



*College of Electrical & Mechanical Engineering
(CEME), NUST- Pakistan*

Department of Electrical Engineering



OBJECT-ORIENTED PROGRAMMING (CS-212)

PROJECT REPORT **HOTEL MANAGEMENT**

Submitted To:

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DE-42-EE Syndicate-B

❖ GitHub Repository:

- All the code of this project is committed to GitHub. To view the repository, click this link:
https://github.com/mamushtag/Hotel_management

❖ Project Abstract:

Hotel Management is a specially designed software for adding, overwriting, and viewing details a hotel may need to store, or view later.

- This software needed a way to add and view correct Customer details. Which included his personal information, the number of days staying, or starting date.
- One of the main requirements of the software was to allow the user/customer to order room service or food automatically. To provide maximum comfort to the user.
- This software should allow the user to view the rooms, check-in, and check out from rooms.
- This software also needed a way to change the items available in the cafeteria, rooms, or even add new floors to the system.
- Overwriting the current data stored in the files is also an important feature this software should introduce.

❖ Project Problems, Features & Approach Detail:

One of the main problems this software idea needed to solve was storing the unknown amount of data somewhere that can be accessed later. To tackle this problem, most of this software is based on File Handling and exception handling for storing the data. Abstract classes to create an easy way to create rooms of different kinds. Inheritance to ensure data members are used in all classes.

```
<----->
**
**                               <----->
**      WELCOME TO Serena Hotel  **
**                               <----->
**                               <----->
**      We provide the best accomodation services  **
**                               <----->
**
<----->

** Home Page **
*****

Hi there! This is the welcome lobby of the Hotel. It's our pleasure to have you with us. You can:
1. Register as a new customer
2. Log into your account
3. Log in as Manager
4. Visit Hotel Website
5. Display all rooms
0. Quit

Please enter the serial number of the option you want to choose:
```

- To store all the Customers, we allowed the user to enter its data, made sure it was error-free, and then recommend a username for the user. This username plays a very important role in identifying the user's specific account, in case of multiple accounts with the same name, as there cannot be two users with the same usernames. To make sure there cannot be two accounts of the same person, this software checks the first name, last name, and email address of the customer and if all three of these are the same, the user cannot create another account. Then the user will be asked to enter his/her username and password, if the username is not used by any other accounts before and is greater than 3 letters, then the user's account is created and stored in the customers.dat file. After this, the user is asked to log into his/her account to continue.

```

<----->
**                                     <----->
**                                     ** WELCOME TO Serena Hotel **
**                                     <----->
**                                     <----->
** We provide the best accomodation services **
**                                     <----->
**                                     <----->
<----->

** Register as a New Customer **
-----

Please Enter your data to register:

Your First name:      fname
Your Last name:       lname
Your Email Address:   email@gmail.com
Your Phone no.:       03xx-xxxxxxx
Your age:             19
Your Gender(1 for 'M' and 2 for 'F'): 1_

<----->
**                                     <----->
**                                     ** WELCOME TO Serena Hotel **
**                                     <----->
**                                     <----->
** We provide the best accomodation services **
**                                     <----->
**                                     <----->
<----->

** Register as a New Customer **
-----

Please Enter your username and Id to register.

Recommended username: fname
Your username:         fname
Your password:         fname

Press any key to continue . . .

!! Account Created !!
!! Your ID: 3 !!
!! Log in to continue !!
-----

Press any key to continue . . . _

```

- The log-in account asks the user to enter his username and password, then checks whether both username and password exist in the file or not. If they exist and both are correct, then the user is allowed to log into the account and sent it to the main page.

```

<----->
**
**               <----->
**               ** WELCOME TO Serena Hotel **
**               <----->
**               <----->
**               ** We provide the best accomodation services **
**               <----->
**
<----->

               ** Log in to your Account **
               -----

Please Enter your username and Id to log in.

Your username:      fname
Your password:      fname

