YPC INTERNATIONAL COLLEGE

BSC (Hons) Multimedia Computing

Seat Booking System – Coursework 2

4100COMP

Introduction to Programming

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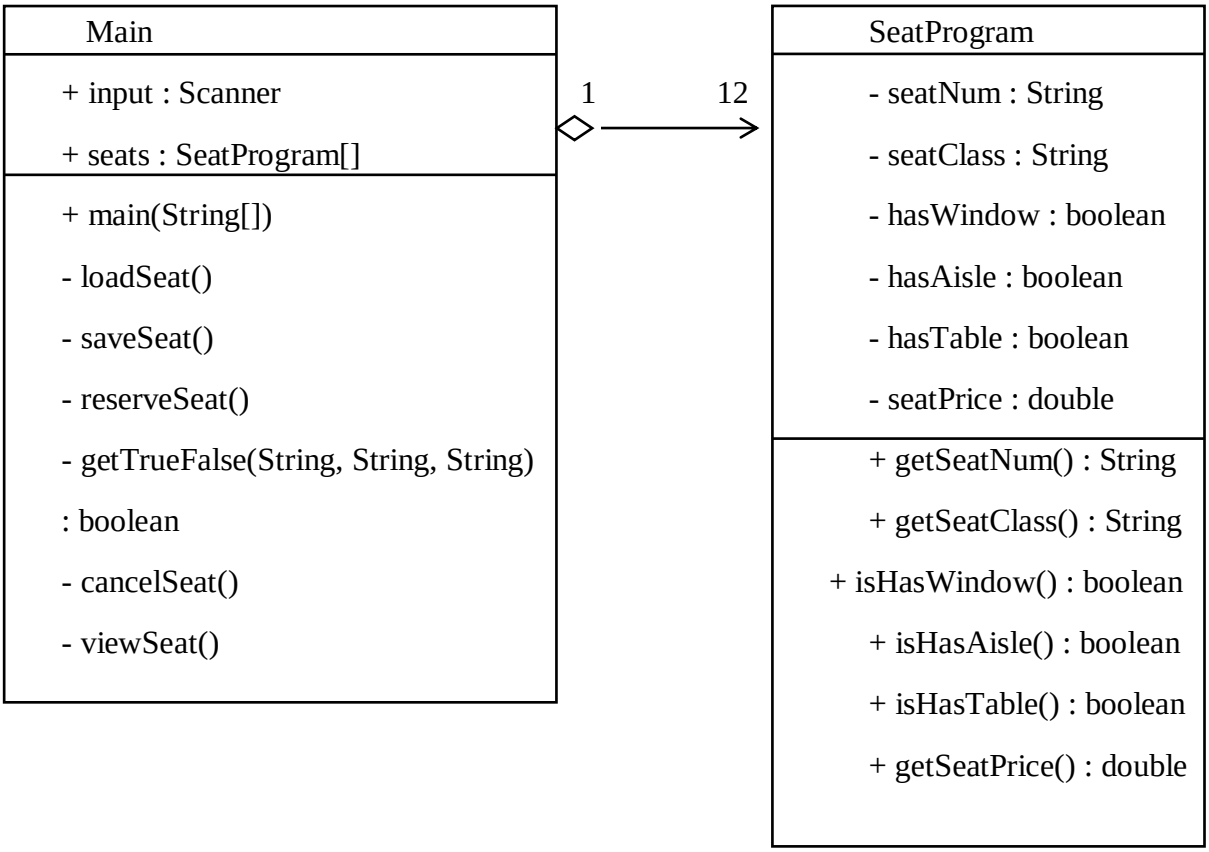
1 UML Class Diagram



First, a Scanner is implemented to scan each user input into the console. This enabled the user to gain access to the information stored in seats text file, which is then being transferred into an array of named SeatProgram. This process of transferring information into SeatProgram array is being done in another subclass. This has enabled the data used to store each seat has a base data types. 3 important methods are also declared in main programme, which is reserveSeat(), cancelSeat() and viewSeat(). These three methods are used to be a basic user interfere for the programme. Although it is also necessary to declare other methods to be used like loadSeat(), saveSeat() for a more complete code flow but it is not consider to be important compared to the above 3 main methods. In short, methods are used to make code management easier and giving users a chance to perform more operations.

