Instructions:

- Go through the problem statement clearly.
- Time limit is 150 minutes (2.5 hrs).
- Make sure that project is created in eclipse.
- Create all your java files in package **com** within src folder of eclipse project.
- Make sure that exact class outline is followed as you did in your previous assignments.
- You need to zip the eclipse project folder and upload the same in ion once completed. The project folder will be available in your workspace folder.
- It is mandatory to upload eclipse project and not java files alone, for your code to be assessed.
- Make sure that there is no compilation error in your code before submission.
- Take screenshot of the output along with the input for each method

Tata Memorial Hospital is planning to automate their processes to manage the operations better.

Mainly there are below operations for which a Java based solution is required:

- Adding doctors to the Hospital
- Adding rooms to the Hospital with different room types
- Allocating rooms based on the requested room type

Create project TMH in eclipse.

All classes should be created inside **com** package.

Create class **Doctor** with below outline.

Create constructors, generate getters/setters and override required methods with the exact details given in outline.

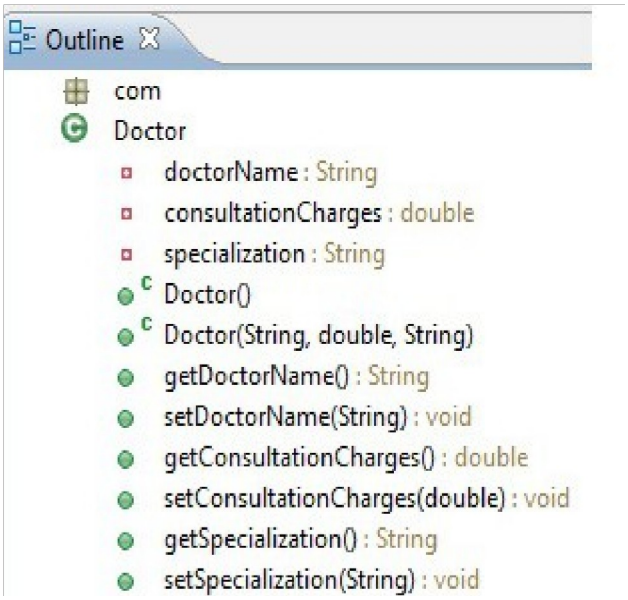
The constructor of Doctor class should be of following sequence.

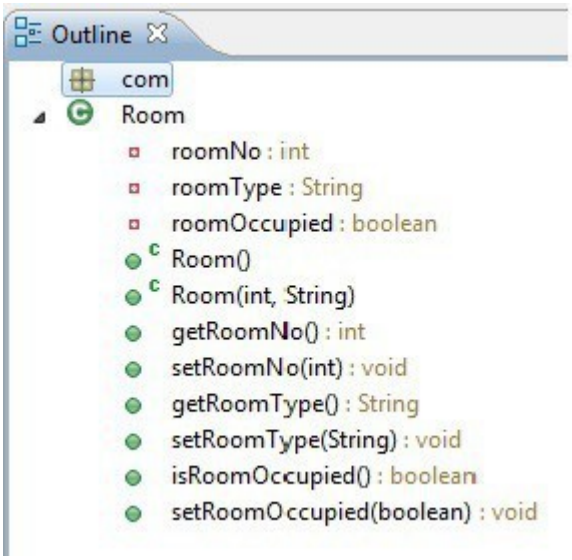
(String doctorName,double consulationCharge,String specialization)

Create **Room** class with below outline. Create constructors, generate getters/setters with the exact details given in outline.

Room Type : could be only be either AC or Non AC.

By default roomOccupied should be kept as false.

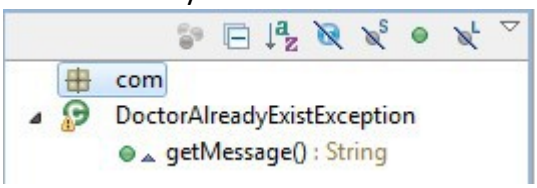




Create a user defined exception **DoctorAlreadyExistException** class . The above exception should be thrown whenever same doctor is being added once again.

