第三章课后练习

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

The output：PARENT: value = 5

原因是父子进程分别使用各自的内存空间，子进程中改变value并不会影响父进程中value的值。

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

How many processes：8

3.4 Some computer systems provide 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?

When the new context is already loaded：

只需要简单改变指向当前寄存器组的指针即可。

When the new context is in the memory and all the register sets are in use：

需要选中一个当前正在被占用的寄存器组，并将其中保存的进程信息都保存到内存指定位置处，并将新的进程信息从内存中加载到这组寄存器中，即完成一个传统的上下文切换。

3.8 Describe the actions taken by a kernel to context-switch between processes.

actions：内核会将旧进程状态保存在其PCB中，然后加载经调度而要执行的新线程的上下文。

3.10 Explain the role of the init (or systemd) process on UNIX and Linux systems in regard to process termination.

init（or systemd）进程是Unix和Linux系统中进程树的根进程，在进程终止中，如果有一个子进程，其父进程在还未调用wait（）前就已经终止了，那么该子进程就成为了孤儿进程（orphan process），对于孤儿进程，Unix和Linux中采用的方式是将其父进程指定为init进程，而在init进程中会定期调用wait（），收集指向它的孤儿进程的退出状态，并释放孤儿进程的进程标识符和进程表条目。