Lab 3: Concurrent Programming with pthread library

Course: CPRE 308
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TAs: Om (Section 1), Gavin (Section 2), Duo (Section 4)

Overview

- Purpose of the lab:
  - Learn to write multi-threaded programs using pthread library
- Submission details:
  - Submit report on Canvas:
    - **Cohesive summary (20 pts)**
      - Include at least one sentence for each experiment
      - Include any details you found interesting in the experiments
    - **Write-up for each lab experiment (80 pts)**
      - Answer questions provided
        - Include relevant details
      - Provide screenshots if mentioned or necessary
  - For Sections 3.2.2 and 3.3, you may submit the source files (t2.c & t3.c) along with your report on Canvas or paste the entire code in the report

Contents

- Task 1: Programming with pthreads
  - Learn more about pthread_create() and pthread_join()
  - Create a program with two functions "thread1" and "thread2" printing "Hello from thread 1" and "Hello from thread 2" respectively
  - Create main function
    - Refer to t1.c, t2.c for syntax
  - Compile the program
- Task 2: Thread synchronization using Mutex
  - Learn more about pthread_mutex_lock and pthread_mutex_unlock functions
  - Compile and run t1.c
  - Answer questions in the report

Contents

- Task 3: Thread synchronization using Conditional Variable
    - Learn more about pthread_cond_signal and pthread_cond_wait
    - Use t2.c program
    - Follow instructions provided
- Task 4: Modified Producer Consumer Problem
    - Download t3.c program
    - Modify t3.c as per instructions
        - Fill up the code for **producer** function
- Additional hints are provided in the instructions sheet