Container Classes

Nested Collections

COMP2603
Object Oriented Programming 1

Week 10

Nested Collection Exercises

Exercise 1

- A competition stores a list of winners for first, second and third place in order.
- The competition has 10 races identified by a number from 1… 10
- A race is not modelled as an object but only by a unique race numbers
- A winner is modelled by a String
- Given a race number, any of winners for first, second or third place can be *randomly accessed.*

Write Java code for the Collection used in the Competition class to model this data.

Exercise 2

A cinema stores a list of movies, **movies**, that are now showing. The list is in alphabetical order. For any movie, the cinema is able to tell a customer how many seats are available.

Write Java code for the Cinema class that has either a Collection or a Map for ordering the movies.

Write Java code for a method *getNumSeats(String movie): int* the returns the number of seats left for the given movie if found, otherwise it returns -1.

Exercise 3

- A hotel stores a list of reservations where each reservation can have up to 3 rooms associated with it.
- A reservation is modelled by a Reservation class that has only a guest name.
- A room is modelled by a Room class with only a unique room num.
- A hotel is modelled by a Hotel class with only 1 Map in it and a no-args constructor
- Given a reservation, the list of rooms can be *efficiently* retrieved

Write Java code for the Hotel class.

Exercise 4

Leading from Exercise 3:

In the Hotel class:

Write Java code for a method *verifyRoomReservation(String name): int* which accepts a guest name and returns the number of rooms reserved if there is a reservation found, 0 otherwise.

State any assumptions made about the Reservation class

Exercise 5

A chef is compiling a recipe book of recipes that will be modelled by a RecipeBook.

Each recipe is sorted by title. However, given any recipe, the list of ingredients sorted by their quantities can be retrieved.

Assume that a Recipe class and an Ingredient class exist with the following class signatures:

```
public class Recipe{  }
public class Ingredient{  }
```

Write Java code for the RecipeBook class stating any assumptions made. A map called recipesAndIngredients should be declared and initialised in this class.