INFORMATICS
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WESTMINSTER

Module - Software Development 2

Module Code - 4COSC005/W

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| Task | Test Case | Expected Result | Actual Result | Pass/Fail |
|---|---|---|---|---|
| 1 | (Add customer) Press “A” to start the add customer method | Add customer Method Running and Displaying User A message as “Adding a customer”<br>And asking user to enter the room number to enter the customer | The method Runs Successfully and shows user a message | PASS |
|  | Entering the room number as “3” | Checking whether the user input is an integer.(if it is not show user a message as invalid input and re-run the method)Checking whether another customer has been added to the same room before this customer.(If the room is occupied display a message to the user to choose a different room)<br>If the room number is 8 stopping the method and displaying the menu<br>Display a message asking from user “their name” | A message asking for the user’s name gets displayed | PASS |
|  | Entering the name for the room as “John” | Displays a message to the user as “the name of the user was added to the room, room number” | A message gets displayed as “John was added to room 3” | PASS |
|  | (View Rooms)User Enters “V” from the menu | Displays a message to the user as “Viewing all rooms” and shows the user all the rooms and the current owners of those rooms | Multiple lines like “Room Number 1,2,3 etc occupied by John, etc” gets displayed | PASS |
|  | (Delete Customer from Room) User Enters “D from the menu” | Displays a message as “Deleting a customer from a room”<br>And asks user to enter the room number that they want to clear | Message Gets Displayed | PASS |
|  | User Enters “3” as the room number | Message gets displayed as “firstName is removed successfully” | Message as “John is removed Successfully” get displayed | PASS |

| | | | | |
|---|---|---|---|---|
| | (Empty Rooms)User Enters “E” From the menu | Displays multiple lines to the user, showing all the empty rooms as “room num is empty” | Displays multiple lines as “room number 0,1,2,4,5,6,7 empty” | PASS |
| | (Finding Rooms)User Enters “F” from the menu | Displays a message to the user as “Finding Room from Customer Name” And asks user for the customer name | Message asking for  the customer name, Gets Displayed | PASS |
| | Enters “John” as customer name | Displays a message as “customer name is in room number room number” | A message gets displayed as “John is in room number 3” | PASS |
| | (Storing Data)User Enters “S” from the menu | Displays a message to the user as “Storing data into a text file” and shows a message as “Data has been stored in filename” | A message gets displayed as “Data was stored in customerinfo.txt” | PASS |
| | (Loading Data)User Enters “L” from the menu | Displays a message as “Loading Data From File” and displays stored data in the console | Stored data gets displayed in the console | PASS |
| | (Alphabetically Sorting)User Enters “O” from the menu | Displays a message to the user as “Sorting names in Alphabetical order” And shows all the names alphabetically sorted | The names sorted in alphabetical order gets displayed | PASS |
| **3** | | | | |
| | (Add Customer) User Enters “A” from the menu | Displays a message as “Adding A Customer”<br>And messages asking for inputs from user gets displayed | A message gets displayed | PASS |
| | Entering the room number as “3” | Displays a message asking user for the room number | A message asking for the user’s name gets displayed | PASS |
| | User enters “John” as first name<br>“conrod” as surname<br>“3456” as credit card number and<br>“2” as number of guests | A message gets displayed as “first name surname is added to room number room number” | A message gets displayed as “John Conrod is added to room number 3” | PASS |

|  |  |  |  |  |
|---|---|---|---|---|
|  | (View Rooms)User Enters “V” from the menu | Displays a message to the user as “Viewing all rooms” and shows the user all the rooms and the current owners of those rooms | Multiple lines like “Room Number 1,2,3 etc occupied by John, etc” gets displayed | PASS |
|  | (Empty Rooms)User Enters “E” From the menu | Displays multiple lines to the user, showing all the empty rooms as “room num is empty” | Displays multiple lines as “room number 0,1,2,4,5,6,7 empty” | PASS |
|  | (Finding Rooms)User Enters “F” from the menu | Displays a message to the user as “Finding Room from Customer Name” And asks user for the customer name | Message asking for the customer name, Gets Displayed | PASS |
|  | Enters “John” as customer name | Displays a message as “customer name is in room number room number” | A message gets displayed as “John is in room number 3” | PASS |
|  | (Storing Data)User Enters “S” from the menu | Displays a message to the user as “Storing data into a text file” and shows a message as “Data has been stored in filename”(In here, first names, surnames, credit card numbers and no.of guests also get stored) | A message gets displayed as “Data was stored in customerinfo.txt” | PASS |
|  | (Loading Data)User Enters “L” from the menu | Displays a message as “Loading Data From File” and displays stored data in the console | Stored data gets displayed in the console | PASS |
| **4** | (Alphabetically Sorting)User Enters “O” from the menu | Displays a message to the user as “Sorting names in Alphabetical order” And shows all the first names alphabetically sorted | The names sorted in alphabetical order gets displayed | PASS |

| | | | | |
|---|---|---|---|---|
| | (Add Customer) User Enters “A” from the menu | Displays a message as “Adding A Customer”<br>And messages asking for inputs from user gets displayed<br>Here the program checks whether all the indexes are filled in the array which consists of first names(if all indexes are filled that means all the rooms are filled). In that case a message saying “There Are No Empty Rooms at The Moment. You Will Be Added to The Waiting List” get displayed which asks for user’s details | A message like “There Are No Empty Rooms at The Moment. You Will Be Added to The Waiting List” gets displayed | PASS |
| | User enters “Maya” as first name<br>“Kumari” as surname<br>“3456” as credit card number and<br>“2” as number of guests | A message displays as “firstName surname was added to waiting list” | A message gets shown as “Maya Kumari is added to waiting list” | PASS |
| | (Delete Customer from Room) User Enters “D from the menu” | Displays a message as “Deleting a customer from a room”<br>And asks user to enter the room number that they want to clear | Message Gets Displayed | PASS |
| | User Enters “3” as the room number | Message gets displayed as “firstName is removed successfully” | Message as “John is removed Successfully” get displayed | PASS |
| | (View Rooms)User Enters “V” from the menu | Displays a message to the user as “Viewing all rooms” and shows the user all the rooms and the current owners of those rooms with the deleted customer from the entered room number being replaced by the first index in the waiting list | Room 0 occupied by e<br>Room 1 occupied by e<br>Room 2 occupied by e<br>Room 3 occupied by Maya Kumari<br>Room 4 occupied by e<br>Room 5 occupied by e<br>Room 6 occupied by e<br>Room 7 occupied by e | PASS |

# Introduction

A menu which contains all the choices get displayed at first from where the user can choose from.

Task 1 : By pressing “A” user can add a customer into a room. First users have to choose the room number where they are being placed (A validator makes sure that an integer can only be entered here as the test cases show above)And also another function runs in the program preventing the user from overwriting an already added customer from the room. Pressing “V” displays multiple lines in the console which shows all the rooms and the owners of them. (“Room 3 is occupied by James O’Brien”) By pressing “E” users can get a display of all the empty rooms. “D” in the menu is for deleting a customer from a room and after users enter the room number that they want to clear, the customer gets deleted from the room. ”F” is for users to find the room where a customer is in, by typing in the name of the customer. ”S” Stores all the data that has been gathered in a text file as it shows in the above test cases and “L” loads all the information into the console. Pressing “O” sorts all the customer names in the alphabetical order as it shows in the above test cases.

Task 2 : Task 2 does the same characteristics as in the Task 1 in a class version

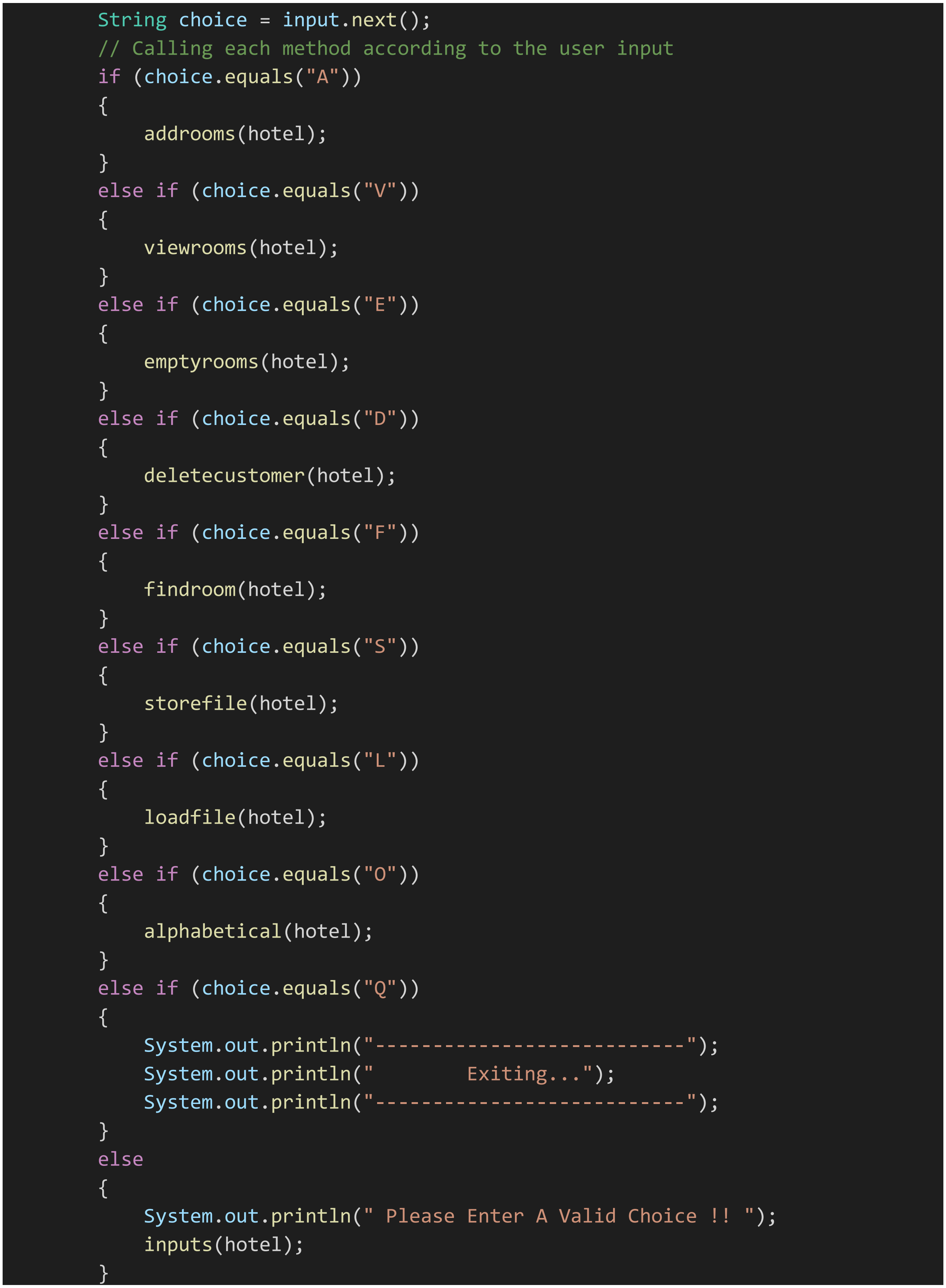
Task 3 : As it shows in the test cases task 3 is an improved version of task 1 which gathers user’s first name, surname, no of guests in a room and the credit card number of the paying guest. Here, these data gathered is also getting stored in the text file when user enters “S” and gets displayed when user enters “L”.(Characteristics of other functions are same as in task 1)

Task 4 : This is an improved version of task 3 as shown in the above test cases. In here if all the rooms are filled the user gets added into a waiting list and data like user’s first name, surname, credit card number and no.of guests get collected as shown above. And when a customer gets deleted from the room the first person in the waiting list gets added to that same room using array indexes.(Characteristics of other functions are same as in task 1)

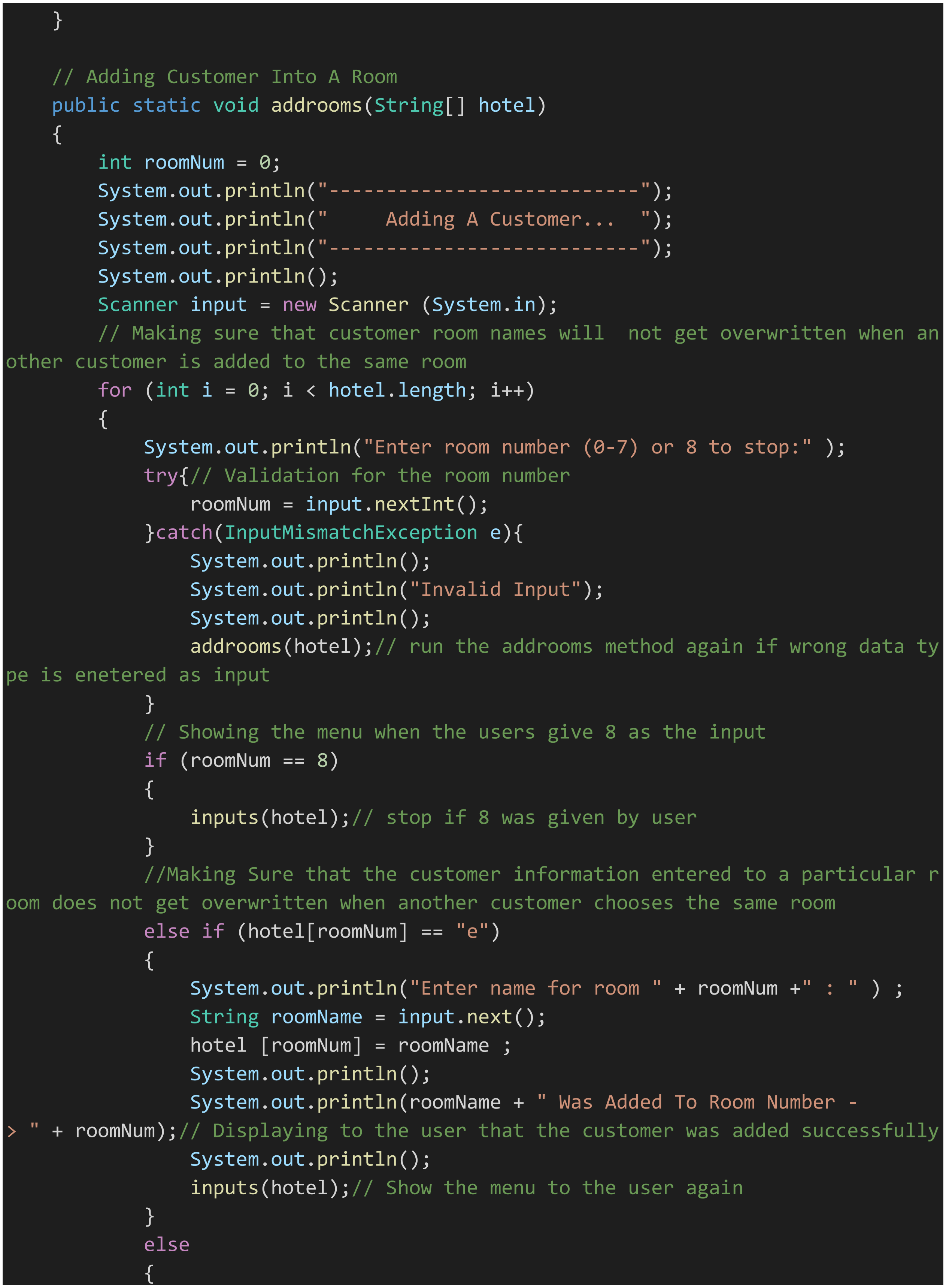
# Appendix : Code

## **Task 1** – Hotel1.java

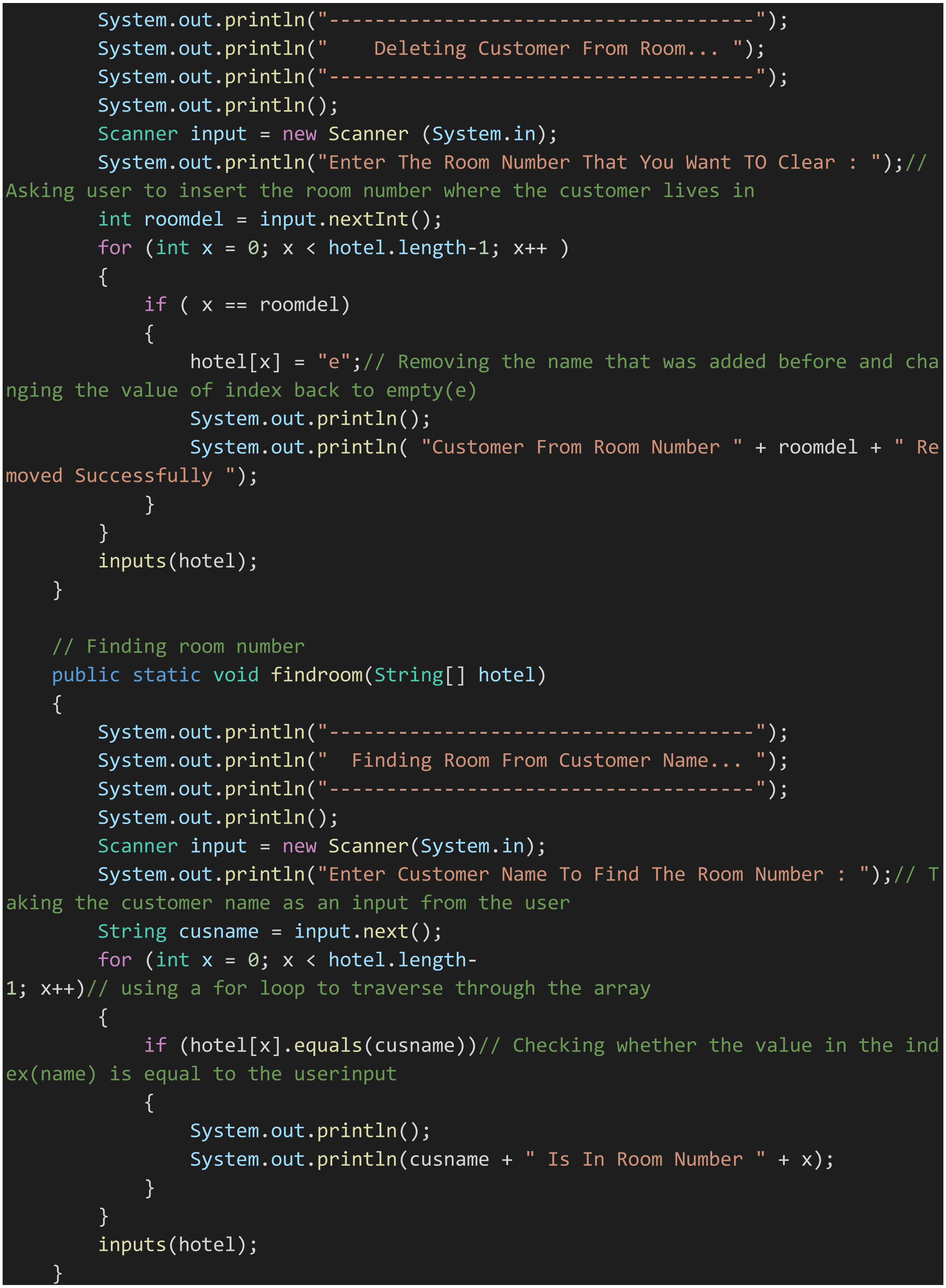
```
import java.util.*;
import java.io.*;


public class Hotel1 {

    public static void main(String[] args)
    {
        Scanner input = new Scanner(System.in);
        String roomName;
        int roomNum = 0;
        String[] hotel = new String[9];
        initialise(hotel);
        inputs(hotel);
    }

    // Menu
    public static void inputs(String[] hotel)
    {
        System.out.println("+--------------------------------------------------------+");
        System.out.println("                      Welcome !!");
        System.out.println("+--------------------------------------------------------+");
        System.out.println(" Enter 'A' : Add New Customer To A Room ");
        System.out.println(" Enter 'V' : View All Rooms ");
        System.out.println(" Enter 'E' : Display Empty Rooms ");
        System.out.println(" Enter 'D' : Delete Customer From Room");
        System.out.println(" Enter 'F' : Find Room From Customer Name ");
        System.out.println(" Enter 'S' : Store Program Data Into A File ");
        System.out.println(" Enter 'L' : Load Program Data From File ");
        System.out.println(" Enter 'O' : View Guests Ordered Alphabetically By Name ");
        System.out.println(" Enter 'Q' : Exit From The Program ");
        System.out.println("+--------------------------------------------------------+");
        Scanner input = new Scanner (System.in);
        System.out.println("");
        System.out.println("Enter Your Choice : ");// Getting the choice of the user as an input
```



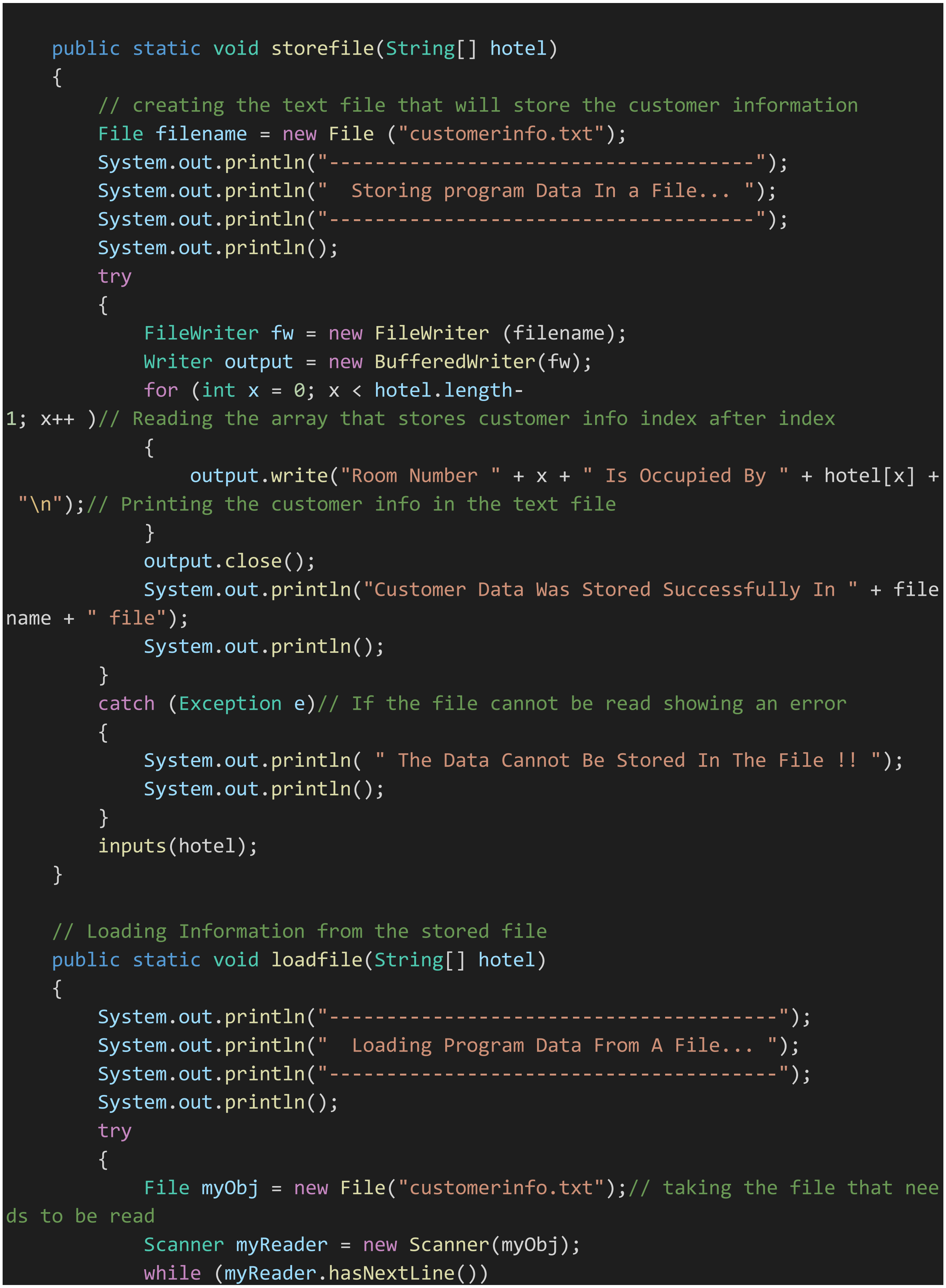
```
        String choice = input.next();
        // Calling each method according to the user input
        if (choice.equals("A"))
        {
            addrooms(hotel);
        }
        else if (choice.equals("V"))
        {
            viewrooms(hotel);
        }
        else if (choice.equals("E"))
        {
            emptyrooms(hotel);
        }
        else if (choice.equals("D"))
        {
            deletecustomer(hotel);
        }
        else if (choice.equals("F"))
        {
            findroom(hotel);
        }
        else if (choice.equals("S"))
        {
            storefile(hotel);
        }
        else if (choice.equals("L"))
        {
            loadfile(hotel);
        }
        else if (choice.equals("O"))
        {
            alphabetical(hotel);
        }
        else if (choice.equals("Q"))
        {
            System.out.println("---------------------------");
            System.out.println("        Exiting...");
            System.out.println("---------------------------");
        }
        else
        {
            System.out.println(" Please Enter A Valid Choice !! ");
            inputs(hotel);
        }
```



