

Software Developer – The Assignment

Analyses and code implementation are required

Develop 'Waiting Room' (WR) simulator. Think of a Post Office waiting room. There are customers, tickets (per task type) and counters. A customer takes the ticket for a task and waits until he receives a call to approach one of the counters to get served. Each counter has a screen with the currently active ticket number. There is also the main screen with an overview of all counters and tickets history and info with expected waiting time per task type.

Here are requirements:

- There is a fixed number of different task types. Each task type requires a fixed processing time and can take between 20 to 60 seconds to get finished.
- Customers can request one ticket at the time at any moment. The number of customers should not be limited.
- There is a fixed number of counters, where each counter can be opened at any moment, and get closed at any moment (providing it is not currently serving a customer).
- Each counter can handle only one task type while active (the task type is registered when the counter activates).
- The waiting queues are created per task type, which means that the 'task tickets' that are issued to customers are numbered in ascending order per task type.
- Each counter must process customers in the order of issued task tickets. That means, at the moment it is finished serving a customer it will start serving the customer that has requested the next issued ticket for that task type.
- If there are no customers that have requested the ticket for that task type, the counter will wait until a customer arrives who'll request a ticket of that type, or until the counter closes whatever happens first.
- It is possible that no counter is open for some specific task type. We can present unknown wait time for that task.
- Keep a log of each action in a file. The content of counter screens and the main screen should be printed in the log file.

Estimated waiting time per task type can be calculated based on averaged history and current number of queued tickets.

The simulator should model customers arrival and desks availability. Customers will request tickets at the moment they enter the Waiting Room and their arrival follows [Poisson distribution](#). The tasks they request are completely random. Each customer requests exactly 1 task. Desks are normally all open but randomly one can close after finishing serving a ticket. We can use average probability of 3 customers per minute and on average every 5 minutes one desk can get closed for 5 minutes.