```

- On the main page user can:

```

<----->
**
**                               <----->
**                               ** WELCOME TO Serena Hotel **
**                               <----->
**                               <----->
**                               ** We provide the best accomodation services **
**                               <----->
**
<----->

                                ** User Menu **
                                =====

1. Check In
2. Check Out
3. View All Rooms
4. Account settings
5. View your Room details
6. Visit Cafeteria
7. Order Food
0. Quit

Enter the serial number of option you want to choose: _

```

- **Check into a Room of Customers' Choice:** If the user has not checked into any room, then the user has displayed all the rooms, then asked to enter the room number of the room customer wants to check into. If the room is not available, then the display function shows that the room is not available and if by chance the customer enters the room no of the room which is not available then the programs also give the error that the room is not available and sends the user back to selecting a room. The user can also not enter the room number of a room which does not exist. If the user enters the room number correctly, the user is asked to enter today's date and the number of nights he wants to stay. While making sure the data entered is logically correct, the user is then shown the amount of money he will have to pay before checking out and after confirming from the user, the user is checked into the room and that room is set to not available. Then the user is not allowed to check into any other room before checking out.

```

<----->
**
**                               <----->
**                               ** WELCOME TO Serena Hotel **
**                               <----->
**                               <----->
** We provide the best accomodation services **
**                               <----->
**
<----->

** All Single Rooms of floor: 1 **
-----
Room no:100   Price: 15$ per night      Room Type : Single with bathroom
Room no:101   Price: 15$ per night      Room Type : s2
Room no:102   Price: 15$ per night      Room Type : s3

** All Double Rooms of floor: 1 **
-----
Room no:110   Price: 25$ per night      Room Type : d1
Room no:111   Price: 25$ per night      Room Type : d2
Room no:112   Price: 25$ per night      Room Type : d3
Room no:113   Price: 25$ per night      Room Type : d4

Press any key to continue . . .

** Room Booking **
-----

Enter the room number of the room you want to select: 110_

```

```

<-----> **
**                                     <-----> **
**                               ** WELCOME TO Serena Hotel **                               **
**                                     <-----> **
**                               <-----> **
**                               ** We provide the best accomodation services **                               **
**                               <-----> **
**                                     <-----> **
<----->

                                ** Check into Room No: 110 **
                                -----

Please Enter the following data to check-in:

Today's Date:
Day:          4
Month:        2
Year:         2022

Number of nights you want to stay: 5

                                ** Your total price will be 125$ **
                                -----

Would you like to conitnue (Enter 1) or return to homepage (Enter 0)? :

```

```

<----->
**
**                               <----->
**                               ** WELCOME TO Serena Hotel **
**                               <----->
**                               <----->
**                               ** We provide the best accomodation services **
**                               <----->
**
<----->

** User Menu **
=====

1. Check In
2. Check Out
3. View All Rooms
4. Account settings
5. View your Room details
6. Visit Cafeteria
7. Order Food
0. Quit

Enter the serial number of option you want to choose: 1

!! You are currently staying in Room number: 110 !!
!! Check out !!
=====

Press any key to continue . . .

```

- **Check-Out of the Room:** If the user has checked in to a room, then the user is taken to the check-out function. In this function, the user is asked to enter today's date and the program calculates the number of nights the user has stayed in that room and charges accordingly. If the customer checks out the day the user was supposed to check out, then there is no message and the user simply pays and checks out. But if the user is checking out early or late, he/she is informed but is charged according to the nights he/she has stayed. Then file handling is used to overwrite the edited changes to customer and room files.

```

<----->
**                                     **
**      WELCOME TO Serena Hotel      **
**                                     **
<----->
** We provide the best accomodation services **
<----->

** Check out of Room No: 110 **

Please Enter the following data to check-in:
Today's Date:
Day:          5
Month:        2
Year:         2022

Number of nights you have stayed: 1
** Your total price is 25$ **
You are checking out 4 nights early.

Would you like to continue (Enter 1) or return to homepage (Enter 0)? : 1

!!      You have paid 25$      !!
Press any key to continue . . .

