GROUP MEMBERS

Phinehas Njuguna	J17-8591-2024
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Ismail Abey	J17-11408-2024
Kevin Odero	J17-8583-2024
Alex Musyoka	J17-8595-2024

QUESTION ONE (15 MARKS)

SOURCE CODE

```
/*
    Phinehas Njuguna    J17-8591-2024
    Peter Mwanzia       J17-3746-2023
    Melvin Jepchumba    J17-8556-2024
    Jeremiah Ngige      J17-8539-2024
    Sandra Oloo         J17-8586-2024
    Ismail Abey         J17-11408-2024
    Kevin Odero         J17-8583-2024
    Alex Musyoka        J17-8595-2024
```

```
*/

class Book{
    String author;
    String title;
    String publisher;
    int cost;
    int copies;
    int accountNumber;

    public Book(String title, String author, String
publisher,
        int accountNumber, int copies, int cost) {
        this.title = title;
        this.author = author;
        this.publisher = publisher;
        this.accountNumber = accountNumber;
        this.copies = copies;
        this.cost = cost;
    }
```

```
    void displayBooks(){
        System.out.println("Title: " + title);
        System.out.println("Author: " + author);
        System.out.println("Publisher: " +
publisher);
        System.out.println("Account Number: " +
accountNumber);
        System.out.println("Copies: " + copies);
        System.out.println("Cost: " + cost);

    }
}
public class Books {
    int count =0;
    Book[] database = new Book[10];//array
declaration
    public void insertBook(String title, String
author, String publisher,
     int accountNumber, int copies, int cost){
        if(count <database.length){
```

```
            database[count] = new
Book(author,title,publisher,copies,cost,accountNumbe
r);
            count++;
            System.out.println("Book successfully
added");
        }else{
            System.out.println("Database is full
cannot add more books");
        }
    }
    public void displayAllBooks(){
        if(count == 0){
            System.out.println("Database is
currently empty");
        }else{
            for(int i=0; i<count;i++){
                database[i].displayBooks();
            }
```

```
        }
    }
    public static void main(String[] args){
        Books myBooks= new Books();
        myBooks.insertBook(
            "Java Programming",
            "James Gosling",
            "Pearson",
            101,
            5,
            1500
        );

        myBooks.insertBook(
            "Data Structures",
            "Mark Allen Weiss",
            "McGraw Hill",
            102,
            3,
            1200
```

```
        );
        myBooks.displayAllBooks();
    }
}
```

OUTPUT

Book successfully added

Title: James Gosling

Author: Java Programming

Publisher: Pearson

Account Number: 5

Copies: 1500

Cost: 101

Title: Mark Allen Weiss

Author: Data Structures

Publisher: McGraw Hill

Account Number: 3

Copies: 1200

Cost: 102

QUESTION TWO (15 MARKS)

