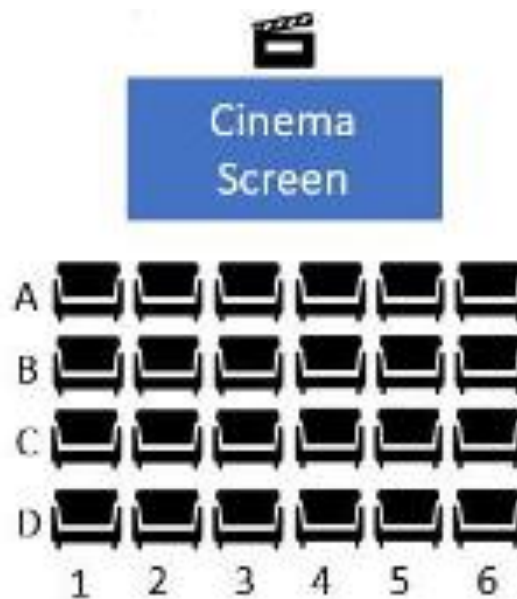


CS 516 Advanced Programming Language (Term 3, 2022-2023)

Movie Ticket Booking Management System



Report Submitted to:

Dr. Huda Althumali & Mrs. Maha Alghamdi

Movie Ticket Booking Management System

Declaration Statement:

I, group 1 members, certify that this project is my own work, based on my personal study and/or research and that I have acknowledged all material and sources used in its preparation, whether they be books, articles, reports, lecture notes, and any other kind of document, electronic or personal communication.

I also certify that this project has not previously been submitted for assessment in any academic capacity, and that I have not copied in part or whole or otherwise plagiarized the work of other persons.

I confirm that I have identified and declared all possible conflicts that I may have.

Submitted by: (Group 1)

Members of the group:

#	Name	ID	Role
1	Warood Khalid Alzayer	2190004986	Leader
2	Dhay Majed Alzaher	2190001584	Member
3	Bshayer Saod Alsafar	2190003715	Member
4	Raghad Wadia Alshuwkh	2190000881	Member
5	Seema Hussain Hilal	2190000508	Member

1. Problem Statement:

With the progress of technology in the world, waiting in long and unending lines just to book a movie ticket is time consuming. The movie could start and the consumer is still in the booking area due to the crowd, and that is why we decided to implement a cinema ticket system.

2. Project Goals and Objectives/Deliverables:

the main characters such as admin, user and their functions ...etc:

-Admin:

Update the theater by adding and deleting movie title, date, time and updating the theater number.

-User:

- 1- Enter username and phone number.
- 2- choose the movie, its number, the number of seats and finally the position of the seats.
- 3- choose one of the options: (cancel the booking OR cancel and book again OR confirm).

General Requirements (functional):

This is a simple project for booking a seat in a cinema online, so the main functionalities are:

-Display movies:

Enable the user to see which movies are available for booking.

-User information:

Take the user's main information, such as name and phone number.

-Seat display:

Display all available seats that are available for booking.

-Update :

Enable the user to update their reservation.

-Delete :

Enable the user to delete their reservation

-Ticket :

Print the final reservation for the user with movie and seat information.

3. Introduction:

The project aims to provide a system enabling users to reserve tickets in the cinema. The automated reservation of tickets and inquiries regarding ticket availability will be handled by this system. The user of this system will select a certain movie from the movie list, select the number of tickets and their locations, and then book the tickets. The user will also have the choice of canceling the reservation or canceling and making a new one or confirming the reservations. The admin will have the option to either update the movie's information or delete it. Our system's objective is to provide the user the freedom to select the number of seats to reserve and their location.

4. Project Scope:

The scope of the project will include the following:

- Developing a system to book tickets and modify the movie's information.
- “Programiz” online compiler for both java and C languages.

5. Success Factors and Benefits:

Success Factors:

- Simple to use a system for clients to easily book tickets.
- Processing reservations accurately and quickly Integration with other theater systems.
- Management and tracking of booking and updating the ticket.
- Effective customer service.

Benefits:

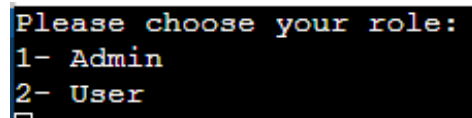
- Facilitate operational efficiency and save time due to automation and streamlined processes.
- Enhancing customer satisfaction and loyalty as a result of the ease of use of the system.

