

CSSE 332 -- OPERATING SYSTEMS

Introduction to Condition Variables

Name: _____

Question 1. (5 points) In your own words, define what are condition variables are and what they allow you to do.

Question 2. Write down the API call that corresponds to each of the actions below.

(a) (5 points) Create a condition variable c :

(b) (5 points) Given a condition variable c and a mutex m , wait on the condition variable:

(c) (5 points) Given a condition variable c , signal **exactly one** waiting thread, if any.

(d) (5 points) Given a condition variable c , signal **all** waiting threads, if any.

Question 3. Consider a thread that calls `pthread_cond_wait(&c, &m)`; where `c` and `m` are a condition variable and a mutex lock, respectively.

- (a) (5 points) Describe the steps performed by the thread as it is ready to wait on the condition variable.

- (b) (5 points) Assume now that another thread calls `pthread_cond_signal(&c)`. Describe the steps taken by the waiting thread when it gets signaled.

Question 4. (10 points) Please write down two **sentences** describing two new things that you learned in this session.

Question 5. (10 points) Please write down two things that you are still not very clear about, or any questions that you might have that the session did not go over or did not cover well.