CMPE160 PROJECT#1

Deadline: March 19^{th}, 2004, 17:00

1 Project Description

In the first project, you will implement an airline reservation system. There are several types of planes so you must use a structure for holding the plane type and the information related to that type such as the number of rows for Economic Class and First Class. For simplicity, assume that the seat plan for every type of plane is the same, only the number of rows change, that is:

Seat plan for First Class: Two blocks, two seats in each block

Example: suppose 3 rows in this type of plane

A1	A2	-	A3	A4
B1	B2	-	B3	B4
C1	C2	-	C3	C4

Seat plan for Economic Class: Two blocks, three seats in each block

Example: suppose 5 rows in this type of plane

D1	D2	D3	-	D4	D5	D6
E1	E2	E3	-	E4	E5	E6
F1	F2	F3	-	F4	F5	F6
G1	G2	G3	-	G4	G5	G6
H1	H2	H3	-	H4	H5	H6

```
struct planeType{
  char typeID[20];
  int numRowsInEco;
  int numRowsInFirst;
}
```

The flight information is the date of the flight, the type of the plane that is used in the flight, and the seat plan. Again for simplicity, there is no date, and no route. All flights are from one place to another (i.e.

from Istanbul to Ankara) and the reservation system only works for the next day. So, the only difference between flights is the hour of that flight. You can store the hour as an integer like: 18:00 is 1800, 01:30 is 130, 00:15 is 15. You must check the hour of a flight to be a valid (between 00:00 and 23:59) hour when it is first entered.

```
struct flight{
  int flightID;
  char typeID[20];
  int hour;
  int *ecoSeatPlan[6];
  int *firstSeatPlan[4];
}
```

When making a reservation, first ask the passenger to select a flight and then ask how many tickets does s/he wants. If there is no seats in any of the classes (Economic Class and First Class), inform the passenger and stop the reservation. If there is enough seat in both classes ask the passenger to select a class. If there is enough seat only in one of the classes, then inform the user and ask if s/he wants a seat in that class. After deciding on the class, display the seat plan of appropriate class and ask the passenger to select seats (Only empty seats can be selected). When you complete a reservation, update the seat plan of the appropriate flight (1's indicate the full seats and 0's indicate the empty seats. Initially all seats are empty) and display the flight information.

The program should be able to execute the following commands:

Command	**Name**	**Explanation**
H	(help)	Provide a summary of the available commands.
IP <type ID>	(insert plane)	Read the specifications of the plane and insert it into the database.
DP	(display planes)	Display all the planes in the database with their specifications (sorted by *typeID*).
IF <flight ID>	(insert flight)	Read the specifications of the flight and insert it into the database.
DF	(display flights)	Display all the flights in the database with their specifications (sorted by *hour*).
R <flight ID>	(make reservation)	Make a reservation for the flight with ID <flight ID>: Display the seat plan and read the preferred seats.
Q	(quit)	Quit the program.

2 Sample Run

>> H

H (help)

IP <type ID> (insert plane)

DP (display planes)

IF <flight ID> (insert flight)

DF (display flights)

R <flight ID> (make reservation)

Q (quit)

>> IP Boeing747

Enter the number of rows in First Class: 5

Enter the number of rows in Economic Class: 15

New plane type is recorded...

>> DP

There are 1 type of planes:

Type ID: Boeing747, # of Rows In First Class: 5, # of Rows In Economic Class: 15

>> IF 111

Enter the ID of the type of the plane: AirBus310

This plane type does not exists!

>> IF 111

Enter the ID of the type of the plane: Boeing747

Enter the hour of the flight: 18:00

New flight is recorded...

>> IP AirBus310

Enter the number of rows in First Class: 3

Enter the number of rows in Economic Class: 5

New plane type is recorded...

>> DP

There are 2 types of planes:

Type ID: AirBus310, # of Rows In First Class: 3, # of Rows In Economic Class: 5

Type ID: Boeing747, # of Rows In First Class: 5, # of Rows In Economic Class: 15

>> IF 120

Enter the ID of the type of the plane: Boeing747

Enter the hour of the flight: 08:30

New flight is recorded...

>> IF 111

This ID is used in another flight!

>> DF

There are 2 scheduled flights

Flight ID: 120 Type ID: Boeing747 Time: 08:30

Flight ID: 111 Type ID: Boeing747 Time: 18:00

>> IF 222

Enter the ID of the type of the plane: AirBus310

Enter the hour of the flight: 22:15

New flight is recorded...

>> DF

There are 3 scheduled flights

Flight ID: 120 Type ID: Boeing747 Time: 08:30

Flight ID: 111 Type ID: Boeing747 Time: 18:00

Flight ID: 222 Type ID: AirBus310 Time: 22:15

...

...

>> R 120

How many tickets do you want: 3

Not enough seats in Economic Class and First Class!

>> R 222

How many tickets do you want: 3

Not enough seats in Economic Class!

Do you want a seat from First Class? (Y/N) Y

Please select your seats by giving the seat letter and seat number

A * show that the seat is full:

A1*	A2	-	A3*	A4*
B1	B2	-	B3	B4
C1*	C2*	-	C3*	C4*

Seat 1>> A1

A1 is full, please select another seat!

Seat 1>> A2

Seat 2>> B1

Seat 3>> B2

Your reservation is completed.

Flight information:

Flight ID: 222 Plane type: AirBus310 Time: 22:15 Seats: A2, B1, B2

>> R 222

How many tickets do you want: 2

Select your class:

1) Economic Class

2) First Class

Choice>>2

Please select your seats by giving the seat letter and seat number

A * show that the seat is full:

A1*	A2*	-	A3*	A4*
B1*	B2*	-	B3	B4
C1*	C2*	-	C3*	C4*

Seat 1>> B3

Seat 2>> B4

Your reservation is completed.

Flight information:

Flight ID: 222 Plane type: AirBus310 Time: 22:15 Seats: B3, B4

>> Q

Bye...

3 Material to Submit

You will prepare the SDD of your project and submit until March 12^{nd}, 2004, 17:00. You will submit the printout of the source listing of your program and a diskette containing the source code and the executable (.c and .exe). The last thing to submit is to mail your source code file (.c) to dikmen@cmpe.boun.edu.tr with the name yournumber.c (e.g. 97022425.c or 01002425.c). The subject of the e-mail should be "cmpe160 project1". Deadline is March 19^{th}, 2004, 17:00.