6. Limitations/Restrictions:

- Limited customizability: The system may not provide as many options for customization as a more complex system, which may limit the ability to customize the booking experience to certain requirements.
- Limited functionality: The system may lack some features and functions compared to a more complex system, which may limit the ability to provide customers with additional services or promotions.
- Limited scalability: The ability to grow a business may be limited by the inability of the system to handle large booking volumes or support many sites.

7. Selected programming language 1:

The first selected programming language is Java, which is an object-oriented language. The system starts off by asking the user to choose its role as an admin or user.



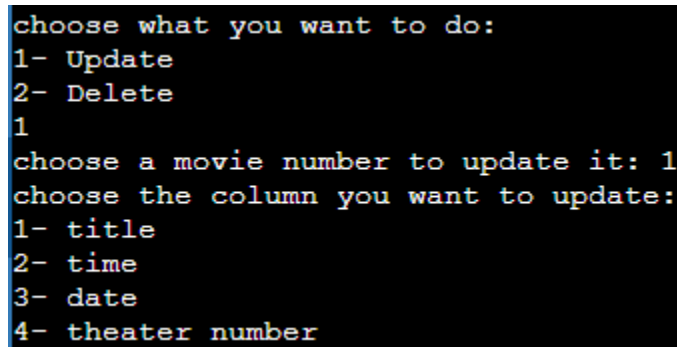
```
Please choose your role:
1- Admin
2- User
█
```

figure 1 . first choice.

if he chose admin, it has two features which are:

1. Update:

contains choosing one of the movies to update either the title, time, date, and theater number using the if function to choose one of them and then changing the value and then after displaying the list with the updated value.



```
choose what you want to do:
1- Update
2- Delete
1
choose a movie number to update it: 1
choose the column you want to update:
1- title
2- time
3- date
4- theater number
█
```

2. Delete:

contains choosing one of the movies to delete from the list (2D Array) then displaying the list without the deleted movie.

```
choose a movie number to Delete it: 1
**** this the movies menu: ****
1- The God Father          1PM      19/4/20
2- Interstellar            9PM      1/5/202
3- Little Women           11AM     25/4/20
4- Fast And Furious        7AM      3/5/202
```

figure 4. delete feature.

if he chose user, there is three main features:

1. choosing a movie:

After taking user information as an input, the movies list will show, and the system will ask the user to enter the movie number that he wants to book.

2. choosing a seat:

After picking the movie, the system will ask about the number of seats the user wants to book and then display seats position within the screen (2D Array) so the user can choose which seats he wants.

```
enter the number of the movie you want:
4
enter the number of seats you want to reserve:
1
-----
-                               -
-           Screen             -
-                               -
-----
A1      A2      A3      A4
B1      B2      B3      B4
C1      C2      C3      C4
D1      D2      D3      D4
Enter the position:
*NOTE: X indecades that the seat is 'unavalibale'
D1
```

3. review ticket:

Lastly, the system will print out user information with booking information such as movie information, seats number and seating position. then the system will ask the number if either he wants to cancel the booking, cancel and booking again, or confirm the reservation.

```
*****
So, this is your Ticket:
*****
Name: see,a
Phone: 234566543
---Movie Information---
Title: Little Women
Time: 11AM
Date: 25/4/2021
Theater Number: 4
-----
Number of Seats: 1
The seats are: D1,
*****

Now, choose what you want to do:
1- cancel booking
2- cancel and book again
3- Confirm
3
Ok, Thanks for booking with us !!
```

Figure 6. user ticket and after review choices

8. Selected programming language 2:

The other selected programming language was C, which is a structured programming language. Writing codes for both languages has many similarities as C provides the foundation and base for many languages Java is one of them.

The system features and functions are also similar, the only differences noticed was while writing the code as some data types and some initializations differ.

9. Comparison between two programming languages

Features for comparison

- **Part1:**

Feature / Language	Java Programming Language	C Programming Language
Syntax	<pre>class HelloWorld { public static void main(String[] args) { System.out.println("This is Java Syntax!"); } }</pre>	<pre>#include <stdio.h> int main() { printf("This is C syntax !"); return 0; }</pre>
Dependencies	Platform independent : write once, Run anywhere	Platform dependent : write once, Compile anywhere.
Paradigm	Object oriented programming language	Structured programming language
Memory Allocation	Uses the “new” keyword to allocate memory.	Uses functions instead of keyword such as: malloc(), calloc()

- **Part 2:**

9.2 Comparison of implementation of system functions:

1. printf() function:

The printf() function in the C programming language is used to show output on the console. The printf() function in C has the following syntax:

```
printf("format string", argument);
```

The System.out.printf() method of the Java programming language is used to display output on the console. Java's System.out.printf() method has the following syntax:

```
System.out.printf("format string", argument);
```

Although the syntax of the two functions is similar, the primary distinction is that in Java, the function is called using the System.out object.

