

Interlude: Process API

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To create a process in UNIX, use a pair of system calls: `fork()` and `exec()`. A third call, `wait()` can be used by a process wishing to wait for a process it has created to complete.

4.1 The `fork()` System Call

`fork()` is lwk weird. We learned from Tanenbaum that `fork()` creates a clone of the current process. But furthermore, the process that is created doesn't start running at `main()`, but it comes into life as if it had called `fork()` itself — a true clone, a copy of the array of bytes representing the entirety of the state of the parent process.

But it still isn't an *exact* copy, like how a clone is now another individual. The value that `fork()` returns to the parent and child is different. While the parent receives the PID of the child, the child is returned a 0. This is useful because now we know which is parent and which is child.

4.2 Adding `wait()` System Call

This is actually not deterministic and can lead to race conditions, unless we use `wait()` or `waitpid()`

4.3 Finally, the `exec()` System Call

There are 6 variants of `exec()`: `exec1()`, `execle()`, `execlp()`, `execv()`, `execvp()`. Read the man pages