**LAB 7 : Process Synchronization**

**Objective**

* To learn how to synchronize threads using pthread synchronization mechanism.

**Instructions**

1. For each question produce a screen shot of the program and the result of the runs.
2. Show your work to your TA and upload the complete exercise on TEAMS before the end of the lab to get full marks.
3. Use the following file naming convention:

CS221 LAB 7-Name-ID

*Note: 1 mark (out of 10) deducted per day late. 3 days late maximum.*

**Exercises**

1. Identify the critical section in function add\_one() of no-synch.c and include pthread synchronization mechanisms. Compile and run the program. Explain the output.
2. Modify the program as follows:

(a) Remove (comment out) pthread\_mutex\_lock()and run your program. Explain your output.

(b) Remove (comment out) only pthread\_mutex\_unlock()and include the following statement right before pthread\_mutex\_lock().

printf ("Thread %ld: i=%d\n", pthread\_self(), i);

Explain what happen.

1. Given a program bank.c which simulates typical bank transactions from an account with initial balance of 1,000. The program uses two threads to randomly carry out a withdrawal or deposit operation with a random amount.

(a) Identify the critical sections in the program.

(b) Apply Pthreads functions to protect the critical sections.

(c) Compile and run your program.



