CPE102: Spring2025

ASSIGNMENT 2

Assigned on April 2, 2025. You should submit your program through Teams by April 25 (any time up to midnight). Remember that your code should be fully documented. I once again remind you to read the academic honesty policy stated below.

Academic Honesty: All course work you submit (labs, homeworkss, exams, programs, etc.) must be done on your own. Note that academic dishonesty includes not only cheating, fabrication, and plagiarism, but also includes helping other students commit acts of academic dishonesty by allowing them to obtain copies of your work. You may discuss general solution strategies with your classmates, however when it comes to formulating/writing/programming solutions, you should work independently. You may NOT share code or any written/printed work, you may NOT examine code belonging to someone else and you may NOT let anyone else examine your code. You are allowed to use the web for reference purposes, but you may NOT copy code or other written materials from any website or any other source as your own work. Failure to comply with these rules constitutes academic dishonesty and will be dealt with harshly. Cheating in assignments will result in a zero for that assignment or failure of the course, at my discretion. Any cheating or assisting another student's cheating in an exam will be penalized by failure in the course.

1. Create a class Passenger that can be used to represent a passenger on a cruise line. The class should at least have the following instance variables: name, address, age and roomNumber. Implement all constructors, copy constructor, accessors and mutators, toString and equals methods. Show me when you have done this.

2. Create a class called Room that represents a room on a cruise ship. This class should have at least the following instance variables: roomNumber, roomType (a room could be interior (I) or window (W) room), cost, a boolean type variable called occupied, and a Passenger type variable that stores a reference to the Passenger object that stays in that room. Implement all constructors, accessors and mutators, toString and equals methods. Show me when you have done this.

3. Write a driver that creates a single Passenger and a Room, and tests all the methods you have defined in the Passenger and Room classes. Print out information on each object right after creation, and after every mutator method call. Show me when your code runs.

- Design and implement a class Cruise by analogy with class Company. A cruise object will store the following: shipName, numberofInteriorRooms, numberOfWindowRooms, numberOfOccupiedRooms, interiorRoomCost, windowRoomCost, an array of Passenger objects, and an array of Room objects.
- The constructor of the Cruise class should initialize all instance variables, and also create all the room objects and initialize them as unoccupied. However, the passenger array should initially be empty-that is, you should not create any passenger objects in the constructor.
- Provide the method: **void addPassenger (Passenger p)** which takes a single Passenger objects as argument and places this passenger in the first empty room. Be careful about privacy leaks.
- Provide the method: **Passenger findPassenger (String name)** which takes a name as an argument, and if that name is found as one of the passenger names in the cruise, it returns a reference to a copy of the found Passenger object.
- Provide the **toString method** that should print information about the cruise, name, the room list and a list of all passengers in the cruise in the following form:

Ship Name: Queen

Rooms: 3 rooms total, 2 Window, 1 Interior

Number: 1, Type: W, Occupied: YES, Cost: 150.00, Passenger Name: Tom Smith

Number: 2, Type: W, Occupied: YES, Cost: 150.00, Passenger Name: Jane Williams

Number: 3, Type: I, Occupied: NO, Cost: 100.00

Passengers: 2 passengers total

(1) Name: Tom Smith, Address: 1000 St. Wayne PA, Age: 45, Room Info: Number: 1, Type: W, Occupied: YES, Cost: 150.00

(2) Name: Jane Williams, Address: 2000 St. San Jose CA, Age: 25, Room Info: Number: 2, Type: W, Occupied: YES, Cost: 150.00

- Write a Driver by analogy with CompanyDriver that creates a cruise, adds several passengers, prints information on the cruise, seaches for passengers in the cruise, etc.