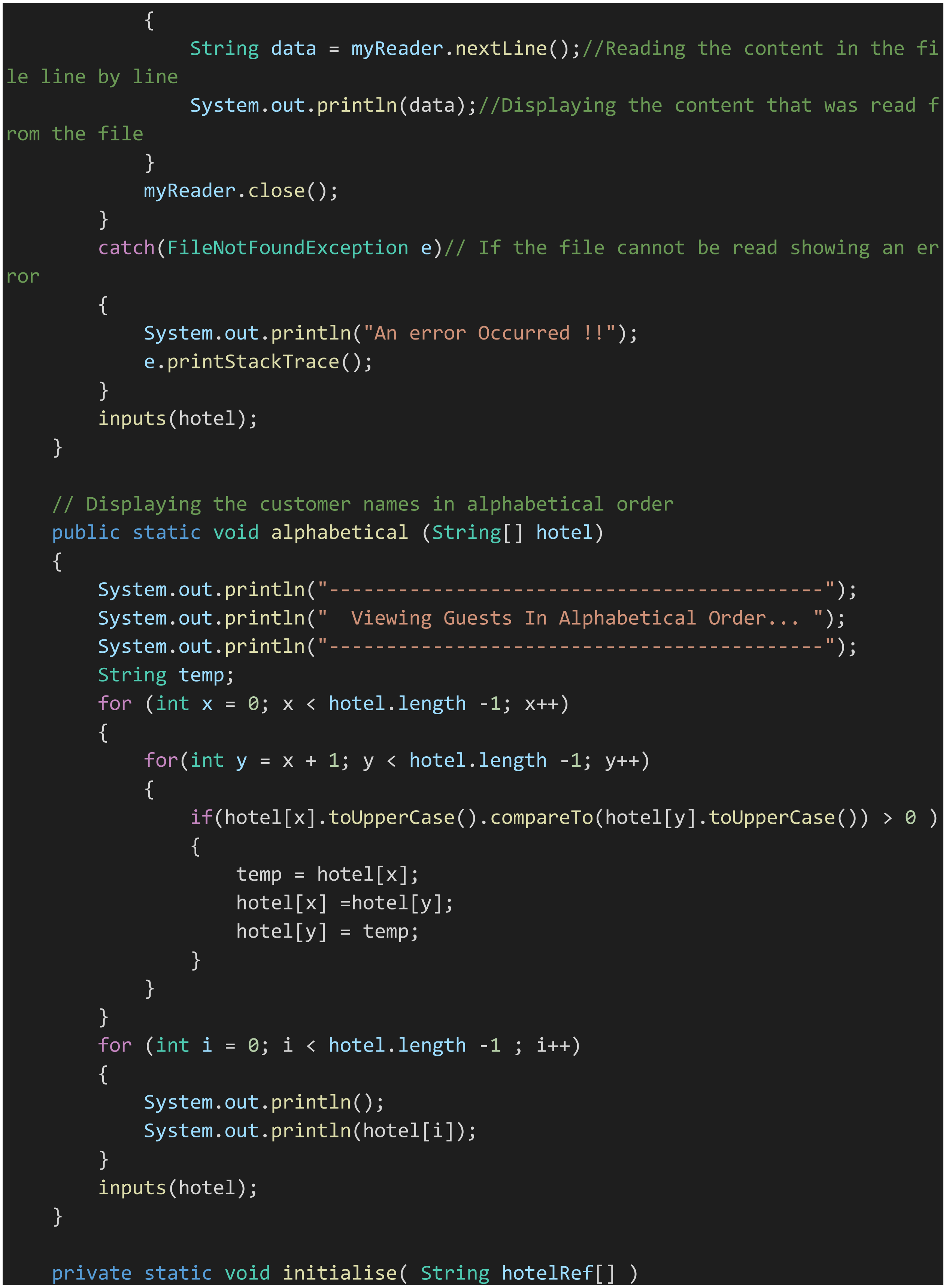
```java
    }

    // Adding Customer Into A Room
    public static void addrooms(String[] hotel)
    {
        int roomNum = 0;
        System.out.println("---------------------------");
        System.out.println("     Adding A Customer...  ");
        System.out.println("---------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        // Making sure that customer room names will  not get overwritten when another customer is added to the same room
        for (int i = 0; i < hotel.length; i++)
        {
            System.out.println("Enter room number (0-7) or 8 to stop:" );
            try{// Validation for the room number
                roomNum = input.nextInt();
            }catch(InputMismatchException e){
                System.out.println();
                System.out.println("Invalid Input");
                System.out.println();
                addrooms(hotel);// run the addrooms method again if wrong data type is enetered as input
            }
            // Showing the menu when the users give 8 as the input
            if (roomNum == 8)
            {
                inputs(hotel);// stop if 8 was given by user
            }
            //Making Sure that the customer information entered to a particular room does not get overwritten when another customer chooses the same room
            else if (hotel[roomNum] == "e")
            {
                System.out.println("Enter name for room " + roomNum +" : " ) ;
                String roomName = input.next();
                hotel [roomNum] = roomName ;
                System.out.println();
                System.out.println(roomName + " Was Added To Room Number -> " + roomNum);// Displaying to the user that the customer was added successfully
                System.out.println();
                inputs(hotel);// Show the menu to the user again
            }
            else
            {
                System.out.println();
                System.out.println("Room Number " + roomNum + " is already occupi
ed ! Please Select A Different Room...");
                System.out.println();
                System.out.println("---------------------------------------------
---------------------------------------");
            }
        }
    }

    // Viewing all the hotel rooms
    public static void viewrooms(String[] hotel)
    {
        System.out.println("---------------------------");
        System.out.println("    Viewing All Rooms... ");
        System.out.println("---------------------------");
        System.out.println();
        for (int x = 0; x < hotel.length-1; x++ )
        {
            System.out.println("Room Number " + x + " Occupied By " + hotel[x]);
        }
        inputs(hotel);
    }

    // Displaying Empty Rooms
    public static void emptyrooms(String[] hotel)
    {
        System.out.println("-------------------------------");
        System.out.println("    Displaying Empty Rooms... ");
        System.out.println("-------------------------------");
        System.out.println();
        for (int x = 0; x < hotel.length-1; x++ )
        {
            if (hotel[x].equals("e"))// All rooms were named as e in initialise m
ethod. Here, if e is the name that means a customer was not added
            {
                System.out.println("Room Number " + x + " Is Empty ");
            }
        }
        inputs(hotel);
    }

    // Deleting Customer Froom A room
    public static void deletecustomer(String[] hotel)
    {
```



```
        System.out.println("-------------------------------------");
        System.out.println("    Deleting Customer From Room... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        System.out.println("Enter The Room Number That You Want TO Clear : ");//
Asking user to insert the room number where the customer lives in
        int roomdel = input.nextInt();
        for (int x = 0; x < hotel.length-1; x++ )
        {
            if ( x == roomdel)
            {
                hotel[x] = "e";// Removing the name that was added before and cha
nging the value of index back to empty(e)
                System.out.println();
                System.out.println( "Customer From Room Number " + roomdel + " Re
moved Successfully ");
            }
        }
        inputs(hotel);
    }

    // Finding room number
    public static void findroom(String[] hotel)
    {
        System.out.println("-------------------------------------");
        System.out.println("  Finding Room From Customer Name... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner(System.in);
        System.out.println("Enter Customer Name To Find The Room Number : ");// T
aking the customer name as an input from the user
        String cusname = input.next();
        for (int x = 0; x < hotel.length-
1; x++)// using a for loop to traverse through the array
        {
            if (hotel[x].equals(cusname))// Checking whether the value in the ind
ex(name) is equal to the userinput
            {
                System.out.println();
                System.out.println(cusname + " Is In Room Number " + x);
            }
        }
        inputs(hotel);
    }
```



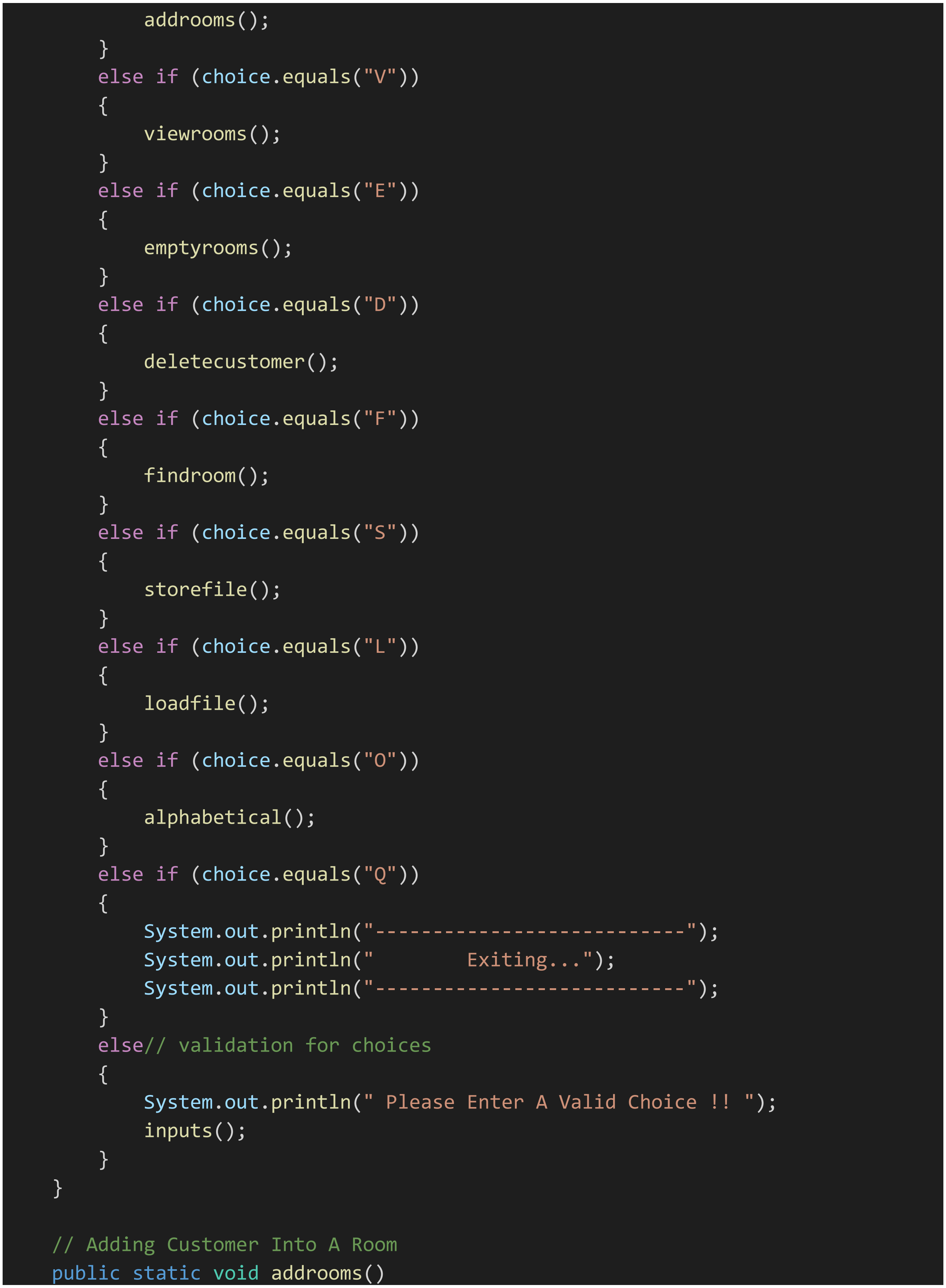
```
    public static void storefile(String[] hotel)
    {
        // creating the text file that will store the customer information
        File filename = new File ("customerinfo.txt");
        System.out.println("-------------------------------------");
        System.out.println("  Storing program Data In a File... ");
        System.out.println("-------------------------------------");
        System.out.println();
        try
        {
            FileWriter fw = new FileWriter (filename);
            Writer output = new BufferedWriter(fw);
            for (int x = 0; x < hotel.length-
1; x++ )// Reading the array that stores customer info index after index
            {
                output.write("Room Number " + x + " Is Occupied By " + hotel[x] +
 "\n");// Printing the customer info in the text file
            }
            output.close();
            System.out.println("Customer Data Was Stored Successfully In " + file
name + " file");
            System.out.println();
        }
        catch (Exception e)// If the file cannot be read showing an error
        {
            System.out.println( " The Data Cannot Be Stored In The File !! ");
            System.out.println();
        }
        inputs(hotel);
    }

    // Loading Information from the stored file
    public static void loadfile(String[] hotel)
    {
        System.out.println("---------------------------------------");
        System.out.println("  Loading Program Data From A File... ");
        System.out.println("---------------------------------------");
        System.out.println();
        try
        {
            File myObj = new File("customerinfo.txt");// taking the file that nee
ds to be read
            Scanner myReader = new Scanner(myObj);
            while (myReader.hasNextLine())
```



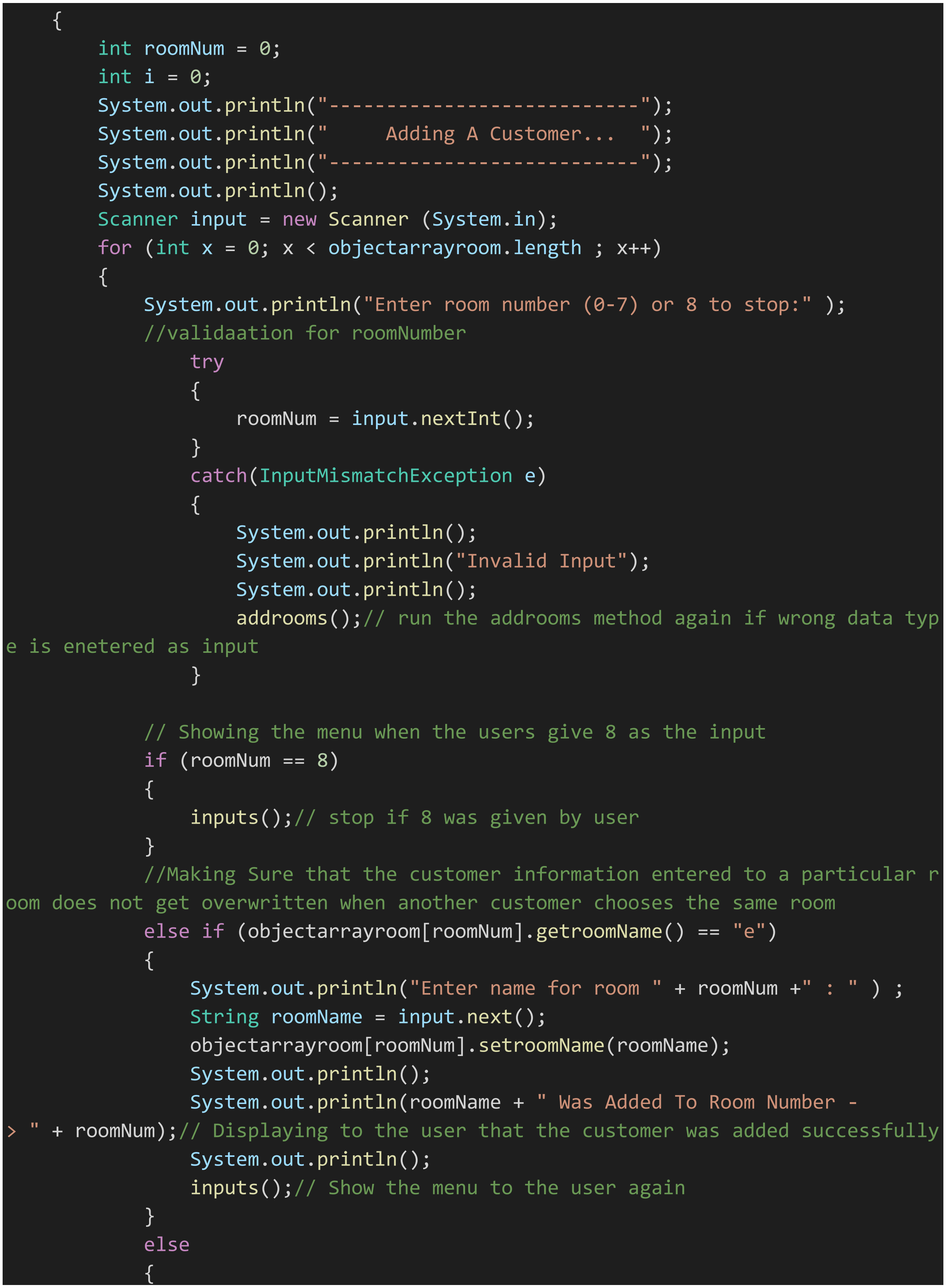
```
            {
                String data = myReader.nextLine();//Reading the content in the file line by line
                System.out.println(data);//Displaying the content that was read from the file
            }
            myReader.close();
        }
        catch(FileNotFoundException e)// If the file cannot be read showing an error
        {
            System.out.println("An error Occurred !!");
            e.printStackTrace();
        }
        inputs(hotel);
    }

    // Displaying the customer names in alphabetical order
    public static void alphabetical (String[] hotel)
    {
        System.out.println("-------------------------------------------");
        System.out.println("  Viewing Guests In Alphabetical Order... ");
        System.out.println("-------------------------------------------");
        String temp;
        for (int x = 0; x < hotel.length -1; x++)
        {
            for(int y = x + 1; y < hotel.length -1; y++)
            {
                if(hotel[x].toUpperCase().compareTo(hotel[y].toUpperCase()) > 0 )
                {
                    temp = hotel[x];
                    hotel[x] =hotel[y];
                    hotel[y] = temp;
                }
            }
        }
        for (int i = 0; i < hotel.length -1 ; i++)
        {
            System.out.println();
            System.out.println(hotel[i]);
        }
        inputs(hotel);
    }

    private static void initialise( String hotelRef[] )
    {
        for (int x = 0; x < 8; x++ ) hotelRef[x] = "e";
    }

}
```

## **Task 2** – Hotel.java

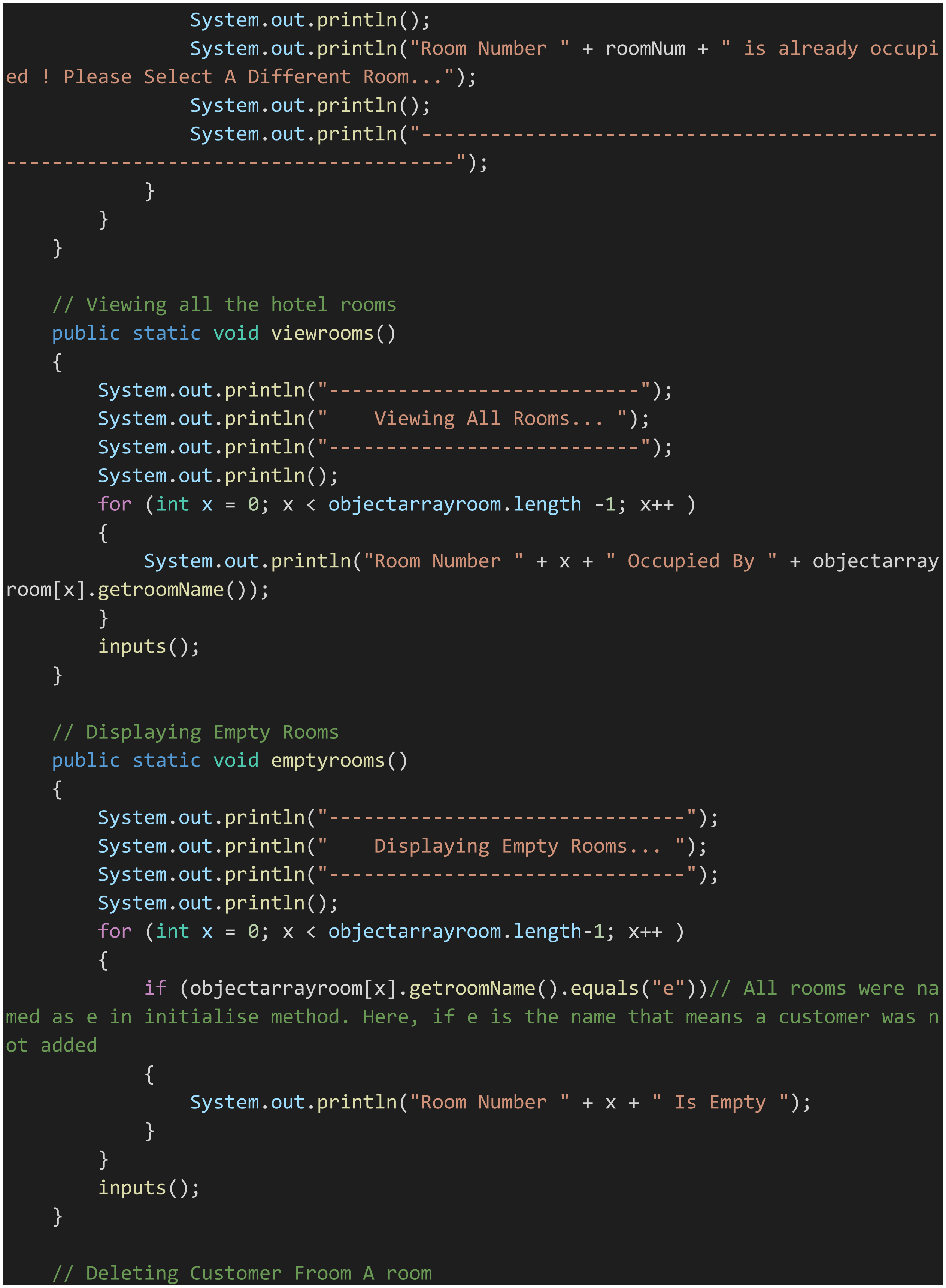
```
import java.util.*;
import java.io.*;


public class Hotel {

    public static void main(String[] args)
    {
        initialise();
        inputs();
    }

private static Room[] objectarrayroom = new Room[9];

    // Menu
    public static void inputs()
    {
        System.out.println("+----------------------------------------------------
----+");
        System.out.println("                    Welcome !!");
        System.out.println("+----------------------------------------------------
----+");
        System.out.println(" Enter 'A' : Add New Customer To A Room ");
        System.out.println(" Enter 'V' : View All Rooms ");
        System.out.println(" Enter 'E' : Display Empty Rooms ");
        System.out.println(" Enter 'D' : Delete Customer From Room");
        System.out.println(" Enter 'F' : Find Room From Customer Name ");
        System.out.println(" Enter 'S' : Store Program Data Into A File ");
        System.out.println(" Enter 'L' : Load Program Data From File ");
        System.out.println(" Enter 'O' : View Guests Ordered Alphabetically By Na
me ");
        System.out.println(" Enter 'Q' : Exit From The Program ");
        System.out.println("+----------------------------------------------------
----+");
        Scanner input = new Scanner (System.in);
        System.out.println("");
        System.out.println("Enter Your Choice : ");// Getting the choice of the u
ser as an input
        String choice = input.next();
        // Calling each method according to the user input
        if (choice.equals("A"))
        {
```



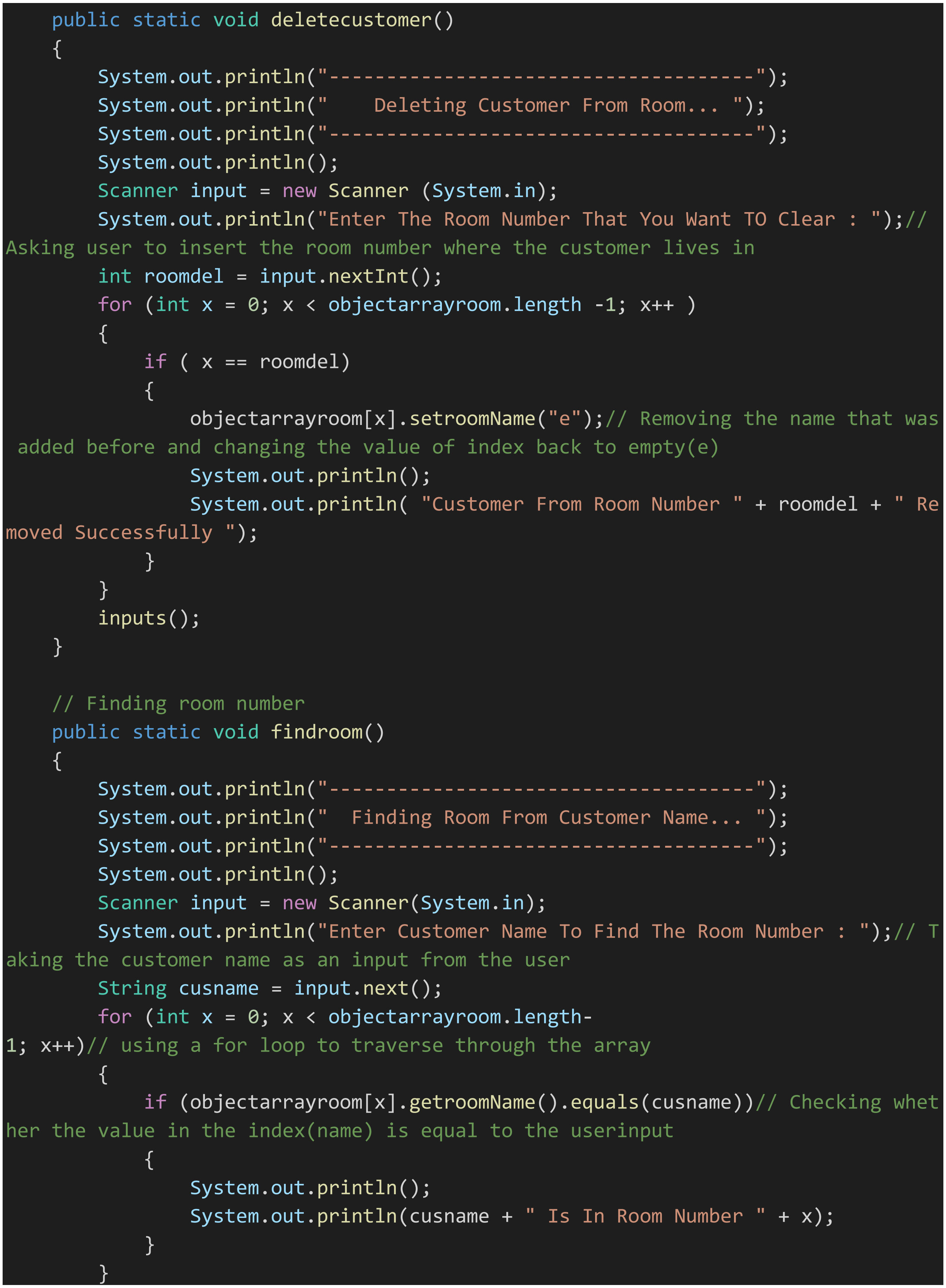
```java
            addrooms();
        }
        else if (choice.equals("V"))
        {
            viewrooms();
        }
        else if (choice.equals("E"))
        {
            emptyrooms();
        }
        else if (choice.equals("D"))
        {
            deletecustomer();
        }
        else if (choice.equals("F"))
        {
            findroom();
        }
        else if (choice.equals("S"))
        {
            storefile();
        }
        else if (choice.equals("L"))
        {
            loadfile();
        }
        else if (choice.equals("O"))
        {
            alphabetical();
        }
        else if (choice.equals("Q"))
        {
            System.out.println("---------------------------");
            System.out.println("        Exiting...");
            System.out.println("---------------------------");
        }
        else// validation for choices
        {
            System.out.println(" Please Enter A Valid Choice !! ");
            inputs();
        }
    }

    // Adding Customer Into A Room
    public static void addrooms()
```



