

(Good) Producer consumer **using a lock**

```
lock := init()
```

```
void producer () {  
    while(1) {  
        item := produce()  
        acquire(lock)  
        while(full(buffer)) {  
            release(lock)  
            yield();  
            acquire(lock)  
        }  
        write(buffer, item)  
        release(lock)  
    }  
}
```

```
void consumer () {  
    while(1) {  
        acquire(lock)  
        while(empty(buffer)) {  
            release(lock)  
            yield();  
            acquire(lock)  
        }  
        item := read(buffer)  
        release(lock)  
        consume(item)  
    }  
}
```

Another Synchronization Construct

Condition Variable

A condition variable supports three operations

- **`cond_wait(cond, lock)`**
unlock the lock and sleep until `cond` is signaled
then re-acquire `lock` before resuming execution
- **`cond_signal(cond)`**
signal the condition `cond` by waking up the next thread
- **`cond_broadcast(cond)`**
signal the condition `cond` by waking up all threads