```

```

<----->
**                                     **
**      WELCOME TO Serena Hotel      **
**                                     **
<----->
** We provide the best accomodation services **
<----->

** User Menu **
*****
1. Check In
2. Check Out
3. View All Rooms
4. Account settings
5. View your Room details
6. Visit Cafeteria
7. Order Food
0. Quit

Enter the serial number of option you want to choose: 2

!! You are currently not staying in any room. !!
!! Check in first !!
Press any key to continue . . .

```

- **Display All Rooms:** This option allows the user to display all the rooms. Available rooms will only display the room number, room price per night, and room type. Otherwise, there will be a room not available written between price and room type.

```

<----->
**
**
** WELCOME TO Serena Hotel **
**
**
** We provide the best accomodation services **
**
**
<----->

** All Single Rooms of floor: 1 **
Room no:100 Price: 15$ per night Room Type : Single with bathroom
Room no:101 Price: 15$ per night Room Type : s2
Room no:102 Price: 15$ per night Room Type : s3

** All Double Rooms of floor: 1 **
Room no:110 Price: 25$ per night Room Type : d1
Room no:111 Price: 25$ per night Room Type : d2
Room no:112 Price: 25$ per night Room Type : d3
Room no:113 Price: 25$ per night Room Type : d4

Press any key to continue . . .

```

- **Accounts Settings:** If the user wants to change its previous data i.e., name, age, or even username and password, the user can enter the serial number of that attribute and change the value. This change will be overwritten into the file when the user will enter 0 to return to the home page.

```

<----->
**
**
** WELCOME TO Serena Hotel **
**
**
** We provide the best accomodation services **
**
**
<----->

** Account Settings **
-----
Enter the serial number of attribute you want to change:
1. First Name: Muhammad Ali
2. Last Name: Hushaq
3. Email Address: mamushtaq@gmail.com
4. Age: 19
5. Gender: Male
6. Phone Number: 03028016194
7. Username: mamushtaq
Press any key to continue . . .
8. Password: *****
9. Quit
Enter the serial number of option you want to choose:

```

- **View Room Details:** If the user is already checked into a room, then it can view the room details.

```

<----->
**
**
** WELCOME TO Serena Hotel **
**
**
** We provide the best accomodation services **
**
**
<----->

** Room no: 110 **
-----
Price per night: 25$
Room Type: d1
Available: No
Customer Staying: mamushtaq
Staying since: 3 2 2022
Staying till: 7 2 2022
Price to be paid: 125$

Press any key to continue . . .

```

- **Visit Cafeteria and Order Food:** The user has the option to view the cafeteria and order food and drink from the cafeteria. At first, the software displays all the available items of the cafeteria and asks the user to select whether he/she wants to order food or drink.

```

<----->
**                                     **
**      WELCOME TO Serena Hotel      **
**                                     **
**      We provide the best accomodation services **
**                                     **
<----->

**      Cafeteria      **
-----

This is the menu of Cafeteria:

**      Food      **
-----
1. Food Name:      Simple Biryani      Price: 1.5$
**      Drinks      **
-----
1. Drink Name:      Sprite 500ml      Price: 0.5$

Press any key to continue . . .

**      Order the Item      **
-----
1. Food
2. Drink
Enter the serial number of type of item you want to change, or 0 to exit: 1

```

- Then the software asks the user to enter the serial number of the item the user wants to order, the quantity, and confirmation whether the user wants to order or not.

```

<----->
**                                     **
**      WELCOME TO Serena Hotel      **
**                                     **
**      We provide the best accomodation services **
**                                     **
<----->

**      Food      **
-----
1. Food Name:      Simple Biryani      Price: 1.5$
Enter the serial number of item you want to change (Enter -1 to exit): 1
Enter the quantity of this specific item: 3

!! You have to pay 4.5$ !!
-----

Would you like to conitnue (Enter 1) or return to homepage (Enter 0)? : 1

!! Your food is on the way !!
-----
Press any key to continue . . .