2 Code

2.1 Main.java:

```
package assignment2;

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

public class Main {

	private static Scanner input = new Scanner(System.in);

	private static final SeatProgram[] seats = new SeatProgram[18];

	public static void main(String[] args) throws Throwable{
		// TODO Auto-generated method stub
		String userSpecify= "";

		loadSeat();

		do {
		System.out.println("--Seat Booking System--\n");
		System.out.println("-MAIN MENU--");
		System.out.println("1 - Reserve Seat");
		System.out.println("2 - Cancel Seat");
		System.out.println("3 - View Seat Reservations");
		System.out.println("Q - Quit\n");
		System.out.print("Please choose one of the above: ");

		userSpecify = input.nextLine();

			switch(userSpecify) {
			case "1": {
				reserveSeat();
				break;
			}
			case "2":{
				cancelSeat();
				break;
			}
			case "3":{
				viewSeat();
				break;
			}
			case "Q":
			case "q":
				break;
			default:{
				System.out.println("\nInvalid input.\n\n");
				}
			}
		} while (!userSpecify.equalsIgnoreCase( "Q"));
			System.out.println("System is shutting down!\n");

	}
```

```
	private static void loadSeat() throws IOException{
		Scanner file = new Scanner(new FileReader("data/seats.txt"));
		int rows = 0;
		while (file.hasNext()) {
			String seatNum = file.next();
			String seatClass = file.next();
			boolean hasWindow = file.nextBoolean();
			boolean hasAisle = file.nextBoolean();
			boolean hasTable = file.nextBoolean();
			double seatPrice = file.nextDouble();
			String email = file.next();

			seats[rows++] =new SeatProgram(seatNum, seatClass, hasWindow,
hasAisle, hasTable, seatPrice, email);
		}
		file.close();
	}

	private static void saveSeat() throws IOException{
		FileWriter write = new FileWriter("data/seats.txt");
		for(SeatProgram go:seats) {
			write.write(go.toString()+"\n");
		}
		write.close();
	}

	private static void reserveSeat() throws Throwable{
		String seatClass = "";
		boolean window = false;
		boolean table, aisle;
		int scoreMax=0;
		SeatProgram bestMatch=null;
		System.out.println("---Seat Reservation---");
		System.out.println("Please choose the quality of the seat:
[std/1st]");
		if(getTrueFalse("==>","std","1st")) {
			seatClass="STD";
		}
		else {
			seatClass="1ST";
		}
		System.out.println("Would you like to sit by the window? [Y/N]");
		window=getTrueFalse("==>","Y","N");
		System.out.println("Would you like a table? [Y/N]");
		table=getTrueFalse("==>","Y","N");
		System.out.println("Would you like to sit by the aisle? [Y/N]");
		aisle=getTrueFalse("==>","Y","N");
		System.out.println("\n");
		//-------------------------------------
		for(SeatProgram n: seats) {
			int score=match(n,seatClass,window,table,aisle);
			if(score==6 /*highest point it would get*/ &&
n.getEmail().equalsIgnoreCase("free")) {
				seatInfo(n);
				System.out.println("Would you like to confirm upon this
reservation? [Y/N]");
				if (getTrueFalse ("==>","Y","N")) {
```

```
                                System.out.println("Please enter your e-mail: ");
                                String eMail=input.nextLine();
                                n.setEmail(eMail);
                                saveSeat();
                                System.out.println("The reservation is
complete.");
                                return;
                          }else {
                                System.out.println("The reservation is
incomplete.");
                          return;
                          }
                    }
                    else {
                          if(score>scoreMax) {
                                bestMatch=n;
                                scoreMax=score;
                          }
                    }
             }
             System.out.println("We cannot found the seat according your
requirement"
                          + " but we found a seat that best matching your
request.");