2. scanf() function:

The scanf() function in the C programming language is used to read input from the console. The C scanf() function has the following syntax:

```
scanf("format string", &argument);
```

The Scanner class of the Java programming language is used to read information from the console. The Java Scanner class has the following syntax:

```
Scanner sc = new Scanner(System.in);  
sc.nextInt();
```

Java has an object-oriented method for reading information from the console called the Scanner class.

3. exit() function:

The exit() function in the C programming language is used to end a program. The exit() function in C has the following syntax:

```
exit(status);
```

The System.exit() method of the Java programming language is used to end a program. The System.exit() method in Java has the following syntax:

```
System.exit(status);
```

Although the syntax of the two functions is identical, the primary distinction is that in Java, the function is called using the System object.

Overall, the object-oriented programming paradigms and the layout of the various runtime environments differ from C and Java, despite the fact that both languages contain identical system functions. This leads to considerable changes in syntax and implementation.

4. Arrays:

Arrays must have a defined size and can only contain values of the same data type in the C programming language. To declare an array in C, use the following syntax:

```
data_type array_name[array_size];
```

Arrays may carry values of various data kinds and come in a variety of sizes in the Java programming language. In Java, the syntax for defining an array is:

```
data_type[] array_name = new data_type[array_size];
```

5. Data types:

Primitive data types in the C programming language include int, char, float, double, etc. Along with object data types, the Java programming language also supports basic data types. In Java, there is an Integer class that may be used to manipulate int values in an object-oriented manner even though int is a basic data type in both C and Java.

Limitations of Java:

- Limited access to low-level hardware resources, which makes some programming tasks challenging or impossible.
- Due to its managed code environment, Java has worse runtime performance when compared to lower-level languages like C.
- Limited operator overloading support, which might make some mathematical computations more challenging.
- Complicated memory management and dealing with raw pointers, which might reduce the effectiveness of some programming languages.

Limitations of C:

- Difficulties in allocating and deallocating memory, which, if not managed effectively, can result in hazardous memory leaks and buffer overflows.
- The lack of integrated support for object-oriented programming makes it more challenging to design intricate software structures.
- Pointers, particularly for inexperienced programmers or those unfamiliar with the language, can be perplexing and result in a variety of errors.
- Because faults are frequently discovered during runtime rather than at compile-time, it demands greater attention to detail.

Comparison of their Strengths and Features:

1. Java's syntax, while might be more verbose, is simpler than C's. Memory management in C is more laborious, whereas garbage collection in Java is automated.
2. Platform: Unlike C, which must be compiled differently for each platform, Java is platform-independent and may operate on any device or operating system.

3. Application: C is frequently used for system-level programming, including embedded devices and operating systems. Java is frequently used for mobile development, corporate level apps, and online applications.

4. Support for classes, objects, and encapsulation is robust in Java, an object-oriented programming language. Object-oriented programming is not directly supported in C, on the other hand.

5. Libraries and Frameworks: A wide range of Java libraries and frameworks, like Spring and Hibernate, offer simple-to-use functionality for difficult jobs. There aren't many libraries for C, thus programmers frequently create their own functions to complete certain tasks.

In conclusion, C is excellent for low-level system development and lacks garbage collection, whereas Java is suitable for application development and includes built-in garbage collection. The decision between Java and C ultimately comes down to the particular requirements of the project and the developer's level of expertise.

