stdio.h, varargs, unistd.h

3 lectures left!!

CS 2130: Computer Systems and Organization 1

November 30, 2022

Announcements

- Homework 8-10 posted, due last day of class at 11pm
    - Homework 10 is **optional** - replaces lowest homework grade
- There **will** be an optional Quiz 9 this weekend - replaces lowest quiz grade
- Final Exam: December 15 at 7-10pm
    - Cumulative, see practice tests
    - Please schedule with SDAC if needed

printf

```
int printf(const char *format, ...);
int fprintf(FILE *stream, const char *format, ...);
```

printf

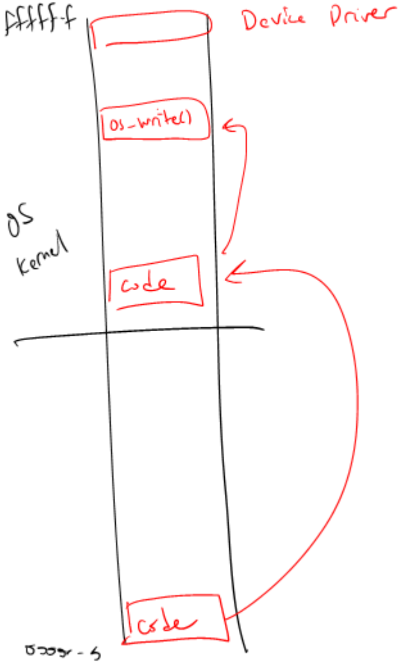
```
int printf(const char *format, ...);
```

```
printf("hi: %s and %d\n", mystr, myint);
```

move copy (str $\longrightarrow$ FILE*)

Backing up...

Syscalls



write :

[argument checking

syscall

[return value checking

ret

write

`write:`

- Argument checking
- `syscall`
- Return value checking
- `ret`

Processes

Process - approximately what we think of as a “running program”

- Operating System effectively has a giant array of processes started since computer turned on
- Try `ps -A`
- Has access to all memory (but only its own!)
- Operating System maintains data structure about each process
  - What program is running, who ran it, when it started, …
  - Array of “file like objects”

Processes

Using `write`