Lab Statement

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Disclaimer

1. Read the Lab Statement and JavaDoc carefully before attempting the question.
2. Skeleton code is given, edit there itself.
3. Take care of package structure. Make the necessary directories before submitting the code.
4. Compile and check for compilation errors before submitting for evaluation.
5. Solve in the order of test cases to ensure proper working and maximum marks.

Problem Statement

In this lab, we are going to simulate a tourist city.

The city has 3 Hotels a threeStarHotel, a fourStarHotel and a fiveStarHotel in which Guests stay and they proceed to have food at a common DiningHall. The Guests have some wealth with them and have a minimum preference.

The guests are allotted a hotel which has the highest rating above their minimum preference given that they can afford it. If they cannot afford it, they are allotted a hotel which has the next highest rating above their minimum preference. If these conditions are not met they may not be allotted any hotel.

If they are allotted a hotel, they rest in their rooms for some time and then proceed to have breakfast in the common dining hall. Then they rest in their rooms for some time and then checkout from the hotel.
Considering the similarity between Computer Science Concepts and Real World, the behavior of these guests are like threads which have random behavior and so we make threads of guests.

Classes

Hotel

Hotel has a rating (3, 4 or 5 stars), a given number of rooms and all rooms have same fixed base cost in a hotel. A guest is welcomed if any room is free, and guests are allotted a room if they have wealth greater than the cost of a room and the rating is greater than guest's minimum preference and number of available rooms is decremented by 1. If no room is free then guest process to the hotel which has the next highest rating.

DiningHall

Dining Hall serves guests breakfast, it has a maximum capacity and it records the number of people it has served. It is common for all three hotels.

Guest

Guest is a single thread which stays in a hotel, proceeds to eat breakfast and then returns to hotel for resting and then checks out. Guest implements **Runnable** and has the run() function which runs the thread, bookRoom() which books a room for the guest and getInfo() function which gives the information about the guest.

City

City is the class which runs the whole simulation, it has 3 hotels, a dining hall and the guests, it initializes the guests as threads and runs them to simulate their behavior.

Package Structure

Follow this package directory structure strictly. No marks will be awarded if the directory structure is incorrect. The java folder should have 2 packages(directories) resources and simulator. Write package declarations and imports accordingly.

> java
>> > resources
>>> - Hotel
>>> - DiningHall
>>> - Guest
>> > simulator
>>> - City

Test Cases

Test Cases	Marks
DiningHall	1
Hotel	1
Guest (constructor)	1
Guest (initResources)	1
Guest (bookRoom)	2
City (constructor)	2
City (simulateCity)	2