

## **Programming Assignment - 2**

**Due Date : Monday February 15<sup>th</sup> – 2021**

**Section 252 : 3:45 pm and Section 253 @ 2:15 pm**

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Using a 2D Vector Array , Write a C++ program that can be used to assign seats for a commercial airplane. The airplane has 13 rows, with six seats in each row.

- Rows 1 and 2 are first class.
- Rows 3 through 7 are business class.
- Rows 8 through 13 are economy class.

Your program must prompt the user to enter the following information:

1. Ticket type (first class ( first), business class ( Business ), or economy class ( economy )
2. Desired seat ( Row Number , Sea )

Output the seating plan in the following form:

	A	B	C	D	E	F
Row 1	*	*	X	*	X	X
Row 2	*	X	*	X	*	X
Row 3	*	*	X	X	*	X
Row 4	X	*	X	*	X	X
Row 5	*	X	*	X	*	*
Row 6	*	X	*	*	*	X
Row 7	X	*	*	*	X	X
Row 8	*	X	*	X	X	*
Row 9	X	*	X	X	*	X
Row 10	*	X	*	X	X	X
Row 11	*	*	X	*	X	*
Row 12	*	*	X	X	*	X
Row 13	*	*	*	*	X	*

Here, \* indicates that the seat is available; X indicates that the seat is occupied. Make this a menu-driven program; show the user's choices and allow the user to make the appropriate choices.

## Style Guidelines :

At the beginning of your program ( and **before** the #include statement ), include the following :

**Header comments** (file documentation block) should be at the top of each file and should contain: Author / s, Serial number , group number , Due Date, Assignment Number, Course number and section, Instructor, and a brief description of the purpose of the code in the file. For example :

```
//      Author : Your name
//
//      Due Date :
//      Programming Assignment Number 2
//      Spring  2021  - CS 3358  - Your Section Number
//
//      Instructor:  Husain Gholoom.
//
//      <Brief description of the  purpose of the program>
```

### **Variable names :**

- Must be meaningful.
- The initial letter should be lowercase, following words should be capitalized, no other caps or punctuation ( i.e. `weightInPounds` ).
- Each variable must be declared on a separate line with a descriptive comment.

### **Named constants :**

- Use for most numeric literals.
- All capitals with underscores ( i.e. `TX_STATE_SALES_TAX` )
- Should occur at top of function, or global (only if necessary)

**Line length** of source code should be no longer than 80 characters (no wrapping of lines).

**Indentation :**

- Use 2-4 spaces (but be consistent throughout your program).
- Indent blocks, within blocks, etc.
- Use blank lines to separate sections.

**Comments for variables :**

All variable definitions should be commented as follows:

```
int  gender;    // integer value for the gender,  
                // 1 = Male , 2 = Female ,
```

**Rules :**

1. Your program **must compile** and run. The program will be tested using Codeblocks for windows version 20.03.
2. Your program must be properly **documented according the style above** . **See the website for the sample programming style program.**
3. **You re not allowed to use arrays, global vector arrays or variables. You are only allowed to use 2 dimensional vector arrays.**
4. You must use the appropriate libraries in writing this program.
5. Must properly format the output by use the appropriate library. See the output below . Also , **Replace my first / last name with your own first / last name.**
6. You must name your program as :
  - 3358\_252\_LastName\_FirstName\_PG2.cpp or
  - 3358\_253\_LastName\_FirstName\_PG2.cpp

Where LastName is your Last Name and FirstName is your First Name. For example , the file name should look something like :

3358\_252\_Gholoom\_Husain\_PG2.cpp ( **not .cbp** )

7. You must upload your programs no later than 1 hour after the starting of class time on the due date. **No late assignments will be accepted. No Exceptions.**
8. **Use Canvas To upload your program** . Every group member must upload the program

## The following points will be deducted if :

- Compilation Errors, Incorrect file format such as uploading .cbp instead of .cpp , missing electronic copy , using global arrays using global arrays, ( - 10 points ) .
- Compilation Errors , using global arrays using global arrays, ( - 8 points ) .

**We will be using Code::Blocks Version 20.03 under windows when testing your program**

- Logical Errors ( at least 1 points ).
- Other ( at least 0.75 points each ) if any of the following takes a place :
  - **Missing function prototypes & definitions, .. etc**
  - Incorrect Output format.
  - Incorrect program file name.
  - Incorrect Style **such as but not limited to** Missing Header comments, missing footer comments, missing program documentations , missing section number , not replacing my first and last name with your first and last and names .... etc.

## Sample Run - 1

Welcome to My Airline APP.

The purpose of this app is to assign seats for your reservation.  
This airplane has 13 rows, with six seats in each row.

- Rows 1 and 2 are first class.
- Rows 3 through 7 are business class.
- Rows 8 through 13 are economy class.

