

# C: `stdio.h`, `varargs`, `unistd.h`

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CS 2130: Computer Systems and Organization 1

April 24, 2023

# Announcements

- Homework 9 due tonight at 11pm
  - Limited number of submissions, test your code before submitting
- Homework 10 due next Monday at 11pm
  - Lab tomorrow will be helpful
  - Limited number of submissions, test your code before submitting
- Final Exam: May 4, 7-10pm, Chem 402





# 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

# printf

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

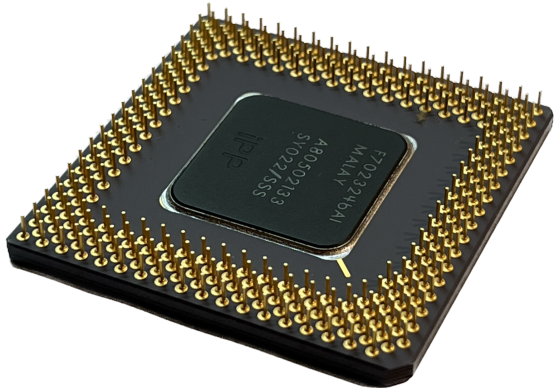
# printf

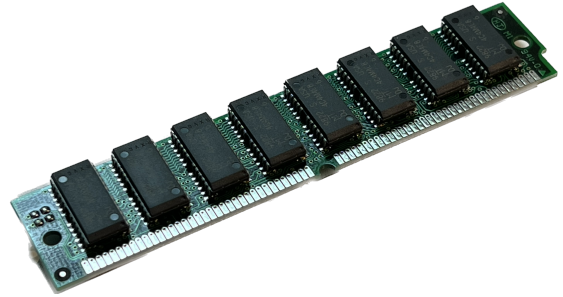
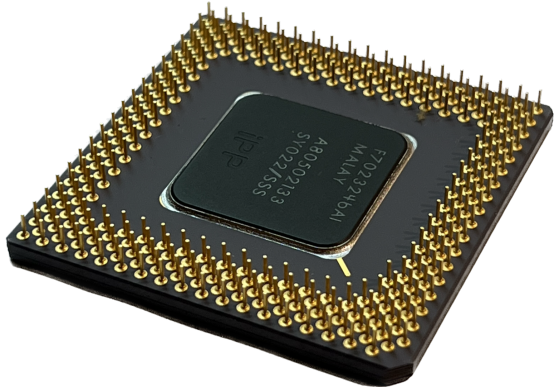
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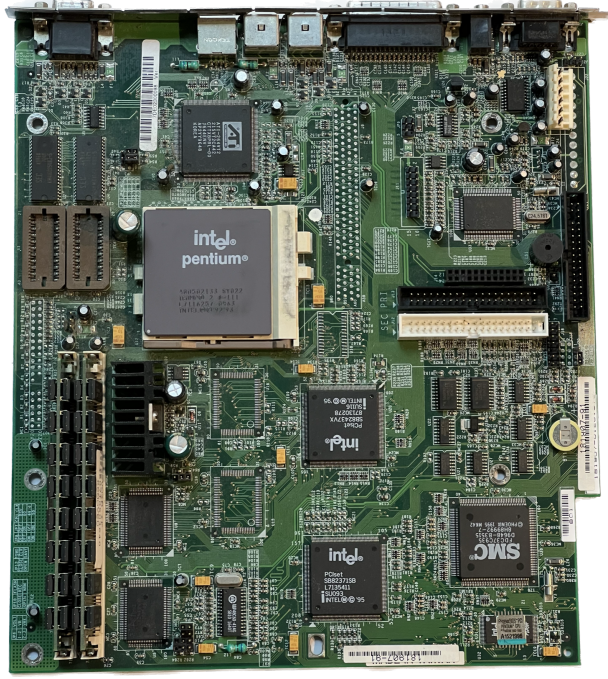
```
printf("hi: %s and %d\n", mystr, myint);
```



Backing up...







# Syscalls

`write:`

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

Using write