PCP2

Concurrency Report

MDSOMO001

**Start, Pause, and Quit Buttons**

Start Button: Initiates the simulation by releasing the latch that allows patrons to start.

Pause Button: Pauses and resumes the simulation by toggling the isPaused atomic boolean. Patrons and the barman check this value to determine whether to proceed.

Quit Button: Terminates the simulation by exiting the application.

**Entrance and Exit**

Entrance and Exit Locks: Entrance and exit doors are synchronized to ensure that only one patron can access them at a time.

**Maximum Patrons Limit**

PeopleCounter: Keeps track of number of patrons inside and outside the club, along with the maximum limit.

Waiting and Capacity Checks: Patrons wait if the club limit is reached or if the entrance door is occupied. Before entering, they check if the club is already at capacity.

**Movement and Distancing**

GridBlock and Clubgoer: Patrons' movement is governed by the GridBlock class, ensuring that they move one block at a time and maintain a realistic distance from each other.

Simultaneous Movement: Patrons move simultaneously in the grid to avoid deadlocks and ensure liveness.

**Deadlock Prevention**

Order of Lock Acquisition: Proper order of acquiring locks is maintained to prevent circular waiting and deadlock situations.

Resource Allocation: Adequate synchronization mechanisms are in place to ensure that threads don't get stuck due to resource contention.