

Semaphores - *Little Book of Semaphores*

- ▶ Initialize: `sem = Semaphore(n)`
 - ▶ Uses Python syntax.
 - ▶ `n` is the initial value.
- ▶ Decrement: `sem.wait()`
 - ▶ Decrement value.
 - ▶ If result is negative, block. Otherwise proceed.
- ▶ Increment: `sem.signal()`
 - ▶ Increment value.
 - ▶ If other threads are waiting, wake one, allowing it to proceed.

Semaphores - pthreads

- ▶ Initialize: `sem_init(&sem, shared, n)`
 - ▶ `sem` is a variable of type `sem_t`.
 - ▶ `shared` is a flag indicating whether the semaphore is shared among processes (nonzero) or just threads (zero).
 - ▶ `n` is the initial value.
- ▶ Decrement: `sem_wait(&sem)`
 - ▶ If old value is positive, then decrement value and proceed.
 - ▶ Otherwise block.
- ▶ Increment: `sem_post(&sem)`
 - ▶ Increment value.
 - ▶ If other threads are waiting, wake one of them, allowing it to proceed.