             seatInfo(bestMatch);
             System.out.println("Would you like to reserve this seat? [Y/N]");
             if (getTrueFalse ("==>","Y","N")) {
                    System.out.println("Please enter your e-mail: ");
                    String eMail=input.nextLine();
                    bestMatch.setEmail(eMail);
                    saveSeat();
                    System.out.println("The reservation is complete.");
                    return;
             }else {
                    System.out.println("The reservation is incomplete.");
             return;
             }
      }
      private static int match(SeatProgram lhs,String clazz,boolean
window,boolean aisle,boolean table) {
             /*This implement a scoring system with following weightage:
              * seatClass=3
              * window=1
              * aisle=1
              * table=1
              **/
             int r=lhs.getSeatClass().equalsIgnoreCase(clazz)?3:0;
             r+=lhs.isHasWindow()==window?1:0;
             r+=lhs.isHasAisle()==aisle?1:0;
             r+=lhs.isHasTable()==table?1:0;
             return r;
      }
      private static boolean getTrueFalse(String Prompt, String True, String
False) {
             while(true) {
                    System.out.print(Prompt);
                    String k=input.nextLine();
```

```
                    if(k.equalsIgnoreCase(True))return true;
                    else if (k.equalsIgnoreCase(False))return false;
                    else System.out.println("Please try again!");
              }
        }

        private static void cancelSeat() throws Throwable{
              System.out.println("Are you sure want to  cancel this seat? [Y/N]");
              String response=input.nextLine();
              if ((response.equals("Y"))||(response.equals("y"))) {
                    System.out.println("Please enter your seat number: ");
                    String seatNum=input.nextLine();
                    for(SeatProgram s:seats) {
                          if(s.getSeatNum().equalsIgnoreCase(seatNum)) {
                                System.out.println("Please enter email for
confirmation: ");
                                String email=input.nextLine();
                                if(email.equalsIgnoreCase(s.getEmail())) {
                                      s.setEmail("free");
                                      saveSeat();
                                      System.out.println("Reservation has been
successfully cancelled.");
                                }
                                else {
                                      System.out.println("The email that you
typed are not registered. Please try again.");
                                }
                          }
                    }
              }
        }

        private static void viewSeat() {
              System.out.println("\n----------Viewing Seats----------\n");
              for(SeatProgram line: seats) {
                    seatInfo(line);
              }
              System.out.print("");
              System.out.println("-----------------------------------\n");
        }

        //to be print seatInfo three columns in each row

        private static void seatInfo(SeatProgram str) {
              System.out.println("     --Seat Information--    \n");
              System.out.printf("Seat Number : %s%n", str.getSeatNum());
              System.out.printf("Seat Class : %s%n", str.getSeatClass());
              System.out.printf("Window available? %s%n",
str.isHasWindow()?"Yes":"No");
              System.out.printf("Table available? %s%n",
str.isHasTable()?"Yes":"No");
              System.out.printf("Aisle available? %s%n",
str.isHasAisle()?"Yes":"No");
              System.out.printf("Is the seat available? %s%n",
str.getEmail().equalsIgnoreCase("free")?"Yes":"No");
              System.out.printf("Price : %.2f%n%n", str.getSeatPrice());
        }
```

