Processes

Practice Exercises

3.1 Using the program shown in Figure 3.30, explain what the output will be at `Line A`.

Answer:

The result is still 5 as the child updates its copy of value. When control returns to the parent, its value remains at 5.

3.2 Including the initial parent process, how many processes are created by the program shown in Figure 3.31?

Answer:

There are 8 processes created.

3.3

3.4 The Sun UltraSPARC processor has multiple register sets. Describe what happens when a context switch occurs if the new context is already loaded into one of the register sets. What happens if the new context is in memory rather than in a register set and all the register sets are in use?

Answer:

The CPU current-register-set pointer is changed to point to the set containing the new context, which takes very little time. If the context is in memory, one of the contexts in a register set must be chosen and be moved to memory, and the new context must be loaded from memory into the set. This process takes a little more time than on systems with one set of registers, depending on how a replacement victim is selected.

3.5 When a process creates a new process using the fork() operation, which of the following state is shared between the parent process and the child process?

a. Stack

b. Heap

c. Shared memory segments

Answer:

Only the shared memory segments are shared between the parent process and the newly forked child process. Copies of the stack and the heap are made for the newly created process.

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