Section Worksheet 8 Solution

a. Starting from an empty account, call deposit(50) then withdraw(1); before the deposit updates ‘balance’, withdrawl runs in its entirety.

b. Starting with an empty account, 2 deposits are made, one for $5 and one for $20. Both processes evaluate ‘balance+amt’ before either stores it back in balance, so one of the deposits will be ‘forgotten.’

c.

```java
int balance;
synchronize void withdraw(long amt) throws Exception {
    if(amt>balance) throw new Exception("Insufficient Funds");
    balance=balance-amt;
} 
synchronize void deposit(long amt) { balance=balance+amt; }
```

d.

```java
int balance;
ReentrantLock lk; //initialize in constructor
void withdraw(long amt) throws Exception {
    lk.lock();
    try {
        if(amt>balance) throw new Exception("Insufficient Funds");
        balance=balance-amt;
    }
    finally{lk.unlock();}
} 
void deposit(long amt) { lk.lock(); balance=balance+amt; lk.unlock(); }
```