10. Attachments:

1. Source code

1.1 Java code:

```
import java.util.Scanner;

public class CinemaTickets {

    public static String[][] movies = {

        {"Avatar      ", "4PM ", "12/4/2021 ", "1"},
        {"The God Father ", "1PM ", "19/4/2021 ", "5"},
        {"Interstellar   ", "9PM ", "1/5/2021  ", "3"},
        {"Little Women   ", "11AM", "25/4/2021 ", "4"},
        {"Fast And Furious", "7AM ", "3/5/2021  ", "2"}

    };

    static String[][] seat_position = {{"A1","A2","A3","A4","A5"},
        {"B1","B2","B3","B4","B5"},
        {"C1","C2","C3","C4","C5"},
        {"D1","D2","D3","D4","D5"}};

    public static void main(String[] args) {

        System.out.println("Please choose your role:");

        System.out.println("1- Admin");

        System.out.println("2- User");
```

```
Scanner input = new Scanner(System.in);

Scanner in = new Scanner(System.in);

int choice = input.nextInt();

if (choice == 1) {

    displayMovies();

    System.out.println("choose what you want to do: ");

    System.out.println("1- Update");

    System.out.println("2- Delete");

    choice = input.nextInt();

    if (choice == 1) {

        System.out.print("choose a movie number to update it: ");

        int movieNum = input.nextInt();

        System.out.println("choose the column you want to update: ");

        System.out.println("1- title ");

        System.out.println("2- time");

        System.out.println("3- date");

        System.out.println("4- theater number");

        int col = input.nextInt();
```

```
System.out.print("Enter the new value: ");

String val = in.nextLine();

movies[movieNum - 1][col - 1] = val;

System.out.println("Done !");

displayMovies();

} else if (choice == 2) {

    System.out.print("choose a movie number to Delete it: ");

    int movieNum = input.nextInt();

    String[][] tmpMov = new String[movies.length - 1][movies.length];

    int k = 0;

    for (int i = 0; i < movies.length; i++) {

        if (i == movieNum - 1) {

            continue;

        }

        for (int j = 0; j < movies[i].length; j++) {

            tmpMov[k][j] = movies[i][j];

        }

        k++;

    }

    movies = tmpMov;
```

```
displayMovies();
```

```
} else {
```

```
}
```

```
} else if (choice == 2) {
```

```
boolean ok = true;
```

```
while (ok) {
```

```
System.out.println("Enter your name: ");
```

```
String name = in.nextLine();
```

```
System.out.println("Enter your phone number: ");
```

```
String phoneNumber = in.nextLine();
```

```
System.out.println("**** Welcome " + name + " ****");
```

```
displayMovies();
```

```
System.out.println("enter the number of the movie you want: ");
```

```
int reserve = input.nextInt();
```

```
String [] chosen_movie = new String[4];
```

```
chosen_movie[0] = movies[reserve-1][0];
```

```
chosen_movie[1] = movies[reserve-1][1];
```



```
chosen_movie[2] = movies[reserve-1][2];
```

```
chosen_movie[3] = movies[reserve-1][3];
```

```
System.out.println("enter the number of seats you want to reserve: ");
```

```
int seatsNum = input.nextInt();
```

```
String [] chosen_positions = new String[seatsNum];
```

```
int n_temp =0;
```

```
String position = null;
```

```
for (int k = 0; k < seatsNum; k++) {
```

```
    System.out.println("    -----");
```

```
    System.out.println("    -          -");
```

```
    System.out.println("    -   Screen   -");
```

```
    System.out.println("    -          -");
```

```
    System.out.println("    -----");
```

```
    for(int i = 0; i < 4; i++)
```

```
    {
```

```
        for(int j = 0; j < 4; j++)
```

```
        {
```

```
            System.out.print("    "+seat_position[i][j]+"  ");
```

```
        }
```

```
        System.out.println();
```

```
    }
```

```
    System.out.println("Enter the position: \n*NOTE: X indecades that the seat is  
'unavalibale'");
```

```
position = input.next();

chosen_positions[n_temp] = position;

n_temp++;

for(int i = 0; i < 4; i++)
{
    for(int j = 0; j < 4; j++){

        if(position.equals(seat_position[i][j]))
        {
            seat_position[i][j] = " X";
        }

    }
}

System.out.println();

System.out.println("*****");

System.out.println("So, this is your Ticket: ");

System.out.println("*****");

System.out.println("Name: " + name);

System.out.println("Phone: " + phoneNumber);

System.out.println("---Movie Information---");

System.out.println("Title: "+chosen_movie[0]);

System.out.println("Time: "+chosen_movie[1]);
```

```
System.out.println("Date: "+chosen_movie[2]);

System.out.println("Theater Number: "+chosen_movie[3]);

System.out.println("-----");

System.out.println("Number of Seats: " + seatsNum);

System.out.print("The seats are: ");

for(int g = 0 ; g<seatsNum; g++){

    System.out.print(chosen_positions[g]+" ");

}

System.out.println("\n*****");

System.out.println();

System.out.println("Now, choose what you want to do: ");

System.out.println("1- cancel booking ");

System.out.println("2- cancel and book again");

System.out.println("3- Confirm");


choice = input.nextInt();

if (choice == 1) {

    System.out.println("Ok, booking process is terminated !");

    ok = false;

} else if (choice == 2) {

    System.out.println("Ok, lets start over again !");

    System.out.println("-----");

    seat_position[0][0] = "A1";

    seat_position[0][1] = "A2";
```

```
seat_position[0][2] = "A3";

seat_position[0][3] = "A4";

seat_position[0][4] = "A5";

seat_position[1][0] = "B1";

seat_position[1][1] = "B2";

seat_position[1][2] = "B3";

seat_position[1][3] = "B4";

seat_position[1][4] = "B5";

seat_position[2][0] = "C1";

seat_position[2][1] = "C2";

seat_position[2][2] = "C3";

seat_position[2][3] = "C4";

seat_position[2][4] = "C5";

seat_position[3][0] = "D1";

seat_position[3][1] = "D2";

seat_position[3][2] = "D3";

seat_position[3][3] = "D4";

seat_position[3][4] = "D5";

} else {

    System.out.println("Ok, Thanks for booking with us !!");

    ok = false;

}

}

} else {
```

```
        System.out.println("invalid role !!");
    }

}

public static void displayMovies() {
    System.out.println("***** this the movies menu: *****");
    for (int i = 0; i < movies.length; i++) {
        System.out.print((i + 1) + "- ");
        for (int j = 0; j < movies[i].length; j++) {
            System.out.print(movies[i][j] + '\t');
        }
        System.out.println();
    }
}
}
```