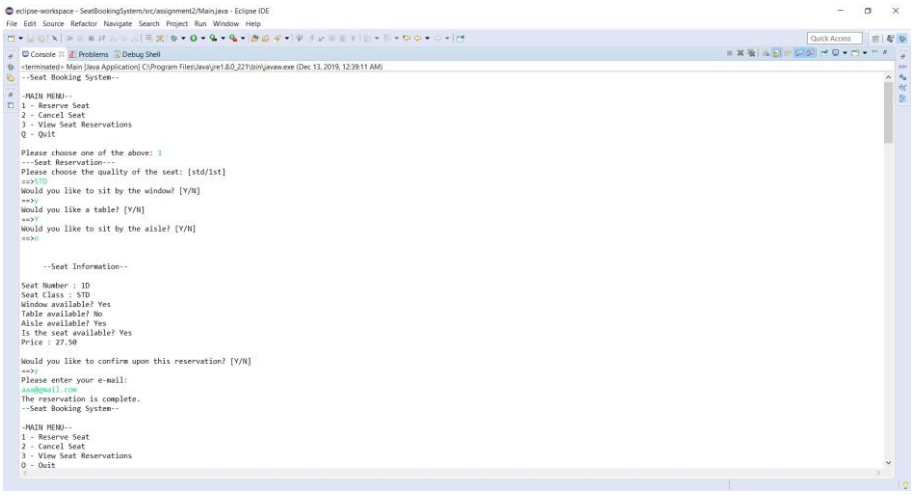
```
}
```

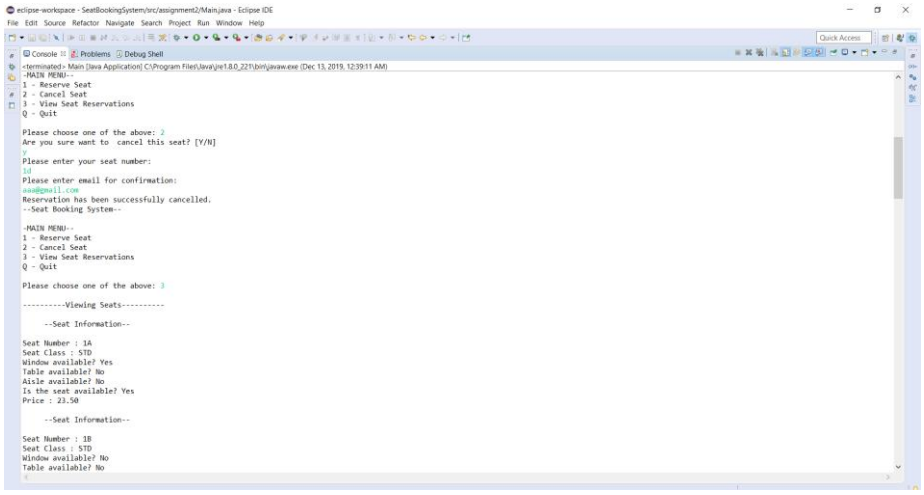
2.2 SeatProgram.java:

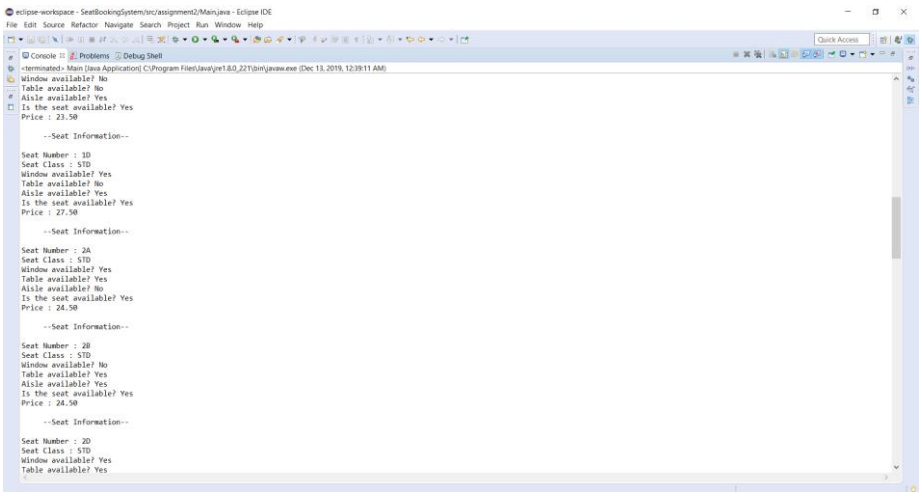
```
package assignment2;

public class SeatProgram {

	private String seatNum;
	private String seatClass;
	private boolean hasWindow;
	private boolean hasAisle;
	private boolean hasTable;
	private double seatPrice;
	private String email;

	public SeatProgram(String seatNum, String seatClass, boolean hasWindow,
boolean hasAisle,
			boolean hasTable, double seatPrice, String email) {
		// TODO Auto-generated constructor stub
		this.seatNum = seatNum;
		this.seatClass = seatClass;
		this.hasWindow = hasWindow;
		this.hasAisle = hasAisle;
		this.hasTable = hasTable;
		this.seatPrice = seatPrice;
		this.email = email;
	}

	public String getEmail() {
		return email;
	}

	public void setEmail(String email) {
		this.email = email;
	}

	public String getSeatNum() {
		return seatNum;
	}

	public String getSeatClass() {
		return seatClass;
	}

	public boolean isHasWindow() {
		return hasWindow;
	}

	public boolean isHasAisle() {
		return hasAisle;
	}

	public boolean isHasTable() {
```