Enter Your Ticket Type

1. Enter D for Displaying the Seating Chart
2. Enter F for First class
3. Enter B for Business Class
4. Enter E for Economy class
5. Enter X To Exit the App.     a

Invalid Choice

Enter Your Ticket Type

1. Enter D for Displaying the Seating Chart
2. Enter F for First class
3. Enter B for Business Class
4. Enter E for Economy class
5. Enter X To Exit the App.     F

Enter Row ( 1 – 2 ) and seat ( A – F )

Enter Row      1

Enter Seat      A

Seat : Row 1 Seat A is assigned

Would you like to Assign another seat ? ( Y / N ) --- N

Thanks for using this APP.

Husain Gholoom

2 – 15 - 2021

## Sample Run - 2

Welcome to My Airline APP.

The purpose of this app is to assign seats for your reservation.  
This airplane has 13 rows, with six seats in each row.

- Rows 1 and 2 are first class.
- Rows 3 through 7 are business class.
- Rows 8 through 13 are economy class.

Enter Your Ticket Type

1. Enter D for Displaying the Seating Chart
2. Enter F for First class
3. Enter B for Business Class
4. Enter E for Economy class
5. Enter X To Exit the App.     D



	A	B	C	D	E	F
Row 1	*	*	X	*	X	X
Row 2	*	X	*	X	*	X
Row 3	*	*	X	X	*	X
Row 4	X	*	X	*	X	X
Row 5	*	X	*	X	*	*
Row 6	*	X	*	*	*	X
Row 7	X	*	*	*	X	X
Row 8	*	X	*	X	X	*
Row 9	X	*	X	X	*	X
Row 10	*	X	*	X	X	X
Row 11	*	*	X	*	X	*
Row 12	*	*	X	X	*	X
Row 13	*	*	*	*	X	*

Enter Your Ticket Type

1. Enter D for Displaying the Seating Chart
2. Enter F for First class
3. Enter B for Business Class
4. Enter E for Economy class
5. Enter X To Exit the App.      F

Enter Row ( 1 – 2 ) and seat ( A – F )

Enter Row      1

Enter Seat      A

Seat : Row 1 Seat A is assigned

Would you like to Assign another seat ? ( Y / N ) --- Y

Enter Your Ticket Type

1. Enter D for Displaying the Seating Chart
2. Enter F for First class
3. Enter B for Business Class
4. Enter E for Economy class
5. Enter X To Exit the App. **D**

	A	B	C	D	E	F
Row 1	X	*	X	*	X	X
Row 2	*	X	*	X	*	X
Row 3	*	*	X	X	*	X
Row 4	X	*	X	*	X	X
Row 5	*	X	*	X	*	*
Row 6	*	X	*	*	*	X
Row 7	X	*	*	*	X	X
Row 8	*	X	*	X	X	*
Row 9	X	*	X	X	*	X
Row 10	*	X	*	X	X	X
Row 11	*	*	X	*	X	*
Row 12	*	*	X	X	*	X
Row 13	*	*	*	*	X	*

Would you like to Assign another seat ? ( Y / N ) --- N

Thanks for using this APP.

Husain Gholoom

2 – 15 - 2021

## Sample Run - 3

Welcome to My Airline APP.

The purpose of this app is to assign seats for your reservation.  
This airplane has 13 rows, with six seats in each row.

- Rows 1 and 2 are first class.
- Rows 3 through 7 are business class.
- Rows 8 through 13 are economy class.

Enter Your Ticket Type

1. Enter D for Displaying the Seating Chart
2. Enter F for First class
3. Enter B for Business Class
4. Enter E for Economy class
5. Enter X To Exit the App.     **F**

Enter Your Ticket Type

Enter Row ( 1 – 2 ) and seat ( A – F )

Enter Row     5

Enter Seat     A

Invalid Row Number

Would you like to Assign another seat ? ( Y / N )    --- N

Thanks for using this APP.

Husain Gholoom

2 – 15 - 2021

## Sample Run - 4

Welcome to My Airline APP.

The purpose of this app is to assign seats for your reservation.  
This airplane has 13 rows, with six seats in each row.

- Rows 1 and 2 are first class.
- Rows 3 through 7 are business class.
- Rows 8 through 13 are economy class.

Enter Your Ticket Type

1. Enter D for Displaying the Seating Chart
2. Enter F for First class
3. Enter B for Business Class
4. Enter E for Economy class
5. Enter X To Exit the App.     F

Enter Your Ticket Type

Enter Row ( 1 – 2 ) and seat ( A – F )

Enter Row     1

Enter Seat     X

Invalid Seat.

Would you like to Assign another seat ? ( Y / N ) --- N

Thanks for using this APP.

Husain Gholoom

2 – 15 - 2021