

CSC 369 Worksheet 2 Solution

August 16, 2020

1 Homework (Simulation)

1. I need to create process trees at each step when the command `./fork.py -s 10` is run.

1) Action: a forks b



2) Action: a forks c



3) Action: c EXITS



4) Action: a forks d



5) Action: a forks e



Notes

- **fork()**
 - Is used to create a new process
 - **Creator** → parent process
 - **Newly Created** → child process
 - Child process is nearly identical to parent process
- **exec()**
 - Allows a child to break free from its similarity to its parent and execute an entirely new program.
- **wait()**
 - Is used to let parent code delay its execution until the child finishes executing.
 - Makes the output deterministic

2. I need to write what the resulting final process trees will look like as the fork-percentage changes. Here I ran command (`./fork.py -s 10 -a 10 -f 0.1` and `./fork.py -s 10 -a 10 -f 0.9`)

Notes

- `./fork.py -s 10 -a 10 -f 0.1`



- `./fork.py -s 10 -a 10 -f 0.9`



Based on the diagram above, I can deduce that the lower the fork percentage, the more likely that `exit()` is executed by the childmost process, and the final tree will either have a single node or none.

On the other hand, the higher the fork-percentage is, the more likely that `fork()` is executed by the childmost process, and the final tree will have nodes that are deeply nested.

2 Homework (Code)

1.