Winter Johnson

Homework 1 Answers

1)

a. The processor is the physical CPU device. Each processor has at least 1 core, the thing that is running any active thread. Processors tend to have more than 1 core.
b. This machine has 8 processors.
c. Each processor has 8 cores, for a total of 64 cores in this machine.
d. Most of the processors run at 3600 Mega-Hz, but two of them run at 4600 Mega-Hz.
e. 131788436 kB total memory.
f. 93338496 kB free memory.
g. 824165 forks created since system booted.
h. 8382369585 context switches.

2)

a. Pid of cpu-print is 831204.
b. 831175, 831174, 831105, 2298, 1
c. The input, output, and error file pointers for the cpu-print process are pointing to /dev/pts/1, which is responsible for terminal I/O.
d. Standard input is pointing to a pipe, while output and error are pointing to /dev/pts/4
e. cd; bash shell | ls; bash code | history; bash shell | ps; bash code

3) memory1.c takes 6280 bytes of virtual memory and 4960 bytes of RAM space, while memory2.c also takes 6280 bytes of virtual memory but takes 4924 bytes of RAM space.

This would confirm that virtual memory holds all the necessary information for running memory.exe (1 or 2), but RAM only needs a portion of that to tell the CPU what to do. So RAM and the hard disk are communicating through the operating system.

4) A calling convention dictates how functions should set up to call and return through the stack. cdecl is a type of calling convention that abstracts the set-up and take-down of a function call, AKA it is responsible for cleaning up the stack. Specifically it details that arguments from the function are passed to the stack right to left, and the callee is responsible for popping those arguments from the stack for use.