

Quiz 2

```
int status;
for (int i=0; i<2; i++) {
    pid_t pid = Fork( );
    if (pid > 0) waitpid(-1, &status, 0);
    ... some long running code ...
}
```

- How many processes will be created (exclude the original parent)?
- Which process will finish first? Why?
- Which process will finish last? Why?
- What is the effect of the waitpid() call?

3 - Ken Wong, 10/19/2006

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Quiz 2 Solution (1)

- 3 processes are created (excludes original process)
 - » If X is the original process, child process IDs are X+1, X+2, and X+3 if system is idle otherwise
- Process X+2 will finish first
- X will finish last because it ends up waiting for each of its children to finish before it can proceed
- waitpid(-1, &status, 0) forces the caller to wait for ANY one of its direct children to finish

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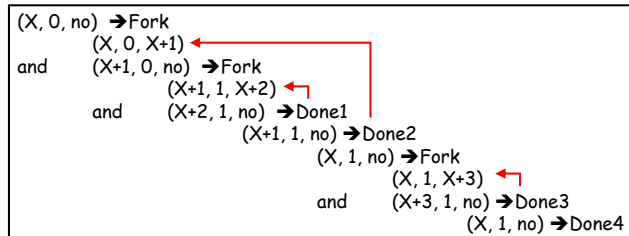
Quiz 2 Solution (2)

Equivalent Code

```
i = 0;
pid = Fork( );
if (pid > 0) wait(...);
i = 1;
pid = Fork( );
if (pid > 0) wait(...);
```

The state evolution is:

» where (PID, i, waiting on) denotes the state of a process



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