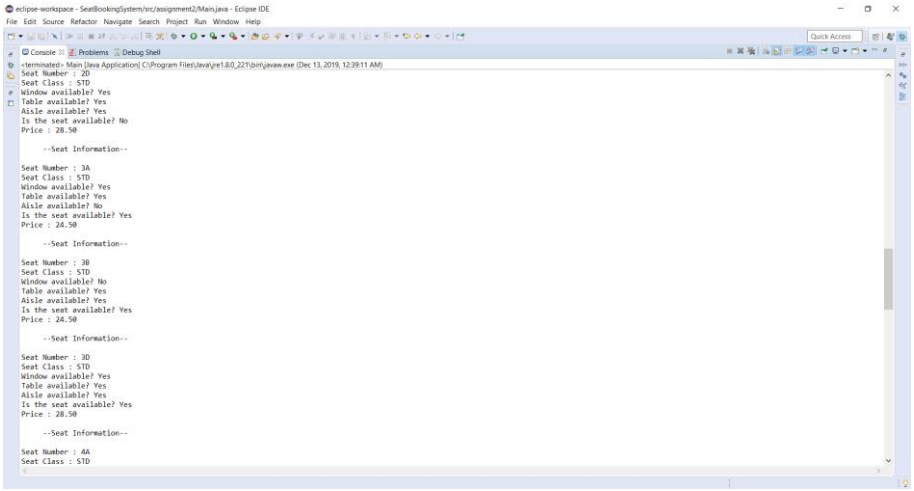
```
		return hasTable;
	}

	public double getSeatPrice() {
		return seatPrice;
	}

	public String toString() {
		return String.format("%s %s %s %s %s %.2f %s", seatNum, seatClass,
hasWindow,hasAisle, hasTable, seatPrice, email);
	}
}
```

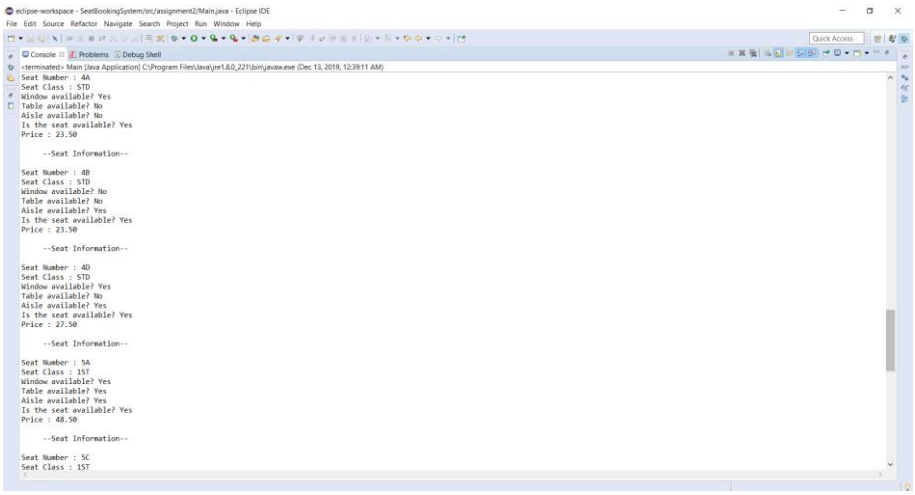
3 Output:

