UNIVERSITY OF MALAYA

TECHNICAL REPORT

WIX 1002 - Fundamentals of Programming

Session 2021/2022

Semester 1

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Requirements and Explanation of the assigned project

Our project requires us to do a hotel system that allows users to book the room and admin to manage the room.

In the booking system, the user should be able to:

- Register an account
- Login to the account
- Reset password
- View the rooms
- Sort the rooms
- Book the room if the date selected is available
- Make transactions
- Review the room

In the management system, the administrator should be able to:

- Login to admin account
- Edit the details of the room
- Add new rooms

Approach to solve the task

1. The project is separated into a few folder:
    a. Login
        i. signUp
        ii. Login
        iii. ForgotPassword
        iv. EmailReset
        v. EmailReset2
    b. user
        i. AdminPage
        ii. ChangePassword
        iii. customerPage
        iv. UpdateProfile
    c. rooms
        i. CheckinRoom
        ii. CheckOutRoom
        iii. ConfirmBooking
        iv. Lists
        v. Room
        vi. RoomAvailable
        vii. Roomlist
        viii. SearchRoom
        ix. SearchRoomCondition
        x. TheModel
    d. transaction
        i. Signup
        ii. transactionHistory
        iii. transactionlist

e. service

I. LuckyHotel

Ii Update

Iii Database

Iv Selection

f. Review

i. rating

2. The project also have the extra features which can make out system better, so we decide to add a few extra features:
    a. Microsoft Azure(online database)
    b. Graphical User Interface(GUI)
    c. List of Image for every room
    d. Email Confirmation
    e. Exception Handling
    f. Other feature: Generate invoice

Description for the solution

Login

signUp

Users are required to enter their personal information which are name, gender, birthdate, phone number, email, password, password reconfirmation, security question and the answer to sign up a new account.

Login

Users need to enter their email and password and choose the user type which consists of customer and admin. Users are not able to proceed to the next page if the email, password or user type entered are incorrect.

ForgotPassword

This class allows the user to reset their password by answering the security question they chose during the sign up process.

EmailReset

If the users have forgotten their answer for the security question, they can reset their password by using email. In this class, users need to enter their email address and a confirmation code will be sent to their email.

EmailReset2

After users enter the confirmation code, they are allowed to reset their password.

User

AdminPage

Admin can choose to manage the rooms and check the check in or check out records.

ChangePassword

The users can change their existing passwords by entering their old passwords for confirmation purposes and then key in their new passwords.

customerPage

This class accumulates all functions which the users can choose to change their profiles or password, view the room list and history(check their previous booking room and give reviews), search and book available rooms.

UpdateProfile

The users can update and save their personal details, including their names, genders, birthdates and phone numbers after logging into their accounts.

Rooms

CheckinRoom

This class used to check in the room when the customer came to the hotel.

CheckOutRoom

This class used to check out the room when the customer returned the key of the room.

ConfirmBooking

After customer chose the room, this class showe all the details and calculate the total amount should be paid by the customer.

lists

This class gets the information using methods from the RoomAvailable class and adds it to the ArrayList.

Room

The administrators can add, update and delete room(s). To add a room, they should at least insert Room ID and price, choose the room type and upload the image to add the room successfully.

To prevent the admin upload something else which is not picture, we use:

- FileNameExtensionFilter("*.IMAGE","jpg","gif","png")
- addChoosableFileFilter(filter)

So that others file types will not be recognized.

There is also a jTable to show all the rooms in Lucky Hotel using:

- (DefaultTableModel) jTable1.getModel()
- addRow(new Object[]{rs.getString(1)});

Using these methods, jTable will get data from the database and show it row by row.

RoomAvailable

This class consists of instance variables, constructor and getter methods. The class is used to get the room information for the Roomlist class and SearchRoom class, so that we do not have to have the similar code in two different classes.

Roomlist

This class shows all the rooms in Lucky Hotel using jTable, the customers are allowed to sort ascending and descending according to the condition they choose, which are Amount of Guests, Amount of Bed, Price and Rating.

SearchRoomCondition

Let the customers type in the room id which was previously shown in the Roomlist. Customers are also required to choose the check in and check out date before viewing the details of the room.

SearchRoom

This class shows the details or information of the room and checks the availability of the room so that duplicate appointments will not occur. If the room is not available during the date the customers chose, then they are not allowed to press the BOOK button.

TheModel

This TheModel class is created with a few methods, such as getter methods to reduce the duplicated code when showing the data extracted from the database to the jTable

Transaction

transactionList

A class that contain all the variables needed for transaction which are String roomid, String roomtype, double total_pay, int noOfDay, Date checkindate, Date checkoutdate, Timestamp datetimeTransaction.

transactionHistory

This class shows all the transactions information in Lucky Hotel using jTable, the information are based on transactionList class and admin are allow to generate invoice to customers.

Signup

This class will show a page for users to enter the information for the transaction which are their credit card numbers, name on cards, credit card types, CCV numbers and expiration date of the cards as proof for the transaction. User should also enter the amount of the transaction for booking. If the amount is enough, the transaction is successful and the room will reserve for the customer and will not available for booking between the date.

Review

Rating

Users are required to rate from 1 to 5 and write a comment for the room. The data input by the users will be saved in the online database. The average rating and comments of each room will be shown in the roomlist.

Service

All the java files in this package assisting in updating the database, used to reduce the code reusability and also help in setting up the whole database.

Extra Features

1. Microsoft Azure(online database)

   Online database is use to store a variety of data such as user information and booking record so that we can check the booking history and set the room available for the next booking.

2. Graphical User Interface(GUI)

   Make the system more user friendly and can book their room easily

3. List of Image for every room

   The images are added to let the customers can make better decision, to show the image, we use:

   - new ImageIcon(new ImageIcon(rooms.get(i).getImage()).getImage()
     - The image can be shown in the pages when the customer is browsing the rooms.
   - .getScaledInstance(int width,int height, Image.SCALE_SMOOTH)
     - This method let us set the width and height of the image and make it fit the jLabel.

4. Email Confirmation

   The user will get a verification code through email if he forgot his password. After entering the correct verification code, the user can set his new password.

5. Exception

When we are doing our project, there are some cases we need to catch the exception and we tried to catch some specific exception, which are:

- ParseException
    - This exception checks whether the String can be parsed into a different specific format. In our project, we caught this exception when we tried to parse the String into double and also to the Date format to calculate the number of days the customers booked and the price they needed to pay.
- SQLException
    - This exception is caught and gives the information when there are errors connecting to the database.
- NullPointerException
    - This exception is a runtime exception that occurs when a variable accessed is not pointing to any object and refers to nothing. We caught this exception to make sure that no information is left out as null and must be filled.
- FileNotFoundException
    - This exception is caught when there is an error when we try to access a file. In our project, this exception is caught when we want to generate the invoice using the FileOutputStream().
- HeadlessException
    - We tried to catch this exception when calling JOptionPane.
- MessagingException
    - This exception was caught when we tried to send a verification message to the email.
- DocumentException
    - This exception is caught when we are trying to output the pdf file using PdfWriter.getInstance(document,fileOutputStream))

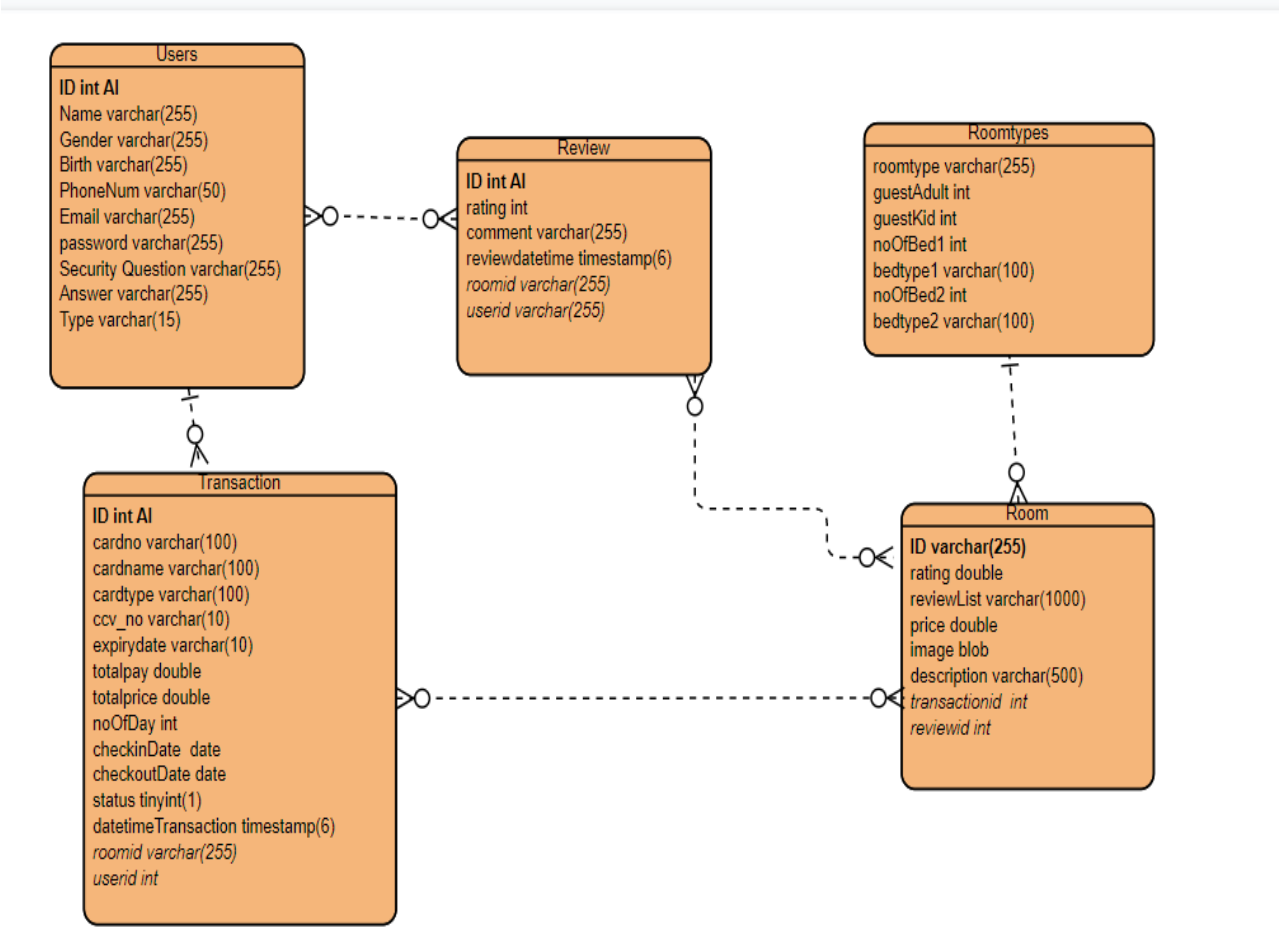
6. Other feature : Generate invoice

   A special feature is added for the user to generate an invoice after the payment is done.The invoice consists of all the information needed:

   - room id
   - room type
   - total payment
   - number of days
   - check-in date
   - check-out date
   - transaction time

   The invoice will be generated in pdf form.