```

- In all these functions, file handling plays a major role in displaying, storing, and overwriting data. For room services one **Floor** class is created which controls the functions of abstract class **Room** with two derived classes, **Single_room** and **Double_room**. For cafeteria services, there is a **Cafeteria** class that handles the **Food** and **Drinks** classes.

- **Manager** class, similar to log in of Customer, allows the manager to log in. If there is no manager.dat file, then the default username and password are admin and admin respectively.

```

<=====>
**
**                               <----->
**                               **   WELCOME TO Serena Hotel   **
**                               <----->
**                               <----->
**                               ** We provide the best accomodation services **
**                               <----->
**
<=====>

                               **   User Menu   **
                               =====

1. Create a new Floor
2. View All Rooms
3. View specific room
4. Account settings
5. View Cafeteria Menu
6. Change Cafeteria Menu
7. Add to Cafeteria Menu
0. Quit

Enter the serial number of option you want to choose:

```

- After logging in successfully manager can:

```

<----->
**
**                               <----->
**                               ** WELCOME TO Serena Hotel **
**                               <----->
**                               <----->
**                               ** We provide the best accomodation services **
**                               <----->
**                               <----->
<----->

** Log in to your Account **
-----

Please Enter your username and Id to log in.

Your username:      mamushtaq
Your password:      abc

```

- **Create a New Floor:** Every floor contains a total of 7 rooms, neither less nor more. At first, a new floor object is saved into floors.dat then the program asks the user to enter the filename of the file in which all objects of rooms will be created. Each file represents rooms on a specific floor. Then every room object is created and saved into the file. The manager class can view all the rooms also.

```
<-----> **
**
**                               <----->
**                               ** WELCOME TO Serena Hotel **
**                               <----->
**                               ----->
**                               ** We provide the best accomodation services **
**                               <----->
**
<----->

                                ** Add a New Floor **
                                -----
                                ** The floor number is 2 **

Enter the number of rooms of each type on these floors:
Single Rooms:      3
Double Rooms:      4
Enter Floor file name: floor2.dat
```

```
<----->  
**  
** <----->  
** ** WELCOME TO Serena Hotel **  
** <----->  
** <----->  
** We provide the best accommodation services **  
** <----->  
**  
----->  
  
                **      Create a New Room      **  
            -----  
                **      Room Number: 200      **  
  
Please Enter Room data to create a room:  
  
Room Type:          S1  
  
!! Single Room: 1 Created !!  
-----  
  
Press any key to continue . . .
```

- **Viewing Specific Room:** Manager class allows the user to view the room details of every room by entering the room number.

```
<----->
**
**                                     <----->
**                                     ** WELCOME TO Serena Hotel **
**                                     <----->
**                                     <----->
**                                     ** We provide the best accomodation services **
**                                     <----->
**
<----->

** Add a New Floor **
-----
** The floor number is 2 **

Enter the number of rooms of each type on these floors:
Single Rooms:      3
Double Rooms:      4
Enter Floor file name: floor2.dat
```

```

<----->
**                                     **
**      WELCOME TO Serena Hotel      **
**      <----->                     **
**      We provide the best accomodation services  **
**      <----->                     **
**                                     **
<----->

**      Create a New Room      **
**      <----->               **
**      Room Number: 200      **
**      <----->               **

Please Enter Room data to create a room:
Room Type:      S1

!! Single Room: 1 Created !!
<----->
Press any key to continue . . .

```

- **Changing Username and Password:** Similar to customer class, the manager can change its username and password. These changes are overwritten into the file when the user returns to the manager menu by entering 0.

```

<----->
**                                     **
**      WELCOME TO Serena Hotel      **
**      <----->                     **
**      We provide the best accomodation services  **
**      <----->                     **
**                                     **
<----->

**      Account Settings      **
**      <----->               **

Enter the serial number of attribute you want to change:
1. Username:      mmushtaq
2. Password:      *****
0. Quit

Enter the serial number of option you want to choose: 1

Please Enter your data to change:
Your username:      mmushtaq

!! Task Completed !!
<----->
Press any key to continue . . .