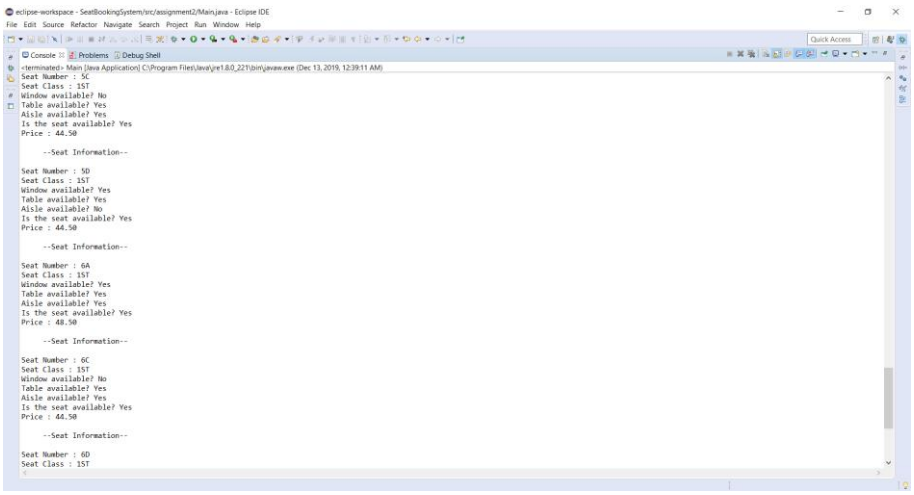





eclipse-workspace - SeatBookingSystem/src/assignment2/Main.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Console Problems Debug Shell
<terminated> Main [Java Application] C:\Program Files\Java\jre1.8.0_221\bin\javaw.exe (Dec 13, 2019, 12:39:11 AM)
Window available? No
Table available? No
Aisle available? Yes
Is the seat available? Yes
Price : 23.50
--Seat Information--
Seat Number : 1D
Seat Class : STD
Window available? Yes
Table available? No
Aisle available? Yes
Is the seat available? Yes
Price : 27.50
--Seat Information--
Seat Number : 2A
Seat Class : STD
Window available? Yes
Table available? Yes
Aisle available? No
Is the seat available? Yes
Price : 24.50
--Seat Information--
Seat Number : 2B
Seat Class : STD
Window available? No
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 24.50
--Seat Information--
Seat Number : 2D
Seat Class : STD
Window available? Yes
Table available? Yes


eclipse-workspace - SeatBookingSystem/src/assignment2/Main.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Console Problems Debug Shell
<terminated> Main [Java Application] C:\Program Files\Java\jre1.8.0_221\bin\javaw.exe (Dec 13, 2019, 12:39:11 AM)
Seat Number : 2D
Seat Class : STD
Window available? Yes
Table available? Yes
Aisle available? Yes
Is the seat available? No
Price : 28.50
--Seat Information--
Seat Number : 3A
Seat Class : STD
Window available? Yes
Table available? Yes
Aisle available? No
Is the seat available? Yes
Price : 24.50
--Seat Information--
Seat Number : 3B
Seat Class : STD
Window available? No
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 24.50
--Seat Information--
Seat Number : 3D
Seat Class : STD
Window available? Yes
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 28.50
--Seat Information--
Seat Number : 4A
Seat Class : STD