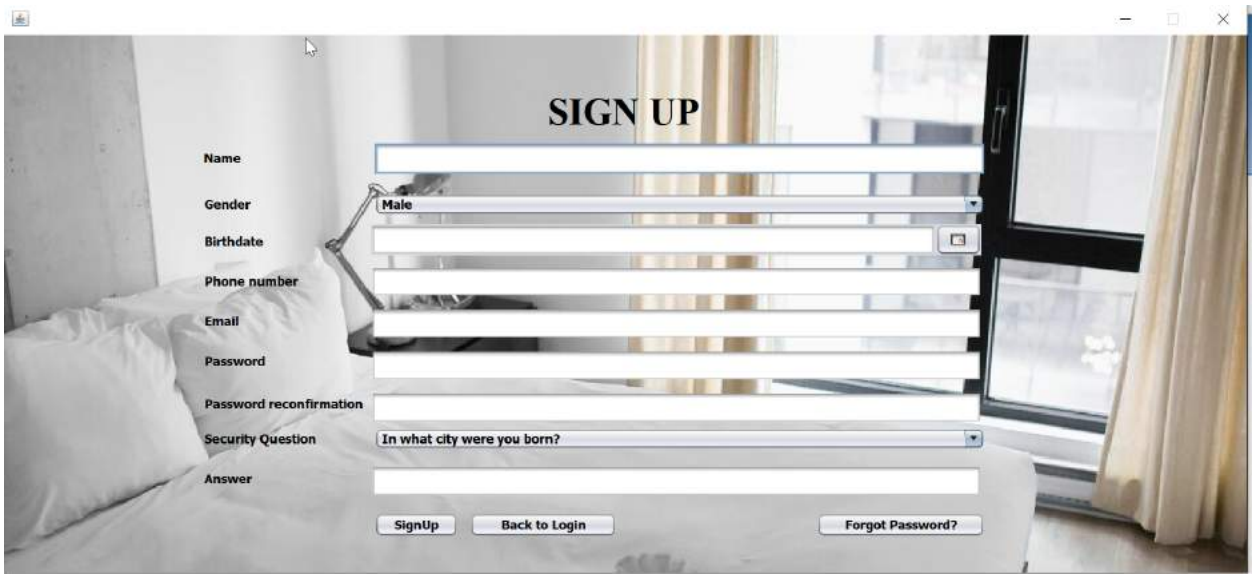
Entity Relation Diagram

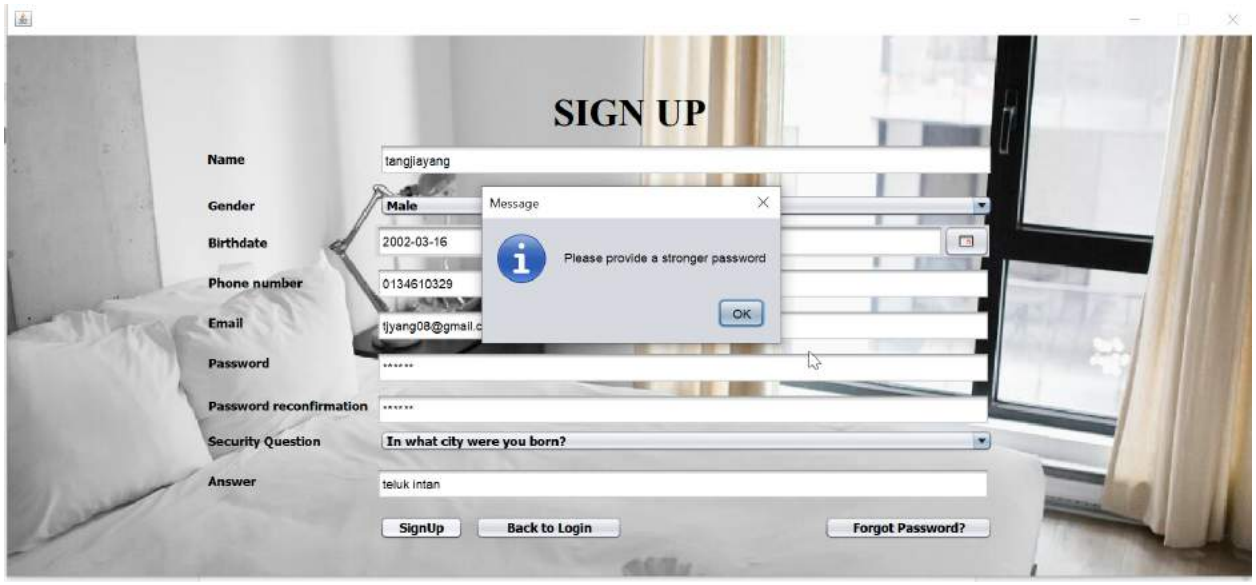


Note: bold=primary key, italic = foreign key

Basically, the program consists of five main entities as mentioned in the assignment. Each entity represents each table that we need to create in the database. We have to create all the tables in the database, and link them accordingly. Symbol like one to one, one to many, many to one, and many to many in the ERD used as guidelines for us to create the project.

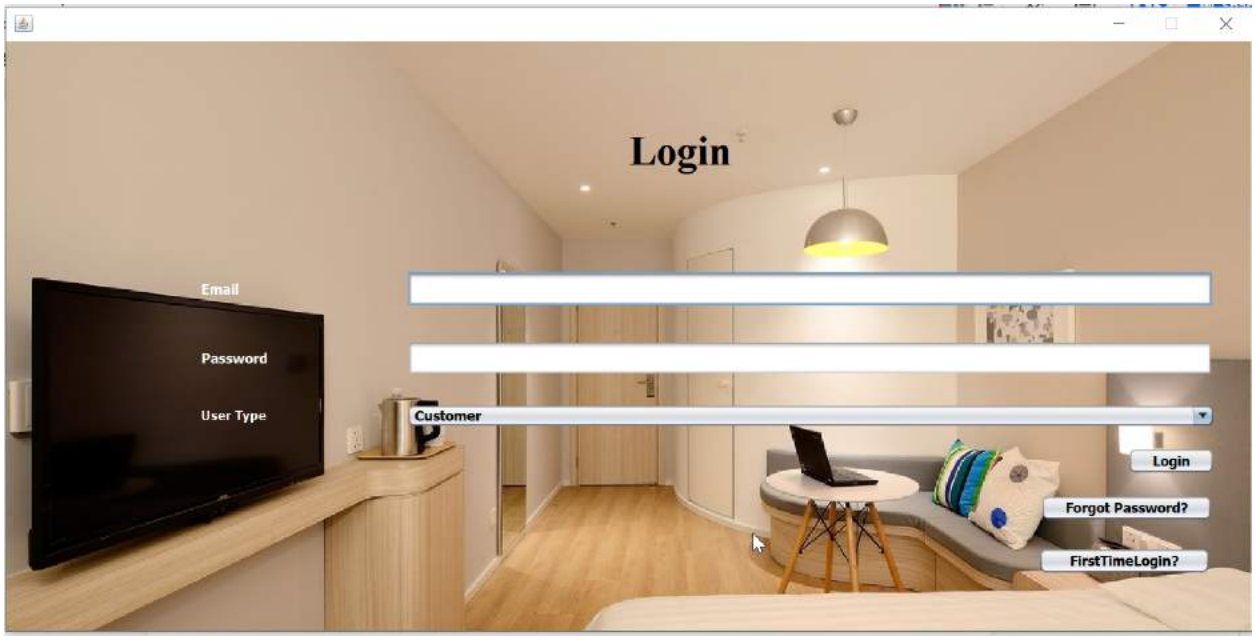
Sample Output





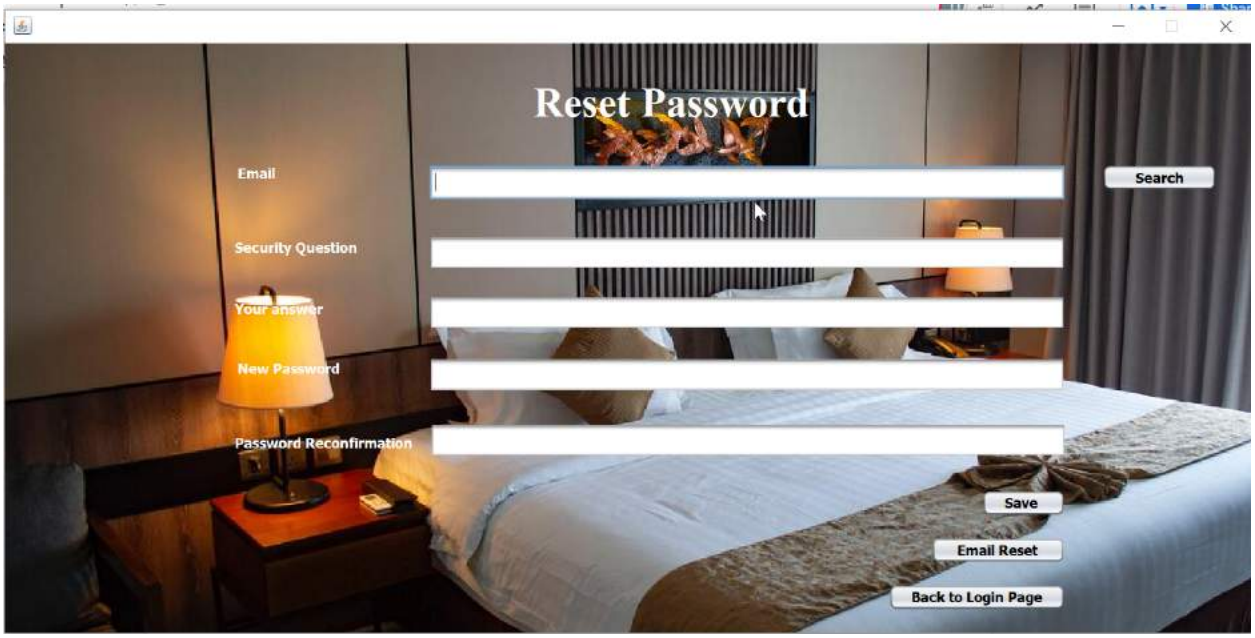
Sample for sign up page

We have set some limits like email format only applicable to the email section using Java Regex. We also set up a limit of length 8 to password to ensure a strong password provided by the user. To ensure users remember their password, we set up two sections for that for the user to reconfirm.