SOURCE CODE

```
import java.util.Scanner;
import  javax.swing.JOptionPane;
public class Airline {
    static boolean[] seats=new boolean[15];//false
indicates available seat
    static void reserveSeat(int classType,Scanner
seatChoice){
        if (allSeatsTaken()) {
        //System.out.println("All seats are full.
Please wait for the next flight in 3 hours.");
        JOptionPane.showMessageDialog(null,
                "All seats are full. Please wait for
the next flight in 3 hours.",
                "Flight Full",
                JOptionPane.INFORMATION_MESSAGE);
        return;
    }
        int seatNumber = -1;
        if(classType == 1){
```

```
            seatNumber = findSeat(0,4);
            if(seatNumber == -1){
                //System.out.println("Business class
is full. Do you want to book in Economy class? (1
for Yes / 0 for No)");
                int response =
JOptionPane.showConfirmDialog(null, "Business class
is full. Do you want to book in Economy class? (1
for Yes / 0 for No)","Seat
assignment",JOptionPane.YES_NO_OPTION);
                //int CLIRes = seatChoice.nextInt();

                if(response ==
JOptionPane.YES_OPTION){
                    seatNumber = findSeat(5,14);
                    if(seatNumber != -1){

assignSeat(seatNumber,"Economy");}
                        else{
```

```
//System.out.println("Economy class is also full.
Please wait for the next flight in 3 hours.");

JOptionPane.showMessageDialog(null, "Economy class
is also full. Please wait for the next flight in 3
hours.","Seat
assignment",JOptionPane.INFORMATION_MESSAGE);
                        }
                }
                else{
                    //System.out.println("Sorry.
Please wait for the next flight that leaves in 3
hours.");

JOptionPane.showMessageDialog(null, "Sorry Please
wait for the next flight that leaves in three
hours","Seat
assignment",JOptionPane.INFORMATION_MESSAGE);
```

```
                }
            }
            else{
                assignSeat(seatNumber,"Business");
            }
        }else if( classType == 2){//economy class
            seatNumber = findSeat(5,14);
            if(seatNumber == -1){
                //System.out.println("Economy class
is full do you want to book Bussiness class instead?
(1 for Yes / 0 for No)");
                int response =
JOptionPane.showConfirmDialog(null, "Economy class
is full do you want to book Bussiness class instead?
(1 for Yes / 0 for No)","Seat
assignment",JOptionPane.YES_NO_OPTION);
                //int CLIRes = seatChoice.nextInt();
                if(response ==
JOptionPane.YES_OPTION){
```

```
                    seatNumber =findSeat(5,14);
                    if(seatNumber != -1){
                        assignSeat(seatNumber,
"Business");
                    }else{
                        //System.out.print("Business
class is also full. Please wait for the next flight
in 3 hours.");

JOptionPane.showMessageDialog(null, "Business class
is also full. Please wait for the next flight in 3
hours.","Seat
assignment",JOptionPane.INFORMATION_MESSAGE);
                    }
                }else{
                    //System.out.println("Sorry.
Please wait for the next flight that leaves in 3
hours.");
```

```
JOptionPane.showMessageDialog(null, "Sorry Please
wait for the next flight that leaves in three
hours","Seat
assignment",JOptionPane.INFORMATION_MESSAGE);
                }
            }else{
                assignSeat(seatNumber,"Economy");
            }
        }
    }
    static int findSeat(int start,int end){
        for(int i= start;i<=end;i++){
            if(!seats[i]){
                return i;
            }
        }
        return -1;
    }
```

```
    static void assignSeat(int seatNumber,String
classType){
        seats[seatNumber] = true;
        //System.out.println("You have been asigned
seat number: " + (seatNumber + 1));
        //System.out.println("BOARDING PASS");
        //System.out.println("Seat Number: " +
(seatNumber + 1));
        //System.out.println("Class: " + classType);
        JOptionPane.showMessageDialog(
            null,
            "BOARDING PASS\n" +
            "Seat Number: " + (seatNumber + 1) +
"\n" +
            "Class: " + classType,
            "Boarding Pass",
            JOptionPane.INFORMATION_MESSAGE
        );

    }
```

```
    static boolean allSeatsTaken(){
        for(boolean seat: seats){
            if(!seat){
                return false;
            }
        }
        return true;
    }
    public static void main(String[] args) {
        Scanner seatChoice = new Scanner(System.in);
        int choice;
        while(true){
            if (allSeatsTaken()) {
                //System.out.println("All seats are
full. Please wait for the next flight in 3 hours.");
                JOptionPane.showMessageDialog(null,
                    "All seats are full. Please wait
for the next flight in 3 hours.",
                    "Flight Full",
```

```
JOptionPane.INFORMATION_MESSAGE);
                break; // exit the while loop
            }
            System.out.println("1. Reserve a seat in
Business Class");
            System.out.println("2. Reserve a seat in
Economy Class");
            System.out.println("3. Exit");
            System.out.print("Enter your choice: ");
            choice = seatChoice.nextInt();
            if(choice == 1){
                reserveSeat(1,seatChoice);

            }else if(choice == 2){
                reserveSeat(2,seatChoice);
            }else if(choice == 3){
                System.out.println("Thank you for
using the Airline Reservation System.");
```

```
                int confirmation=
JOptionPane.showConfirmDialog(null,"Are you sure you
want exit?","Exit",JOptionPane.YES_NO_OPTION);
                    if(confirmation
==JOptionPane.YES_OPTION){

JOptionPane.showMessageDialog(null,"Thank you for
using the Airline Reservation
System.","Exit",JOptionPane.INFORMATION_MESSAGE);
                        break;
                    }else{
                        continue;
                    }

            }else{
                System.out.print("Invalid choice ");
                JOptionPane.showMessageDialog(null,
"Invalid choice","Error",JOptionPane.ERROR_MESSAGE);
            }
        }
```

```
    }

}
```