eclipse-workspace - SeatBookingSystem/src/assignment2/Main.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Console Problems Debug Shell
<terminated> Main [Java Application] C:\Program Files\Java\jre1.8.0_221\bin\javaw.exe (Dec 13, 2019, 12:39:11 AM)
Seat Number : 4A
Seat Class : STD
Window available? Yes
Table available? No
Aisle available? No
Is the seat available? Yes
Price : 23.50
--Seat Information--
Seat Number : 4B
Seat Class : STD
Window available? No
Table available? No
Aisle available? Yes
Is the seat available? Yes
Price : 23.50
--Seat Information--
Seat Number : 4D
Seat Class : STD
Window available? Yes
Table available? No
Aisle available? Yes
Is the seat available? Yes
Price : 27.50
--Seat Information--
Seat Number : 5A
Seat Class : 1ST
Window available? Yes
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 48.50
--Seat Information--
Seat Number : 5C
Seat Class : 1ST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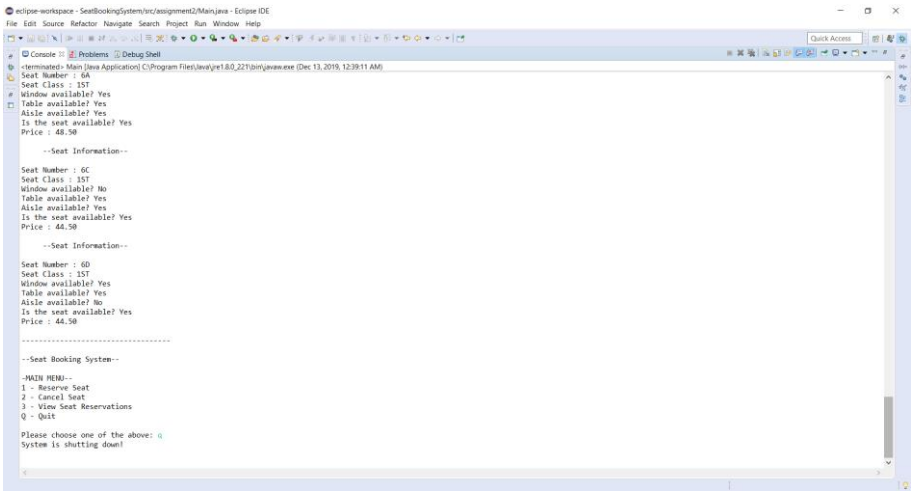
Console Problems Debug Shell
<terminated> Main [Java Application] C:\Program Files\Java\jre1.8.0_221\bin\javaw.exe (Dec 13, 2019, 12:39:11 AM)
Seat Number : 5C
Seat Class : 1ST
Window available? No
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 44.50
--Seat Information--
Seat Number : 5D
Seat Class : 1ST
Window available? Yes
Table available? Yes
Aisle available? No
Is the seat available? Yes
Price : 44.50
--Seat Information--
Seat Number : 6A
Seat Class : 1ST
Window available? Yes
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 48.50
--Seat Information--
Seat Number : 6C
Seat Class : 1ST
Window available? No
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 44.50
--Seat Information--
Seat Number : 6D
Seat Class : 1ST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Console Problems Debug Shell
<terminated> Main [Java Application] C:\Program Files\Java\jre1.8.0_221\bin\javaw.exe (Dec 13, 2019, 12:39:11 AM)
Seat Number : 6A
Seat Class : 1ST
Window available? Yes
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 48.50
--Seat Information--
Seat Number : 6C
Seat Class : 1ST
Window available? No
Table available? Yes
Aisle available? Yes
Is the seat available? Yes
Price : 44.50
--Seat Information--
Seat Number : 6D
Seat Class : 1ST
Window available? Yes
Table available? Yes
Aisle available? No
Is the seat available? Yes
Price : 44.50

--Seat Booking System--
-MAIN MENU--
1 - Reserve Seat
2 - Cancel Seat
3 - View Seat Reservations
Q - Quit
Please choose one of the above: q
System is shutting down!