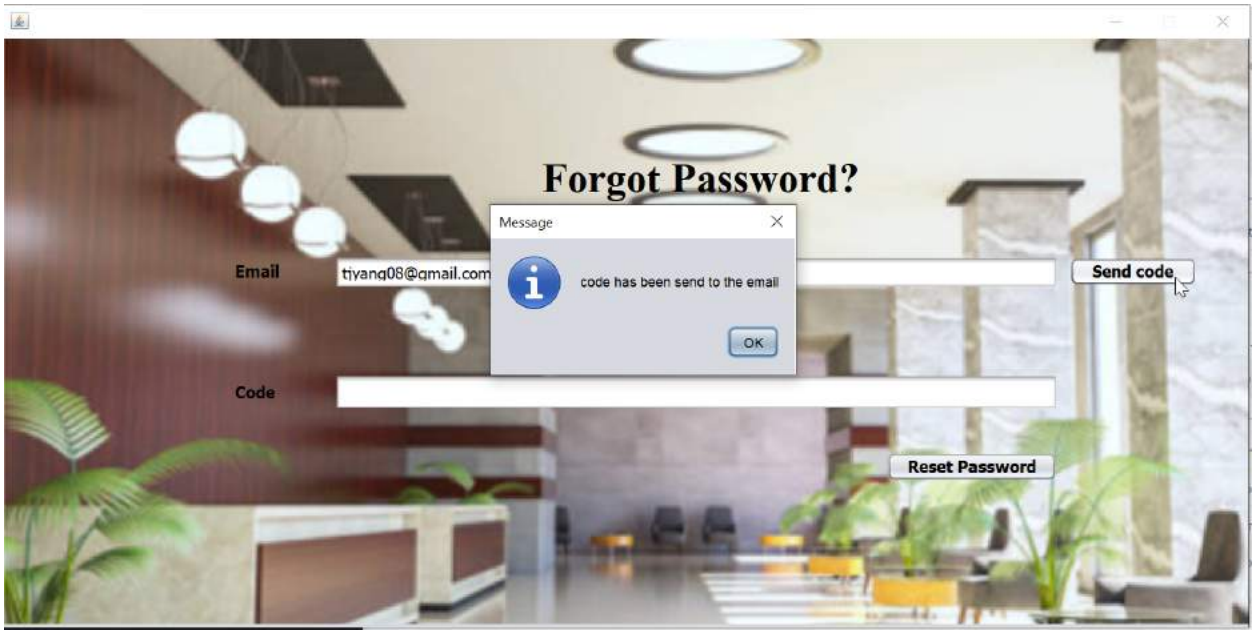


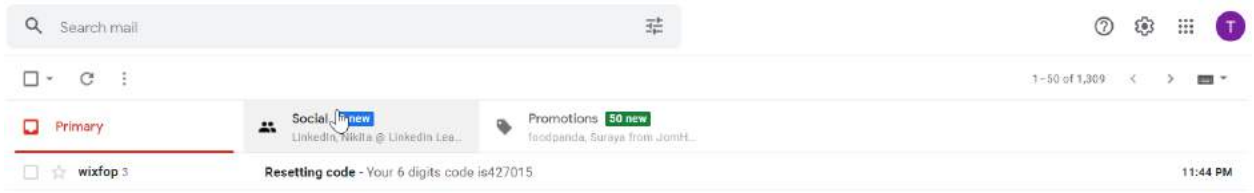
Sample for login page

We set up a login page which requires users to input their email and password to reconfirm their credentials. The user can register a new account by click on 'FirstTimeLogin' and can reset their password in 'forgot password'.


Reset Password
Email
Search
Security Question
Your answer
New Password
Password Reconfirmation
Save
Email Reset
Back to Login Page

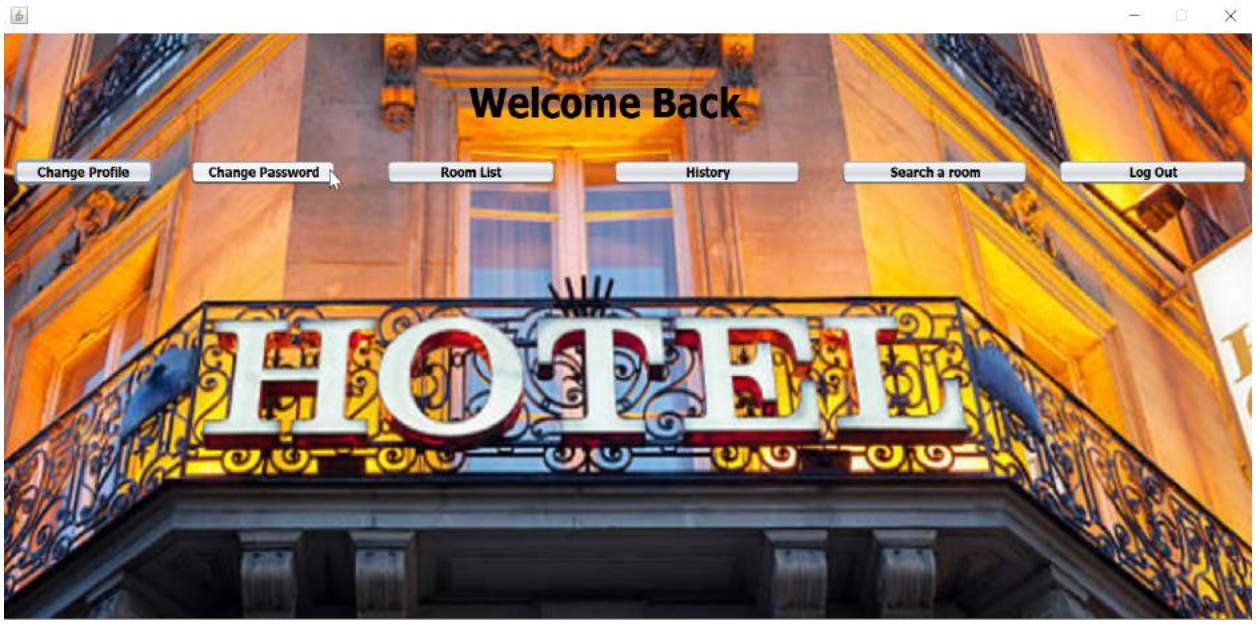
Forgot Password?
Email
Send code
Code
Reset Password





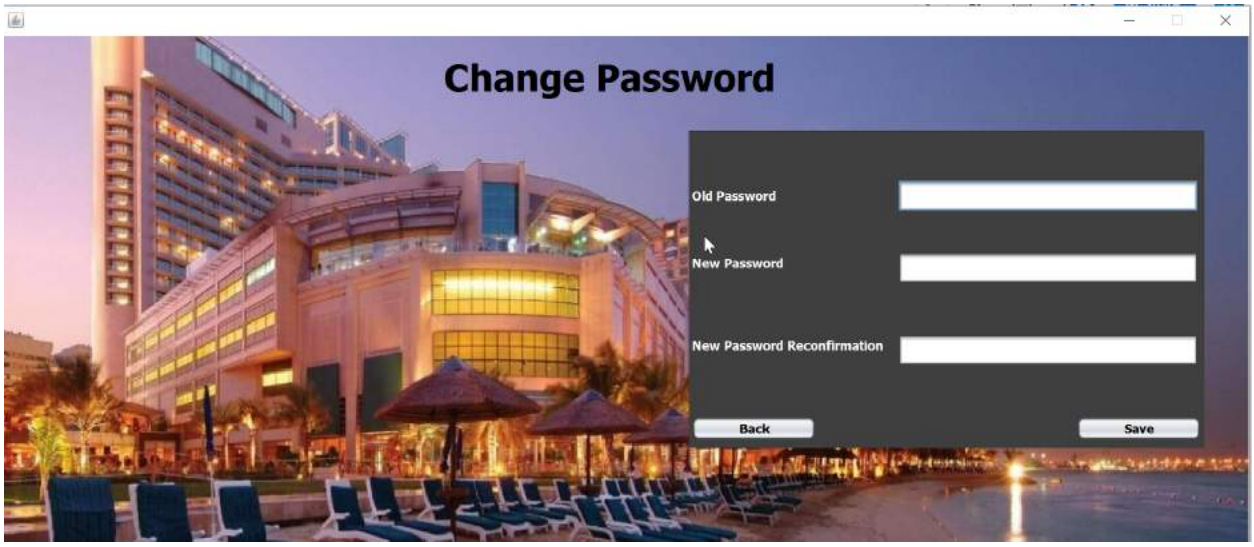
Sample for reset Password pages

We provided two ways to reset users' forgotten password, one is by security question set up and another is by email reset.