```

```

<----->
**                                     **
**      WELCOME TO Serena Hotel      **
**      <----->                     **
**      We provide the best accomodation services  **
**      <----->                     **
**                                     **
<----->

**      Account Settings      **
**      <----->               **

Enter the serial number of attribute you want to change:
1. Username:      mmushtaq
2. Password:      *****
0. Quit

Enter the serial number of option you want to choose: _

```

- **Change or Add to Cafeteria Menu:** The manager class has the authority to view, change or add new items to the cafeteria menu. Both food and drinks are added by the manager.

```

<----->
** WELCOME TO Serena Hotel **
<----->
<----->
** We provide the best accomodation services **
<----->
<----->

=====

                ** Cafeteria **
                =====

This is the menu of Cafeteria:

                ** Food **
                =====
1. Food Name:      Simple Biryani          Price: 1.5$
                ** Drinks **
                =====
1. Drink Name:     Sprite 500ml           Price: 0.5$
    Press any key to continue . . .

                ** Overwrite the Item **
                =====
1. Food
2. Drink
Enter the serial number of type of item you want to change, or 0 to exit: 1_

<----->
** WELCOME TO Serena Hotel **
<----->
<----->
** We provide the best accomodation services **
<----->
<----->

=====

                ** Food **
                =====
1. Food Name:      Simple Biryani          Price: 1.5$
Enter the serial number of item you want to order (Enter -1 to exit): _

<----->
** WELCOME TO Serena Hotel **
<----->
<----->
** We provide the best accomodation services **
<----->
<----->

=====

                ** Food Detail **
                =====
Food Name:         Simple Biryani          Price: 1.5$
Enter 1 to change Food name, 2 to change price and 0 to exit: 1
Title of food:     Small Biryani

<----->
** WELCOME TO Serena Hotel **
<----->
<----->
** We provide the best accomodation services **
<----->
<----->

=====

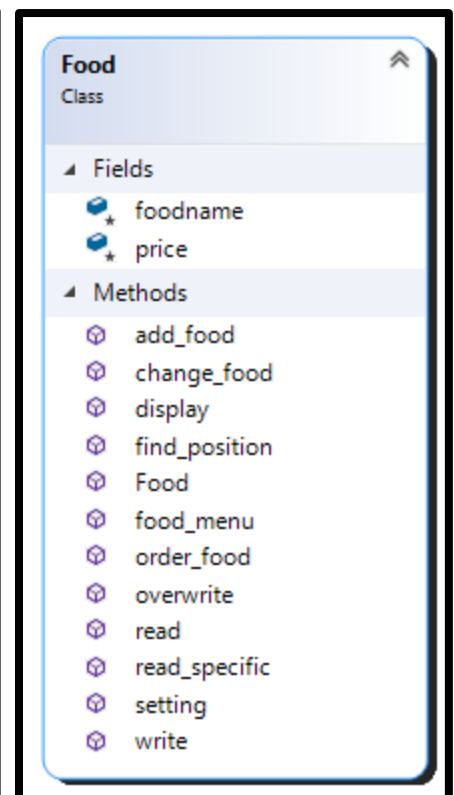
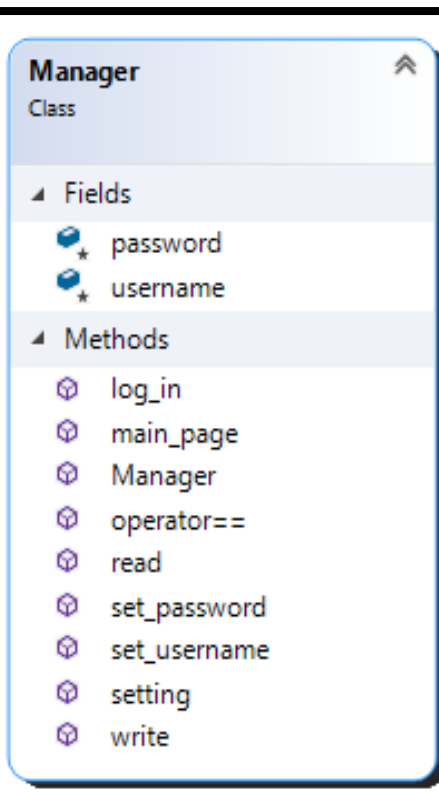
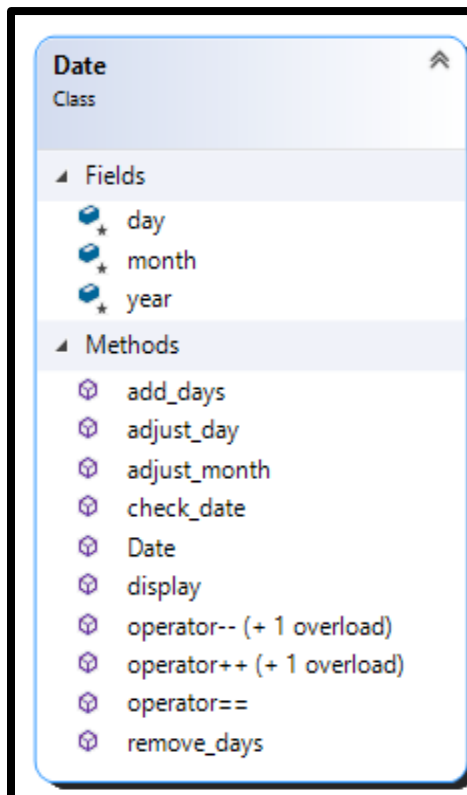
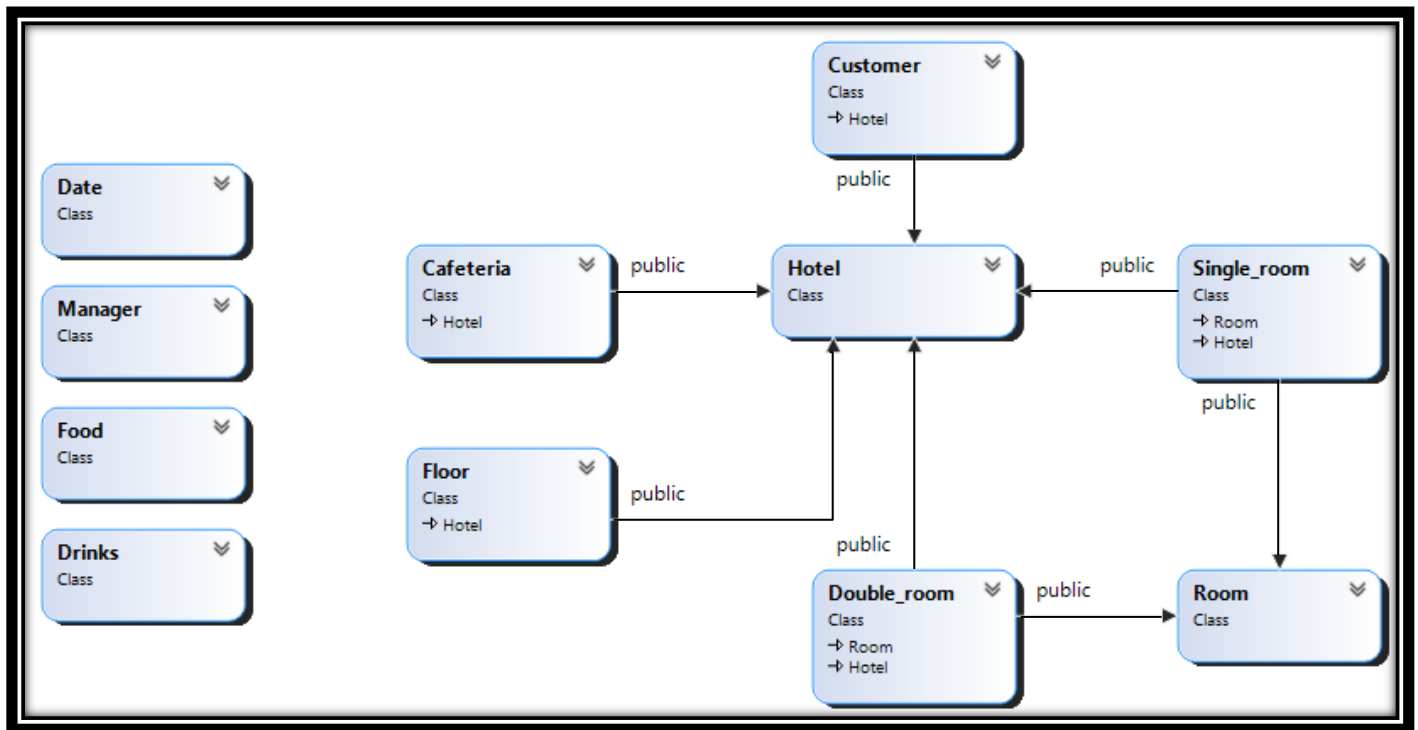
                ** Cafeteria **
                =====

This is the menu of Cafeteria:

                ** Food **
                =====
1. Food Name:      Small Biryani          Price: 1.5$
                ** Drinks **
                =====
1. Drink Name:     Sprite 500ml           Price: 0.5$
    Press any key to continue . . .

