CS 435/535 Assignment #7 – Spring 2020

Project Overview: In this project, you will use **Scheme** to complete the same payroll project done previously. Again, there are three kinds of employees: `SalariedEmployee`, `HourlyEmployee`, and `CommissionEmployee`. The employees are saved in a file as shown below. Each employee occupies one line and two attributes are separated by one or more spaces. The number of employees in the file is unknown in advance. You can download from Blackboard a sample employees file named `employee.dat`, containing the following employees.

```
salaried Jeremy Greer 1800
hourly Maria Garcia 25 8.50
commission Floyd Jenkins 300 3000 .08
hourly Carlton West 45 12.50
commission Rose Harvey 300 15000 .15
hourly Viola Jennings 65 17.50
salaried Robert Johnson 2700
```

For this project, you need to create a file named `payroll.scm` to define a function named `compute` that will take two or four arguments, as illustrated below. You can define helper functions in the file.

```
(compute "employees.dat" "print")
(compute "employees.dat" "print" "ge" 2000)
```

If the user furnishes the incorrect number of arguments, the function shall print an error message and it is done. Your function shall read the employees from the file, and perform the operation as requested. You can assume the arguments furnished will be valid if the number is correct. You can also assume the employee file can be opened for reading and contains valid data. For more details, please see the sample execution at the end. Please note the numeric values are not necessary rounded to two decimal places.

What You Need To Do

- Create a directory named **`project7`** for this assignment. Download **`employees.dat`** from Blackboard to the **`project7`** directory, if needed.
- Create a Scheme file named `payroll.scm` to define a function named `compute` to read the employees file and to perform the requested action.
- When you are ready to submit your project, compress your **`project7`** directory into a single (compressed) zip file, **`project7.zip`**.
- Once you have a compressed zip file named **`project7.zip`**, submit that zip file to Blackboard.
- Your submission will be graded on `cs-parallel.ua.edu`. Make sure to test it on that machine before submission.

Assignment #7 is due at 11:59pm on Monday, April 13. Late projects are not accepted.

**An assignment shall be completed individually, with no sharing of code or solutions.
All submissions will go through MOSS (Measure Of Software Similarity) for similarity check.
The University of Alabama's Code of Academic Conduct will be rigorously enforced.**

A sample execution of the program

Assume a file named `test.scm` is created that contains the following function calls.

```
(load "payroll.scm")
(compute "employees.dat")
(compute "employees.dat" "count")
(compute "employees.dat" "total")
(compute "employees.dat" "avg")
(compute "employees.dat" "min")
(compute "employees.dat" "max")
(compute "employees.dat" "max" "lt" 1800)
(compute "employees.dat" "print" "ge" 2000)
```

The following are output after executing **`scheme --quiet < test.scm`**

```
;Loading "payroll.scm"... done

Usage: (compute employee_file action)
or
Usage: (compute employee_file action operator threshold)

Valid actions: count print min max total avg
Valid operators: eq ne gt ge lt le

There are 7 employees

Total payment is $9343.75

Average payment per employee is $1334.82

Hourly employee: Maria Garcia
hours worked: 25.00, hourly rate: 8.50
earned $212.50

Salaried employee: Robert Johnson
weekly salary: 2700.00
earned $2700.00

Hourly employee: Viola Jennings
hours worked: 65.00, hourly rate: 17.50
earned $1487.50

Commission employee: Rose Harvey
minimum salary: 300.00, sales amount: 15000.00, commission rate: 15.00%
earned $2250.00

Salaried employee: Robert Johnson
weekly salary: 2700.00
earned $2700.00
```