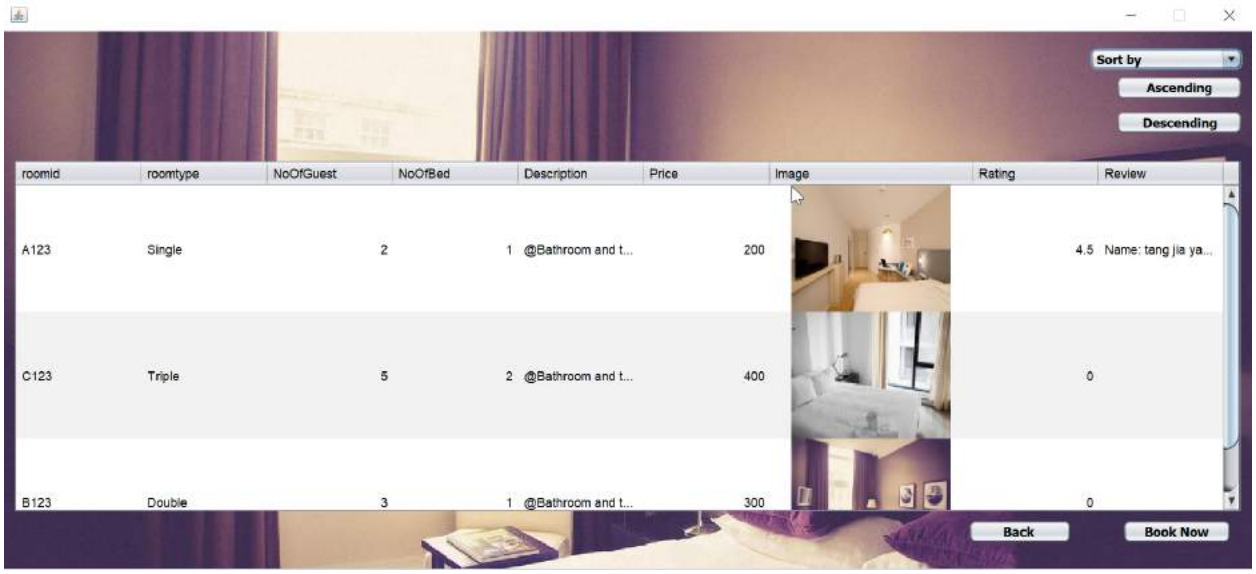


Sample for customer Page. This page stores all the functionalities that can be performed by the customer.

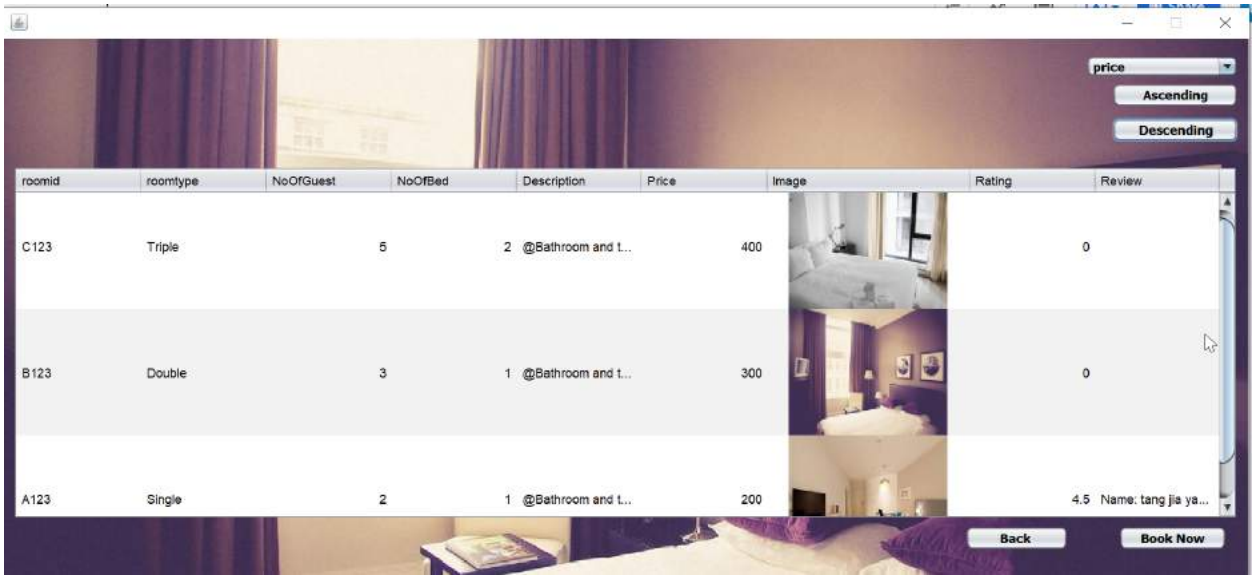
Sample for change profile page. Back button is to return to the customer page.



Sample for change password page. Users are required to have their old password to change to a new one. Again, 'back' assists in return to the customer home page.

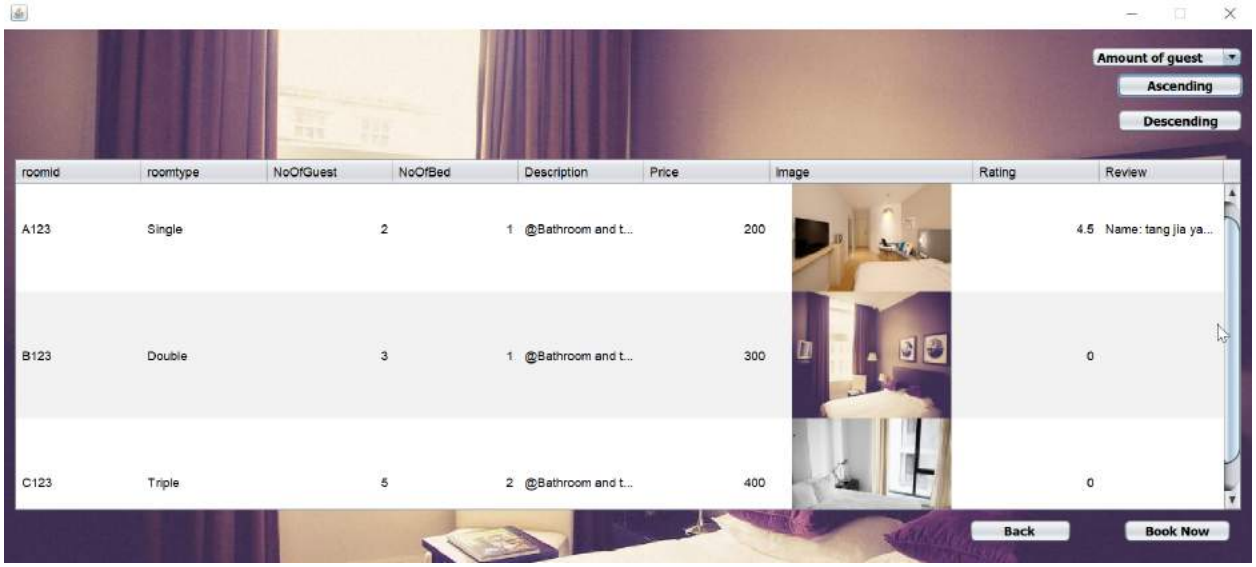


Sample room list for the customer to refer. Users can sort according to characteristics they want. 'Back' redirects to the customer page. 'Book' redirects to 'Searching room condition' page.

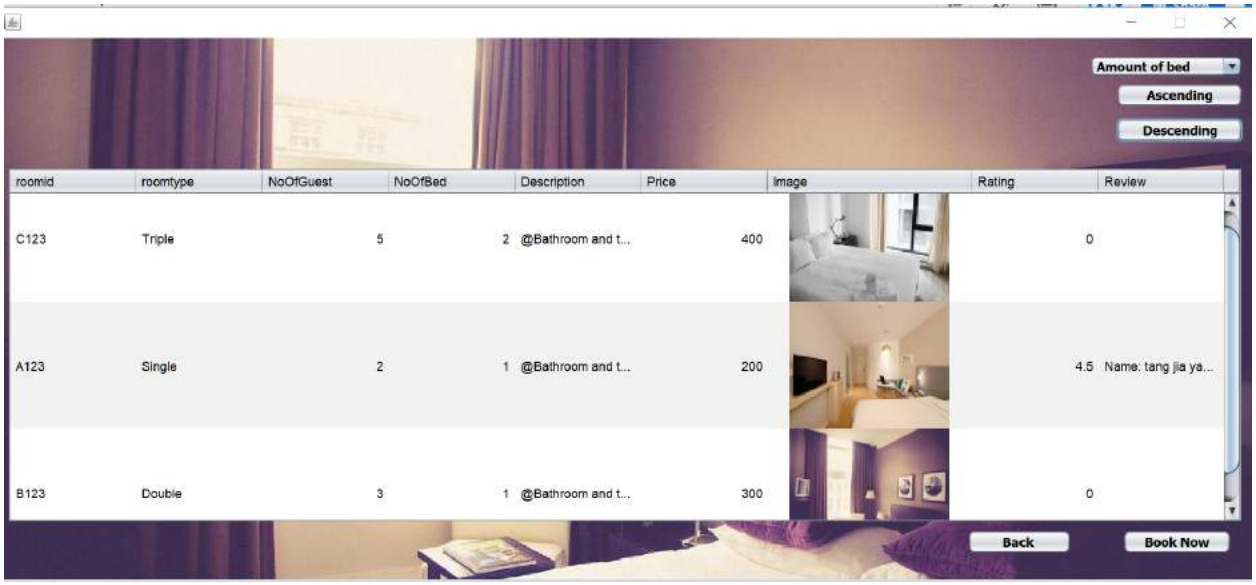


Sample descending sorting according to price.