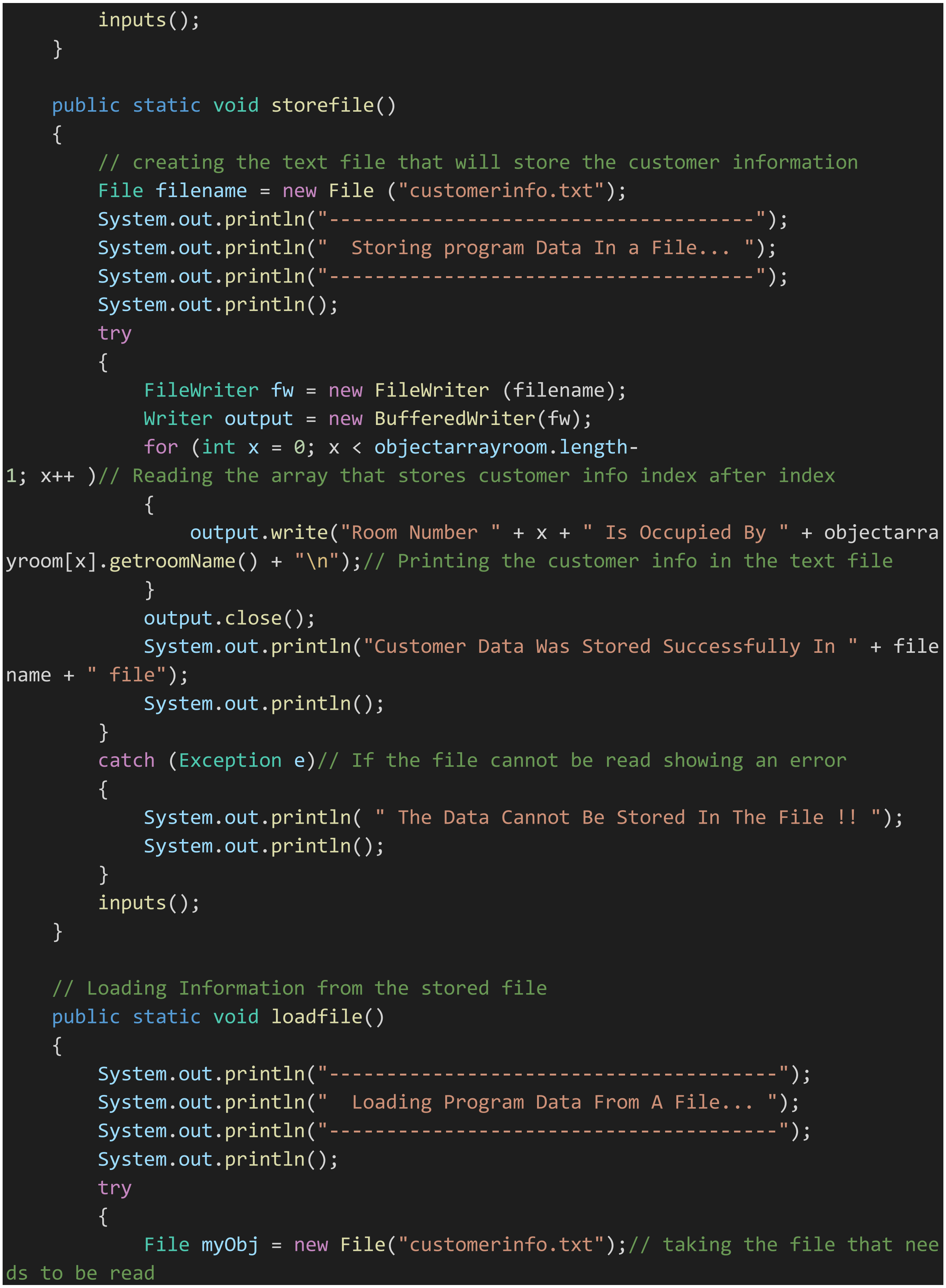
```
    {
        int roomNum = 0;
        int i = 0;
        System.out.println("---------------------------");
        System.out.println("     Adding A Customer...  ");
        System.out.println("---------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        for (int x = 0; x < objectarrayroom.length ; x++)
        {
            System.out.println("Enter room number (0-7) or 8 to stop:" );
            //validaation for roomNumber
                try
                {
                    roomNum = input.nextInt();
                }
                catch(InputMismatchException e)
                {
                    System.out.println();
                    System.out.println("Invalid Input");
                    System.out.println();
                    addrooms();// run the addrooms method again if wrong data type is enetered as input
                }

            // Showing the menu when the users give 8 as the input
            if (roomNum == 8)
            {
                inputs();// stop if 8 was given by user
            }
            //Making Sure that the customer information entered to a particular room does not get overwritten when another customer chooses the same room
            else if (objectarrayroom[roomNum].getroomName() == "e")
            {
                System.out.println("Enter name for room " + roomNum +" : " ) ;
                String roomName = input.next();
                objectarrayroom[roomNum].setroomName(roomName);
                System.out.println();
                System.out.println(roomName + " Was Added To Room Number -> " + roomNum);// Displaying to the user that the customer was added successfully
                System.out.println();
                inputs();// Show the menu to the user again
            }
            else
            {
```



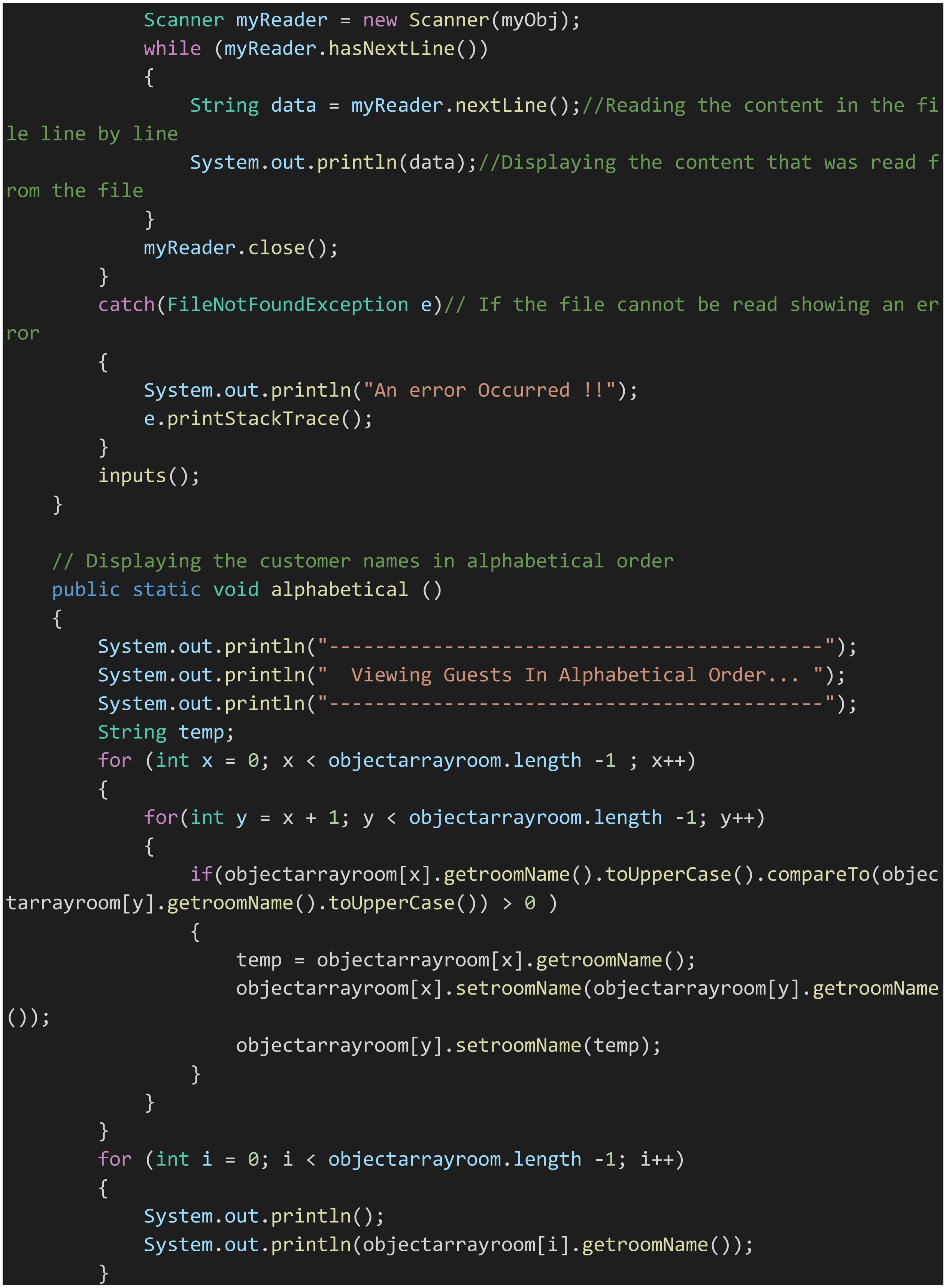
```
                System.out.println();
                System.out.println("Room Number " + roomNum + " is already occupi
ed ! Please Select A Different Room...");
                System.out.println();
                System.out.println("---------------------------------------------
---------------------------------------");
            }
        }
    }

    // Viewing all the hotel rooms
    public static void viewrooms()
    {
        System.out.println("---------------------------");
        System.out.println("    Viewing All Rooms... ");
        System.out.println("---------------------------");
        System.out.println();
        for (int x = 0; x < objectarrayroom.length -1; x++ )
        {
            System.out.println("Room Number " + x + " Occupied By " + objectarray
room[x].getroomName());
        }
        inputs();
    }

    // Displaying Empty Rooms
    public static void emptyrooms()
    {
        System.out.println("-------------------------------");
        System.out.println("    Displaying Empty Rooms... ");
        System.out.println("-------------------------------");
        System.out.println();
        for (int x = 0; x < objectarrayroom.length-1; x++ )
        {
            if (objectarrayroom[x].getroomName().equals("e"))// All rooms were na
med as e in initialise method. Here, if e is the name that means a customer was n
ot added
            {
                System.out.println("Room Number " + x + " Is Empty ");
            }
        }
        inputs();
    }

    // Deleting Customer Froom A room
```



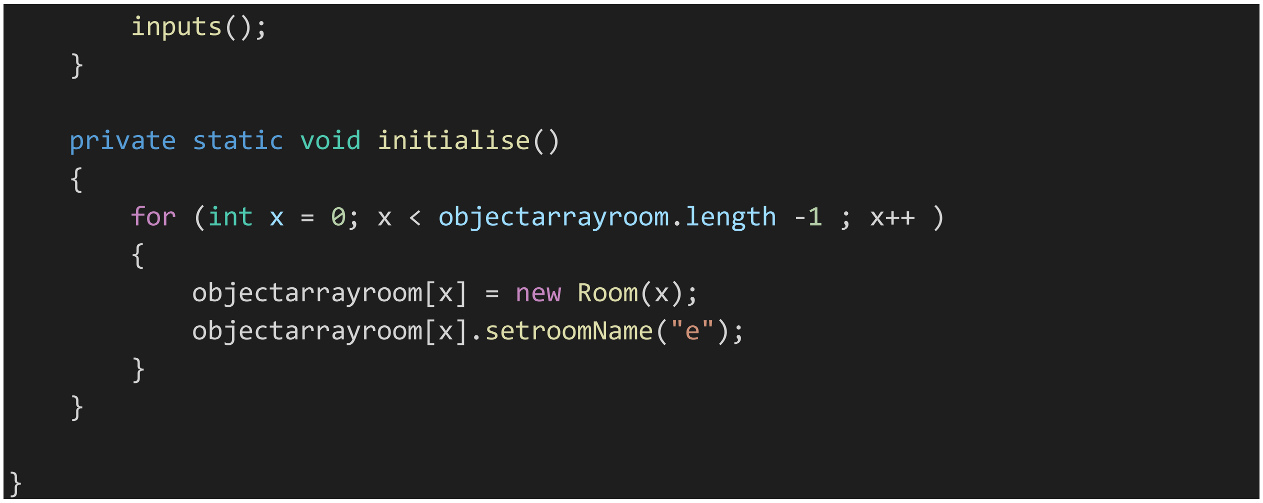
```
    public static void deletecustomer()
    {
        System.out.println("-------------------------------------");
        System.out.println("    Deleting Customer From Room... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        System.out.println("Enter The Room Number That You Want TO Clear : ");//
Asking user to insert the room number where the customer lives in
        int roomdel = input.nextInt();
        for (int x = 0; x < objectarrayroom.length -1; x++ )
        {
            if ( x == roomdel)
            {
                objectarrayroom[x].setroomName("e");// Removing the name that was
 added before and changing the value of index back to empty(e)
                System.out.println();
                System.out.println( "Customer From Room Number " + roomdel + " Re
moved Successfully ");
            }
        }
        inputs();
    }

    // Finding room number
    public static void findroom()
    {
        System.out.println("-------------------------------------");
        System.out.println("  Finding Room From Customer Name... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner(System.in);
        System.out.println("Enter Customer Name To Find The Room Number : ");// T
aking the customer name as an input from the user
        String cusname = input.next();
        for (int x = 0; x < objectarrayroom.length-
1; x++)// using a for loop to traverse through the array
        {
            if (objectarrayroom[x].getroomName().equals(cusname))// Checking whet
her the value in the index(name) is equal to the userinput
            {
                System.out.println();
                System.out.println(cusname + " Is In Room Number " + x);
            }
        }
```



```
        inputs();
    }

    public static void storefile()
    {
        // creating the text file that will store the customer information
        File filename = new File ("customerinfo.txt");
        System.out.println("-------------------------------------");
        System.out.println("  Storing program Data In a File... ");
        System.out.println("-------------------------------------");
        System.out.println();
        try
        {
            FileWriter fw = new FileWriter (filename);
            Writer output = new BufferedWriter(fw);
            for (int x = 0; x < objectarrayroom.length-
1; x++ )// Reading the array that stores customer info index after index
            {
                output.write("Room Number " + x + " Is Occupied By " + objectarra
yroom[x].getroomName() + "\n");// Printing the customer info in the text file
            }
            output.close();
            System.out.println("Customer Data Was Stored Successfully In " + file
name + " file");
            System.out.println();
        }
        catch (Exception e)// If the file cannot be read showing an error
        {
            System.out.println( " The Data Cannot Be Stored In The File !! ");
            System.out.println();
        }
        inputs();
    }

    // Loading Information from the stored file
    public static void loadfile()
    {
        System.out.println("---------------------------------------");
        System.out.println("  Loading Program Data From A File... ");
        System.out.println("---------------------------------------");
        System.out.println();
        try
        {
            File myObj = new File("customerinfo.txt");// taking the file that nee
ds to be read
```

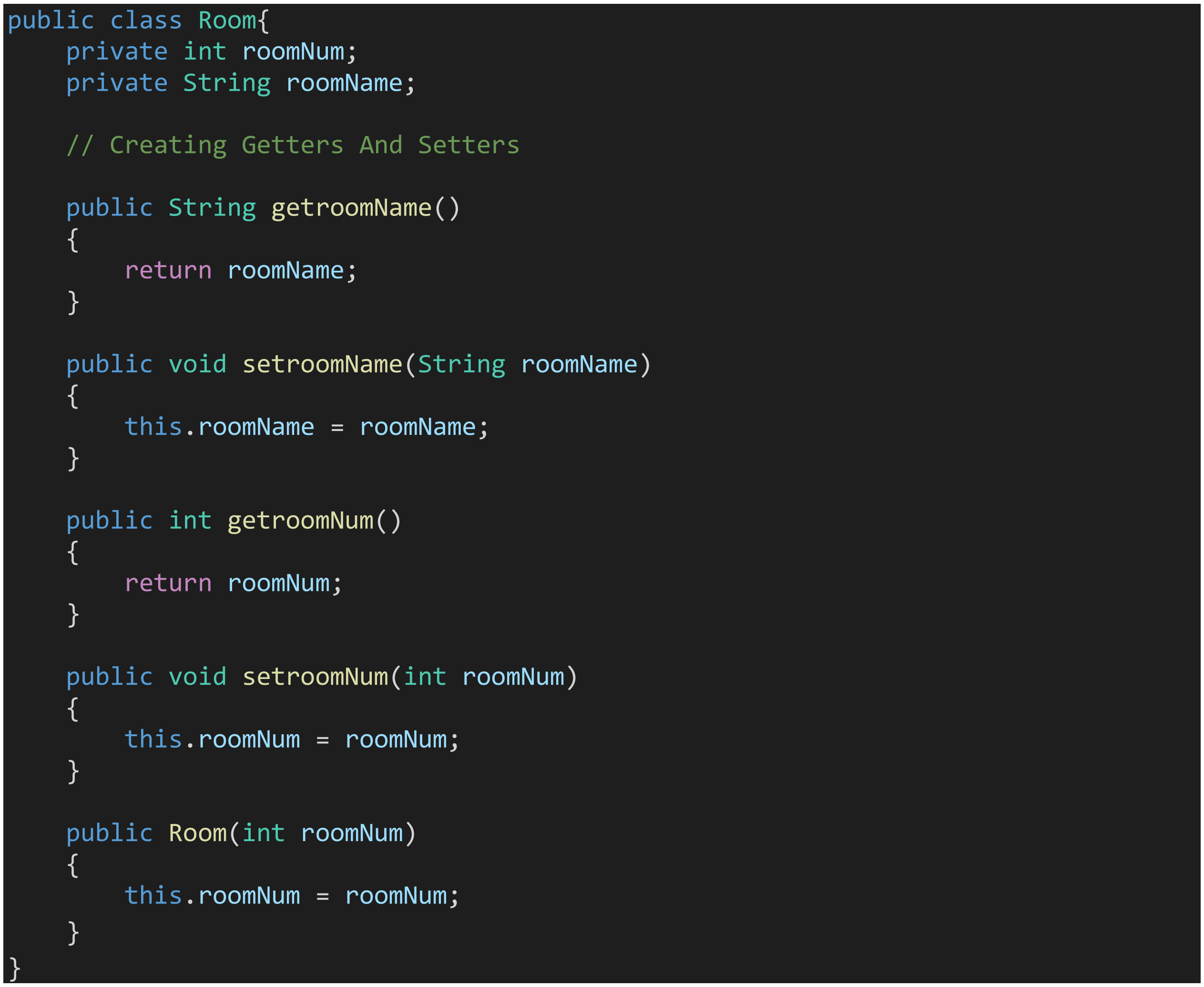


```
            Scanner myReader = new Scanner(myObj);
            while (myReader.hasNextLine())
            {
                String data = myReader.nextLine();//Reading the content in the file line by line
                System.out.println(data);//Displaying the content that was read from the file
            }
            myReader.close();
        }
        catch(FileNotFoundException e)// If the file cannot be read showing an error
        {
            System.out.println("An error Occurred !!");
            e.printStackTrace();
        }
        inputs();
    }

    // Displaying the customer names in alphabetical order
    public static void alphabetical ()
    {
        System.out.println("-------------------------------------------");
        System.out.println("  Viewing Guests In Alphabetical Order... ");
        System.out.println("-------------------------------------------");
        String temp;
        for (int x = 0; x < objectarrayroom.length -1 ; x++)
        {
            for(int y = x + 1; y < objectarrayroom.length -1; y++)
            {
                if(objectarrayroom[x].getroomName().toUpperCase().compareTo(objectarrayroom[y].getroomName().toUpperCase()) > 0 )
                {
                    temp = objectarrayroom[x].getroomName();
                    objectarrayroom[x].setroomName(objectarrayroom[y].getroomName());

                    objectarrayroom[y].setroomName(temp);
                }
            }
        }
        for (int i = 0; i < objectarrayroom.length -1; i++)
        {
            System.out.println();
            System.out.println(objectarrayroom[i].getroomName());
        }
```



```java
        inputs();
    }

    private static void initialise()
    {
        for (int x = 0; x < objectarrayroom.length -1 ; x++ )
        {
            objectarrayroom[x] = new Room(x);
            objectarrayroom[x].setroomName("e");
        }
    }

}
```

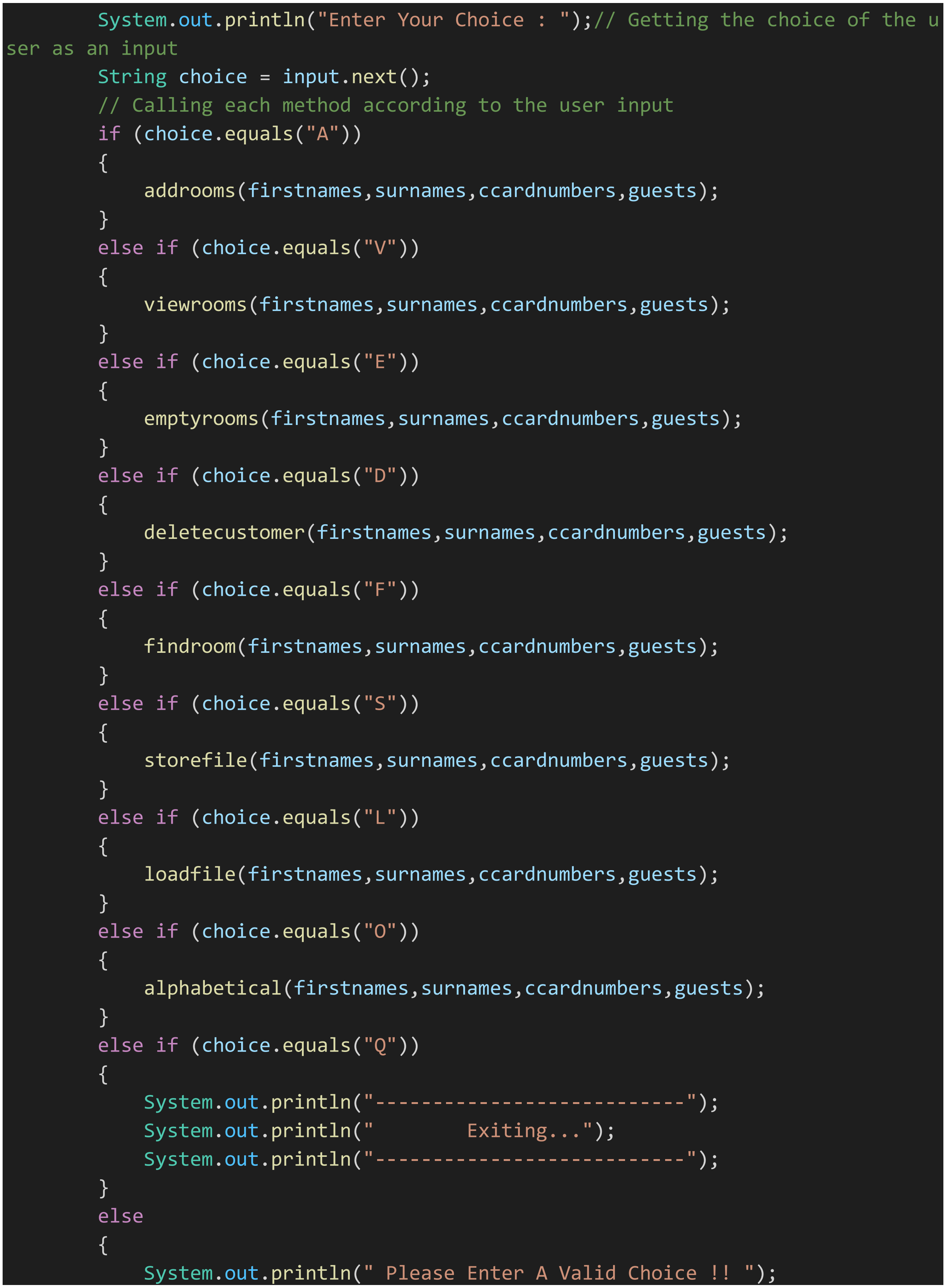
Room.java



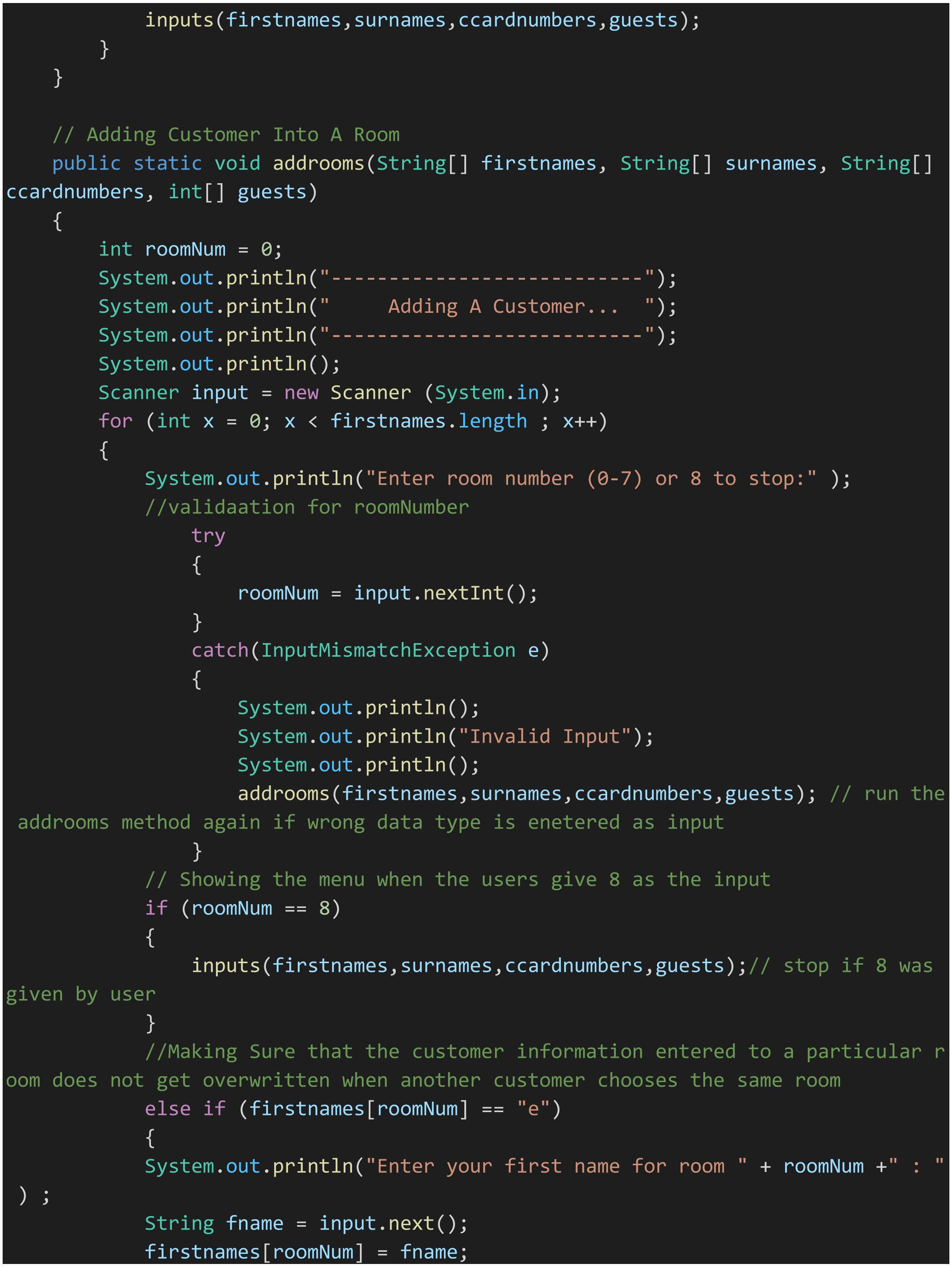
```java
public class Room{
    private int roomNum;
    private String roomName;

    // Creating Getters And Setters

    public String getroomName()
    {
        return roomName;
    }

    public void setroomName(String roomName)
    {
        this.roomName = roomName;
    }

    public int getroomNum()
    {
        return roomNum;
    }

    public void setroomNum(int roomNum)
    {
        this.roomNum = roomNum;
    }

    public Room(int roomNum)
    {
        this.roomNum = roomNum;
    }
}
```

