

1.

b.

```
monitor bank {
    int balance = 1000000;
    cond delay;
    proc deposit(int amount) {
        balance += amount;
        if(amount(delay)<=balance)
            signal(delay);
    }

    proc withdraw(int amount) {
        while (amount > balance ) {
            wait(delay);
        }
        balance -= amount;
        return amount;
    }
}
```

c.

```
monitor bank {
    int balance = 1000000;
    cond delay;
    queue withdrawNums;

    proc deposit( int amount ) {
        balance += amount;
        int next = withdrawNums.head();
        if(next<=balance)
            signal(delay);
    } # deposit

    proc withdraw( int amount ) {
        withdrawNums.push(amount);
        while ( amount > balance )
            wait( delay );

        WithdrawNums.pop();
        balance -= amount;
        return amount;
    } # withdraw
} # bank monitor
```

2.

```
monitor communication {
    queue Q = new queue(n);
    cond c[n] = new cond[n];
    item it;
    proc producer(it){
        for i is in 0...n{
            Q.add(it)
            Signal(c[i]);
        }
    }

    proc consumer(int id){
        while(Q[id] is null)
            wait(c);

        it = Q.pop();
    }
}
```

3.

```
monitor Printer {
    int A,B=1;//1 is true as 0 is false.
    cond printer;

    proc printerA(){
        while(!A)
            wait(printer);
        A =0;

        A=1;
        Signal(printer);
    }

    proc printerB(){
        while(!B)
            wait(printer);
        B =0;

        B=1;
        Signal(printer);
    }

    proc printBoth(){
        while(!A && !B)
            wait(printer);

        int a,b =0;
        if(A){
            A=0;
            a=1;
        }else if(B){
            B=0;
            b=1;
        }

        if(a)
            A=1;
        else if(b)
            B=1;

        Signal(printer);
    }
}
```