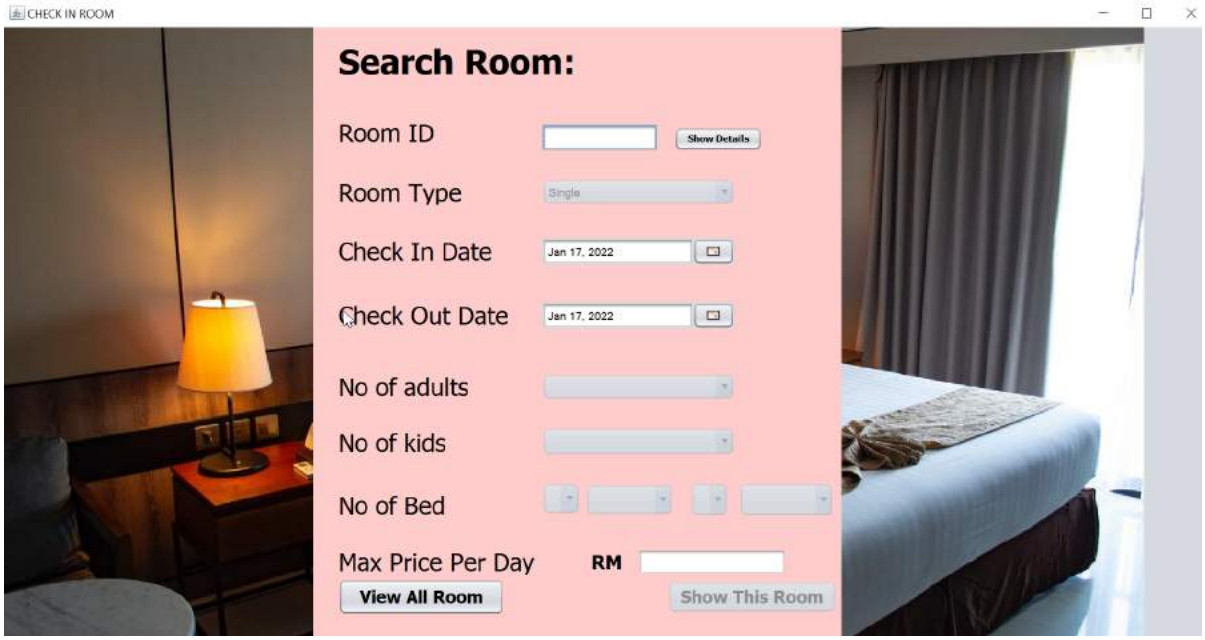
Sample Descending sorting according to rating.



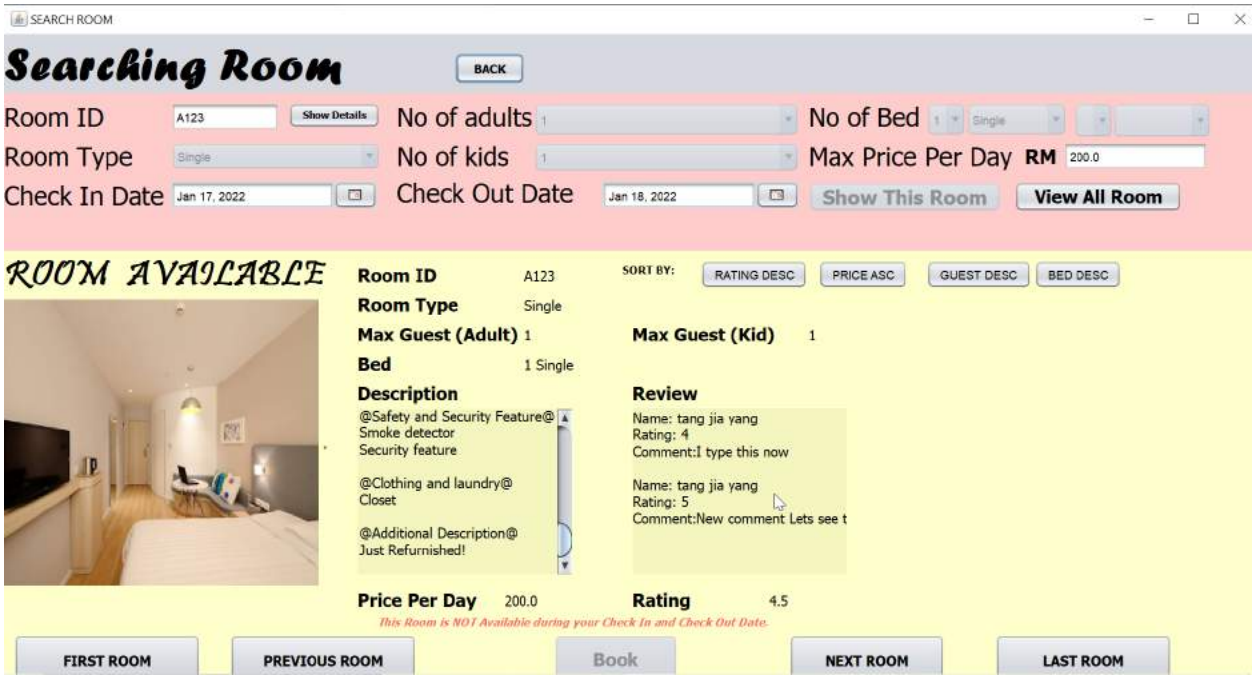
Sample 'Ascending order' according to the amount of guest accommodatable.



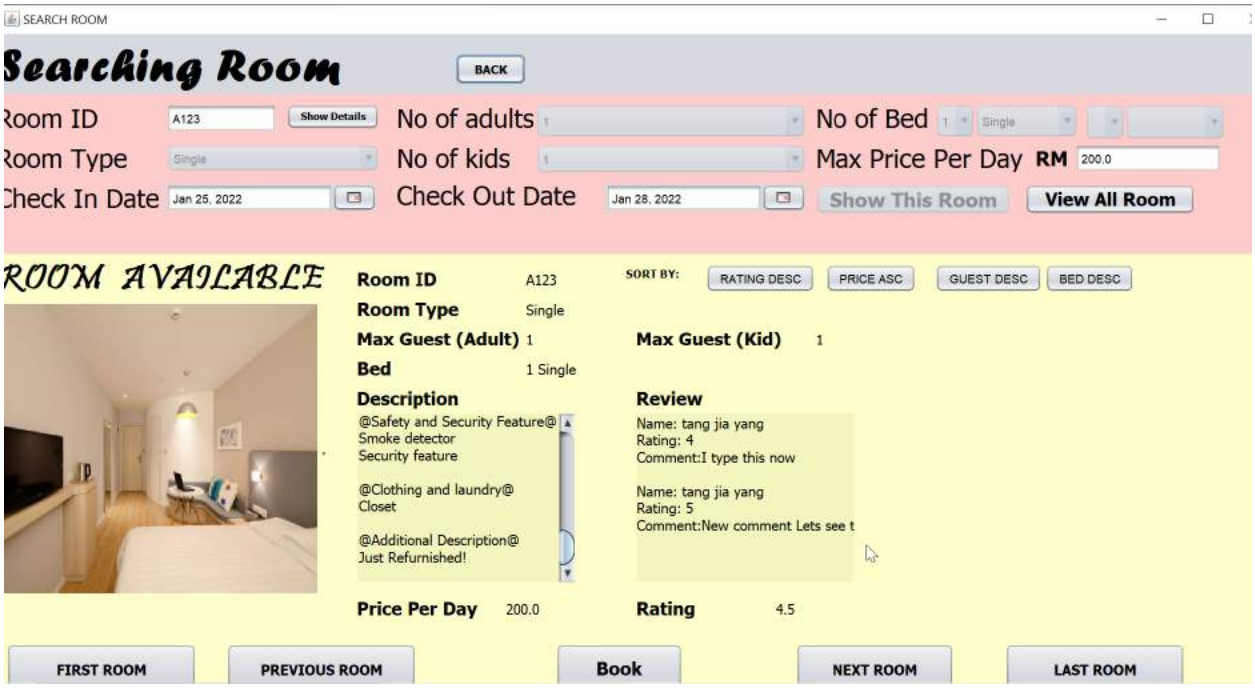
Sample sorting amount of bed in descending order.



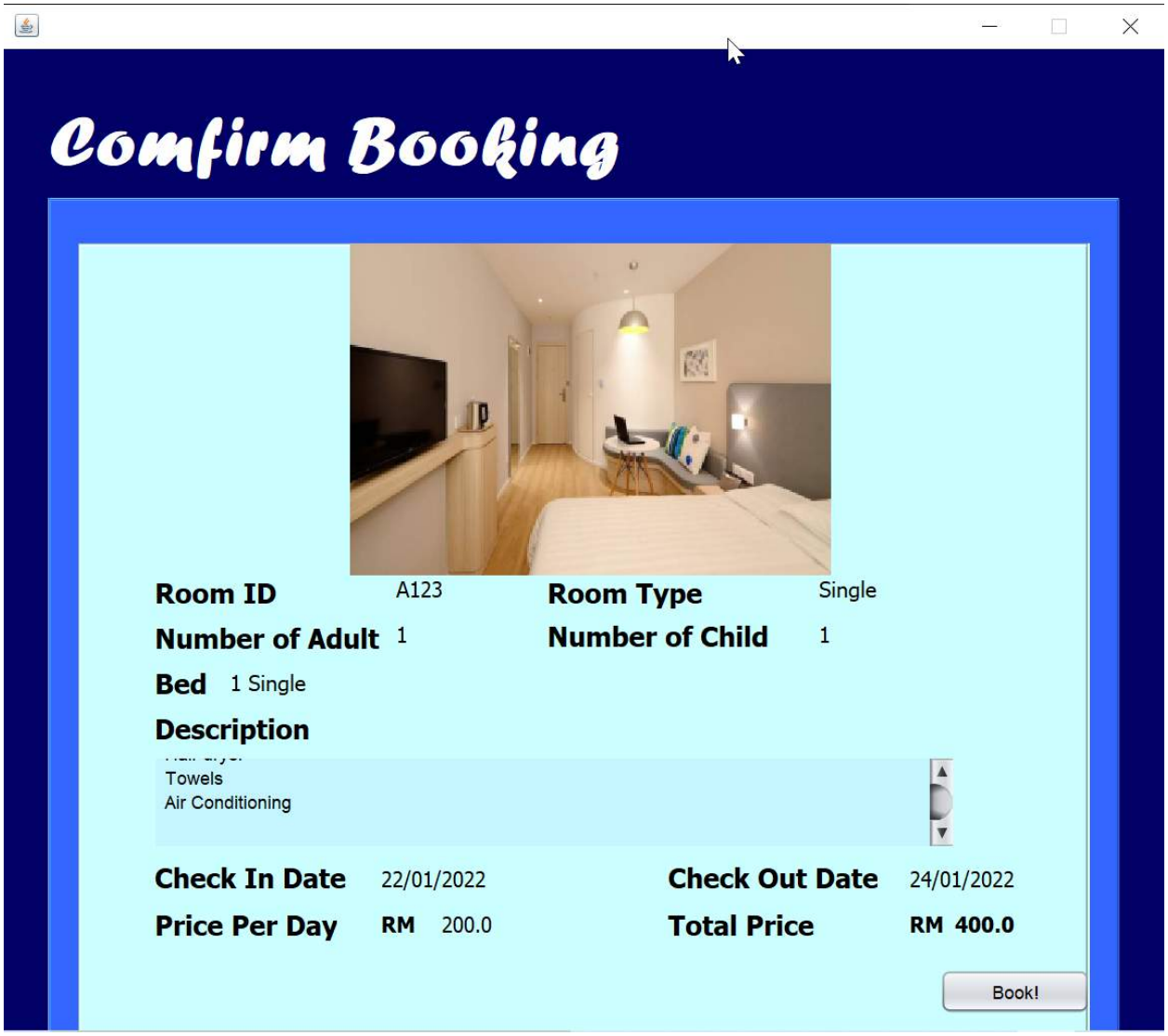
Sample for Search Room Condition Page. Users can Key in any room they want according to room id. If they wish to check for a room list they can click on "view all rooms". "Show this room" button will be enabled once user key in Roomid and click on show details. Users also need to key in the date they want.



