CS214
Semaphores

Condition Variables Review

1. I have two threads blocked on a condition variable 'cv1'

```
while( cloudy == 42 ) p_cond_wait( &cv1, &m);
```

How do I wake them both up?

```
p_m_lock(&m);
cloudy = 42;
_____________________
p_m_unlock(&m);
```

2. What must be locked before calling p_cond_wait ?

3. How do I use counting semaphores?

4. How can I use counting semaphores to implement a ring buffer?

```
pthread_mutex_t m = PTHREAD_MUTEX_INITIALIZER:
void init() {
  sem_init( _____, 0, _____);
  sem_init( _____, 0, _____);
}
void sync_enqueue(work_t *work) {




}
work_t* sync_dequeue(){




}
```

What have I made?

```
01   pthread_mutex_t m = PTHREAD=MUTEX_INITIALIZER;
02   pthread_cond_t cv = PTHREAD_COND_INITIALIZER;
03   int  cake = 0;
04
05   void  decrement() { // Waits if nonzero
06    lock(&m)
07    while(cake == 0) p_cond_wait(&cv, &m);
08    cake --;
09    unlock(&m);
10   }
11
12   void increment() {
13     lock(&m);
14     cake ++;
15     if( ___________ ) p_cond_signal(&cv);
16     unlock(&m);
17   }
18
```