Comp111 - Quiz 1

Oct 2, 2012 - closed book

Name:_____

Login:_____

Please fill in the blanks. Each blank is worth 5 points. Blanks with the same number have the same answer.

1. An operating system "mediates" between the _____1_____ and user programs. Parts of this mediation include device _____2_____ that describe how to control external devices, as well as mechanism for _____3_____ resources such as memory, devices, and computing cycles among several processes.
2. The difference between a program and a process is that a program lives on disk and describes what to do, while a process lives in _____4_____ and actually does it. A process has -- in addition to a program -- a _____5_____ that gives it the illusion that it is executing in isolation from other processes.
3. One difference between interrupts and signals is that interrupts are delivered and processed _____6_____, while signals are processed when the target process is _____7_____.
4. In a typical linux system, system activity is checked every _____8_____ of a second, and the running processes are charged with using that amount of time. The extent to which a system is busy is measured via the _____9_____ average, which is the average number of processes that are _____10_____ to run.
5. In a process memory map, the text segment contains a _____11_____ version of your program, which is _____12_____ by all processes that run the program.
6. The program

   ```
   if (_____13_____) { exit(0); }
   ```

   creates an unlimited number of zombie processes, because the parent doesn't _____14_____ any of their exit codes.

7. The C library avoids system calls when possible, because each call requires expensive _____15_____ into _____16_____ mode and back.
8. When a process asks malloc for a few bytes of memory, the operating system actually allocates the process a _____17_____ of memory in response. This remains allocated until the process _____18_____.
9. In the five-state model of process execution, a process cannot go directly from "blocked" to "running" because the process must first be placed into the _____19_____ state.
10. The _____20_____ system call replaces one process with another.
11.
12. (Extra credit) The reason that the fork call is not outrageously expensive in time is that all pages -- including writeable ones -- are shared between the two copies of a process until one process _____21_____.