

(Bad) Producer Consumer using a lock

- The producer might write into a full buffer
- The consumer might read from an empty buffer

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

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

```
lock := init()
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void consumer () {  
    while(1) {  
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        item := read(buffer)  
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        consume(item)  
    }  
}
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- The producer might write into a full buffer
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(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)  
    }  
}
```