1.2 C code

```
#include <stdio.h>
#include <stdbool.h>
#include <string.h>
char movies[5][4][154] = {
    {"Avatar", "4PM", "12/4/2021", "1"},
    {"The God Father", "1PM", "19/4/2021", "5"},
    {"Interstellar", "9PM", "1/5/2021", "3"},
    {"Little Women", "11AM", "25/4/2021", "4"},
    {"Fast And Furious", "7AM", "3/5/2021", "2"}
};
char seat_position[4][5][3] = {
    {"A1", "A2", "A3", "A4", "A5"},
    {"B1", "B2", "B3", "B4", "B5"},
    {"C1", "C2", "C3", "C4", "C5"},
    {"D1", "D2", "D3", "D4", "D5"}
};
void displayMovies() {
    printf("***** this is the movies menu: *****\n");
    for (int i = 0; i < 5; i++) {
        printf("%d- ", i + 1);
        for (int j = 0; j < 4; j++) {
            printf("%s\t", movies[i][j]);
        }
        printf("\n");
    }
}
int main() {
    printf("Please choose your role:\n");
    printf("1- Admin\n");
    printf("2- User\n");
    int choice;
    scanf("%d", &choice);
    if (choice == 1) {
        displayMovies();
        printf("choose what you want to do: \n");
        printf("1- Update\n");
    }
}
```

```
printf("2- Delete\n");
scanf("%d", &choice);
if (choice == 1) {
    printf("choose a movie number to update it: ");
    int movieNum;
    scanf("%d", &movieNum);
    printf("choose the column you want to update: \n");
    printf("1- title\n");
    printf("2- time\n");
    printf("3- date\n");
    printf("4- theater number\n");
    int col;
    scanf("%d", &col);
    printf("Enter the new value: ");
    char val[154];
    scanf("%s", val);
    strcpy(movies[movieNum - 1][col - 1], val);
    printf("Done !\n");
    displayMovies();
} else if (choice == 2) {
    printf("choose a movie number to Delete it: ");
    int movieNum;
    scanf("%d", &movieNum);
    char *tmpMov[4][15];
    int k = 0;
    for (int i = 0; i < 5; i++) {
        if (i == movieNum - 1) {
            continue;
        }
        for (int j = 0; j < 4; j++) {
            strcpy(tmpMov[k][j], movies[i][j]);
        }
        k++;
    }
    for (int i = 0; i < 4; i++) {
        for (int j = 0; j < 15; j++) {
            strcpy(movies[i][j], tmpMov[i][j]);
        }
    }
}
```

```
displayMovies();
} else {
}
} else if (choice == 2) {
    bool ok = true;
    while (ok) {
        printf("Enter your name: ");
        char name[100];
        scanf("%s", name);
        printf("Enter your phone number: ");
        char phoneNumber[100];
        scanf("%s", phoneNumber);
        printf("***** Welcome %s *****\n", name);
        displayMovies();
        printf("enter the number of the movie you want: ");
        int reserve;
        scanf("%d", &reserve);
        char chosen_movie[4][15];
        strcpy(chosen_movie[0], movies[reserve - 1][0]);
        strcpy(chosen_movie[1], movies[reserve - 1][1]);
        strcpy(chosen_movie[2], movies[reserve - 1][2]);
        strcpy(chosen_movie[3], movies[reserve - 1][3]);
        printf("enter the number of seats you want to reserve: ");
        int seatsNum;
        scanf("%d", &seatsNum);
        char chosen_positions[seatsNum][3];