**Task 3** – Hotel3.java(array version)

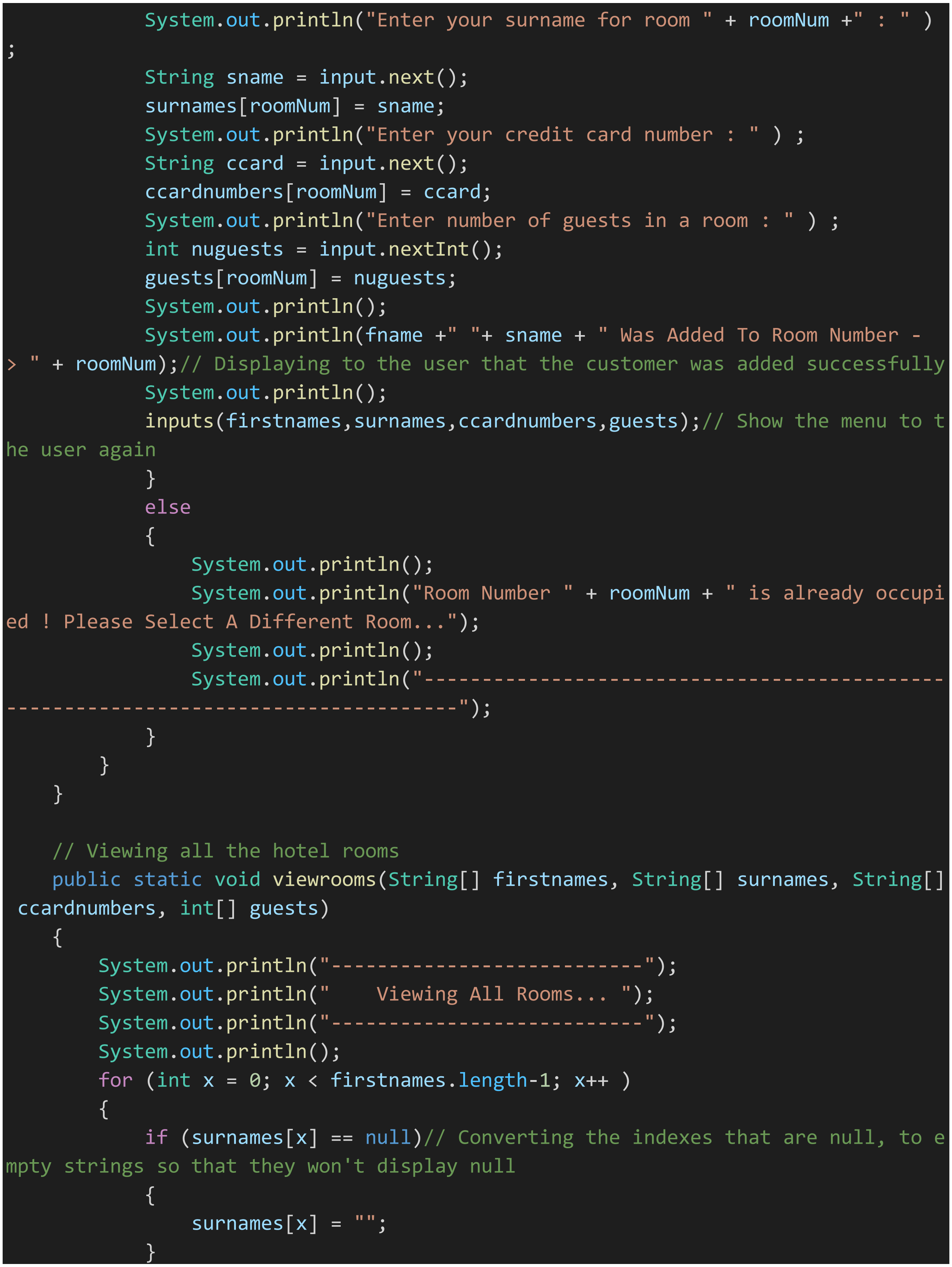
```
import java.util.*;
import java.io.*;


public class Hotel3 {

    public static void main(String[] args)
    {
        int roomNum = 0;
        String[] hotel = new String[9];
        String[] firstnames = new String[9];
        String[] surnames = new String[9];
        String[] ccardnumbers = new String[9];
        int[] guests = new int[9];
        initialise(firstnames);
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    // Menu
    public static void inputs(String[] firstnames, String[] surnames, String[] cc
ardnumbers, int[] guests)
    {
        System.out.println("+----------------------------------------------------
----+");
        System.out.println("                      Welcome !!");
        System.out.println("+----------------------------------------------------
----+");
        System.out.println(" Enter 'A' : Add New Customer To A Room ");
        System.out.println(" Enter 'V' : View All Rooms ");
        System.out.println(" Enter 'E' : Display Empty Rooms ");
        System.out.println(" Enter 'D' : Delete Customer From Room");
        System.out.println(" Enter 'F' : Find Room From Customer Name ");
        System.out.println(" Enter 'S' : Store Program Data Into A File ");
        System.out.println(" Enter 'L' : Load Program Data From File ");
        System.out.println(" Enter 'O' : View Guests Ordered Alphabetically By Na
me ");
        System.out.println(" Enter 'Q' : Exit From The Program ");
        System.out.println("+----------------------------------------------------
----+");
        Scanner input = new Scanner (System.in);
        System.out.println("");
```



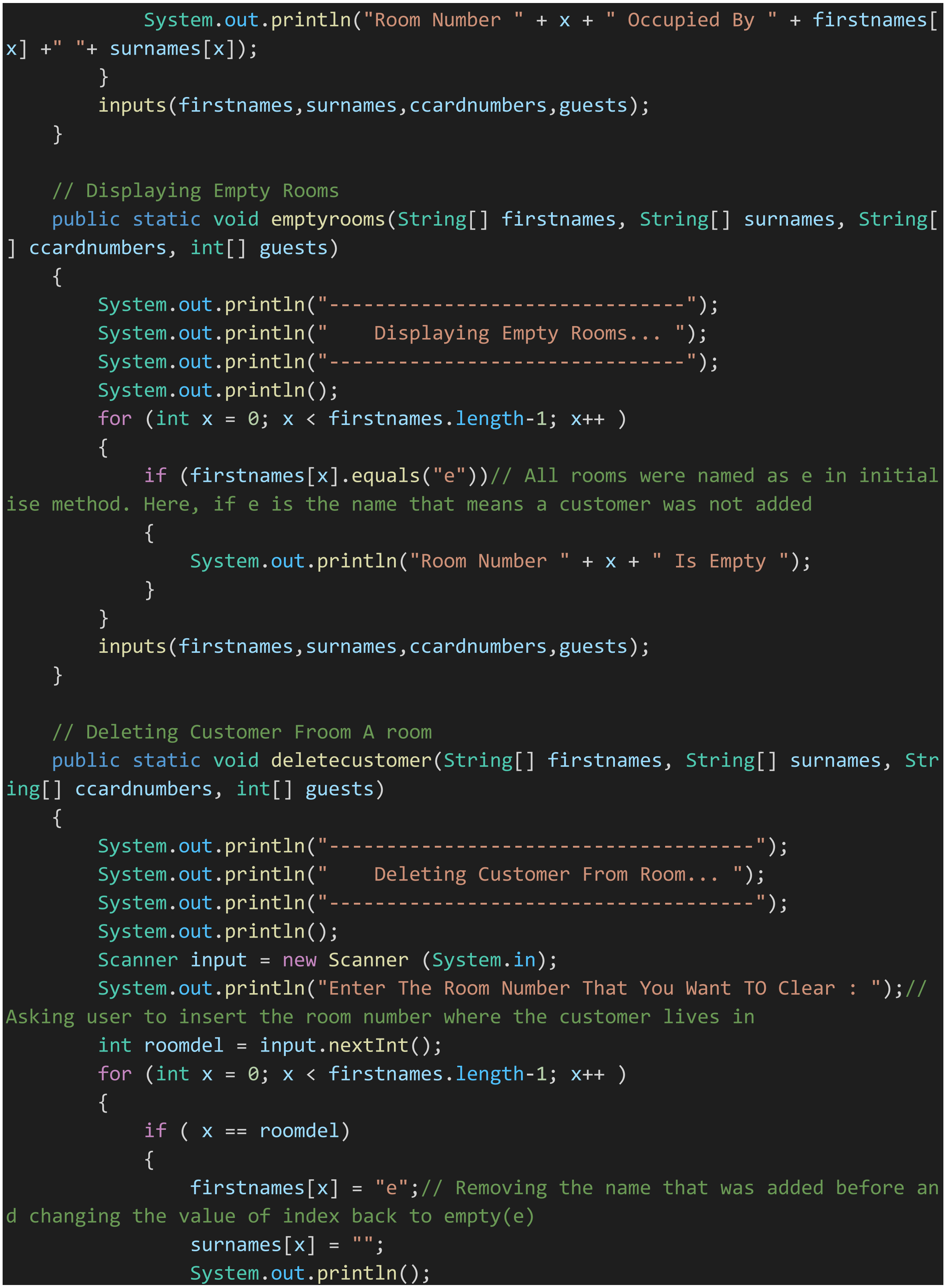
```
        System.out.println("Enter Your Choice : ");// Getting the choice of the u
ser as an input
        String choice = input.next();
        // Calling each method according to the user input
        if (choice.equals("A"))
        {
            addrooms(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("V"))
        {
            viewrooms(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("E"))
        {
            emptyrooms(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("D"))
        {
            deletecustomer(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("F"))
        {
            findroom(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("S"))
        {
            storefile(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("L"))
        {
            loadfile(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("O"))
        {
            alphabetical(firstnames,surnames,ccardnumbers,guests);
        }
        else if (choice.equals("Q"))
        {
            System.out.println("---------------------------");
            System.out.println("        Exiting...");
            System.out.println("---------------------------");
        }
        else
        {
            System.out.println(" Please Enter A Valid Choice !! ");
```



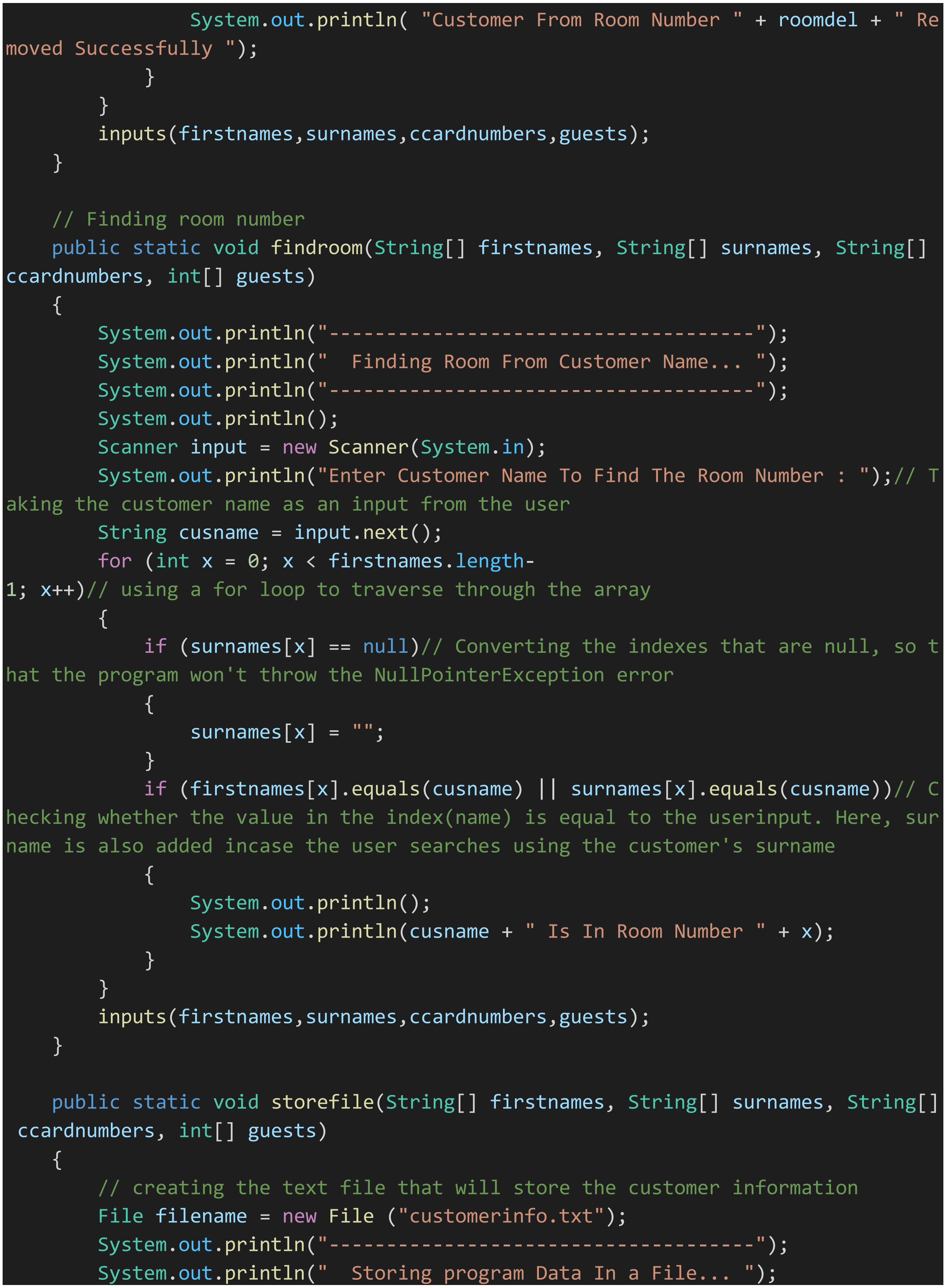
```
            inputs(firstnames,surnames,ccardnumbers,guests);
        }
    }

    // Adding Customer Into A Room
    public static void addrooms(String[] firstnames, String[] surnames, String[] 
ccardnumbers, int[] guests)
    {
        int roomNum = 0;
        System.out.println("---------------------------");
        System.out.println("     Adding A Customer...  ");
        System.out.println("---------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        for (int x = 0; x < firstnames.length ; x++)
        {
            System.out.println("Enter room number (0-7) or 8 to stop:" );
            //validaation for roomNumber
                try
                {
                    roomNum = input.nextInt();
                }
                catch(InputMismatchException e)
                {
                    System.out.println();
                    System.out.println("Invalid Input");
                    System.out.println();
                    addrooms(firstnames,surnames,ccardnumbers,guests); // run the
 addrooms method again if wrong data type is enetered as input
                }
            // Showing the menu when the users give 8 as the input
            if (roomNum == 8)
            {
                inputs(firstnames,surnames,ccardnumbers,guests);// stop if 8 was 
given by user
            }
            //Making Sure that the customer information entered to a particular r
oom does not get overwritten when another customer chooses the same room
            else if (firstnames[roomNum] == "e")
            {
            System.out.println("Enter your first name for room " + roomNum +" : "
 ) ;
            String fname = input.next();
            firstnames[roomNum] = fname;
```



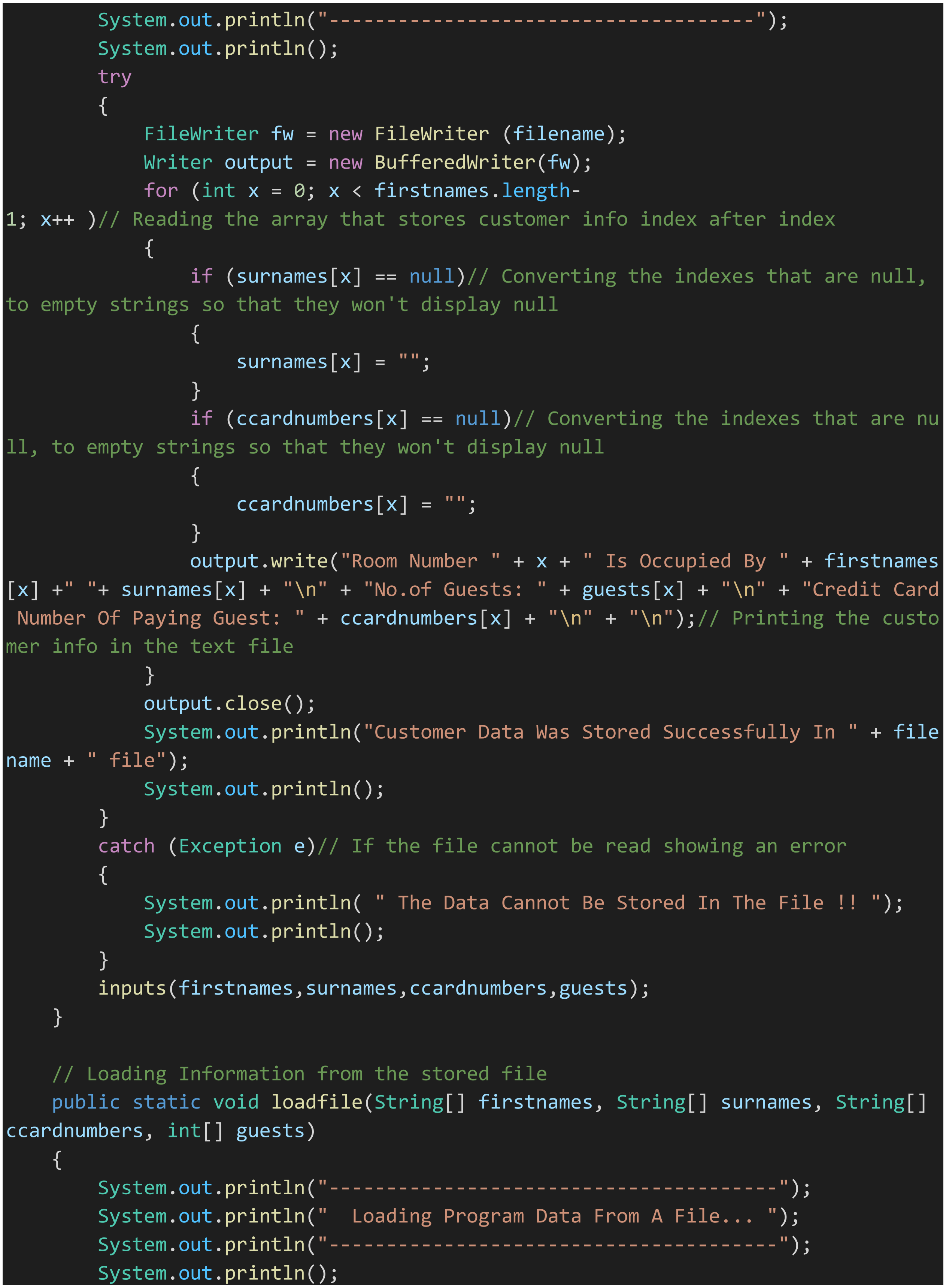
```
            System.out.println("Enter your surname for room " + roomNum +" : " )
;
            String sname = input.next();
            surnames[roomNum] = sname;
            System.out.println("Enter your credit card number : " ) ;
            String ccard = input.next();
            ccardnumbers[roomNum] = ccard;
            System.out.println("Enter number of guests in a room : " ) ;
            int nuguests = input.nextInt();
            guests[roomNum] = nuguests;
            System.out.println();
            System.out.println(fname +" "+ sname + " Was Added To Room Number -
> " + roomNum);// Displaying to the user that the customer was added successfully
            System.out.println();
            inputs(firstnames,surnames,ccardnumbers,guests);// Show the menu to t
he user again
            }
            else
            {
                System.out.println();
                System.out.println("Room Number " + roomNum + " is already occupi
ed ! Please Select A Different Room...");
                System.out.println();
                System.out.println("---------------------------------------------
---------------------------------------");
            }
        }
    }

    // Viewing all the hotel rooms
    public static void viewrooms(String[] firstnames, String[] surnames, String[]
 ccardnumbers, int[] guests)
    {
        System.out.println("---------------------------");
        System.out.println("    Viewing All Rooms... ");
        System.out.println("---------------------------");
        System.out.println();
        for (int x = 0; x < firstnames.length-1; x++ )
        {
            if (surnames[x] == null)// Converting the indexes that are null, to e
mpty strings so that they won't display null
            {
                surnames[x] = "";
            }
```



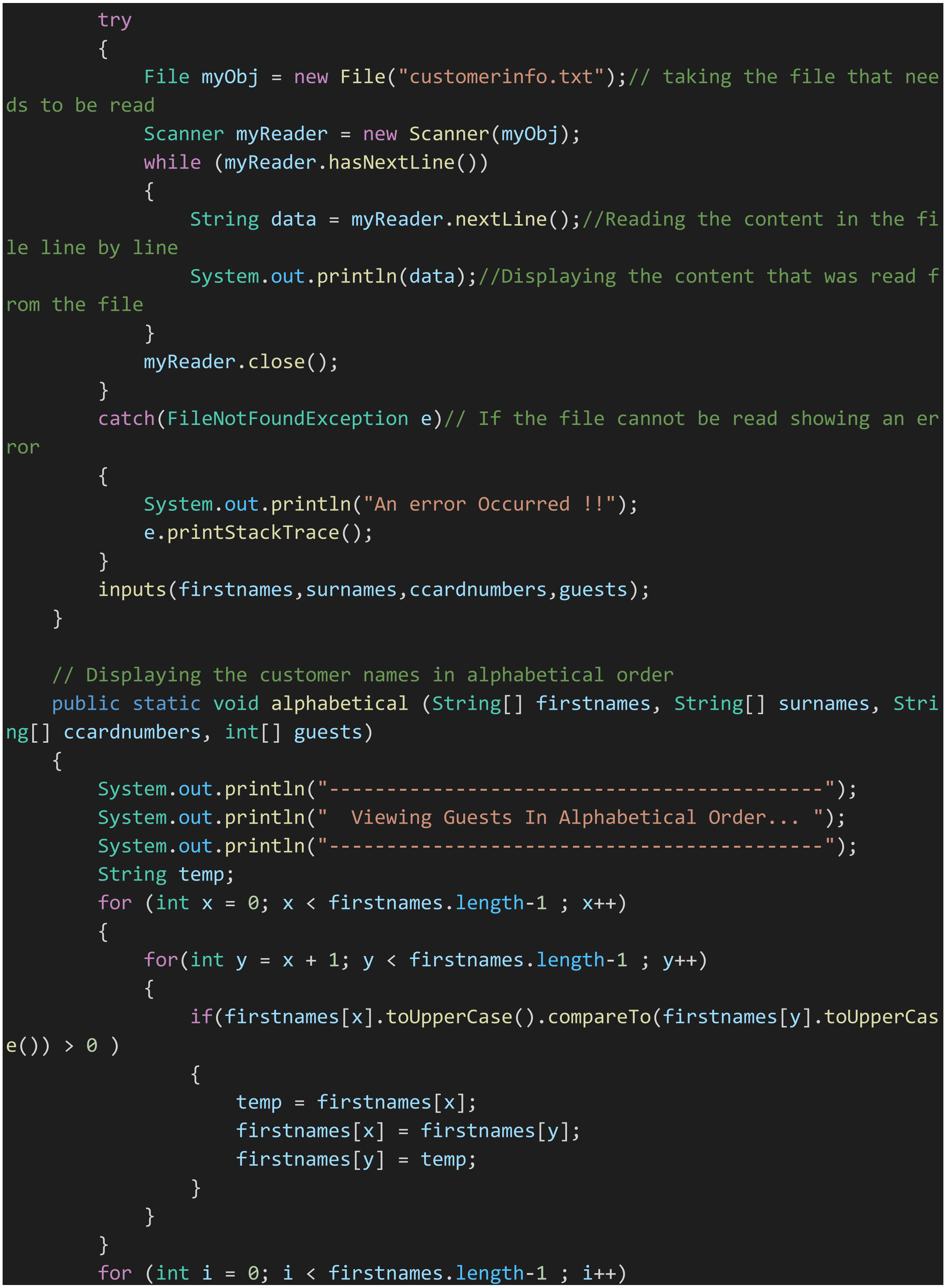
```java
            System.out.println("Room Number " + x + " Occupied By " + firstnames[x] +" "+ surnames[x]);
        }
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    // Displaying Empty Rooms
    public static void emptyrooms(String[] firstnames, String[] surnames, String[] ccardnumbers, int[] guests)
    {
        System.out.println("-------------------------------");
        System.out.println("    Displaying Empty Rooms... ");
        System.out.println("-------------------------------");
        System.out.println();
        for (int x = 0; x < firstnames.length-1; x++ )
        {
            if (firstnames[x].equals("e"))// All rooms were named as e in initialise method. Here, if e is the name that means a customer was not added
            {
                System.out.println("Room Number " + x + " Is Empty ");
            }
        }
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    // Deleting Customer Froom A room
    public static void deletecustomer(String[] firstnames, String[] surnames, String[] ccardnumbers, int[] guests)
    {
        System.out.println("-------------------------------------");
        System.out.println("    Deleting Customer From Room... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        System.out.println("Enter The Room Number That You Want TO Clear : ");// Asking user to insert the room number where the customer lives in
        int roomdel = input.nextInt();
        for (int x = 0; x < firstnames.length-1; x++ )
        {
            if ( x == roomdel)
            {
                firstnames[x] = "e";// Removing the name that was added before and changing the value of index back to empty(e)
                surnames[x] = "";
                System.out.println();
```



```
                System.out.println( "Customer From Room Number " + roomdel + " Re
moved Successfully ");
            }
        }
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    // Finding room number
    public static void findroom(String[] firstnames, String[] surnames, String[]
ccardnumbers, int[] guests)
    {
        System.out.println("-------------------------------------");
        System.out.println("  Finding Room From Customer Name... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner(System.in);
        System.out.println("Enter Customer Name To Find The Room Number : ");// T
aking the customer name as an input from the user
        String cusname = input.next();
        for (int x = 0; x < firstnames.length-
1; x++)// using a for loop to traverse through the array
        {
            if (surnames[x] == null)// Converting the indexes that are null, so t
hat the program won't throw the NullPointerException error
            {
                surnames[x] = "";
            }
            if (firstnames[x].equals(cusname) || surnames[x].equals(cusname))// C
hecking whether the value in the index(name) is equal to the userinput. Here, sur
name is also added incase the user searches using the customer's surname
            {
                System.out.println();
                System.out.println(cusname + " Is In Room Number " + x);
            }
        }
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    public static void storefile(String[] firstnames, String[] surnames, String[]
 ccardnumbers, int[] guests)
    {
        // creating the text file that will store the customer information
        File filename = new File ("customerinfo.txt");
        System.out.println("-------------------------------------");
        System.out.println("  Storing program Data In a File... ");
```



