CS 202 - Computer Science II

Project 2

Due date (FIXED): Wednesday, 2/8/2017, 11:59 pm

Objectives: The two main objectives of this project is to test your ability to (1) create and use structs with arrays, and (2) design, implement and test a solution to a given problem. A review of your knowledge of arrays, iostream, file I/O and C-style strings is also included.

Description:
For this project, you are to create a program that will assist users who want to rent a car. You are given a **datafile with 10 different cars**, and you must **read in all** of the **car data** from the **file** and **store** it in an **array of structs**. You must also **create a menu** with the functionality defined below. Although an example file is provided, for grading purposes your project will be tested against a different test file that will not be provided to you beforehand. Our test file will be in the same format as the example file.

The RentalCar struct will contain the following data members:

- **make**, a C-style string
- **model**, a C-style string
- **year**, an int
- **price**, a float (price per day)
- **available**, a bool (1 = true; 0 = false; try to display true/false using the "boolalpha" flag)

The menu must have the following functionality:

- **Read ALL** data from **file**.
- **Print out ALL** data for all of the cars.
- **Estimate** car **rental cost** - **prompt** the user for a **car number** (first car in file should be represented to the user as #1), and **the number of days** to rent the car.
- **Find** the **most expensive** car.
- **Print out** ONLY the **available** cars.
- **Exit** program.

The following minimum functionality and structure is required:

- Ask the **user** for the **input file** name.
- The list of cars must be stored in an **array of structs**.
- Use **character arrays** (i.e., C-style) to hold your strings. No string data type!
- Write **multiple functions** (Hint: each menu option should be a function).
- You can use **pass by reference** in your function.
- Write your **own string copy**, **string compare** (or other) functions as needed.
- The other functionality and structure of the program should remain the **same as Project #1**, including **writing to screen** and **file** and **restrictions on string** libraries, **global variables** and **constants**, etc.

Sample Output for menu option 2:

2014 Toyota Tacoma $115.12 per day Available: true

2012 Honda CRV $85.1 per day Available: false

2015 Ford Fusion $90.89 per day Available: false

2013 GMC Yukon $110.43 per day Available: false

2009 Dodge Neon $45.25 per day Available: true

2011 Toyota Rav4 $65.02 per day Available: true

2012 Mazda CX5 $86.75 per day Available: true

2016 Subaru Outback $71.27 per day Available: false

2015 Ford F150 $112.83 per day Available: true

2010 Toyota Corolla $50.36 per day Available: true

The completed project should have the following properties:

- Written, compiled and tested using Linux.
- It must compile successfully using the g++ compiler on department machines.
  Instructions how to remotely connect to department machines are included in the Projects folder in WebCampus.
- The code must be commented and indented properly.
  Header comments are required on all files and recommended for the rest of the program.
  Descriptions of functions commented properly.
- A one page (minimum) typed sheet documenting your code. This should include the overall purpose of the program, your design, problems (if any), and any changes you would make given more time.

Turn in: Compressed .cpp file and project documentation.

Submission Instructions:

- You will submit your work via WebCampus
- Name your code file proj2.cpp
- If you have header file, name it proj2.h
- Compress your:
  1. Source code
  2. Documentation

  Do not include executable
- Name the compressed folder:
  PA#_Lastname_Firstname.zip
  Ex: PA2_Smith_John.zip

Late Submission:

A project submission is "late" if any of the submitted files are time-stamped after the due date and time. Projects will be accepted up to 24 hours late, with 20% penalty.