Final Project:

Table Reservations for Hungry Diners

Project Overview:

A popular restaurant is needing to improve how they handle table reservations because they have frequently had angry diners in the recent past due to flaws in the methodology they have been using up to now. They have decided to hire you to create a table reservation system because of your expertise in writing computer programs. Even though your time is quite limited, you have decided to take on this job because they have promised you a handsome compensation. They have collected some information on scenarios they have observed recently, particularly at the time the restaurant opens for the day, and they will be using this data as input to the program you develop to see how they can improve their service.

The input to your program will be a file in CSV format. The first line will contain one or more numbers separated by commas representing how many people can be seated at each table, with one number for each table in their restaurant. Each of the remaining lines in the file will have the name of a party, how many people are in the party, and how many minutes the party will take in total from the time they are seated until they are done eating, with commas separating the values on each line. There won't be any blank lines in the input file.

Your program, which needs to be written in C++, will need to assign each party in turn to one or two tables, until there are no more parties left or a party is not able to be seated. Once this happens, your program will need to output the table assignments for the parties for which your program was able to find seating. Your program should not assign a table bigger than is needed for the party if a smaller table can fully accommodate them. To receive an A+ for this project, your program will also need to output how long the first party that could not be seated needs to wait for a table to become available.

Expectations:

- Your program needs to be readable – it needs to be possible for someone reading your program to follow along what your program is doing.
- You will be provided with a C++ program to use as your starting point. However, your program must be a demonstration of how to solve this problem using object-oriented programming.
- Each person in your team needs to be responsible for writing at least one class declaration and implementation. In addition, each person in your team needs to write a program that tests at least one class implementation that someone else in the team wrote.

- Each team will need to create two or three data files that demonstrate that their program works correctly. These data files need to conform to the specifications above, and they need to be of value. In other words, at a minimum, they need to be useful for determining if the program generally works correctly. Each data file needs to have associated expected output. Grading will take into account how completely the data files test program functionality.

Due Date:

- April 23 – final, production ready program and data files

Team Composition:

Each team will consist of 3 or 4 persons of your choice.

Class Presentations:

Each team will give a presentation on April 23rd or 24th on how they approached the problem and how their code works, as well as demonstrate the program. Each team member must participate in the presentation and talk about the code someone else in the team wrote, as well as how he or she tested this code. Although the presentation will need to address what was done, it should focus on how the code works and why it was done the way it was done.