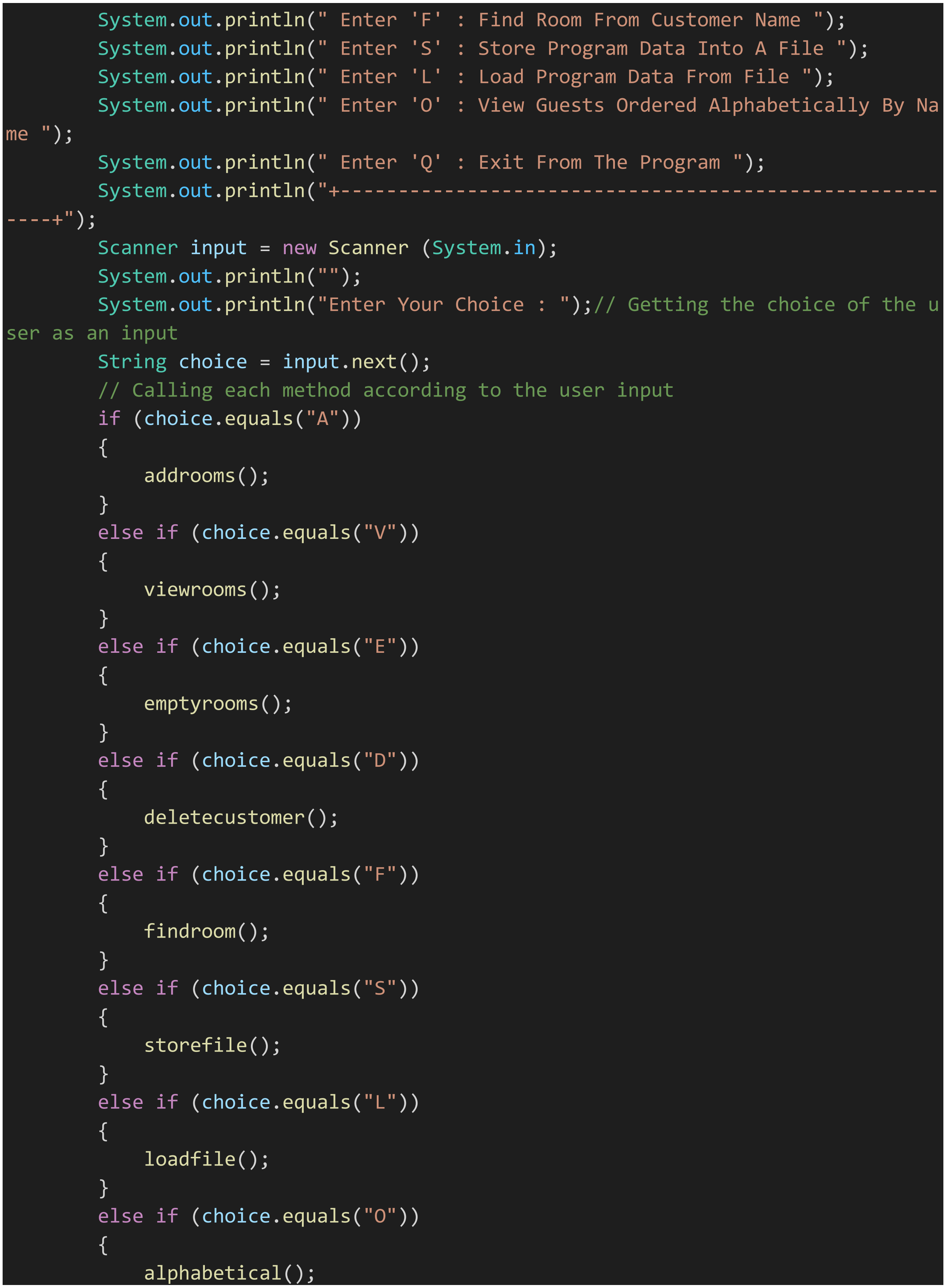
```
        System.out.println("-------------------------------------");
        System.out.println();
        try
        {
            FileWriter fw = new FileWriter (filename);
            Writer output = new BufferedWriter(fw);
            for (int x = 0; x < firstnames.length-
1; x++ )// Reading the array that stores customer info index after index
            {
                if (surnames[x] == null)// Converting the indexes that are null,
to empty strings so that they won't display null
                {
                    surnames[x] = "";
                }
                if (ccardnumbers[x] == null)// Converting the indexes that are nu
ll, to empty strings so that they won't display null
                {
                    ccardnumbers[x] = "";
                }
                output.write("Room Number " + x + " Is Occupied By " + firstnames
[x] +" "+ surnames[x] + "\n" + "No.of Guests: " + guests[x] + "\n" + "Credit Card
 Number Of Paying Guest: " + ccardnumbers[x] + "\n" + "\n");// Printing the custo
mer info in the text file
            }
            output.close();
            System.out.println("Customer Data Was Stored Successfully In " + file
name + " file");
            System.out.println();
        }
        catch (Exception e)// If the file cannot be read showing an error
        {
            System.out.println( " The Data Cannot Be Stored In The File !! ");
            System.out.println();
        }
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    // Loading Information from the stored file
    public static void loadfile(String[] firstnames, String[] surnames, String[]
ccardnumbers, int[] guests)
    {
        System.out.println("---------------------------------------");
        System.out.println("  Loading Program Data From A File... ");
        System.out.println("---------------------------------------");
        System.out.println();
```



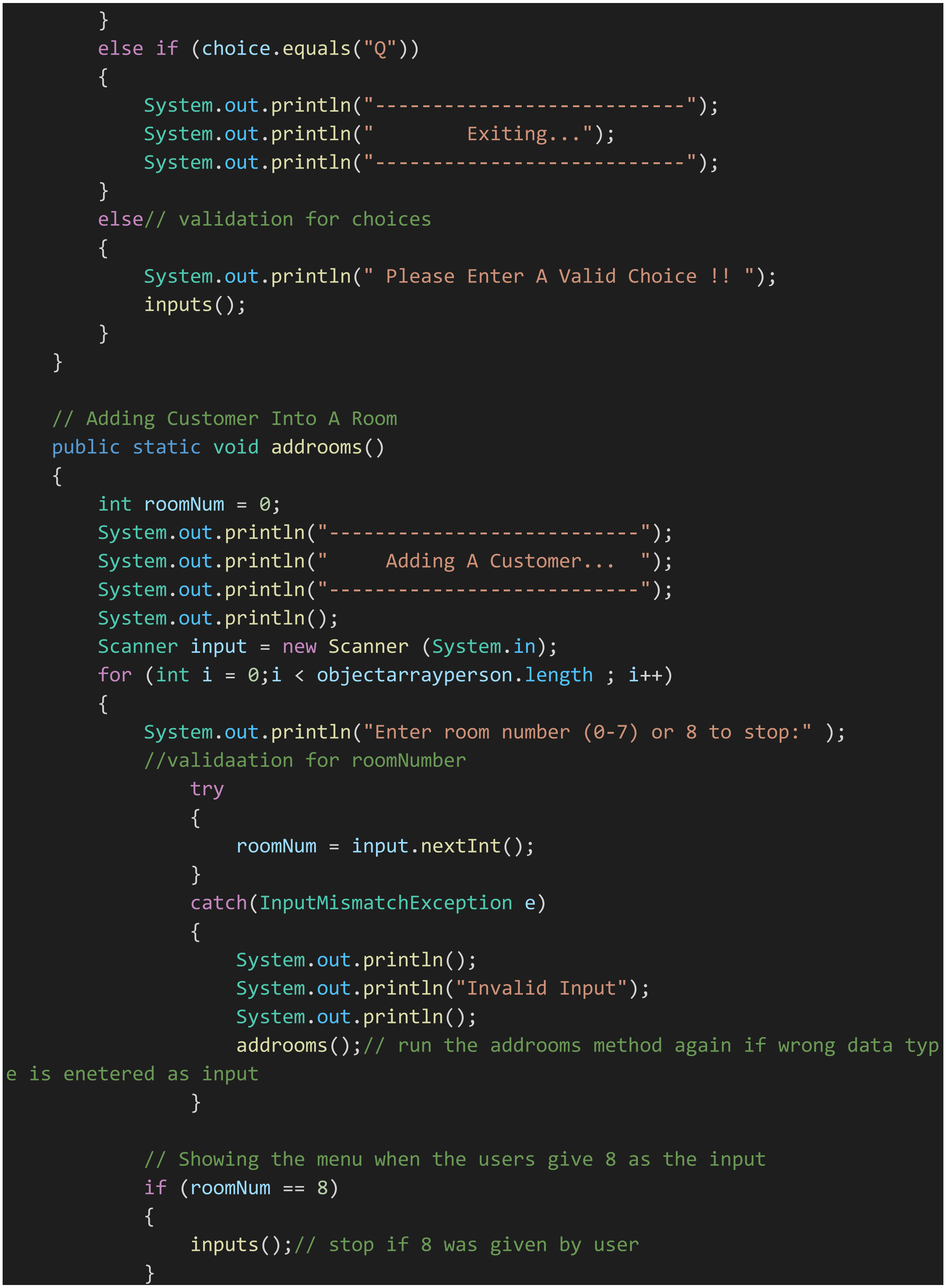
```
        try
        {
            File myObj = new File("customerinfo.txt");// taking the file that needs to be read
            Scanner myReader = new Scanner(myObj);
            while (myReader.hasNextLine())
            {
                String data = myReader.nextLine();//Reading the content in the file line by line
                System.out.println(data);//Displaying the content that was read from the file
            }
            myReader.close();
        }
        catch(FileNotFoundException e)// If the file cannot be read showing an error
        {
            System.out.println("An error Occurred !!");
            e.printStackTrace();
        }
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    // Displaying the customer names in alphabetical order
    public static void alphabetical (String[] firstnames, String[] surnames, String[] ccardnumbers, int[] guests)
    {
        System.out.println("-------------------------------------------");
        System.out.println("  Viewing Guests In Alphabetical Order... ");
        System.out.println("-------------------------------------------");
        String temp;
        for (int x = 0; x < firstnames.length-1 ; x++)
        {
            for(int y = x + 1; y < firstnames.length-1 ; y++)
            {
                if(firstnames[x].toUpperCase().compareTo(firstnames[y].toUpperCase()) > 0 )
                {
                    temp = firstnames[x];
                    firstnames[x] = firstnames[y];
                    firstnames[y] = temp;
                }
            }
        }
        for (int i = 0; i < firstnames.length-1 ; i++)
        {
            System.out.println();
            System.out.println(firstnames[i]);
        }
        inputs(firstnames,surnames,ccardnumbers,guests);
    }

    private static void initialise( String firstnames[] )
    {
        for (int x = 0; x < 8; x++ ) firstnames[x] = "e";
    }

}
```

## **Task 3** – Hotel.java(Class Version)

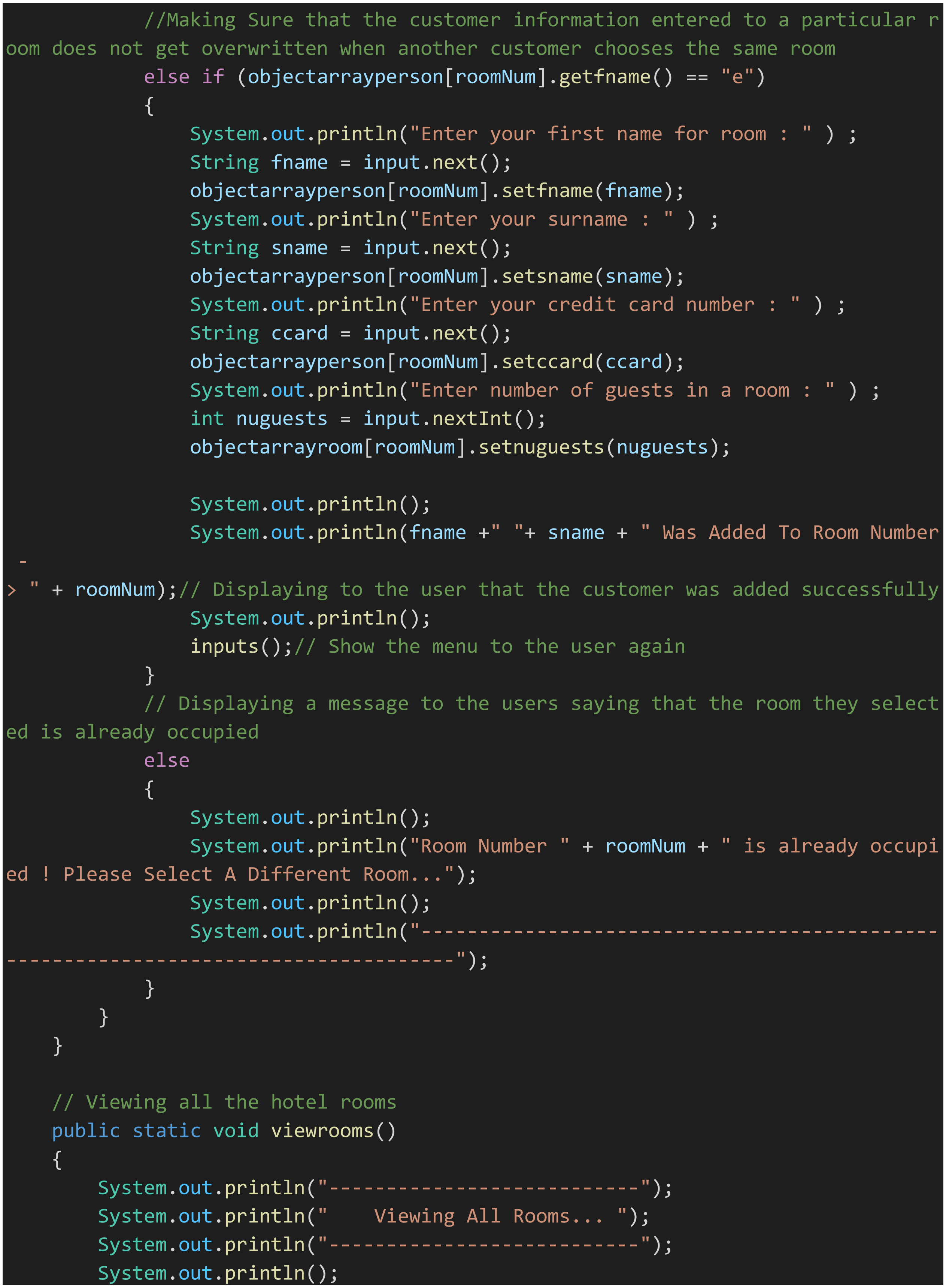
```

import java.util.*;
import java.io.*;


public class Hotel {

    public static void main(String[] args)
    {
        initialise();
        inputs();
    }

private static Room[] objectarrayroom = new Room[9];
private static Person[] objectarrayperson = new Person[9];

    // Menu
    public static void inputs()
    {
        System.out.println("+----------------------------------------------------
----+");
        System.out.println("                      Welcome !!");
        System.out.println("+----------------------------------------------------
----+");
        System.out.println(" Enter 'A' : Add New Customer To A Room ");
        System.out.println(" Enter 'V' : View All Rooms ");
        System.out.println(" Enter 'E' : Display Empty Rooms ");
        System.out.println(" Enter 'D' : Delete Customer From Room");
```



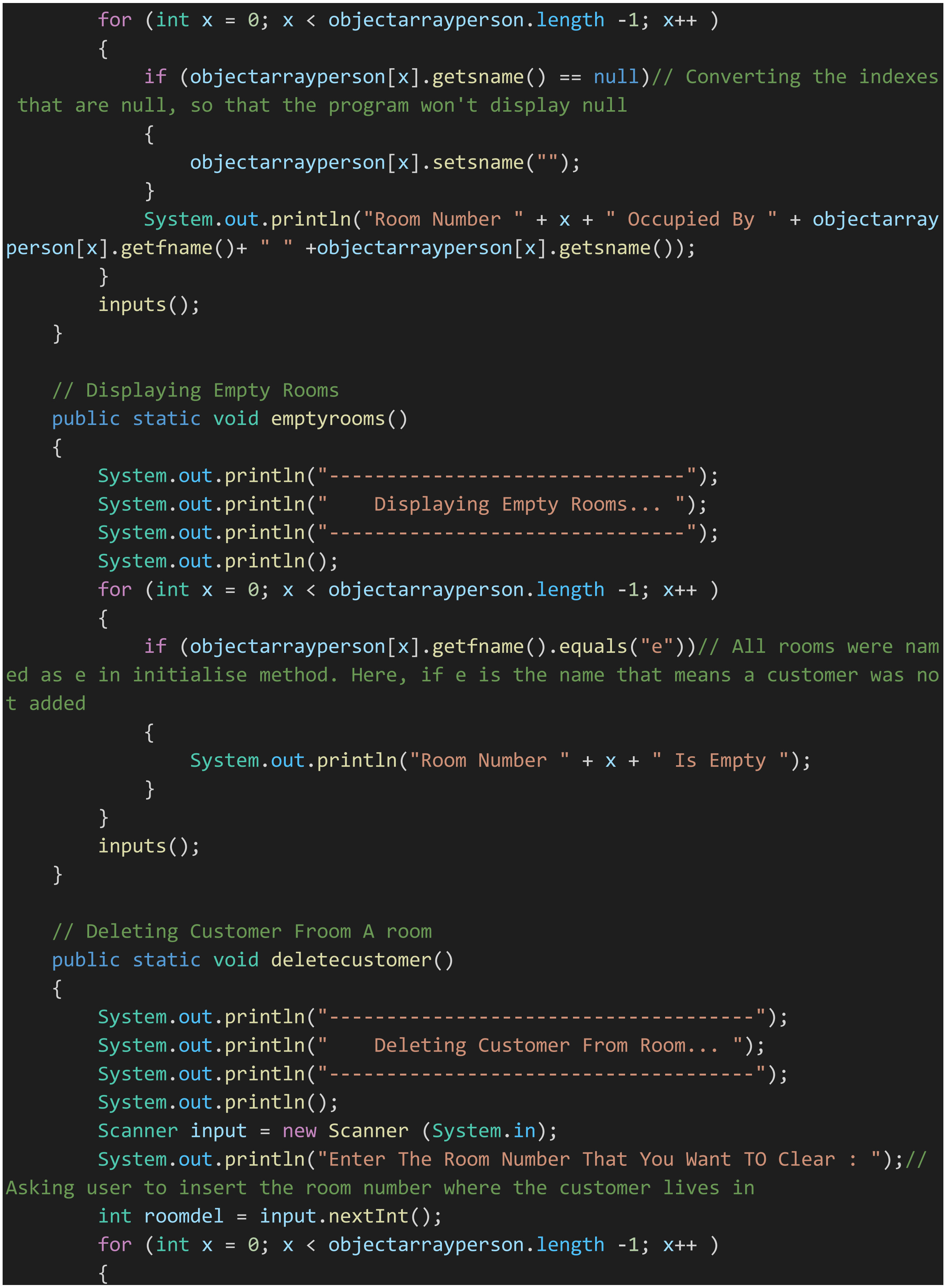
```
        System.out.println(" Enter 'F' : Find Room From Customer Name ");
        System.out.println(" Enter 'S' : Store Program Data Into A File ");
        System.out.println(" Enter 'L' : Load Program Data From File ");
        System.out.println(" Enter 'O' : View Guests Ordered Alphabetically By Na
me ");
        System.out.println(" Enter 'Q' : Exit From The Program ");
        System.out.println("+----------------------------------------------------
----+");
        Scanner input = new Scanner (System.in);
        System.out.println("");
        System.out.println("Enter Your Choice : ");// Getting the choice of the u
ser as an input
        String choice = input.next();
        // Calling each method according to the user input
        if (choice.equals("A"))
        {
            addrooms();
        }
        else if (choice.equals("V"))
        {
            viewrooms();
        }
        else if (choice.equals("E"))
        {
            emptyrooms();
        }
        else if (choice.equals("D"))
        {
            deletecustomer();
        }
        else if (choice.equals("F"))
        {
            findroom();
        }
        else if (choice.equals("S"))
        {
            storefile();
        }
        else if (choice.equals("L"))
        {
            loadfile();
        }
        else if (choice.equals("O"))
        {
            alphabetical();
```



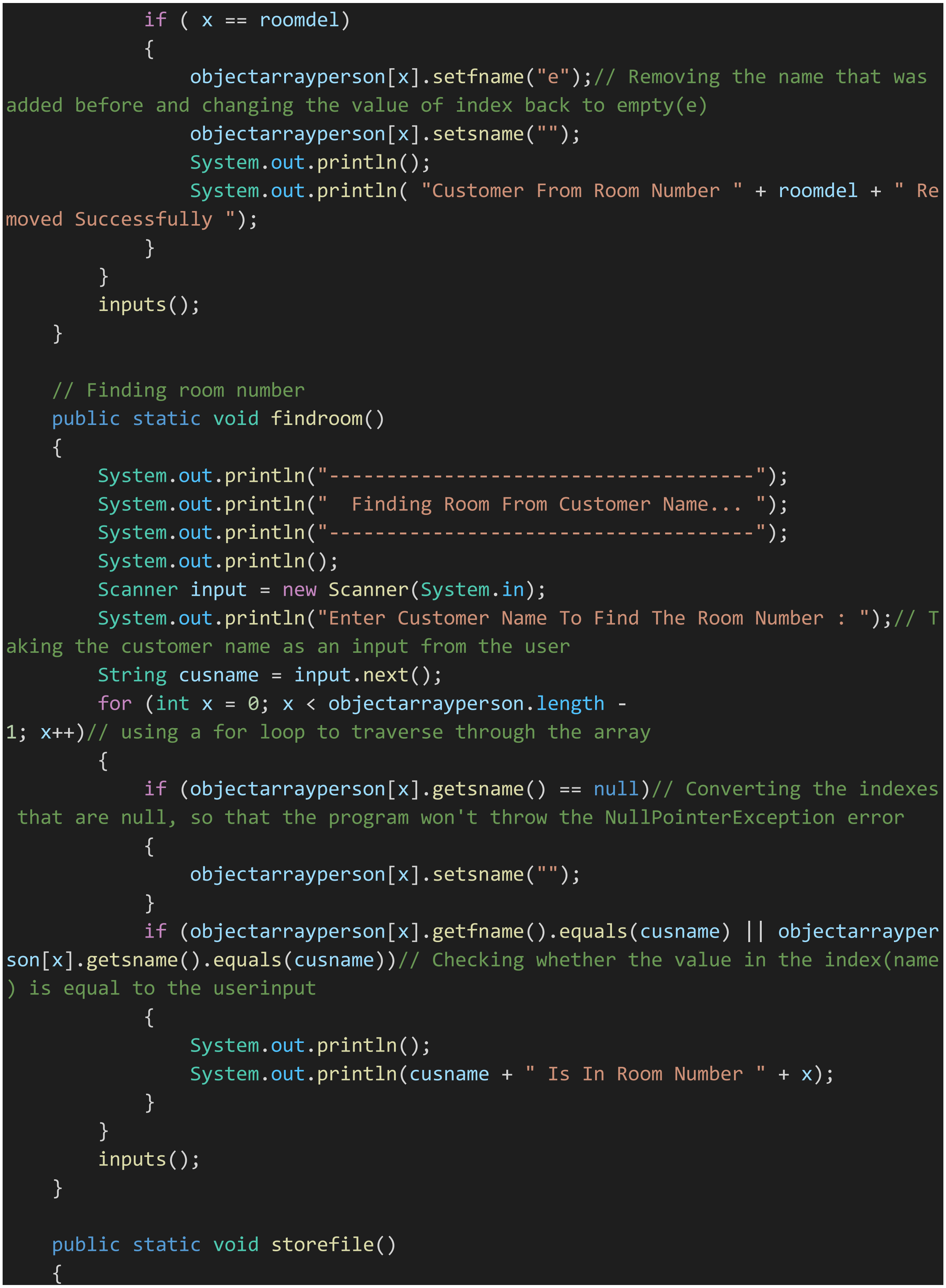
```
        }
        else if (choice.equals("Q"))
        {
            System.out.println("---------------------------");
            System.out.println("        Exiting...");
            System.out.println("---------------------------");
        }
        else// validation for choices
        {
            System.out.println(" Please Enter A Valid Choice !! ");
            inputs();
        }
    }

    // Adding Customer Into A Room
    public static void addrooms()
    {
        int roomNum = 0;
        System.out.println("---------------------------");
        System.out.println("     Adding A Customer...  ");
        System.out.println("---------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        for (int i = 0;i < objectarrayperson.length ; i++)
        {
            System.out.println("Enter room number (0-7) or 8 to stop:" );
            //validaation for roomNumber
                try
                {
                    roomNum = input.nextInt();
                }
                catch(InputMismatchException e)
                {
                    System.out.println();
                    System.out.println("Invalid Input");
                    System.out.println();
                    addrooms();// run the addrooms method again if wrong data typ
e is enetered as input
                }

            // Showing the menu when the users give 8 as the input
            if (roomNum == 8)
            {
                inputs();// stop if 8 was given by user
            }
```