OUTPUT

THE CLI PRINTS HAVE BEEN COMMENTED OUT IN THE SOURCE CODE BUT USED IN THE RUNNING TO SHOW THE IMPLEMENTATION SINCE ITS HARD TO COPY THE GUI

1. Reserve a seat in Business Class

2. Reserve a seat in Economy Class

3. Exit

Enter your choice: 1

You have been asigned seat number: 1

BOARDING PASS

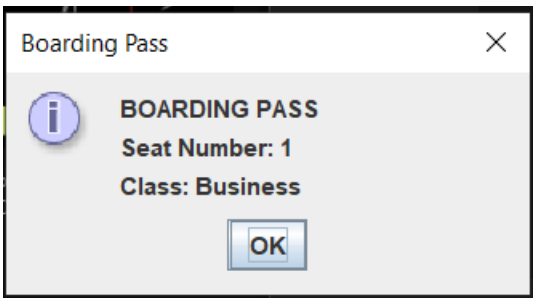
Seat Number: 1

Class: Business

1. Reserve a seat in Business Class

2. Reserve a seat in Economy Class

3. Exit



Enter your choice: 1

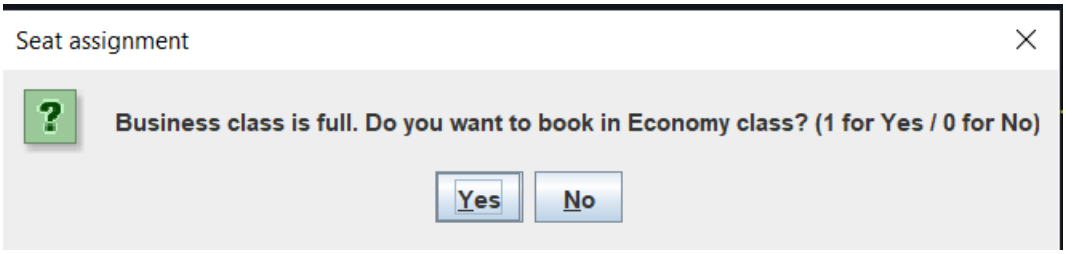
You have been asigned seat number: 2

BOARDING PASS

Seat Number: 2

Class: Business

Business class is full. Do you want to book in Economy class? (1 for Yes / 0 for No)



You have been asigned seat number: 6

BOARDING PASS

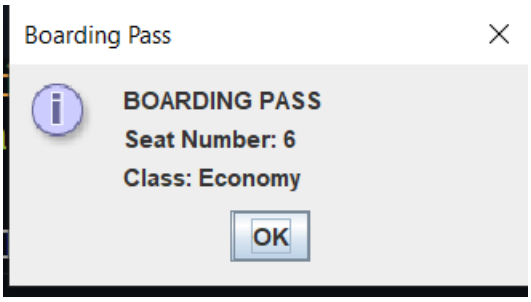
Seat Number: 6

Class: Economy

1. Reserve a seat in Business Class

2. Reserve a seat in Economy Class

3. Exit



(The system doesnt allow booking from business if full)

Enter your choice: 1

Business class is full. Do you want to book in Economy class? (1 for Yes / 0 for No)

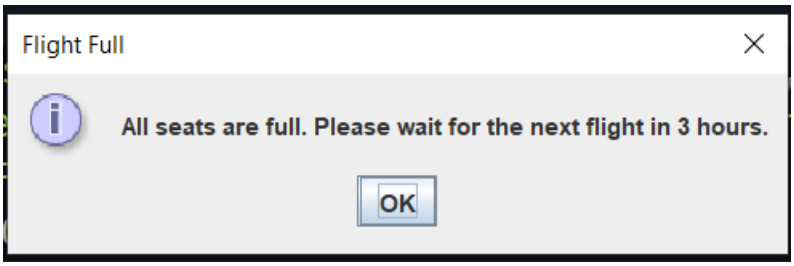
You have been asigned seat number: 7

BOARDING PASS

Seat Number: 7

Class: Economy

All seats are full. Please wait for the next flight in 3 hours.



Enter your choice: 3

Thank you for using the Airline Reservation System.