The concept of **lock** (a.k.a mutex)

- The **lock** supports three operations:
  - **`init()`**
    creates an unlocked mutex
  - **`acquire()`**
    waits until the mutex is unlocked, then locks it to enter the C.S
  - **`release()`**
    unlocks the mutex to leave the C.S, waking up anyone waiting for it

(Bad) Producer Consumer **using a lock**

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

```
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)
  }
}
```