```

- Similar to the Customer class, the Manager class calls the functions of Floor class which then calls the functions of Room classes. Similarly, the Manager class calls the Cafeteria class which then calls the functions of Food and Drinks classes.
- Main also has an option to view the website. This option opens up a website on the user's browser using *shellapi*. The website which it opens is: <https://www.serenahotels.com/islamabad>
- There are a total of 11 classes.
- **Whose UML diagrams are represented below:**

❖ UML Diagrams:

Customer

Class

→ Hotel

Fields

- ★ age
- ★ current_room_no
- ★ currently_staying
- ★ email_address
- ★ firstname
- ★ gender
- ★ id
- ★ lastname
- ★ password
- ★ phone_number
- ★ price
- ★ total_customers
- ★ username

Methods

- ⊗ account_already_created
- ⊗ check_in
- ⊗ check_out
- ⊗ create_login_id_and_pass
- ⊗ Customer
- ⊗ display
- ⊗ log_in
- ⊗ main_page
- ⊗ overwrite
- ⊗ read
- ⊗ register_account
- ⊗ set_age
- ⊗ set_email
- ⊗ set_first_name
- ⊗ set_gender
- ⊗ set_last_name
- ⊗ set_password
- ⊗ set_phone
- ⊗ set_total_customers
- ⊗ set_username
- ⊗ setting
- ⊗ user_available
- ⊗ write

Drinks

Class

Fields

- ★ drinkname
- ★ price

Methods

- ⊗ add_drink
- ⊗ change_drink
- ⊗ display
- ⊗ drink_menu
- ⊗ Drinks
- ⊗ find_position
- ⊗ order_drink
- ⊗ overwrite
- ⊗ read
- ⊗ read_specific
- ⊗ setting
- ⊗ write

Floor

Class

→ Hotel

Fields

- ★ floor_file
- ★ floor_number
- ★ rooms_available
- ★ total_floors

Methods

- ⊗ add_floor
- ⊗ find_room
- ⊗ find_total_floors
- ⊗ Floor
- ⊗ read_all_rooms
- ⊗ write