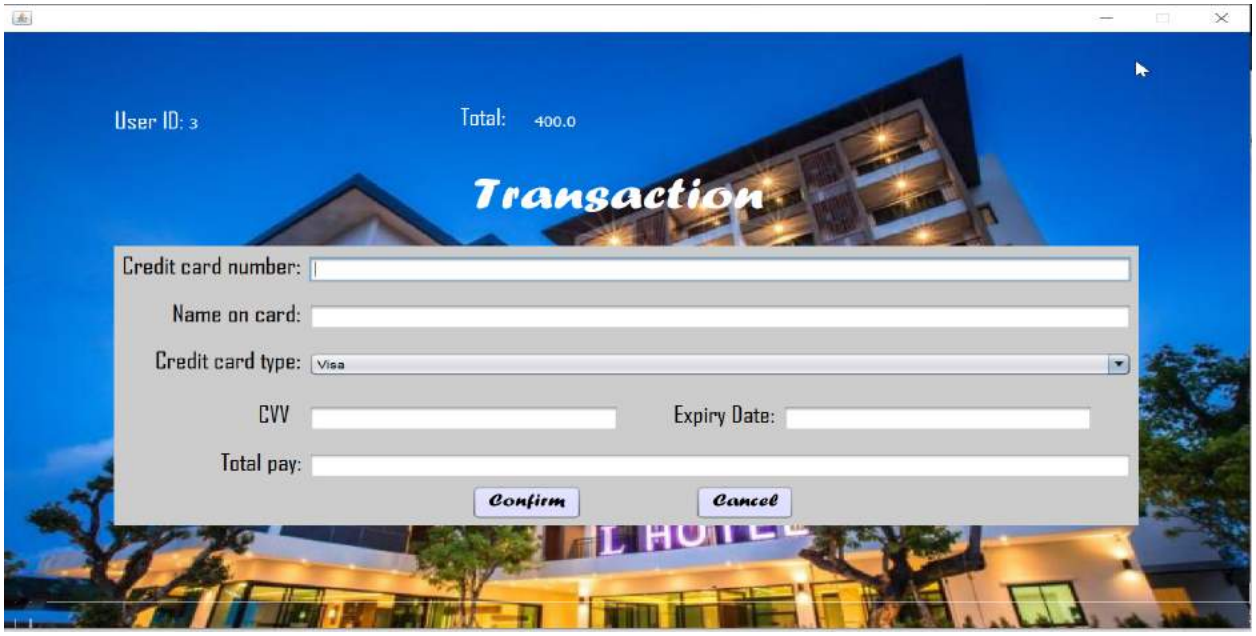
Sample 'Searching Room page' when user insert date that is not available.

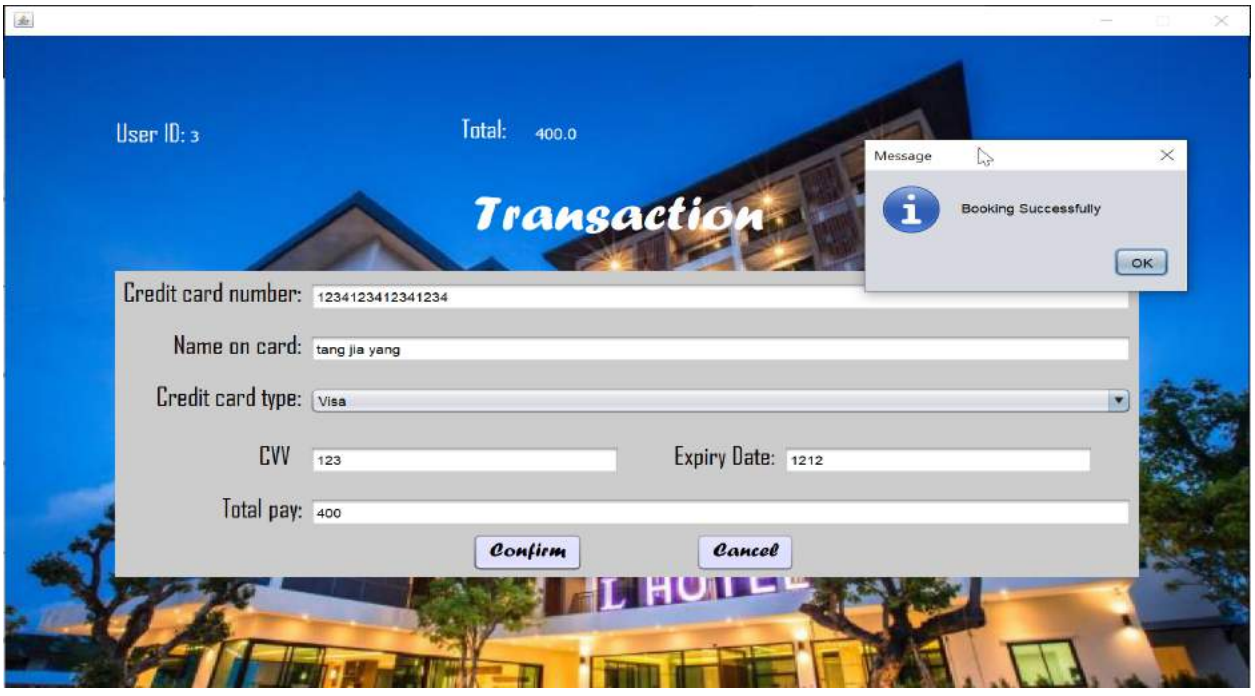


Sample page when user enters date that not yet booked by any customer. Also, user can perform any of the functionality like 'View All Room' that returns to the roomlist page, 'sorting function' that includes a few sorting, 'back' button that returns to the search room condition page, 'book' button that directs to the confirmation page. Some room details like user comment and rating are also available here, average rating, price per day, description, number of guests, number of beds and pictures for the room.



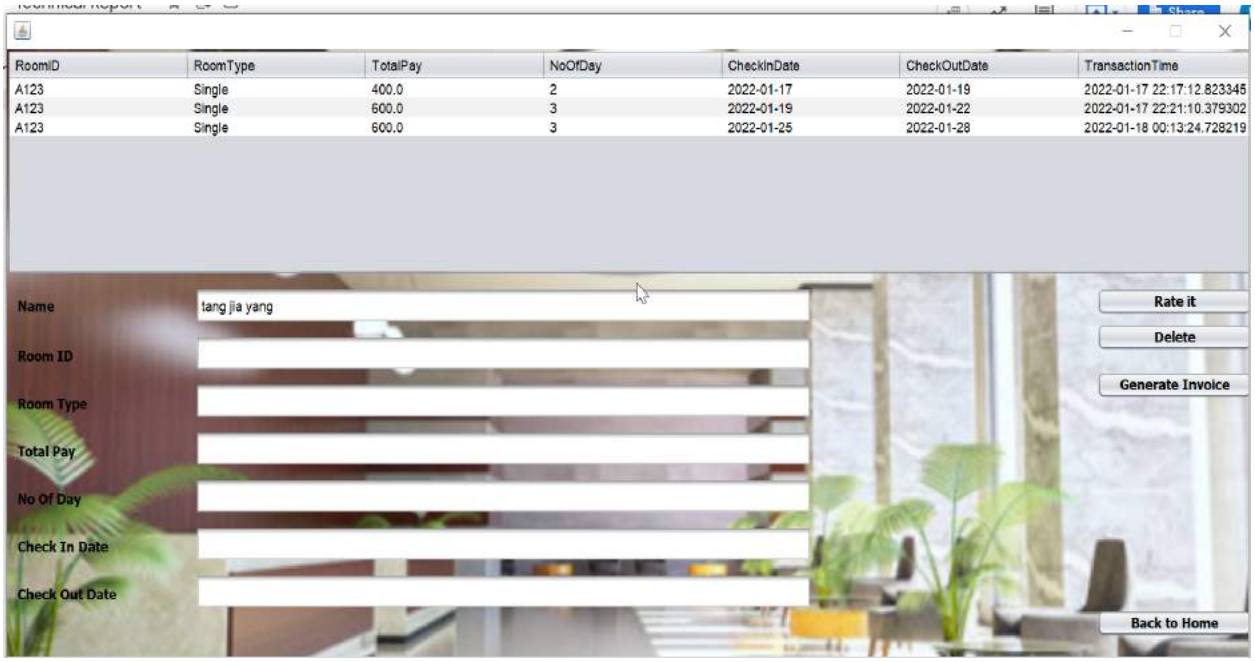
Booking confirmation page. This page will display all the details of the room, and the details the user entered like check in date, check out date, total price and so on. 'Book' button will lead to the transaction page.

