Team Project, Part 1

1. Team Project – Design -- 20 pts.

Please check the "Team Project Part 1" assignment on Canvas to learn more about the Team Project.

TOTAL: 20 pts.

Team Project: Design for the "Theater Seating" Problem

Design plays a very important role in the team development of the project.

On this first stage of development, your goal is to write a detailed design for the "Theater Seating" project. Some part of the design is already laid out for you in the problem description, but a lot of details are not mentioned.
Your design must include a detailed resolution of such issues as

- user interface,
- information storage in the file (data format etc.) and
- all other issues that you think are important in the development process.

You should also describe

- the general modules that this project should consist of (consider that your team will consist of 3 people)
- Module headers/prototypes
- Module interaction in pseudo code

Please do not implement the project yet, just think it through.

Theater Seating Problem

Write a program that can be used by a small theater to sell tickets for performances. The theater's auditorium has 15 rows of seats, with 30 seats in each row. The program should display a screen that shows which seats are available and which are taken. For example, the following screen shows a chart depicting each seat in the theater. Seats that are taken are represented by an * symbol, and seats that are available are represented by a # symbol:

```
        123456789012345678901234567890
Row 1 ***###*#####*###*##########*##*#
Row 2 ########*********##**#***########*
Row 3 ###********##***#********######
Row 4 ***#################***########
```

Row 5 ##*******###*******#*#*#######
Row 6 ###********##***#********#####
Row 7 #######*******##**#***#######*
Row 8 ###*******##****#*******#####
Row 9 ###********##***#********#####
Row 10 ****************************
Row 11###********##***#********#####
Row 12 ***##################**########
Row 13 ###***************#****######
Row 14 ##############################
Row 15##############################

Here is the list of tasks this program must perform:

- When the program begins, it should ask the user to enter the seat prices for each row. The prices can be stored in a separate array. (Alternatively, the prices may be read from a file.)

- Once the prices are entered, the program should display a seating chart similar to the one shown above. The seating chart information may be read from the file. If the file with the seating info does not exist yet, it means that all the seats are empty. Whenever the program ends, the seating chart information should be stored in the file. The user may enter the row and seat number for tickets being sold. Every time a ticket or group of tickets is purchased, the program should display the total ticket prices and update the seating chart.

- The program should keep a total of all ticket sales. The user should be given an option of viewing this amount.

- The program should also give the user an option to see a list of how many seats have been sold, how many seats are available in each row, and how many seats are available in entire auditorium.

Input Validation: When tickets are being sold, do not accept row or seat numbers that do not exist. When someone requests a particular seat, the program should make sure that seat available before it is sold.