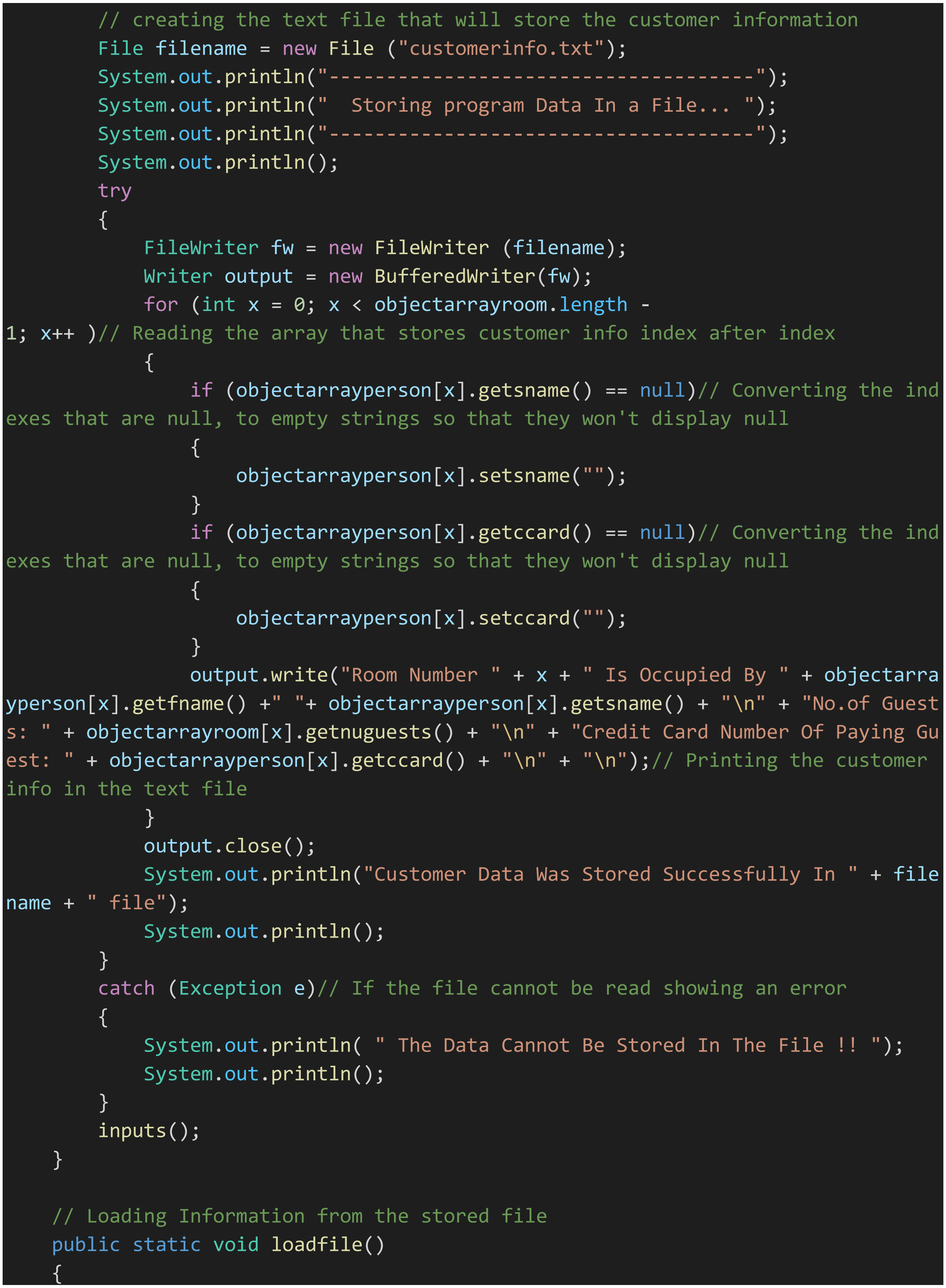
```
            //Making Sure that the customer information entered to a particular r
oom does not get overwritten when another customer chooses the same room
            else if (objectarrayperson[roomNum].getfname() == "e")
            {
                System.out.println("Enter your first name for room : " ) ;
                String fname = input.next();
                objectarrayperson[roomNum].setfname(fname);
                System.out.println("Enter your surname : " ) ;
                String sname = input.next();
                objectarrayperson[roomNum].setsname(sname);
                System.out.println("Enter your credit card number : " ) ;
                String ccard = input.next();
                objectarrayperson[roomNum].setccard(ccard);
                System.out.println("Enter number of guests in a room : " ) ;
                int nuguests = input.nextInt();
                objectarrayroom[roomNum].setnuguests(nuguests);

                System.out.println();
                System.out.println(fname +" "+ sname + " Was Added To Room Number
 -
> " + roomNum);// Displaying to the user that the customer was added successfully
                System.out.println();
                inputs();// Show the menu to the user again
            }
            // Displaying a message to the users saying that the room they select
ed is already occupied
            else
            {
                System.out.println();
                System.out.println("Room Number " + roomNum + " is already occupi
ed ! Please Select A Different Room...");
                System.out.println();
                System.out.println("-------------------------------------------------
---------------------------------------");
            }
        }
    }

    // Viewing all the hotel rooms
    public static void viewrooms()
    {
        System.out.println("---------------------------");
        System.out.println("    Viewing All Rooms... ");
        System.out.println("---------------------------");
        System.out.println();
```



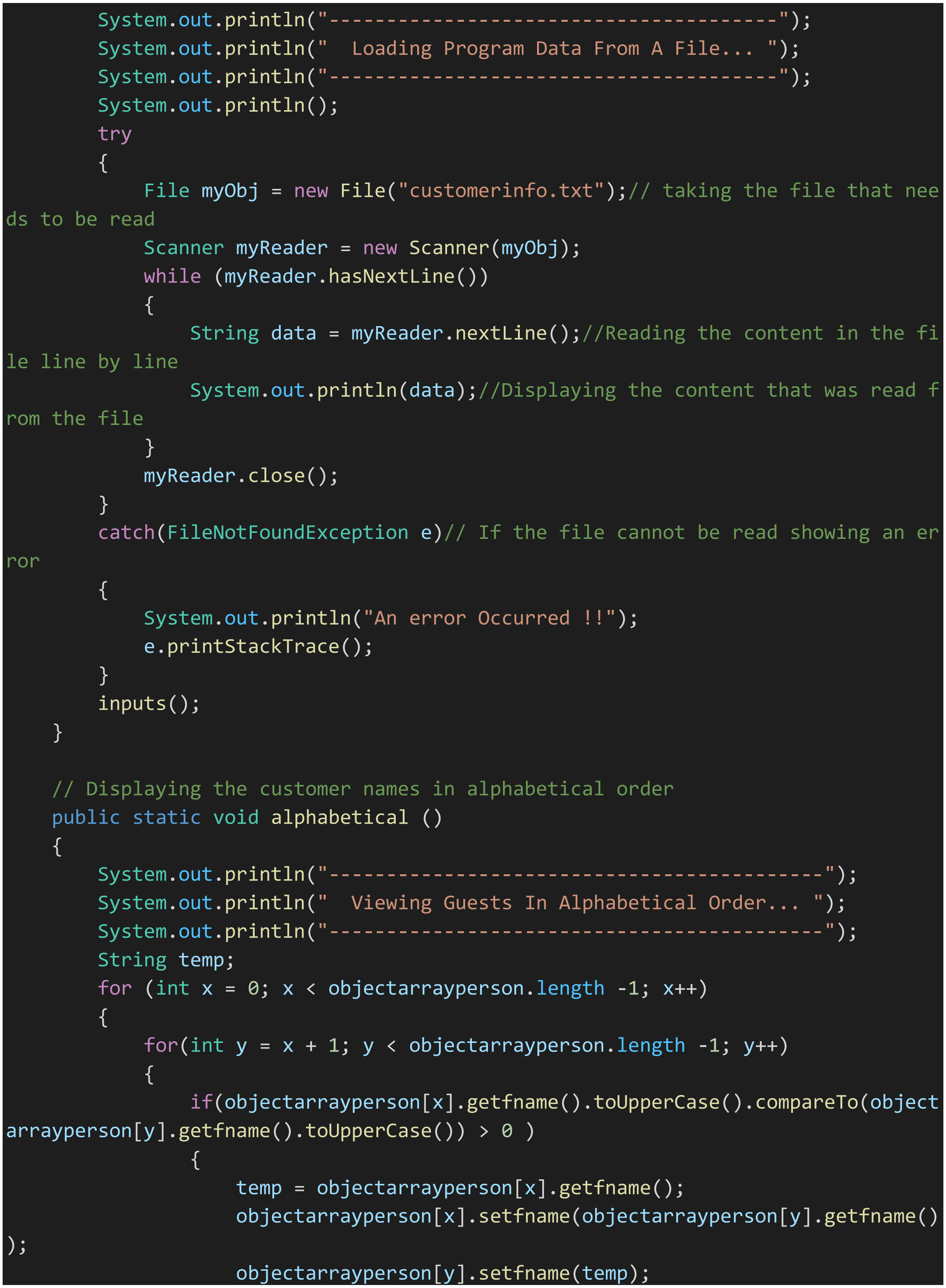
```
        for (int x = 0; x < objectarrayperson.length -1; x++ )
        {
            if (objectarrayperson[x].getsname() == null)// Converting the indexes
 that are null, so that the program won't display null
            {
                objectarrayperson[x].setsname("");
            }
            System.out.println("Room Number " + x + " Occupied By " + objectarray
person[x].getfname()+ " " +objectarrayperson[x].getsname());
        }
        inputs();
    }

    // Displaying Empty Rooms
    public static void emptyrooms()
    {
        System.out.println("-------------------------------");
        System.out.println("    Displaying Empty Rooms... ");
        System.out.println("-------------------------------");
        System.out.println();
        for (int x = 0; x < objectarrayperson.length -1; x++ )
        {
            if (objectarrayperson[x].getfname().equals("e"))// All rooms were nam
ed as e in initialise method. Here, if e is the name that means a customer was no
t added
            {
                System.out.println("Room Number " + x + " Is Empty ");
            }
        }
        inputs();
    }

    // Deleting Customer Froom A room
    public static void deletecustomer()
    {
        System.out.println("-------------------------------------");
        System.out.println("    Deleting Customer From Room... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        System.out.println("Enter The Room Number That You Want TO Clear : ");//
Asking user to insert the room number where the customer lives in
        int roomdel = input.nextInt();
        for (int x = 0; x < objectarrayperson.length -1; x++ )
        {
```



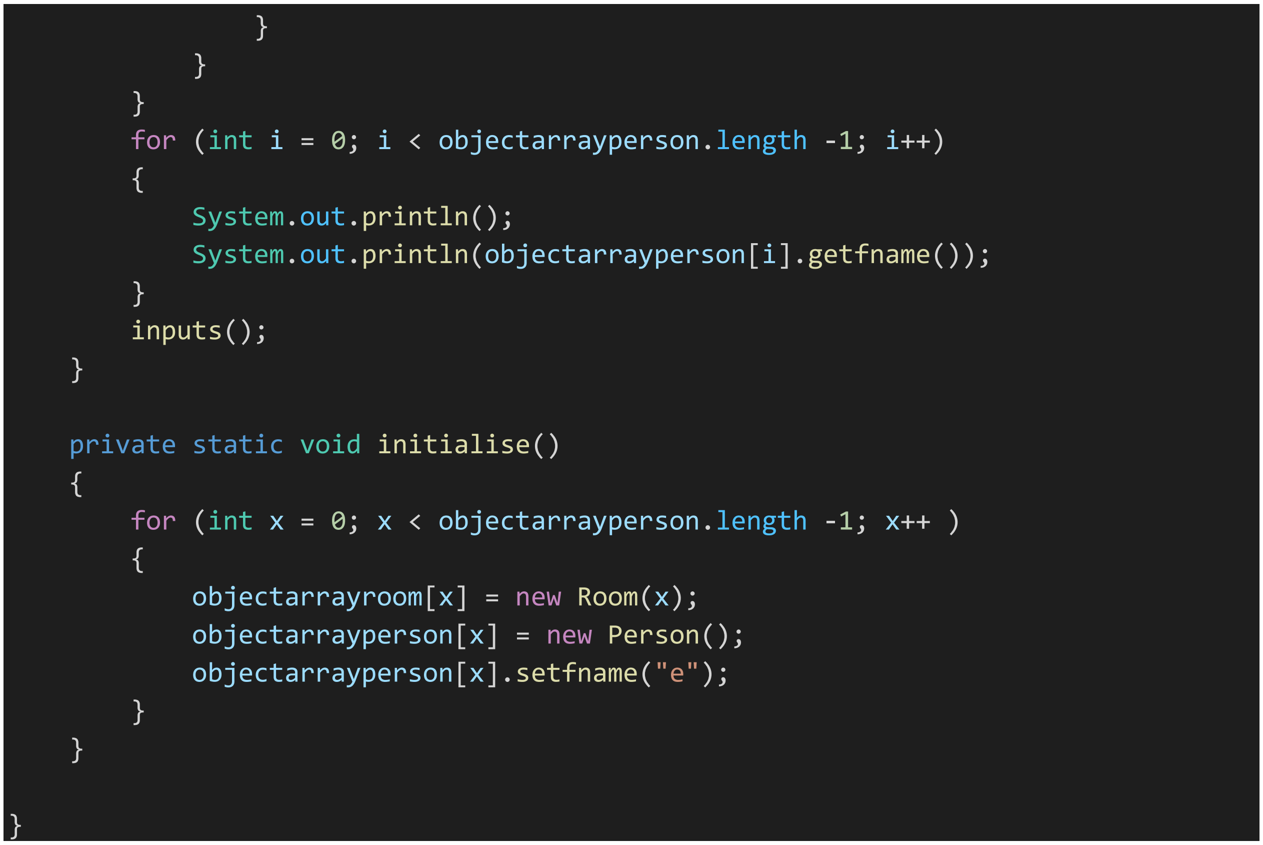
```java
            if ( x == roomdel)
            {
                objectarrayperson[x].setfname("e");// Removing the name that was added before and changing the value of index back to empty(e)
                objectarrayperson[x].setsname("");
                System.out.println();
                System.out.println( "Customer From Room Number " + roomdel + " Removed Successfully ");
            }
        }
        inputs();
    }

    // Finding room number
    public static void findroom()
    {
        System.out.println("-------------------------------------");
        System.out.println("  Finding Room From Customer Name... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner(System.in);
        System.out.println("Enter Customer Name To Find The Room Number : ");// Taking the customer name as an input from the user
        String cusname = input.next();
        for (int x = 0; x < objectarrayperson.length - 1; x++)// using a for loop to traverse through the array
        {
            if (objectarrayperson[x].getsname() == null)// Converting the indexes that are null, so that the program won't throw the NullPointerException error
            {
                objectarrayperson[x].setsname("");
            }
            if (objectarrayperson[x].getfname().equals(cusname) || objectarrayperson[x].getsname().equals(cusname))// Checking whether the value in the index(name) is equal to the userinput
            {
                System.out.println();
                System.out.println(cusname + " Is In Room Number " + x);
            }
        }
        inputs();
    }

    public static void storefile()
    {
```



```
        // creating the text file that will store the customer information
        File filename = new File ("customerinfo.txt");
        System.out.println("-------------------------------------");
        System.out.println("  Storing program Data In a File... ");
        System.out.println("-------------------------------------");
        System.out.println();
        try
        {
            FileWriter fw = new FileWriter (filename);
            Writer output = new BufferedWriter(fw);
            for (int x = 0; x < objectarrayroom.length -
1; x++ )// Reading the array that stores customer info index after index
            {
                if (objectarrayperson[x].getsname() == null)// Converting the ind
exes that are null, to empty strings so that they won't display null
                {
                    objectarrayperson[x].setsname("");
                }
                if (objectarrayperson[x].getccard() == null)// Converting the ind
exes that are null, to empty strings so that they won't display null
                {
                    objectarrayperson[x].setccard("");
                }
                output.write("Room Number " + x + " Is Occupied By " + objectarra
yperson[x].getfname() +" "+ objectarrayperson[x].getsname() + "\n" + "No.of Guest
s: " + objectarrayroom[x].getnuguests() + "\n" + "Credit Card Number Of Paying Gu
est: " + objectarrayperson[x].getccard() + "\n" + "\n");// Printing the customer
info in the text file
            }
            output.close();
            System.out.println("Customer Data Was Stored Successfully In " + file
name + " file");
            System.out.println();
        }
        catch (Exception e)// If the file cannot be read showing an error
        {
            System.out.println( " The Data Cannot Be Stored In The File !! ");
            System.out.println();
        }
        inputs();
    }

    // Loading Information from the stored file
    public static void loadfile()
    {
```

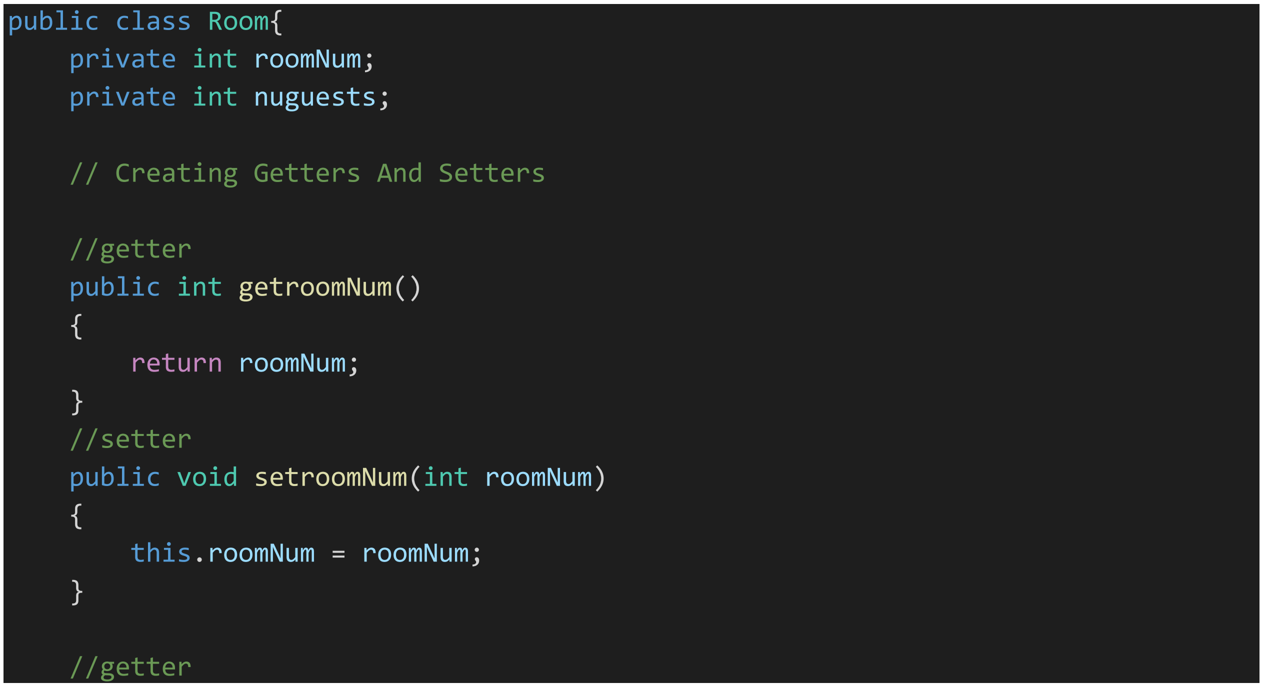


```
        System.out.println("---------------------------------------");
        System.out.println("  Loading Program Data From A File... ");
        System.out.println("---------------------------------------");
        System.out.println();
        try
        {
            File myObj = new File("customerinfo.txt");// taking the file that nee
ds to be read
            Scanner myReader = new Scanner(myObj);
            while (myReader.hasNextLine())
            {
                String data = myReader.nextLine();//Reading the content in the fi
le line by line
                System.out.println(data);//Displaying the content that was read f
rom the file
            }
            myReader.close();
        }
        catch(FileNotFoundException e)// If the file cannot be read showing an er
ror
        {
            System.out.println("An error Occurred !!");
            e.printStackTrace();
        }
        inputs();
    }

    // Displaying the customer names in alphabetical order
    public static void alphabetical ()
    {
        System.out.println("-------------------------------------------");
        System.out.println("  Viewing Guests In Alphabetical Order... ");
        System.out.println("-------------------------------------------");
        String temp;
        for (int x = 0; x < objectarrayperson.length -1; x++)
        {
            for(int y = x + 1; y < objectarrayperson.length -1; y++)
            {
                if(objectarrayperson[x].getfname().toUpperCase().compareTo(object
arrayperson[y].getfname().toUpperCase()) > 0 )
                {
                    temp = objectarrayperson[x].getfname();
                    objectarrayperson[x].setfname(objectarrayperson[y].getfname()
);
                    objectarrayperson[y].setfname(temp);
```



```
                }
            }
        }
        for (int i = 0; i < objectarrayperson.length -1; i++)
        {
            System.out.println();
            System.out.println(objectarrayperson[i].getfname());
        }
        inputs();
    }

    private static void initialise()
    {
        for (int x = 0; x < objectarrayperson.length -1; x++ )
        {
            objectarrayroom[x] = new Room(x);
            objectarrayperson[x] = new Person();
            objectarrayperson[x].setfname("e");
        }
    }

}
```

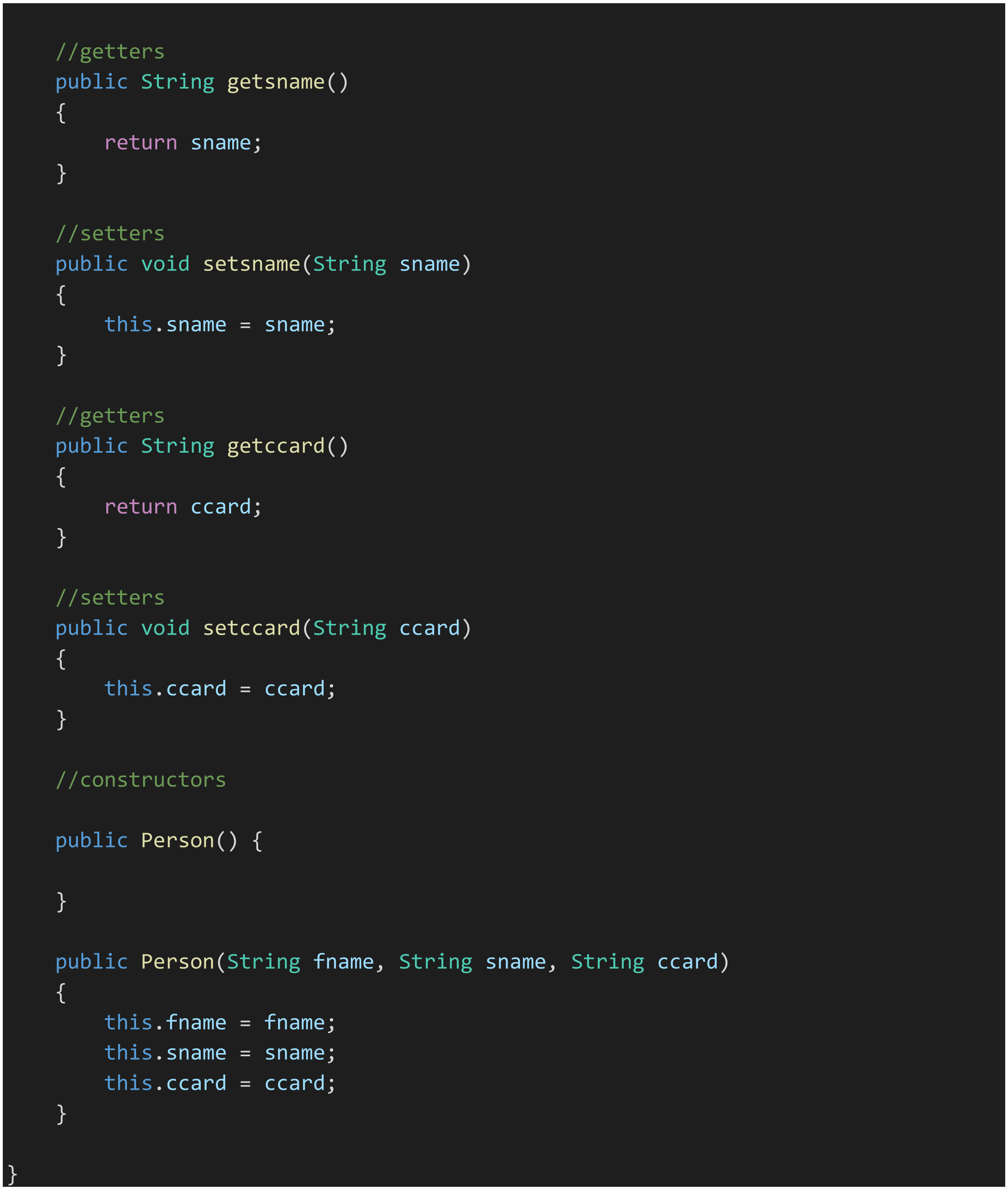
Room.java



```
public class Room{
    private int roomNum;
    private int nuguests;

    // Creating Getters And Setters

    //getter
    public int getroomNum()
    {
        return roomNum;
    }
    //setter
    public void setroomNum(int roomNum)
    {
        this.roomNum = roomNum;
    }

    //getter
    public int getnuguests()
    {
        return nuguests;
    }

    //setters
    public void setnuguests(int setnuguests)
    {
        this.nuguests = nuguests;
    }

    //constructor
    public Room(int roomNum)
    {
        this.roomNum = roomNum;
    }

    public Room(int roomNum, int nuguests)
    {
        this.roomNum = roomNum;
        this.nuguests = nuguests;
    }
}
```

