ELEN2004: Software Development I

Laboratory Assignment No 3

Due Date: Friday March 13th, 2015, By 18:59Hrs

Outcome

After the assignment is completed we should improve our skills on the following:

1. How to execute and run some advanced Unix commands,
2. How to develop and write a computer program for a simple defined problem.
3. How to write a program that does file I/O.

The Work Schedule

There are three tasks to be completed in this 3hr laboratory session.

1. Task-1: Complete the Unix tutorial
2. Task-1: Writing a simple program that does some calculations.
3. Task-3: Writing a simple program to find the maximum, minimum, average, and standard deviation of the marks of a class.

Task-1

You are required to complete the task of running the Unix tutorial started in LabAssignment1. This time you want to complete the following sections:

1. Tutorial Six,
2. Tutorial Seven,
3. Tutorial Eight

Task-2

Interest on a credit card's unpaid balance is calculated using the average daily balance. Suppose that *netBalance* is the balance shown in the bill, *payment* is the payment made, *d1* is the number of days in the billing cycle, and *d2* is the number of days payment is made before billing cycle. Then, the average daily balance is:

$$averageDailyBalance \;=\; (netBalance * d1 - payment * d2)/d1$$

If the interest rate per month is, say, 0.0152, then the interest on the unpaid balance is:

$$interest \;=\; averageDailyBalance * 0.0152$$

Write a program that accepts as input *netBalance*, *payment*, $d1$, $d2$, and *interest* rate per month. The program outputs the interest. Format your output to two decimal places. Repeat runs of the program for three different sets of input of *netBalance*, *payment*, $d1$, $d2$, and *interest* rate per month.

Task-3

An input text file holds records of student's *Surname* and *Firstname* and the scores of five test marks obtained in a class. The fields are separated by blank spaces. There is a single line of a record of each student. Write a C++ program that opens the input file, reads the records of the student, one at a time, and derives the *minimum, maximum, average* and *standard deviation* of the marks of each student and writes the *Surname* and *Firstname* followed by the *minimum, maximum, average* and *standard deviation* of the marks in an output text file. On completion you use the appropriate Unix command to check the content of the output file. The input file is available on SAKAI as *"elen2004Lab3data.txt"* in the sub-directory of Laboratory Exercises.

The Deliverables

- Submit the text of the programs of Task-2 and Task-3 and the output text file of Task-3.
- You DO NOT need to add the text of any pseudo-code developed for these tasks.

Submission should be under the name of the **first student** of the pair of students that worked together.