1 Process API

Vocabulary

1. **Process Identifier (PID)**
   - Is an unique identifier for an active process
2. **CPU Scheduler**
   - Is a policy which determines which process to run at a given point in time
3. **Concurrency**
   - Is the ability of a program to run out of order without affecting the final outcome
4. **Deterministic Execution**
   - Means path of execution is fully determined by the specification of computation
   - Is guaranteed to procduce the same outcome, given the same input
5. **Non-determinism**
   - Means path of execution isn't fully determined by the specification of computation
   - Same input can produce different outcomes
6. **Multi-threaded Programs**
   - Is synonymous to **Multitasking**
   - Is a program that processes multiples threads at one time
7. **Signal**
   - Is events triggered by the CPU and software running on it
   - Triggers corresponding handler on per process basis when invoked

1.1 fork() System Call

- Creates a new process
- Is an almost exact copy of the calling process
- **Parent** is the creator
  - Runs from `main()` (beginning of program)
- **Child** is the newly created process
  - Runs from `fork()` (where `fork()` occurs)

1.2 wait() System Call

- Forces parent to wait for a child process to finish its process

1.3 exec() System Call

- Does not create a new process
- Transforms currently running program into a different running program
- Current running program is overwritten
- Code segment, heap, and stack are re-initialized

Example

`(pid: 123) p3.c — exec() —> (pid: 123) ls -al`