

# OS 作业 1

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## 1. 多个缓冲区的进程的同步问题:

```
Semaphore mutex = 1;
Semaphore empty = n;
Semaphore full = 0;
item a[n];
int in = 0;
int out = 0;
```

```
void producer()
{
    while(true)
    {
        produce an item namev;
        P(empty);
        P(mutex);
        a[in]=namev;
        in=(in+1)%n
        V(mutex);
        V(full);
    }
}
```

```
void consumer()
{
    while(true)
    {
        P(full);
        P(mutex);
        namep=a[out];
        out=(out+1)%n
        V(mutex);
        V(empty);
    }
}
```

```
void main() {
while(1)
```

```

{
cobegin
producer();
consumer();
coend
}

```

## 2. 吃水果问题:

```

Semaphore empty=5;
orange = 0;
apple = 0;
semaphore mutex = 1;
void Dad()
{
    while (true)
    {
        wait(empty);
        wait(mutex);
        signal(mutex);
        put a fruit
        if (fruit= orange)
            signal(orange);
        else signal(apple);
    }
}

void Son() {
    while (true)
    {
        wait(orange);
        wait(mutex);
        Pick an orange;
        signal(mutex);
        signal(empty);
        Eat the orange;
    }
}

void Son2()
{
    while (true)
    {
        wait(apple);
        wait(mutex);

```

```
    pick an apple;
    signal(mutex);
    signal(empty);

    eat the apple;
}
}
void main() {
cobegin
Dad();
Son();
Son2();
coend
```