Person.java

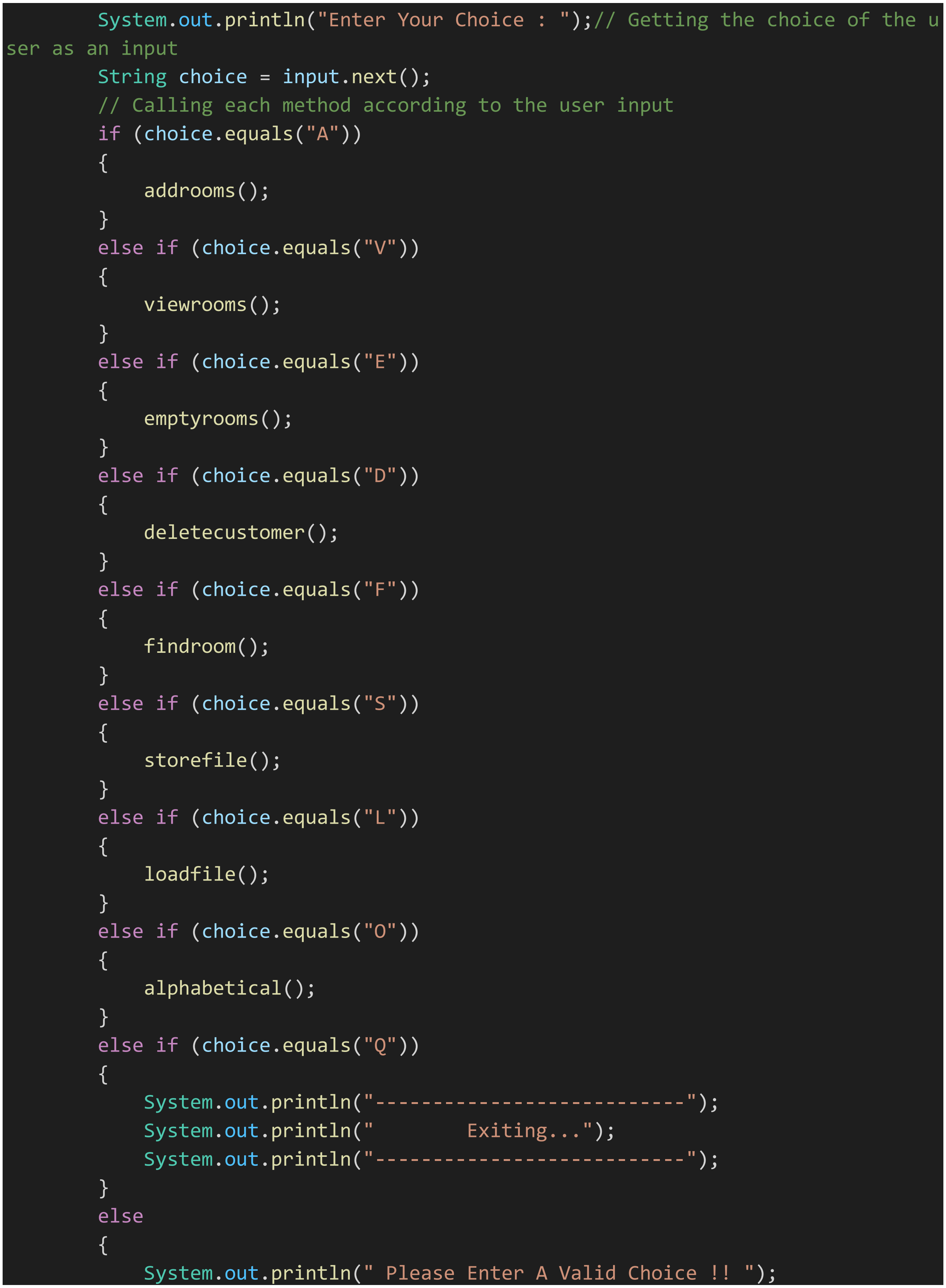
```
public class Person{
    private String fname;
    private String sname;
    private String ccard;



    // getters
    public String getfname()
    {
        return fname;
    }

    //setters
    public void setfname(String fname)
    {
        this.fname = fname;
    }
```



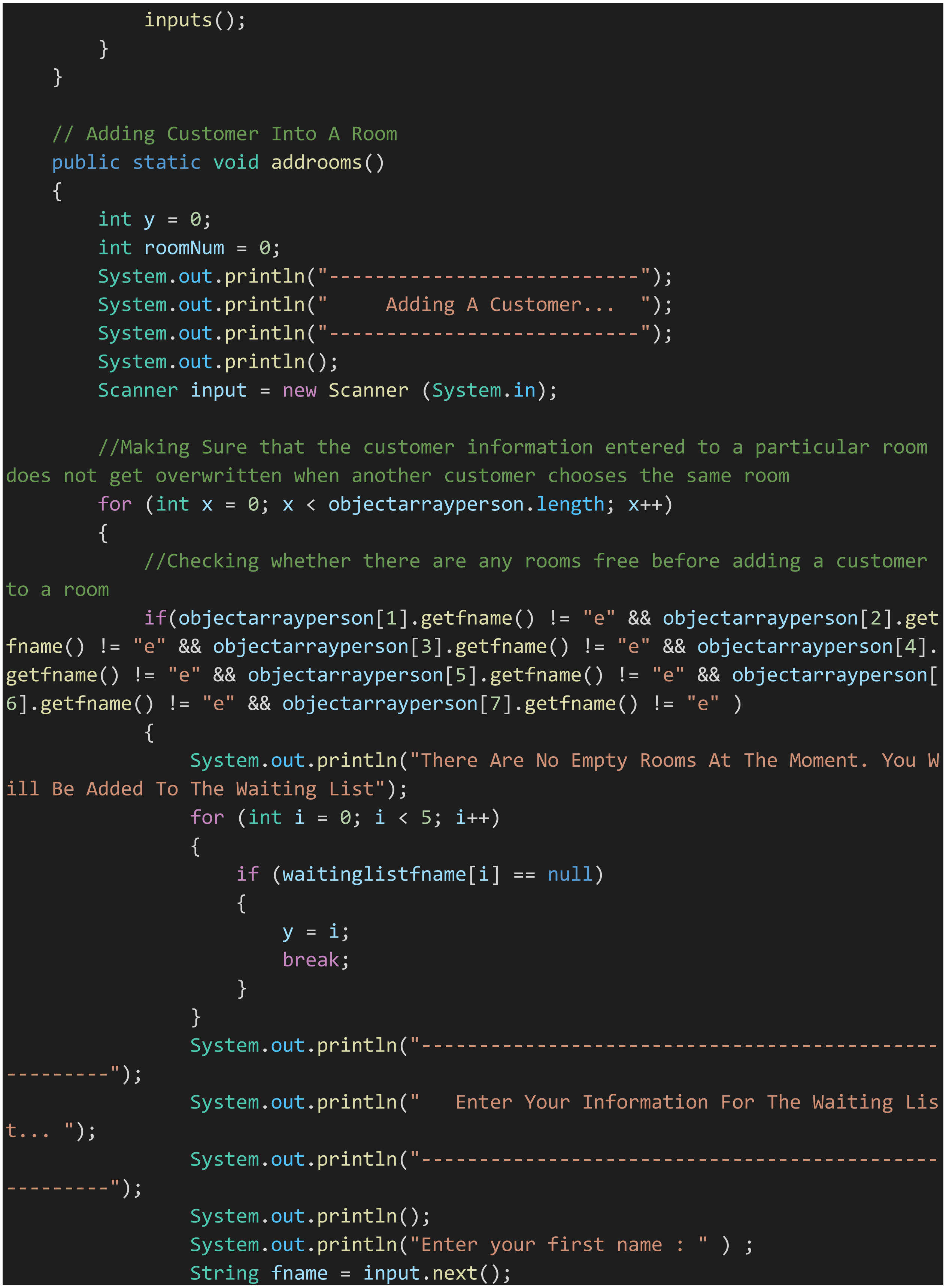
```
    //getters
    public String getsname()
    {
        return sname;
    }

    //setters
    public void setsname(String sname)
    {
        this.sname = sname;
    }

    //getters
    public String getccard()
    {
        return ccard;
    }

    //setters
    public void setccard(String ccard)
    {
        this.ccard = ccard;
    }

    //constructors

    public Person() {

    }

    public Person(String fname, String sname, String ccard)
    {
        this.fname = fname;
        this.sname = sname;
        this.ccard = ccard;
    }

}
```

**Task 4** – Hotel.java

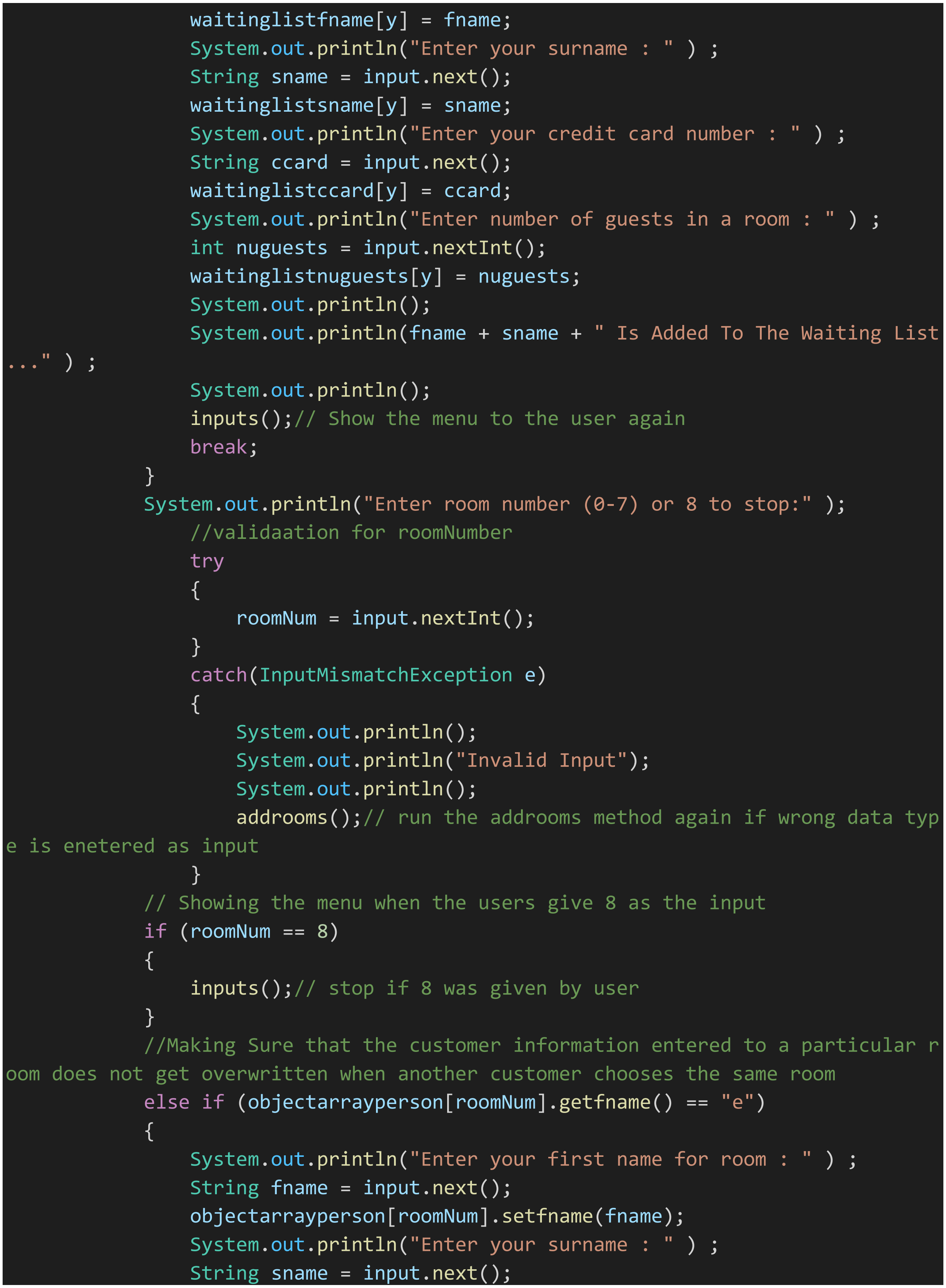
```
import java.util.*;
import java.io.*;


public class Hotel {

    public static void main(String[] args)
    {
        initialise();
        inputs();
    }

private static Room[] objectarrayroom = new Room[9];
private static Person[] objectarrayperson = new Person[9];
public static String[] waitinglistfname = new String[5];
public static String[] waitinglistsname = new String[5];
public static String[] waitinglistccard = new String[5];
public static int[] waitinglistnuguests = new int[5];

    // Menu
    public static void inputs()
    {
        System.out.println("+----------------------------------------------------
----+");
        System.out.println("                      Welcome !!");
        System.out.println("+----------------------------------------------------
----+");
        System.out.println(" Enter 'A' : Add New Customer To A Room ");
        System.out.println(" Enter 'V' : View All Rooms ");
        System.out.println(" Enter 'E' : Display Empty Rooms ");
        System.out.println(" Enter 'D' : Delete Customer From Room");
        System.out.println(" Enter 'F' : Find Room From Customer Name ");
        System.out.println(" Enter 'S' : Store Program Data Into A File ");
        System.out.println(" Enter 'L' : Load Program Data From File ");
        System.out.println(" Enter 'O' : View Guests Ordered Alphabetically By Na
me ");
        System.out.println(" Enter 'Q' : Exit From The Program ");
        System.out.println("+----------------------------------------------------
----+");
        Scanner input = new Scanner (System.in);
        System.out.println("");
```



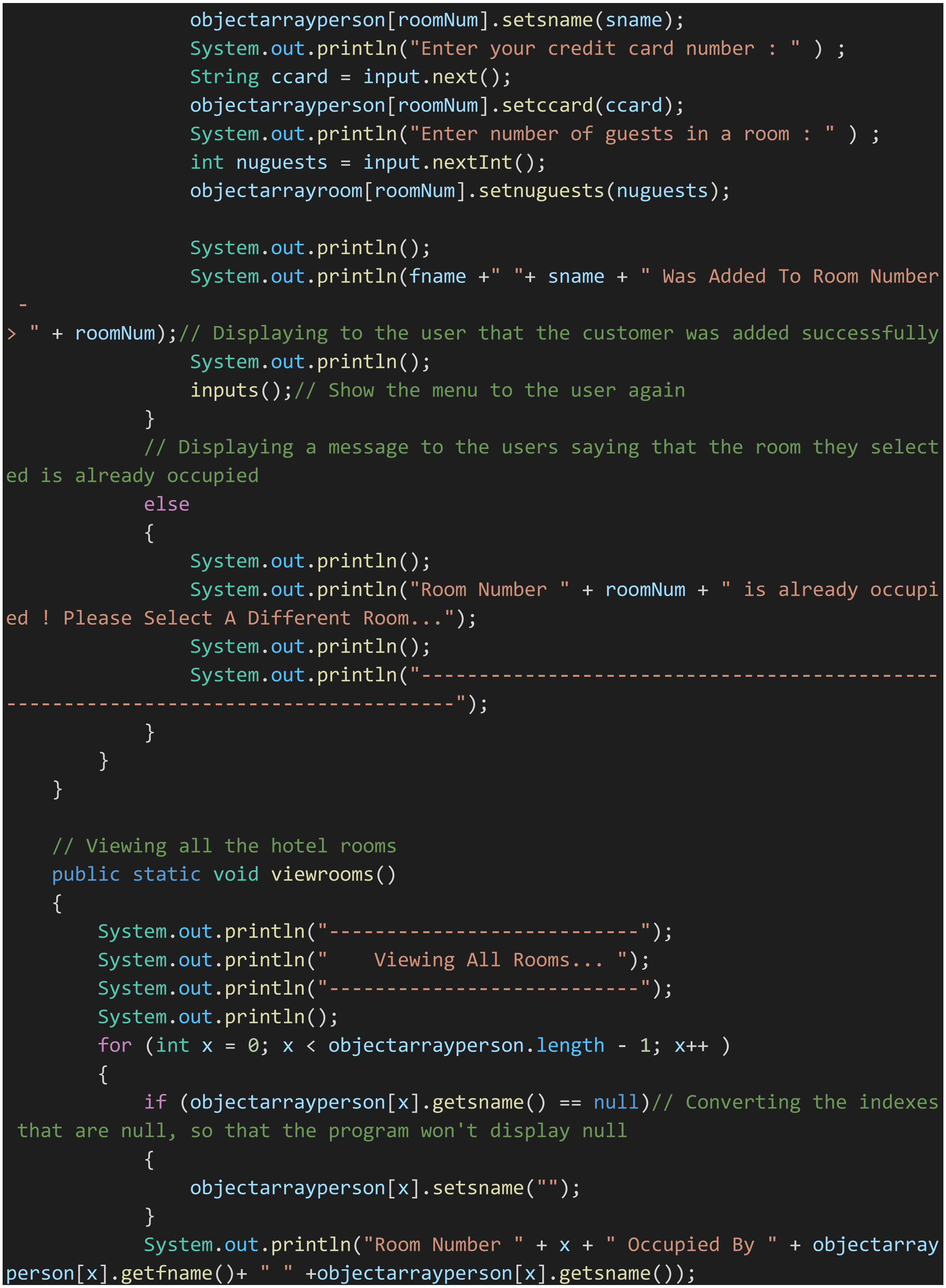
```
        System.out.println("Enter Your Choice : ");// Getting the choice of the u
ser as an input
        String choice = input.next();
        // Calling each method according to the user input
        if (choice.equals("A"))
        {
            addrooms();
        }
        else if (choice.equals("V"))
        {
            viewrooms();
        }
        else if (choice.equals("E"))
        {
            emptyrooms();
        }
        else if (choice.equals("D"))
        {
            deletecustomer();
        }
        else if (choice.equals("F"))
        {
            findroom();
        }
        else if (choice.equals("S"))
        {
            storefile();
        }
        else if (choice.equals("L"))
        {
            loadfile();
        }
        else if (choice.equals("O"))
        {
            alphabetical();
        }
        else if (choice.equals("Q"))
        {
            System.out.println("---------------------------");
            System.out.println("        Exiting...");
            System.out.println("---------------------------");
        }
        else
        {
            System.out.println(" Please Enter A Valid Choice !! ");
```



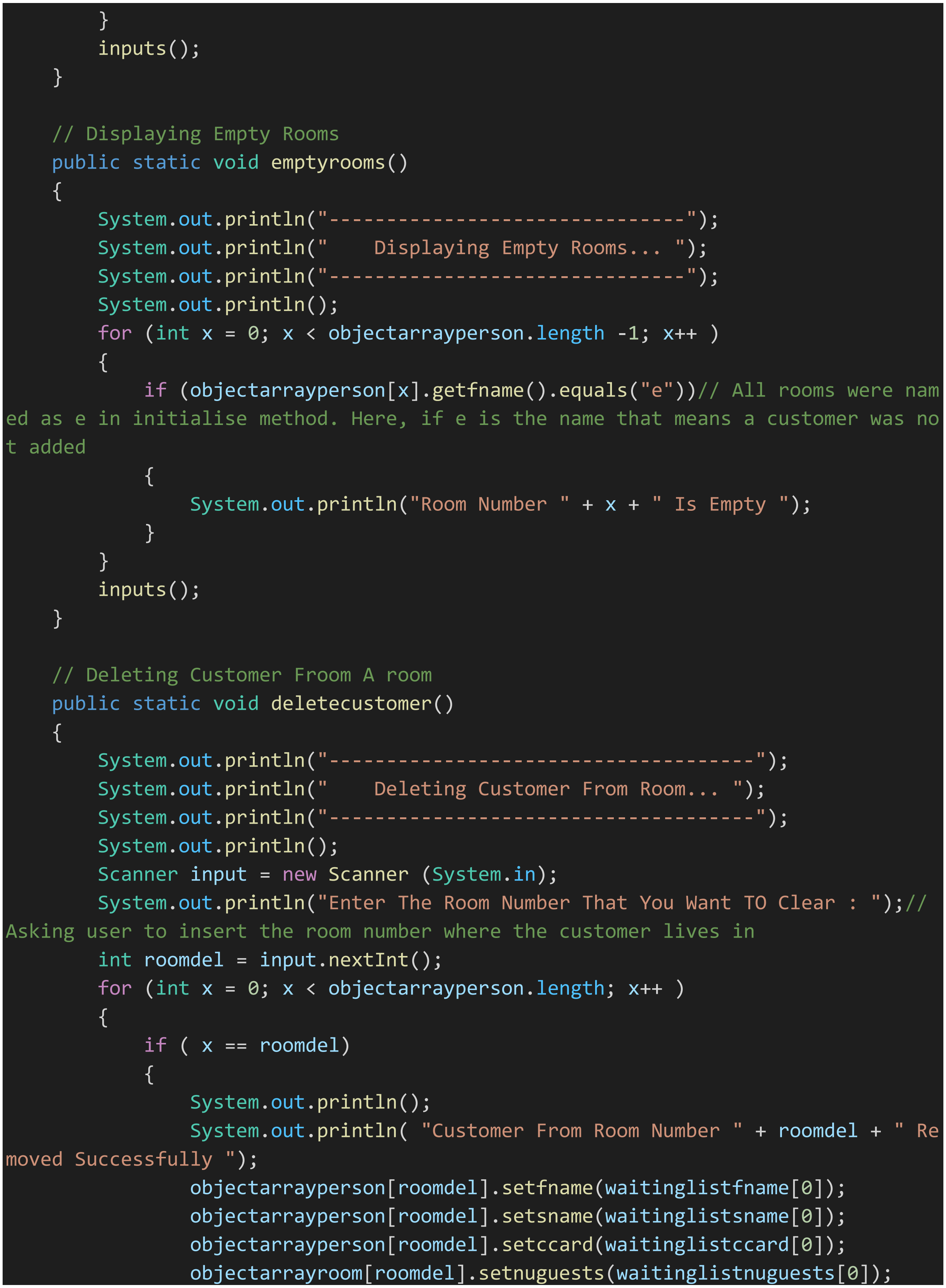
```
            inputs();
        }
    }

    // Adding Customer Into A Room
    public static void addrooms()
    {
        int y = 0;
        int roomNum = 0;
        System.out.println("---------------------------");
        System.out.println("     Adding A Customer...  ");
        System.out.println("---------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);

        //Making Sure that the customer information entered to a particular room does not get overwritten when another customer chooses the same room
        for (int x = 0; x < objectarrayperson.length; x++)
        {
            //Checking whether there are any rooms free before adding a customer to a room
            if(objectarrayperson[1].getfname() != "e" && objectarrayperson[2].getfname() != "e" && objectarrayperson[3].getfname() != "e" && objectarrayperson[4].getfname() != "e" && objectarrayperson[5].getfname() != "e" && objectarrayperson[6].getfname() != "e" && objectarrayperson[7].getfname() != "e" )
            {
                System.out.println("There Are No Empty Rooms At The Moment. You Will Be Added To The Waiting List");
                for (int i = 0; i < 5; i++)
                {
                    if (waitinglistfname[i] == null)
                    {
                        y = i;
                        break;
                    }
                }
                System.out.println("------------------------------------------------------");
                System.out.println("   Enter Your Information For The Waiting List... ");
                System.out.println("------------------------------------------------------");
                System.out.println();
                System.out.println("Enter your first name : " ) ;
                String fname = input.next();
```