        int n_temp = 0;
        char position[3];
        for (int k = 0; k < seatsNum; k++) {
            printf("      -----\\n");
            printf("      -          -\\n");
            printf("      -   Screen   -\\n");
            printf("      -          -\\n");
            printf("      -----\\n");
            for (int i = 0; i < 4; i++) {
                for (int j = 0; j < 4; j++) {
                    printf("    %s    ", seat_position[i][j]);
                }
                printf("\\n");
            }
        }
    }
}
```



```
}  
printf("Enter the position: \n*NOTE: X indicates that the seat is  
'unavailable'\n");  
scanf("%s", position);  
strcpy(chosen_positions[n_temp], position);  
n_temp++;  
for (int i = 0; i < 4; i++) {  
    for (int j = 0; j < 4; j++) {  
        if (strcmp(position, seat_position[i][j]) == 0) {  
            strcpy(seat_position[i][j], " X");  
        }  
    }  
}  
}  
printf("\n*****\n");  
printf("So, this is your Ticket: \n");  
printf("*****\n");  
printf("Name: %s\n", name);  
printf("Phone: %s\n", phoneNumber);  
printf("---Movie Information---\n");  
printf("Title: %s\n", chosen_movie[0]);  
printf("Time: %s\n", chosen_movie[1]);  
printf("Date: %s\n", chosen_movie[2]);  
printf("Theater Number: %s\n", chosen_movie[3]);  
printf("-----\n");  
printf("Number of Seats: %d\n", seatsNum);  
printf("The seats are: ");  
for (int g = 0; g < seatsNum; g++) {  
    printf("%s, ", chosen_positions[g]);  
}  
printf("\n*****\n\n");  
printf("Now, choose what you want to do: \n");  
printf("1- cancel booking \n");  
printf("2- cancel and book again\n");  
printf("3- Confirm\n");  
scanf("%d", &choice);  
if (choice == 1) {  
    printf("Ok, booking process is terminated !\n");  
    ok = false;
```

```
} else if (choice == 2) {  
    printf("Ok, lets start over !\n");  
    printf("- - - - -\n");  
    strcpy(seat_position[0][0], "A1");  
    strcpy(seat_position[0][1], "A2");  
    strcpy(seat_position[0][2], "A3");  
    strcpy(seat_position[0][3], "A4");  
    strcpy(seat_position[0][4], "A5");  
    strcpy(seat_position[1][0], "B1");  
    strcpy(seat_position[1][1], "B2");  
    strcpy(seat_position[1][2], "B3");  
    strcpy(seat_position[1][3], "B4");  
    strcpy(seat_position[1][4], "B5");  
    strcpy(seat_position[2][0], "C1");  
    strcpy(seat_position[2][1], "C2");  
    strcpy(seat_position[2][2], "C3");  
    strcpy(seat_position[2][3], "C4");  
    strcpy(seat_position[2][4], "C5");  
    strcpy(seat_position[3][0], "D1");  
    strcpy(seat_position[3][1], "D2");  
    strcpy(seat_position[3][2], "D3");  
    strcpy(seat_position[3][3], "D4");  
    strcpy(seat_position[3][4], "D5");  
} else {  
    printf("Ok, Thanks for booking with us !!\n");  
    ok = false;  
}  
}  
} else {  
    printf("invalid role !!\n");  
}  
}
```

References:

“Home.” *Difference between Java and C Language*, www.geeksforgeeks.org/difference-between-java-and-c-language/amp/. Accessed 07 June 2023.

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