1. What does a modern operating system do?
2. What is a context switch? How is context switch implemented in OS?
3. Suppose we have the following simple bank account deposit and withdraw program, rewrite it so that it is safe for multiple thread concurrent execution, and that withdraw would wait until sufficient fund becomes available in the account:

unsignedint account = 0;

void deposit (unsigned int amount){

account += amount;

}

void withdraw (unsigned int amount){

if (account >= amount) account -= amount;

}

1. What are the four necessary conditions for dead locks?

互斥

不可剥夺

Holding and waiting

成环依赖

1. What are the three running states of a process? When a running process does an I/O operation, what is the new state of the process?

运行

等待

阻塞

等待

或阻塞

1. Suppose we have the following four processes to schedule:

What are the scheduling of both preemptive and non-preemptive Shortest Job First scheduling? And what are their average waiting time respectively?

Process Arriving Time CPU Burst

P1 0 8

P2 1 6

P3 2 4

P4 3 6