Hotel

Class

Fields

- ★ hotel_name

Methods

- ⊗ continue_or_not
- ⊗ display
- ⊗ Hotel
- ⊗ main_page

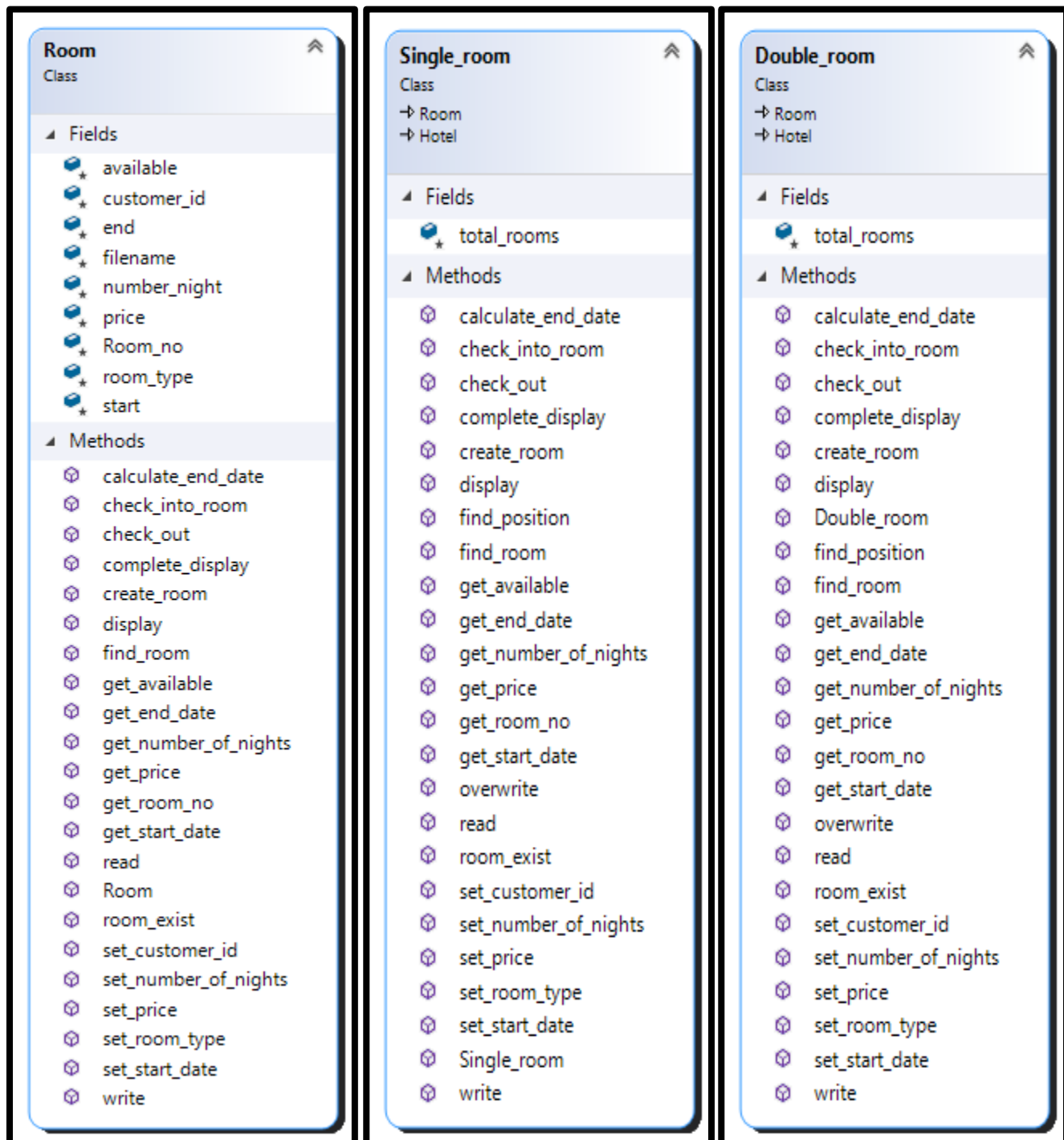
Cafeteria

Class

→ Hotel

Methods

- ⊗ add_new_item
- ⊗ menu
- ⊗ order
- ⊗ overwrite



THANK YOU