Return below message from getMessage() method:

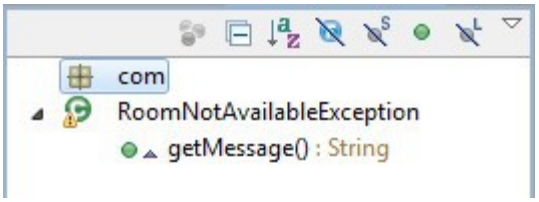
Doctor Already Exist !! Please recheck before adding new Doctor.



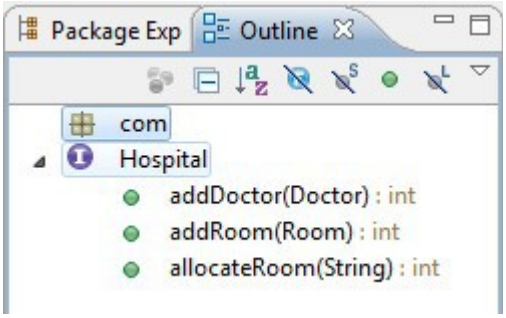
Create a user defined exception **RoomNotAvailableException** class.

Return below message from getMessage() method:

Currently Room is not available. It is already occupied.



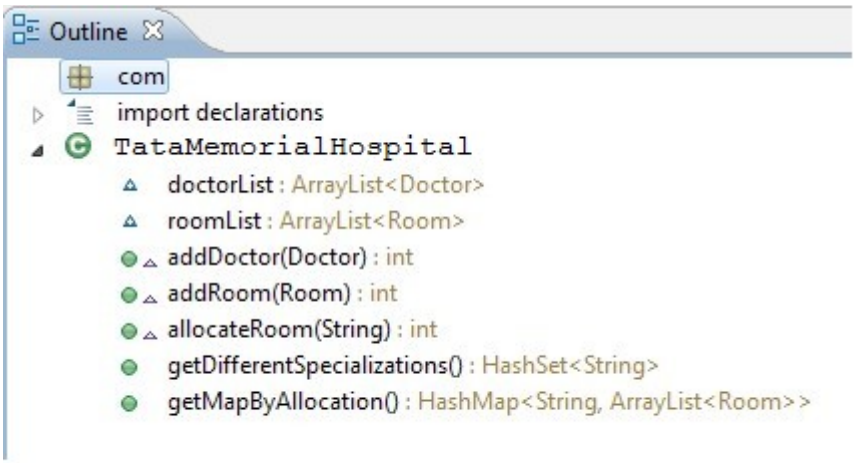
Create an interface **Hospital** –
This is a contract to follow the design for building Hospital Management System. Refer below outline



Create a class **TataMemorialHospital** with below details.

- Implement Hospital interface and all its methods with appropriate logic.
- TataMemorialHospital class should contain ArrayList of Doctors and Rooms.
- Should have main method to test the all the methods.

Refer below outline for this class.



Consider below methods in **TataMemorialHospital** class:

addDoctor – This method will take Doctor object as a parameter. It will add this object to the list if doctors with the same **name** and **specialization** does not exist in the list already and returns the total number of doctors in the list. If Doctor with the same **name** and **specialization** already exists, it must throw DoctorAlreadyExistException. Do not handle the exception there. Please throw the same.

addRoom – This method will take Room object. It will add this object to the list and returns the total number of rooms in the list. This method should not be able to add duplicate rooms in the list. If so, then the method should check from the existing list by comparing room number and then do not add the room again, but just need to return the existing size of the list. There is no need to throw/handle any exception when the duplicate room is added.

allocateRoom – This method will take roomType as parameter and allocates the room based on the room type. Please check if the room is already allocated before allocating it to another person. It returns allocated room number if the room is available for allocation. One the room is successfully allocated then the roomOccupied status should be set to true. It must throw RoomNotAvailableException if room with specified type is not available. Do not handle the exception there. Please throw the same.

getDifferentSpecializations – This method will return a **Set** of String types, where it will contain unique set of specialization that Doctors of TataMemorialHospital have. This specialization should be in sorted order.

getMapByAllocation – This method will return **HashMap** with String as key and **ArrayList of Room objects** as value. This **HashMap** should only contain 2 entries:

Key - "allocated" **Value** – ArrayList of Rooms allocated currently.
Key – "unallocated" **Value -** ArrayList of Rooms unallocated currently.

Note : One Room can be occupied by one person only.

******* **All the very best** ********