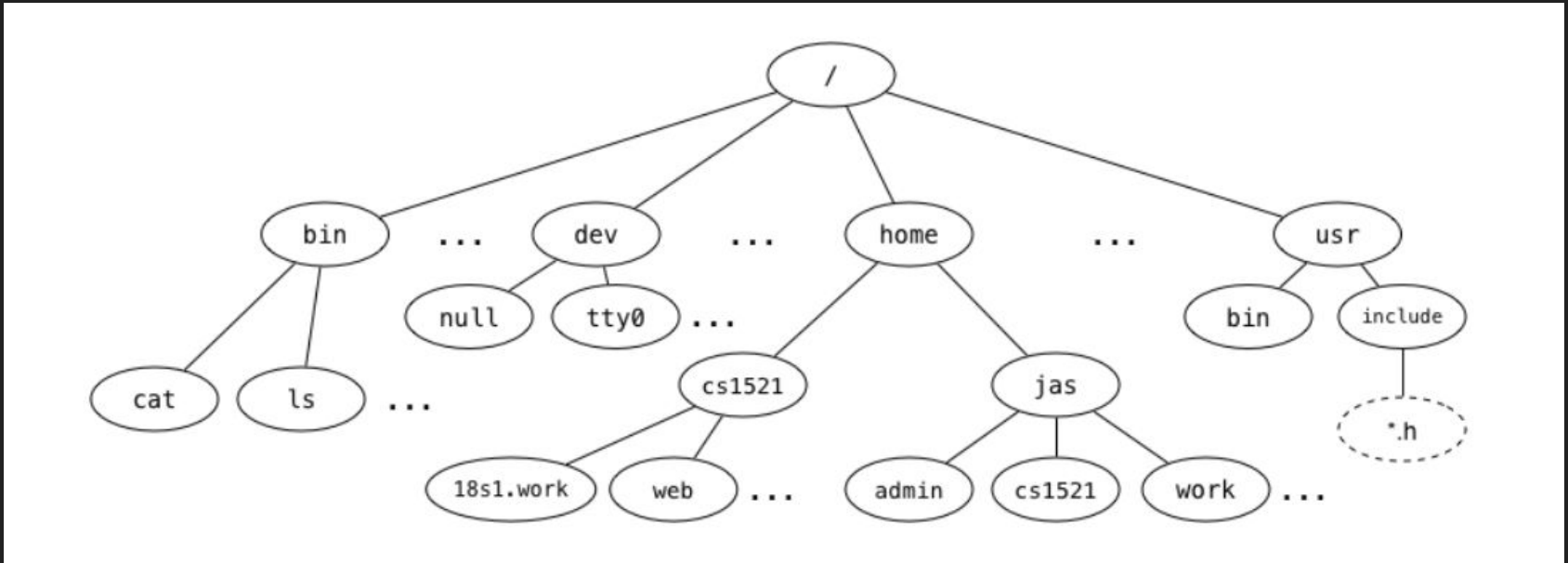
Week 8 

Files

UNIX filesystem structure

- The Unix filesystem is tree-structured, with the directory called / as the root of the tree.



Filesystem Objects

- File
  - Regular File
  - Directory (aka Folder)
  - Symbolic Link
  - Special Device Driver
- Questions:
  - What directory is ~/../..?
  - What kind of filesystem object is **cat** ?
  - What kind of filesystem object is **home** ?
  - What kind of filesystem object is **tty0** ?
  - What is a **symbolic link** ?

Filesystem Objects

- File
  - Regular File
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  - Special Device Driver
- Questions:
  - What directory is ~/../..? (A: root “/”)
  - What kind of filesystem object is **cat**? (A: regular file, all programs are just files)
  - What kind of filesystem object is **home**? (A: directory)
  - What kind of filesystem object is **tty0**? (A: special device driver)
  - What is a **symbolic link**? (A: file, contains location of another file)

Working with files - **fopen**

- What does fopen do? What are its parameters? What does it return?
  - “**man 3 fopen**”
- When might it return NULL?
  - File doesn’t exist
  - Not enough permissions
  - File open in another program
- How can we tell why it returned NULL?
  - Check the errno! (with **perror** or manually using **errno.h**)

Reading from files

- **fgetc** (like getchar)
  - Reads a single char / byte
  - How many different values can fgetc return?
- **fscanf**
  - Similar to scanf
- **fgets**
  - Reads in the next line (text)
- **fread**
  - Reads specified amount of bytes (binary)

Writing to files

- fputc (like putchar)
  - Prints a char / byte
- fprintf
  - Like printf
- fputs
  - Prints a line / string (text)
- fwrite
  - Prints specified number of bytes (binary)

Assorted Information

- Why should you not use **fgets** or **fputs** with binary data?
  - fgets/fputs stops when we reach a null terminator (0 value). Binary data might have 0 values, which would stop us from reading a whole line.

- Why are the names of **fgetc**, **fputc**, **putchar** and **getchar** misleading?
  - These functions are getting/writing a byte, not necessarily a char