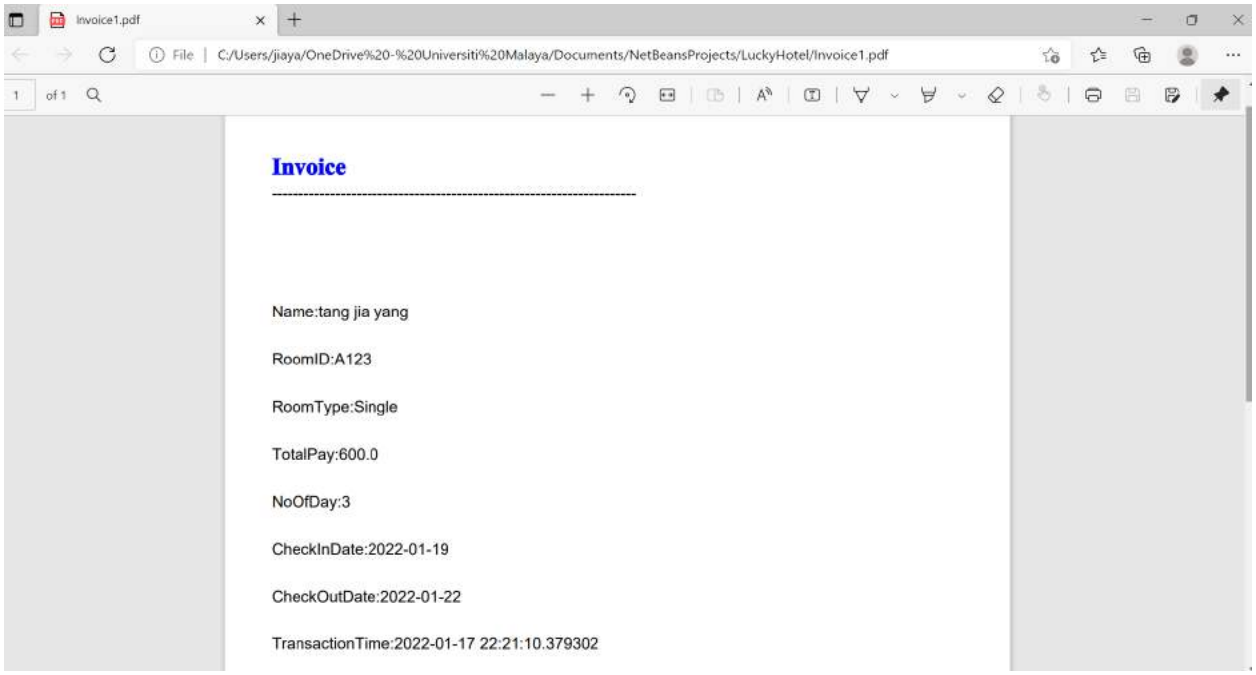




User transaction Page. Users need to key in their details in order to book successfully. There are few restrictions made, like credit card number must be 16digits, and CCV number must be 3 digits, total pay must also be the same as total shown in above section. Once the user key in everything is correct it will direct the user to the transaction history

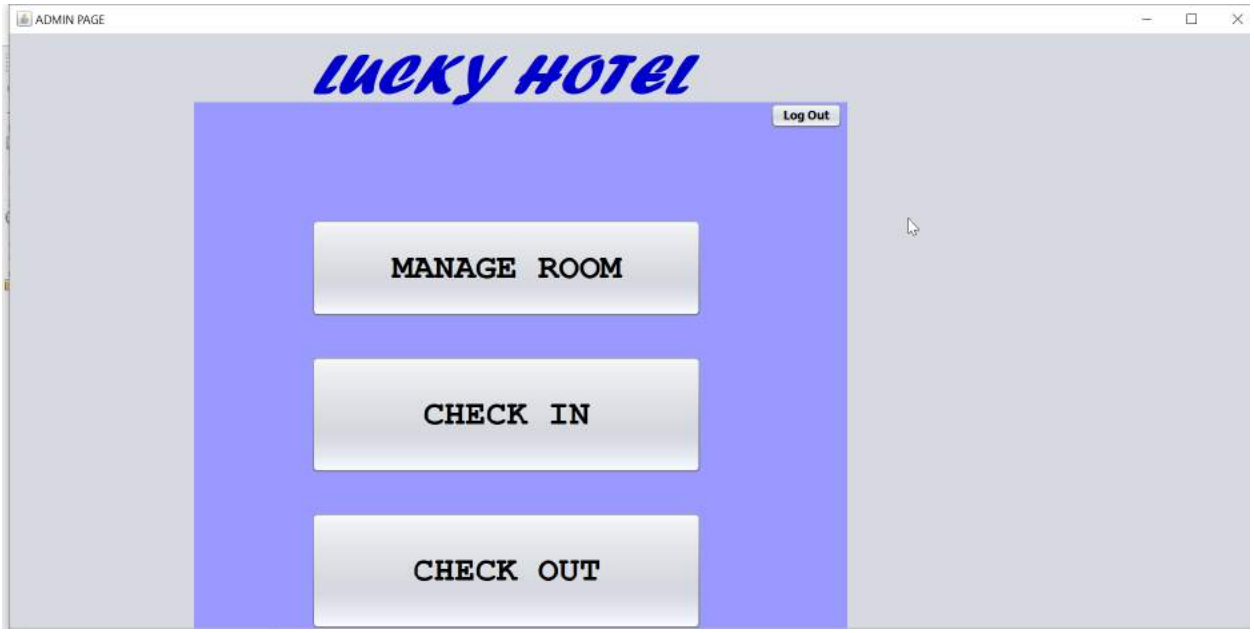
page. If the user enters cancel, it will redirect the user to the customer page and the user has to key in again. Cancel indicates a failed transaction.



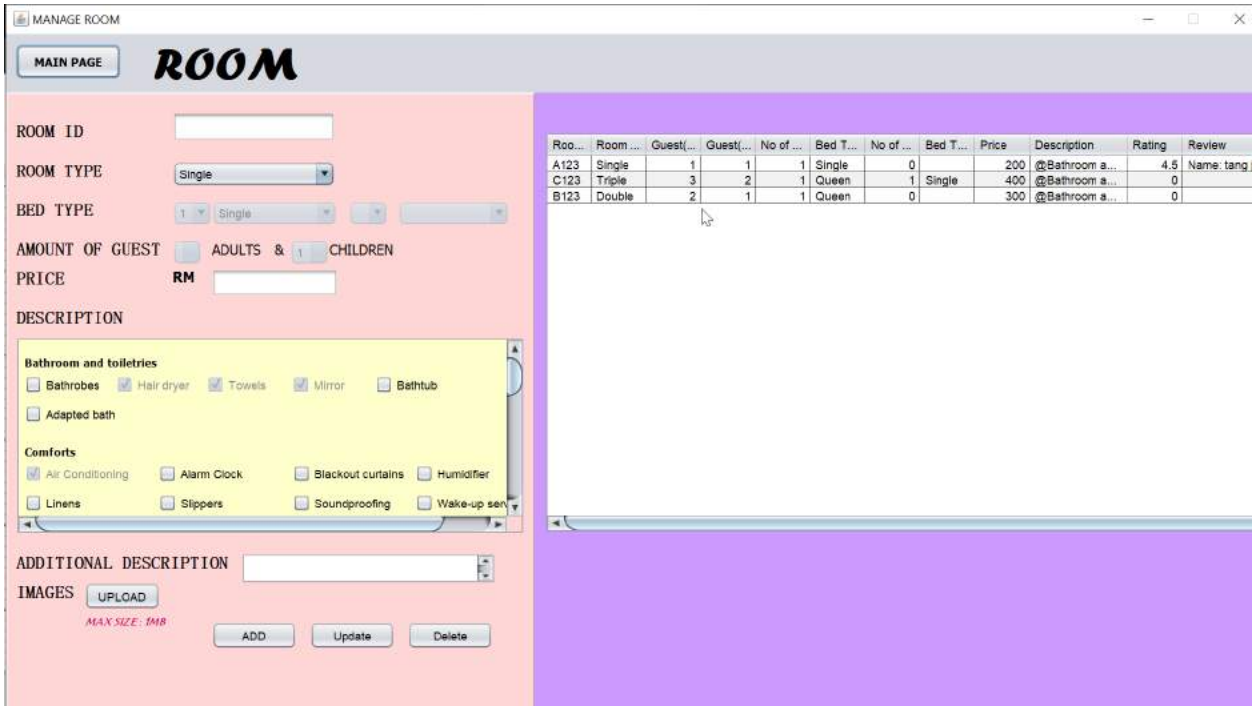


Transaction History page. Users can rate the room once a transaction is done. Click on the rate it will direct to the rating page. If the user clicks on delete, the transaction record will

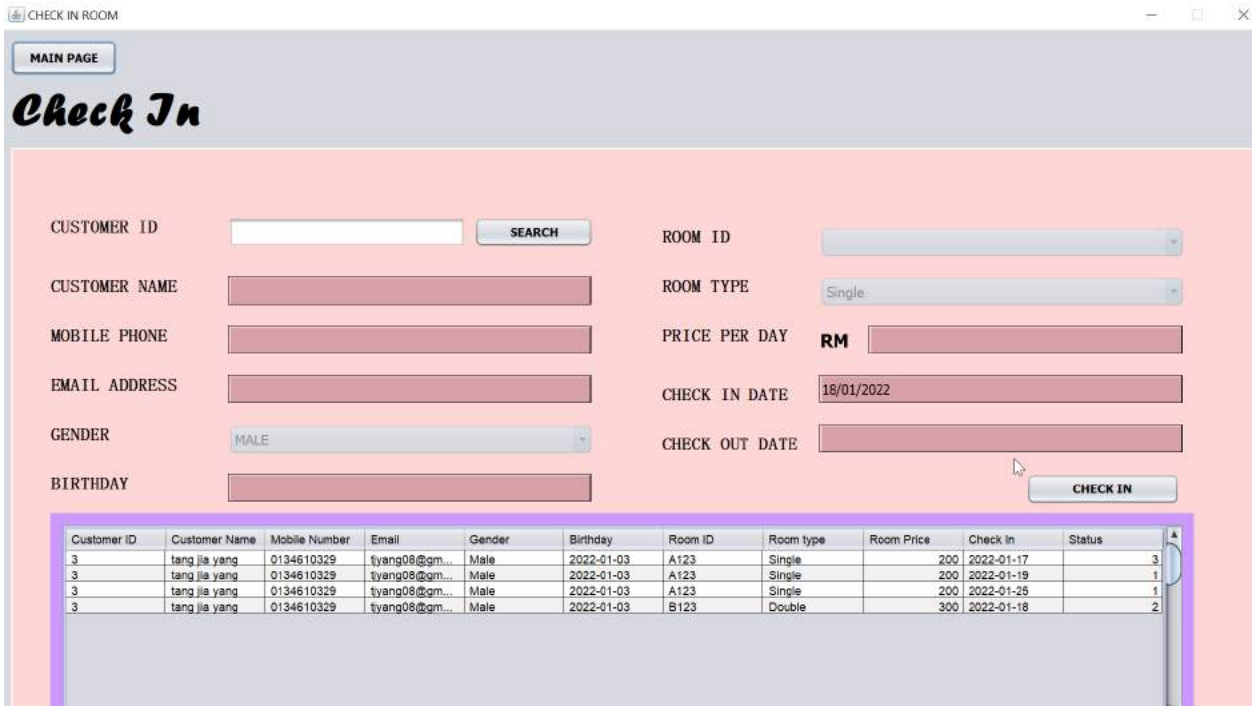
be deleted. If clicked on generate invoice in a pdf form. 'Back to home' directs the user back to the customer page.



