

Assignment A

The Library Reservation System: In a busy library, students often need to reserve study rooms in advance. To facilitate this process, the library decides to implement a reservation system using threads. The system should allow students to check room availability, reserve rooms, and cancel reservations.

Question: Design a multi-threaded reservation system for the library. Implement functions to check room availability, reserve rooms, and cancel reservations while ensuring thread safety and proper synchronization.

- Restriction: You must use mutex locks and condition variables for thread synchronization and ensure that only one thread can access or modify a room's reservation status at a time to prevent race conditions.
- With this restriction in place, you'll need to carefully manage access to the shared data (room reservation status) using mutex locks to ensure thread safety. Additionally, condition variables can be used to signal when a room becomes available for reservation or when a reservation is canceled.

NOTE

Don't worry if you come across something in the assignment that you don't understand. Take your time to look it up! Even though this assignment seems simple, it might take you up to three hours, especially if you're new to threads.

But if you're familiar with threads, that's what I consider will take 1 hour from you. Best of luck, guys!