Processes and Threads

CS 241

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fork() Example

```c
void main() {
    int i = 0;
    for (i = 0; i < 10; i++)
        if (!fork())
            break;
}
```
What makes up a process?

- Operating systems manage processes in a structure called a **process control block** (PCB). Includes:
  - Identification information
  - Runtime information
  - Accounting information
Threads

• The purpose of a process is to act as a container of threads.
  – Threads are the “computational engine” of the process: *they run code!*

  – At startup:
What makes up a threads?

• Operating systems manage threads in a structure called a thread control block (TCB). Includes:
  – Identification information
  – Runtime information
  – Accounting information
Modeling a Thread/Process

• To understand the interactions of thread, processes are modeled using a state diagram.
  – For a process with only one thread, this also models the entire process

• Two-State Model:
Five-State Model
Two process, each with 1 thread

One process with two threads