If a user entered as admin, they are able to perform three functions: manage rooms, check in users and check out users.

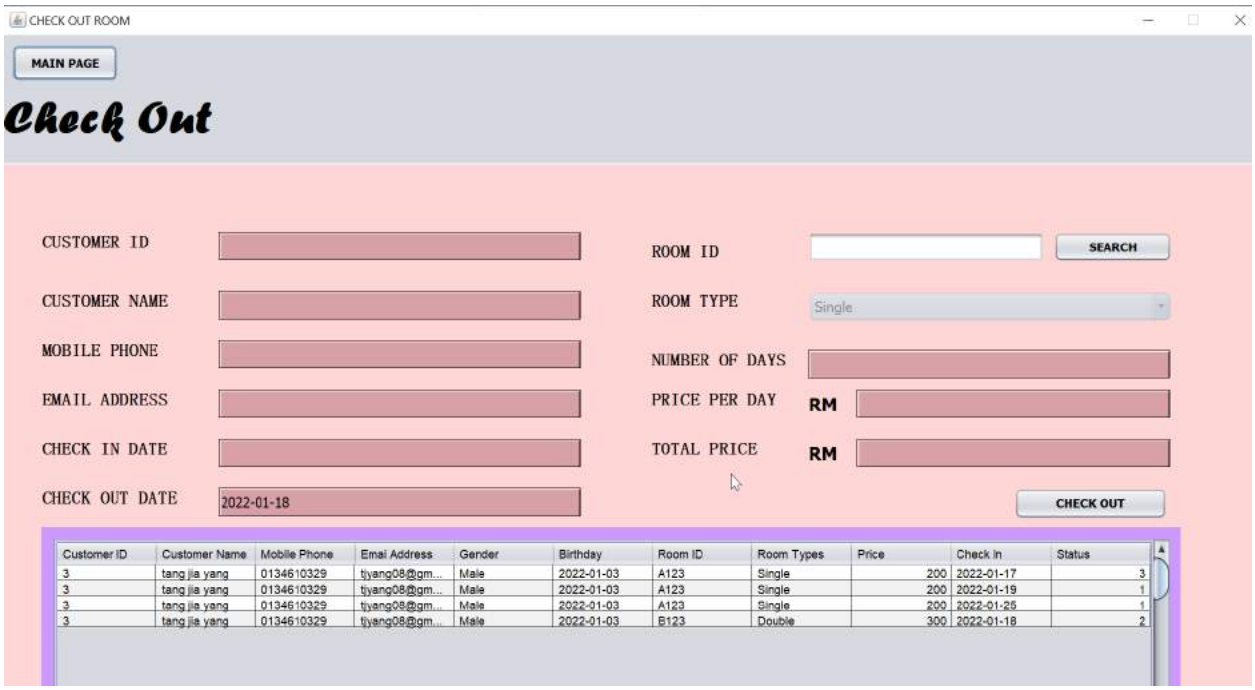


Manage room page. Users can add rooms, delete and update the room details. Note, the maximum size of the picture is only 1 MB.

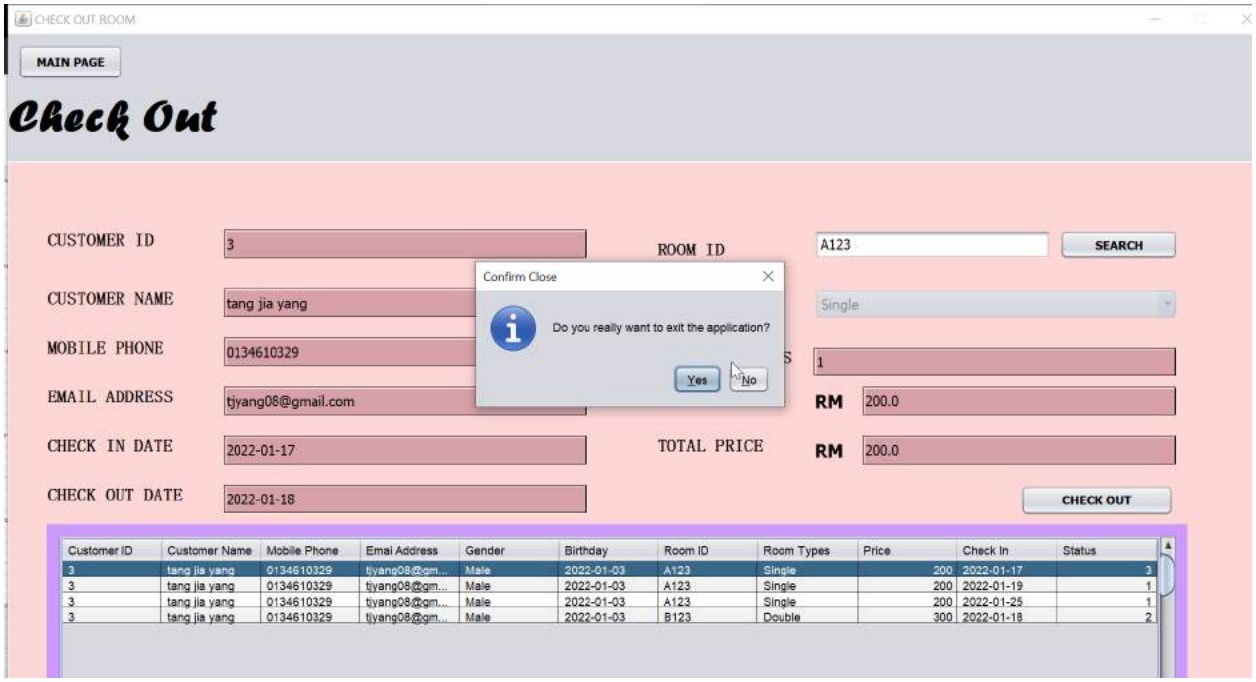


If the admin clicks on the selected row, it can change the status of the customer to 2. 2

indicates check in. Note: Check in date must be the same as the user computer's date on that time.

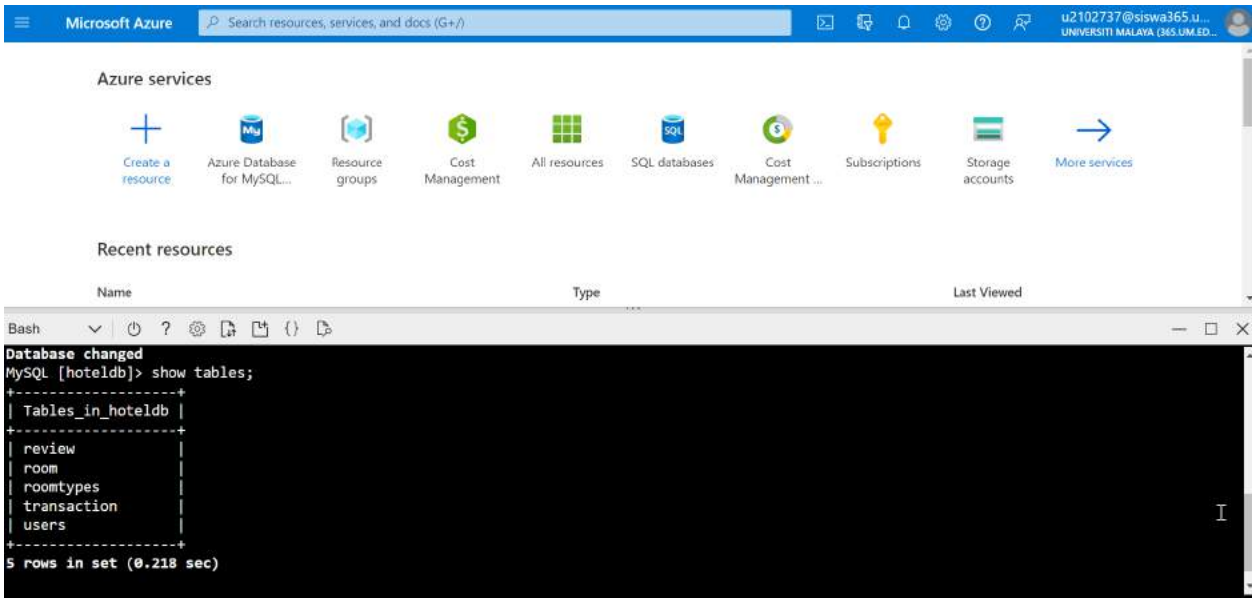


Check out Page. Admin can select on the row they want, and the system will calculate the price for the customer. This is useful when the customer requests to check out earlier than the booking date. For example, user books date from 11- 13 January but he/she decides to leave earlier like on day 12. The system will calculate 11-12 January price only instead of what customers book on the booking page. Once clicked on the check out date, customer status will change to 3 indicating the user successfully checked out.



The cross button is to prevent the user accidentally clicking on that, the reconfirmation dialog to stop the program from bouncing out.

Others



Proof of online database being used.