

Homework 6

Assigned: Friday, Jul 11, 2008

Due: 10:59PM, Monday, Jul 14, 2008

Points: 100 + 30 extract points (7% of the grade)

[Instruction]

- To add the Header with pledge, follow the instructions in the web page:
<http://www.cs.unc.edu/~zlj/comp110/assignments.html>
- For this program assignment, you need first to design an algorithm by drawing a flow chart. You can use PowerPoint or Word to draw the flow chart. Then you implement your algorithm using Java
- You need to turn in **both** the flow chart of your algorithm (preferring a Power Point file) and your program (Java file) using Blackboard by 10:59PM, Jul 14, 2008.
- You also need to demonstrate the program to the instructor. There are two timing slots for demonstration:
 - Jul 15, office hours (1PM-3PM)
 - Jul 15, after the class (11:15AM-11:40AM)

[Grading of the Programming Assignments]

- Compile? (20%)
- Runs as expected? (70%) (correct input/output)
- Readability (comments in your programs) (10%)
- Extra points (30%)

MPG Report. A motor company is looking for someone to write a program that can analyze the fuel usage and MPG (mile per gallon) of a customer's vehicle. The customer has a list of records for all gas pumps in the order of purpose. The records are stored in a file "*FuelUsage.txt*" in the following form.

```
Ford Taurus 22012.0
11.918 32.17 22218.0
12.769 35.23 22445.0
11.695 35.66 22606.0
11.336 34.00 22814.0
13.143 40.73 23172.0
12.669 37.61 23384.0
11.08 36.55 23583.0
12.508 42.51 23800.0
11.721 43.94 24010.0
7.437 28.77 24203.0
12.586 50.33 24485.0
8.768 34.98 24696.0
```

The first line of data shows the make and the model of the vehicle, followed by the initial mileage of the vehicle. Initially, the vehicle has a **full** tank of gasoline. Then each line of the data shows the record for each pump. The record includes three entries: the gallon of the gasoline pumped to fill up the **whole** tank, the amount of the money paid and the latest mileage of the vehicle read at the moment of this pump.

Your program needs to read the file "*FuelUsage.txt*" which is attached. Then the program needs to provide the customer a "MPG report" with the following information: the total gasoline expense, the MPG of the vehicle between two purchases as well as the average and maximum MPG. The output of your program needs to send to a file, e.g. *MPG.txt*. You need to make sure your MPG report is readable to the customer.

[Extra credits 30] In your MPG report, you can include any additional statistics information (e.g. the price of the gasoline), which can also be useful for the customer.