Concurrent & Parallel Programming

MSc

Assignment 1 - Total weight 20%

Assignment due 24-March, your code will be tested in lab session on the next week after 24-March, failing to attend the lab will results in 1oosing major portion of the grade.

Write a program to simulate a bus traveling between 5 different stations and repeats the cycle, the bus can take up to a maximum of 50 persons, at each station random number of persons get off the bus and random number of persons get on the bus, consider these cases

- If bus does not have enough space for all persons, persons will have to stay in station for next cycle
- Persons cannot mount on bus until persons on bus dismount first.
- You can simulate bus trip with a fixed delay between each stop to simulate travel time.
- Persons can not mount/dismount the bus until bus arrives to the designated station.

Hints:

Use semaphores to control access to the bus and other utilities to control access to bus. Use thread pools to manage thread management. You can use latches, cyclic barriers, re-entrant locks and condition variables to write your code.

You need to submit the Java program in native format, .java files only,

NO Word Doc, PDF, txt or JAR files.