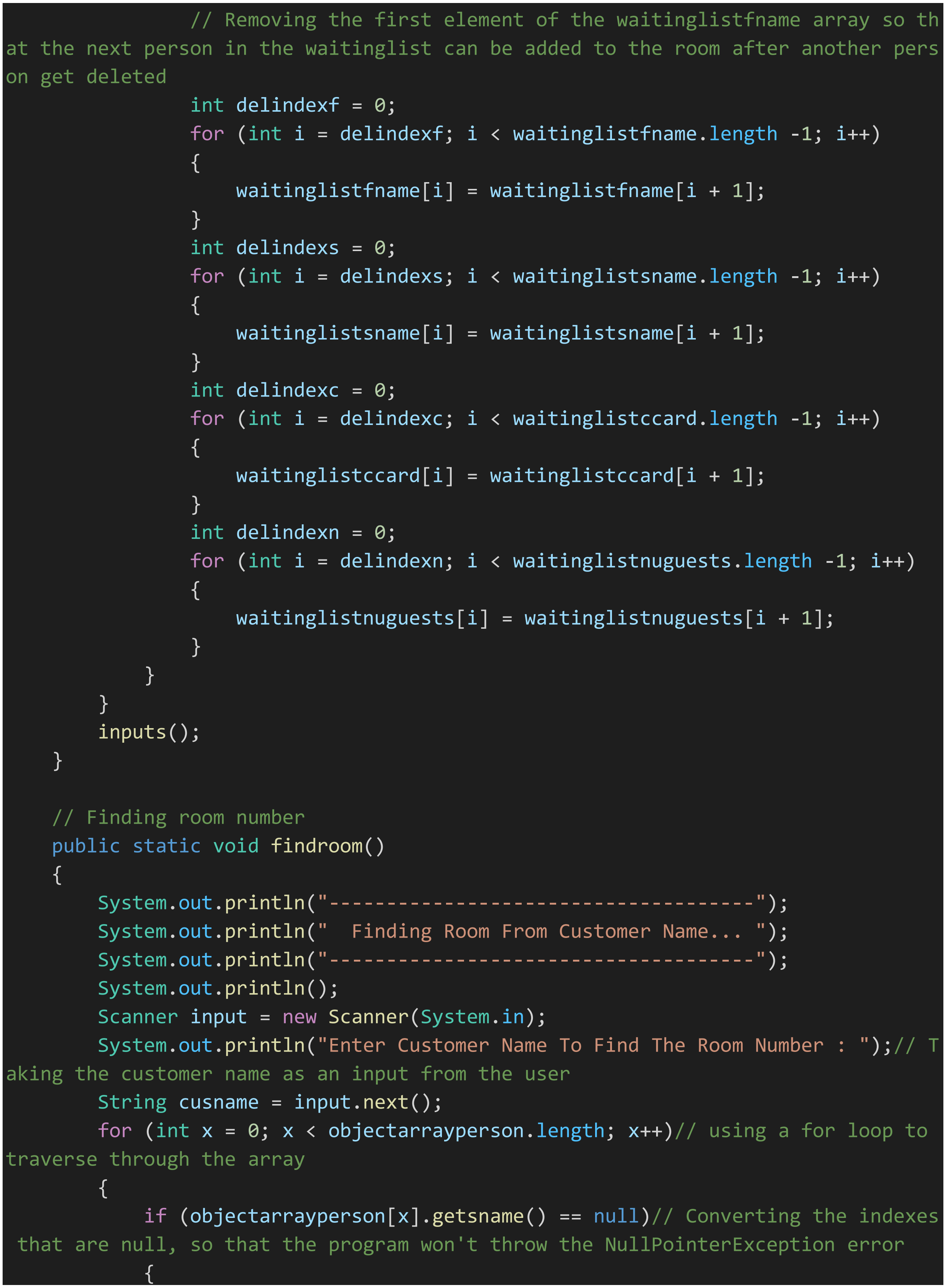
```
                waitinglistfname[y] = fname;
                System.out.println("Enter your surname : " ) ;
                String sname = input.next();
                waitinglistsname[y] = sname;
                System.out.println("Enter your credit card number : " ) ;
                String ccard = input.next();
                waitinglistccard[y] = ccard;
                System.out.println("Enter number of guests in a room : " ) ;
                int nuguests = input.nextInt();
                waitinglistnuguests[y] = nuguests;
                System.out.println();
                System.out.println(fname + sname + " Is Added To The Waiting List
..." ) ;
                System.out.println();
                inputs();// Show the menu to the user again
                break;
            }
            System.out.println("Enter room number (0-7) or 8 to stop:" );
                //validaation for roomNumber
                try
                {
                    roomNum = input.nextInt();
                }
                catch(InputMismatchException e)
                {
                    System.out.println();
                    System.out.println("Invalid Input");
                    System.out.println();
                    addrooms();// run the addrooms method again if wrong data typ
e is enetered as input
                }
            // Showing the menu when the users give 8 as the input
            if (roomNum == 8)
            {
                inputs();// stop if 8 was given by user
            }
            //Making Sure that the customer information entered to a particular r
oom does not get overwritten when another customer chooses the same room
            else if (objectarrayperson[roomNum].getfname() == "e")
            {
                System.out.println("Enter your first name for room : " ) ;
                String fname = input.next();
                objectarrayperson[roomNum].setfname(fname);
                System.out.println("Enter your surname : " ) ;
                String sname = input.next();
```



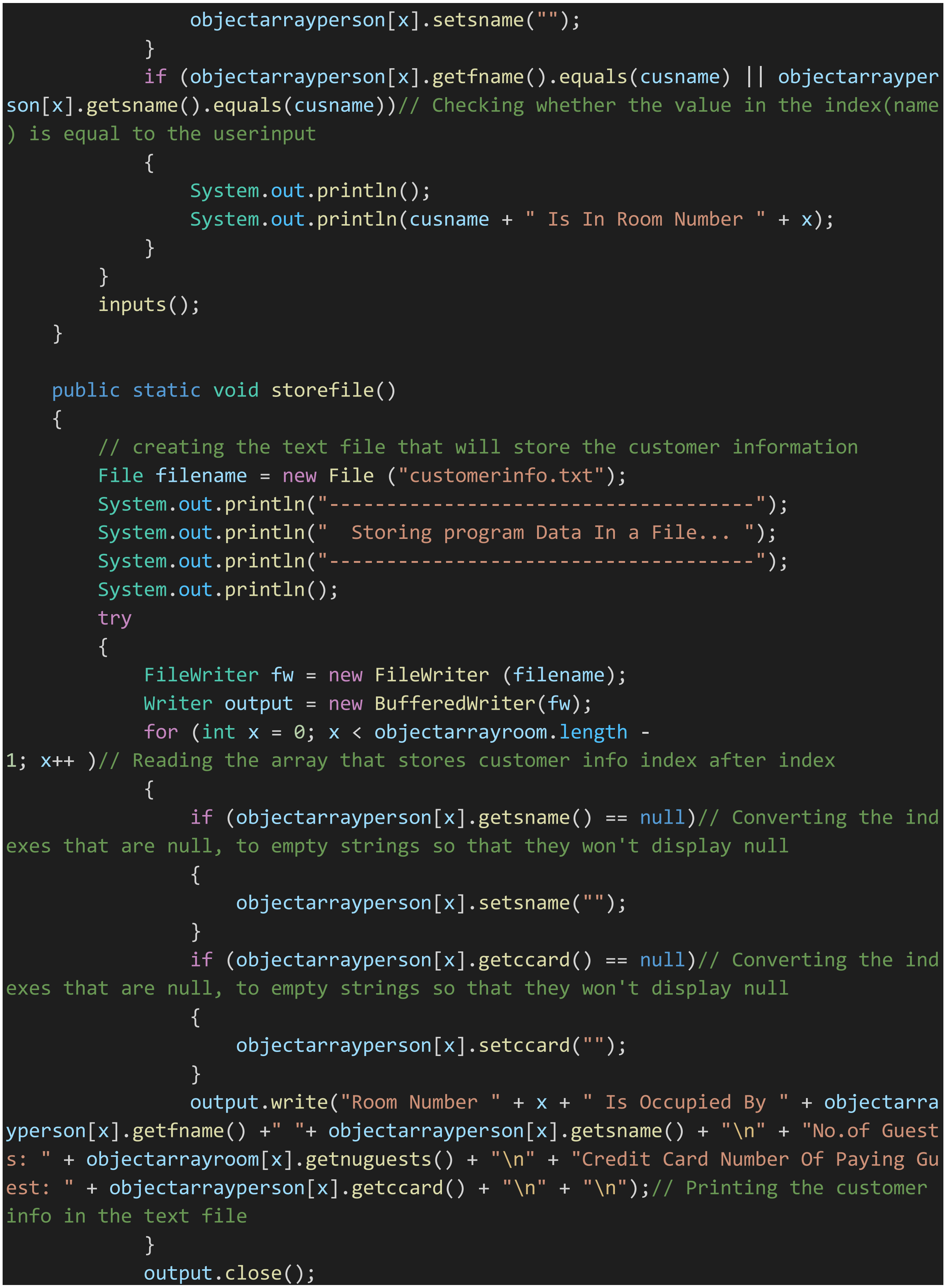
```
                objectarrayperson[roomNum].setsname(sname);
                System.out.println("Enter your credit card number : " ) ;
                String ccard = input.next();
                objectarrayperson[roomNum].setccard(ccard);
                System.out.println("Enter number of guests in a room : " ) ;
                int nuguests = input.nextInt();
                objectarrayroom[roomNum].setnuguests(nuguests);

                System.out.println();
                System.out.println(fname +" "+ sname + " Was Added To Room Number
 -
> " + roomNum);// Displaying to the user that the customer was added successfully
                System.out.println();
                inputs();// Show the menu to the user again
            }
            // Displaying a message to the users saying that the room they select
ed is already occupied
            else
            {
                System.out.println();
                System.out.println("Room Number " + roomNum + " is already occupi
ed ! Please Select A Different Room...");
                System.out.println();
                System.out.println("---------------------------------------------
---------------------------------------");
            }
        }
    }

    // Viewing all the hotel rooms
    public static void viewrooms()
    {
        System.out.println("---------------------------");
        System.out.println("    Viewing All Rooms... ");
        System.out.println("---------------------------");
        System.out.println();
        for (int x = 0; x < objectarrayperson.length - 1; x++ )
        {
            if (objectarrayperson[x].getsname() == null)// Converting the indexes
 that are null, so that the program won't display null
            {
                objectarrayperson[x].setsname("");
            }
            System.out.println("Room Number " + x + " Occupied By " + objectarray
person[x].getfname()+ " " +objectarrayperson[x].getsname());
```



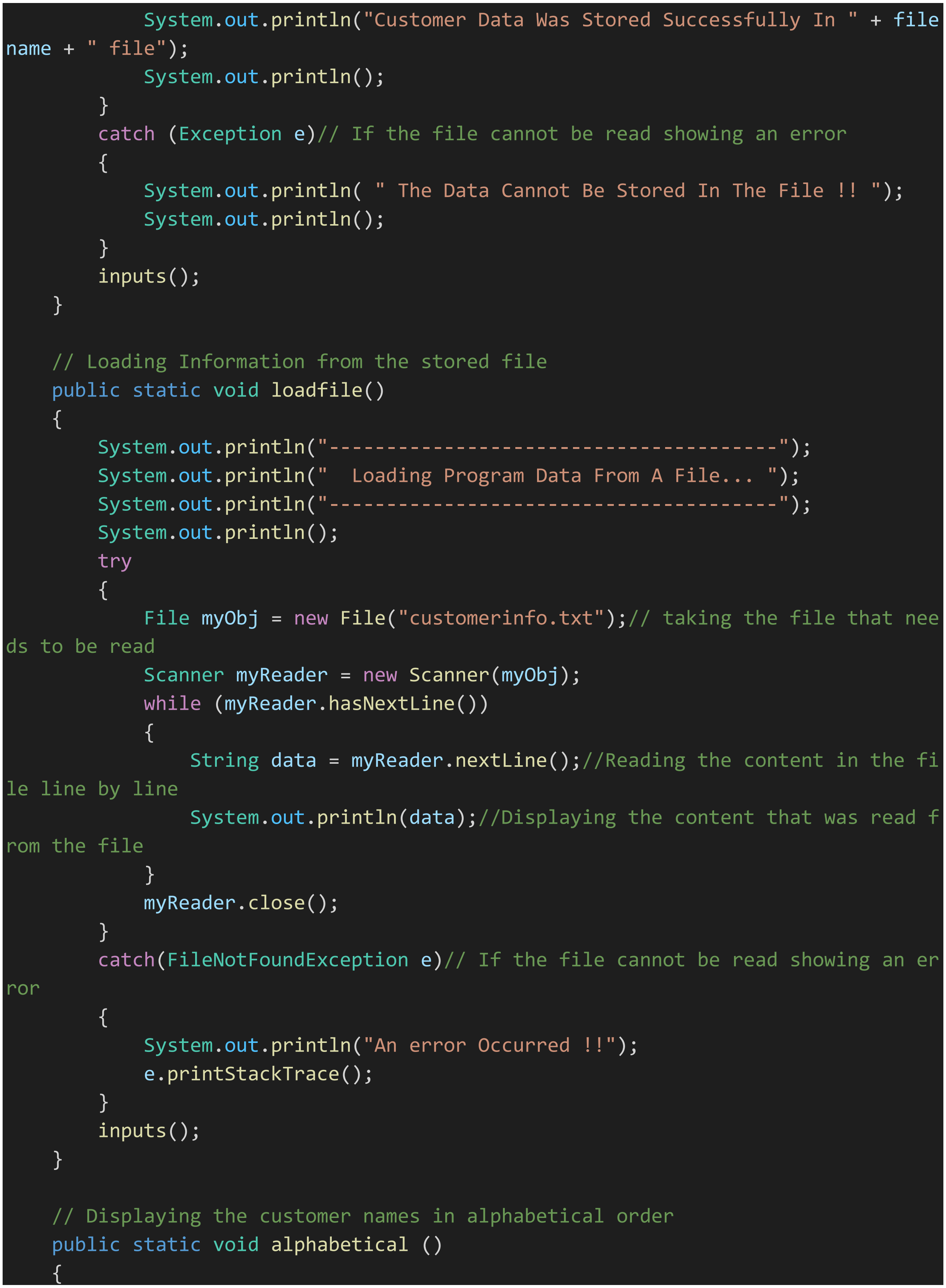
```java
        }
        inputs();
    }

    // Displaying Empty Rooms
    public static void emptyrooms()
    {
        System.out.println("-------------------------------");
        System.out.println("    Displaying Empty Rooms... ");
        System.out.println("-------------------------------");
        System.out.println();
        for (int x = 0; x < objectarrayperson.length -1; x++ )
        {
            if (objectarrayperson[x].getfname().equals("e"))// All rooms were named as e in initialise method. Here, if e is the name that means a customer was not added
            {
                System.out.println("Room Number " + x + " Is Empty ");
            }
        }
        inputs();
    }

    // Deleting Customer Froom A room
    public static void deletecustomer()
    {
        System.out.println("-------------------------------------");
        System.out.println("    Deleting Customer From Room... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner (System.in);
        System.out.println("Enter The Room Number That You Want TO Clear : ");// Asking user to insert the room number where the customer lives in
        int roomdel = input.nextInt();
        for (int x = 0; x < objectarrayperson.length; x++ )
        {
            if ( x == roomdel)
            {
                System.out.println();
                System.out.println( "Customer From Room Number " + roomdel + " Removed Successfully ");
                objectarrayperson[roomdel].setfname(waitinglistfname[0]);
                objectarrayperson[roomdel].setsname(waitinglistsname[0]);
                objectarrayperson[roomdel].setccard(waitinglistccard[0]);
                objectarrayroom[roomdel].setnuguests(waitinglistnuguests[0]);
```



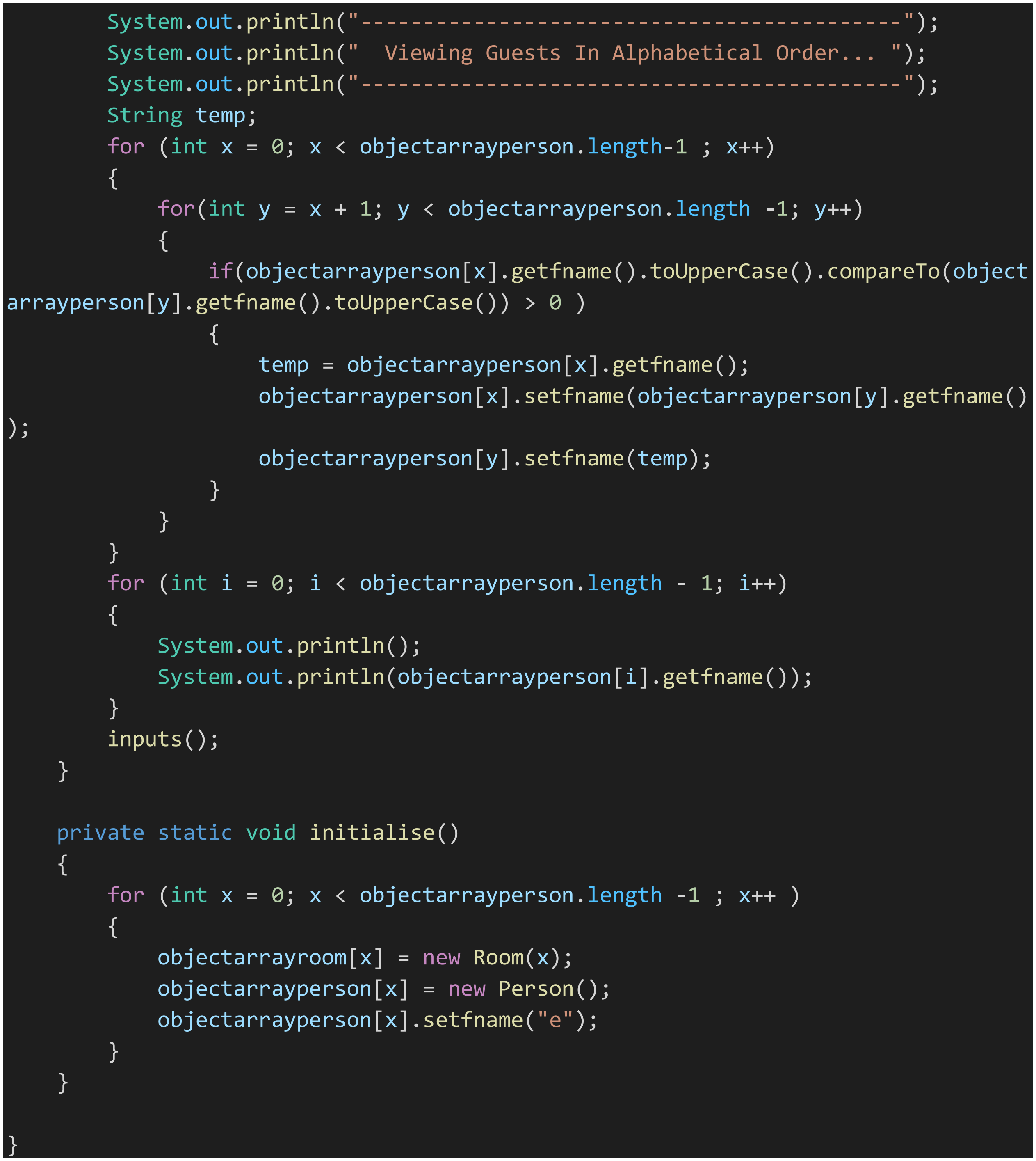
```java
                // Removing the first element of the waitinglistfname array so th
at the next person in the waitinglist can be added to the room after another pers
on get deleted
                int delindexf = 0;
                for (int i = delindexf; i < waitinglistfname.length -1; i++)
                {
                    waitinglistfname[i] = waitinglistfname[i + 1];
                }
                int delindexs = 0;
                for (int i = delindexs; i < waitinglistsname.length -1; i++)
                {
                    waitinglistsname[i] = waitinglistsname[i + 1];
                }
                int delindexc = 0;
                for (int i = delindexc; i < waitinglistccard.length -1; i++)
                {
                    waitinglistccard[i] = waitinglistccard[i + 1];
                }
                int delindexn = 0;
                for (int i = delindexn; i < waitinglistnuguests.length -1; i++)
                {
                    waitinglistnuguests[i] = waitinglistnuguests[i + 1];
                }
            }
        }
        inputs();
    }

    // Finding room number
    public static void findroom()
    {
        System.out.println("-------------------------------------");
        System.out.println("  Finding Room From Customer Name... ");
        System.out.println("-------------------------------------");
        System.out.println();
        Scanner input = new Scanner(System.in);
        System.out.println("Enter Customer Name To Find The Room Number : ");// T
aking the customer name as an input from the user
        String cusname = input.next();
        for (int x = 0; x < objectarrayperson.length; x++)// using a for loop to 
traverse through the array
        {
            if (objectarrayperson[x].getsname() == null)// Converting the indexes
 that are null, so that the program won't throw the NullPointerException error
            {
```



```
                objectarrayperson[x].setsname("");
            }
            if (objectarrayperson[x].getfname().equals(cusname) || objectarrayper
son[x].getsname().equals(cusname))// Checking whether the value in the index(name
) is equal to the userinput
            {
                System.out.println();
                System.out.println(cusname + " Is In Room Number " + x);
            }
        }
        inputs();
    }

    public static void storefile()
    {
        // creating the text file that will store the customer information
        File filename = new File ("customerinfo.txt");
        System.out.println("-------------------------------------");
        System.out.println("  Storing program Data In a File... ");
        System.out.println("-------------------------------------");
        System.out.println();
        try
        {
            FileWriter fw = new FileWriter (filename);
            Writer output = new BufferedWriter(fw);
            for (int x = 0; x < objectarrayroom.length -
1; x++ )// Reading the array that stores customer info index after index
            {
                if (objectarrayperson[x].getsname() == null)// Converting the ind
exes that are null, to empty strings so that they won't display null
                {
                    objectarrayperson[x].setsname("");
                }
                if (objectarrayperson[x].getccard() == null)// Converting the ind
exes that are null, to empty strings so that they won't display null
                {
                    objectarrayperson[x].setccard("");
                }
                output.write("Room Number " + x + " Is Occupied By " + objectarra
yperson[x].getfname() +" "+ objectarrayperson[x].getsname() + "\n" + "No.of Guest
s: " + objectarrayroom[x].getnuguests() + "\n" + "Credit Card Number Of Paying Gu
est: " + objectarrayperson[x].getccard() + "\n" + "\n");// Printing the customer
info in the text file
            }
            output.close();
```



```
            System.out.println("Customer Data Was Stored Successfully In " + filename + " file");
            System.out.println();
        }
        catch (Exception e)// If the file cannot be read showing an error
        {
            System.out.println( " The Data Cannot Be Stored In The File !! ");
            System.out.println();
        }
        inputs();
    }

    // Loading Information from the stored file
    public static void loadfile()
    {
        System.out.println("---------------------------------------");
        System.out.println("  Loading Program Data From A File... ");
        System.out.println("---------------------------------------");
        System.out.println();
        try
        {
            File myObj = new File("customerinfo.txt");// taking the file that needs to be read
            Scanner myReader = new Scanner(myObj);
            while (myReader.hasNextLine())
            {
                String data = myReader.nextLine();//Reading the content in the file line by line
                System.out.println(data);//Displaying the content that was read from the file
            }
            myReader.close();
        }
        catch(FileNotFoundException e)// If the file cannot be read showing an error
        {
            System.out.println("An error Occurred !!");
            e.printStackTrace();
        }
        inputs();
    }

    // Displaying the customer names in alphabetical order
    public static void alphabetical ()
    {
```



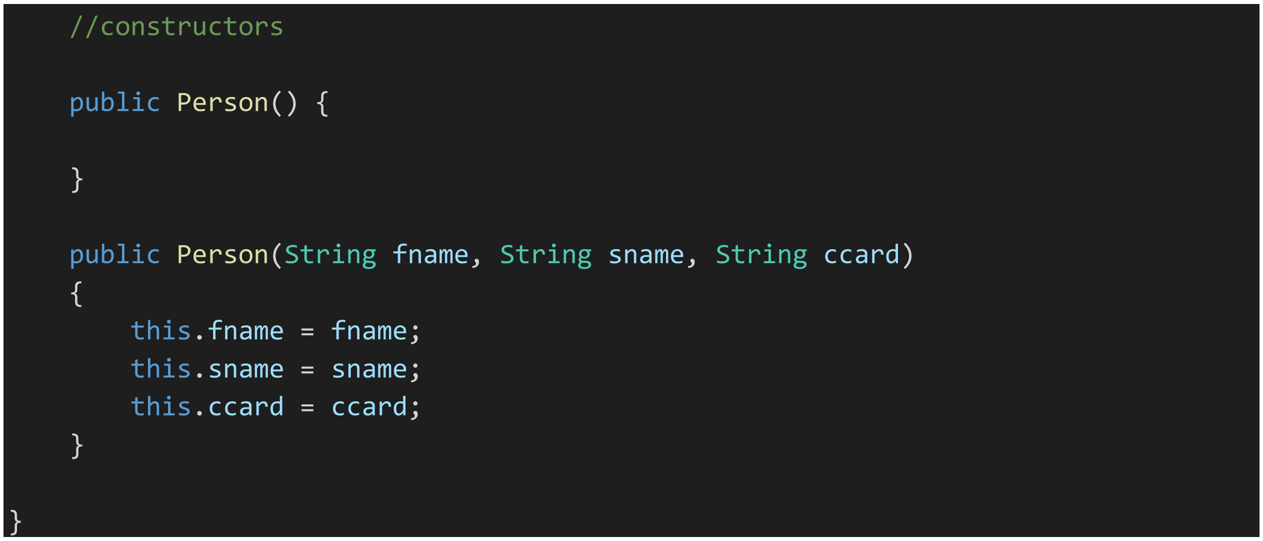
```
        System.out.println("-------------------------------------------");
        System.out.println("  Viewing Guests In Alphabetical Order... ");
        System.out.println("-------------------------------------------");
        String temp;
        for (int x = 0; x < objectarrayperson.length-1 ; x++)
        {
            for(int y = x + 1; y < objectarrayperson.length -1; y++)
            {
                if(objectarrayperson[x].getfname().toUpperCase().compareTo(object
arrayperson[y].getfname().toUpperCase()) > 0 )
                {
                    temp = objectarrayperson[x].getfname();
                    objectarrayperson[x].setfname(objectarrayperson[y].getfname()
);

                    objectarrayperson[y].setfname(temp);
                }
            }
        }
        for (int i = 0; i < objectarrayperson.length - 1; i++)
        {
            System.out.println();
            System.out.println(objectarrayperson[i].getfname());
        }
        inputs();
    }

    private static void initialise()
    {
        for (int x = 0; x < objectarrayperson.length -1 ; x++ )
        {
            objectarrayroom[x] = new Room(x);
            objectarrayperson[x] = new Person();
            objectarrayperson[x].setfname("e");
        }
    }

}
```

Room.java

```java
public class Room{
    private int roomNum;
    private int nuguests;

    // Creating Getters And Setters

    //getter
    public int getroomNum()
    {
        return roomNum;
    }
    //setter
    public void setroomNum(int roomNum)
    {
        this.roomNum = roomNum;
    }

    //getter
    public int getnuguests()
    {
        return nuguests;
    }

    //setters
    public void setnuguests(int setnuguests)
    {
        this.nuguests = nuguests;
    }

    //constructor
    public Room(int roomNum)
    {
        this.roomNum = roomNum;
    }

    public Room(int roomNum, int nuguests)
    {
        this.roomNum = roomNum;
        this.nuguests = nuguests;
    }
}
```

Person.java

```java
public class Person{
    private String fname;
    private String sname;
    private String ccard;



    // getters
    public String getfname()
    {
        return fname;
    }

    //setters
    public void setfname(String fname)
    {
        this.fname = fname;
    }

    //getters
    public String getsname()
    {
        return sname;
    }

    //setters
    public void setsname(String sname)
    {
        this.sname = sname;
    }

    //getters
    public String getccard()
    {
        return ccard;
    }

    //setters
    public void setccard(String ccard)
    {
        this.ccard = ccard;
    }
```



```
    //constructors

    public Person() {

    }

    public Person(String fname, String sname, String ccard)
    {
        this.fname = fname;
        this.sname = sname;
        this.ccard = ccard;
    }

}
```