操作系统作业

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1.Why is the separation of mechanism and policy desirable?

机制和策略的分离能保证系统可以灵活地被修改。

2. What are the two models of interprocess communication? What are the strengths and weaknesses of the two approaches?

两种模型： 内存共享模型和消息传递模型

两种模型的比较：共享内存模型可以在两个或多个进程间建立，一般不需要操作系统内核参与，而消息传递一般时通过系统调用来完成的，需要操作系统内核协助。

3. Including the initial parent process, how many processes are created by the program shown in Figure 1?

5+4+3+2+1=15

4.Explain the circumstances under which the line of code marked printf (“LINE J”) in Figure 2 will be reached.

当exec执行参数中的程序失败时会调用标记的那一条printf函数

5.Using the program in Figure 3, identify the values of pid at lines A, B,C, and D. (Assume that the actual pids of the parent and child are 2600and 2603, respectively.)

A：0

B：2603

C:2600

D：2600

6.Using the program shown in Figure 4, explain what the output will be at lines X and Y

X：

```
CHILD:0
CHILD:-1
CHILD:-4
CHILD:-9
CHILD:-16
```

Y:

```
PARENT:0
PARENT:1
PARENT:4
PARENT:9
PARENT:16
```

7. Which of the following components of program state are shared across threads in a multithreaded process?

a b and c

8.A system with two dual-core processors has four processors available for scheduling. A CPU-intensive application is running on this system. All input is performed at program start-up, when a single file must be opened.Similarly, all output is performed just before the program terminates,when the program results must be written to a single file. Between startup and termination, the program is entirely CPU-bound. Your task is to improve the performance of this application by multithreading it. The application runs on a system that uses the one-to-one threading model

1. 只需要为输入输出分别创建一个线程，因为程序中间的执行时CPU bounded，再创建其他的线程意义不大

2. 4个，因为有4个CPU可供调度

9.Consider the following code segment:

a. 6个进程

b. 2个线程

10. The program shown in Figure 5 uses the Pthreads API. What would bethe output from the program at LINE C and LINE P

LINE C：5

LINE P：0 （易错）