Object-Oriented Programming Lab#7, Fall 23

Today's Topics

- Class/Object
- Access modifier
- package
- ArrayList

ArrayLIst:

Action	Code
Creating an ArrayList	ArrayList<T> list = new ArrayList<T>();
Adding element to arraylist	list.add(T t);
Adding multiple elements to arraylist	list.addAll(ArrayList<T> t);
Remove an element	list.remove(int index) list.remove(T t)
Remove multiple elements from an arraylist	list.removeAll(ArrayList<T> t);
Accessing an element	List.get(int index)
Size of arraylist	list.size();

Problems/Assignments – Online Reservation System

Create an Online Reservation System to help the customer and owner of the item to streamline the booking process and enhance customer experience. The system should allow customers to easily make reservations for a hotel, restaurant, vehicle through an intuitive and user-friendly interface. There will be 2 types of customers to this system; owner of the item and who wants to reserve the item. Each owner has to create an account to the system to add their item info to the system. Customer also has to create account if he/she wants to rent a property.

Here is the list of the classes to implement the Application

1. **Item** Class (under **uap** package):
    a. **Attributes** (all private): id, description, category, ArrayList<String> features, rate, isAvailable, owner, personReserved
    b. **Constructor** – pass parameter for all except **isAvailable** and **personReserved**. Inside the constructor, initialize the attributes with respective parameters and set the **isAvailable** to true.
    c. **Methods**:

Method Header	What the method should do?
public void addFeature(String feature)	Add the **feature** parameter to ***features*** attribute
public void removeFeature(String feature)	Remove the **feature** parameter from ***features*** attribute.

public void addFeatures(ArrayList<String> features)	Add the **features** parameter to ***features*** attribute using the **addAll** method of **ArrayList** class.
public void removeFeatures(ArrayList<String> features)	Remove the **features** parameter from ***features*** attribute using the **removeAll** method of **ArrayList** class
add getter methods for all attributes	
add setter method for rate, isAvailable, and personReserved	
public void reserveItem(String personReserved)	set the **isAvailable** to false and **personReserved** using the setter methods.
public void reservationOver()	set the **isAvailable** to true and **personReserved** to **null** using the setter methods.
public void cancelReservation()	set the **isAvailable** to true and **personReserved** to **null** using the setting methods.
public String toString()	Return the attribute values as String.

2. **ReservationSystem** class (under **uap** package):
    a. **Attributes** (all private): name, ArrayList<Item> items
    b. **Constructor-** pass parameter for name. Inside the constructor, initialize the name attribute with the parameter and instantiate the items arraylist.
    c. **Methods**:

Method Header	**What the method should do?**
public void addItem(String id, String description, String category, double rate, ArrayList<String> features, String owner)	Create a Item object using the parameters and add the ***items*** attribute/list
public int/Item findItem(String id)	Loop through the ***items*** attribute and find the item that has matching id. If the item is found, return the index/Item. Otherwise return -1/null.
public void addFeature(String id, String feature)	Call ***findItem*** method and call ***addFeature*** if the item is found.
public void removeFeature(String id, String feature)	Call ***findItem*** method and call ***removeFeature*** of the **Item** class if the item is found.
public void addFeatures(String id, ArrayList<String> features)	Call ***findItem*** method and call ***addFeatures*** of the **Item** class if the item is found.
public void removeFeatures(String id, ArrayList<String> features)	Call ***findItem*** method and call ***removeFeatures*** of the **Item** class if the item is found.
public void reserveItem(String id, String personReserved)	Call ***findItem*** method. If the item is available, call ***reserveItem*** method of the **Item** class.
public void reservationComplete(String id)	Call ***findItem*** method. If the item is available, call ***reservationOver*** method of the **Item** class.
public void cancelReservation(String id)	Call ***findItem*** method. If the item is available, call ***cancelReservation*** method of the **Item** class.
public ArrayList<Item> getItems()	Getter method for **items** attribute.

public void viewAll()	Loop through the ***items*** attribute and print each item.
public void viewDetails(String id)	Call ***findItem*** method and print the item if the item is found.

3. **App** class (under **uap.app** package):
    a. Add main method, create an object of **ReservationSystem** class and provide menu for each method.