New York University
Computer Science Department
Introduction to Software Development

Homework#1

Deadline: *Monday, 10:00am, September 21th, 2015*

Note:

Guidelines:

- Compile and run the program for the input parameters specified for each exercises.
- Please use the following naming convention "ExerciseX.java", where X is the number of the exercise. Please apply this convention to all coming homework assignments during the semester.
- Make an archive (zip folder – Compressed Folder) with all the **java files** and post it on NYU Classes **(Homework_X.zip)**
- **Please comment you code. Explain major lines in your program.**
- Please **do not send the entire project**, the Java file for each exercise is all that we need.
- Please provide the answers for exercise 10 in a word document or pdf file (e.g exercise10.pdf) and include it into Homework_X.zip

Exercise 1 (10pts):

Write a computer program that calculates the addition, subtraction, division, multiplication, and the reminder of two numbers being entered by the user.

Data Requirements

Problem input

X /* first number */

Y /*second number */

Problem output

Sum of x and y

Subtraction of x and y

Division of x and y

Multiplication of x and y

Reminder of x and y

Exercise 2 (10pts):

Write a computer program that converts Km to Miles

Problem input

/* Number of m kilometers */

Problem output

/* Number of miles */

Relevant Formula

1Km = 0.6214 miles

Exercise 3 (10pts):

Write a computer that predicts the score needed on a final exam to achieve a desired grade in a course. The program should interact with the user as follows:

Enter desired grade> B

Enter minimum average required> 79.5

Enter current average in course> 74.6

Enter how much the final count as a percentage of the course grade> 25

You need a score of 94.20 on the final to get **B**

Relevant Formula

Score needed = (minimum average required - (current average) (1- final percentage decimal)) / final percentage decimal

Exercise 4 (10pts):

Write a program that converts temperature in Fahrenheit to Celsius

Problem input
/* Number of degrees in Fahrenheit */
Problem output
/* Number of degrees in Celsius */
C = (5/9) * (F-32)

Exercise 5 (10pts):

Write a computer program that asks the user for a password and checks if the password is correct. If the password is valid, you display a message to the user saying "Valid Password". Otherwise, you display the message "Invalid Password".

Assume that the valid password is "NYU1256"

Note: Make you used Strings in Java and you will be have to find the right method to compare two Strings. You will also need to use a selection statement.

Exercise 6 (10pts):

Write a Java program that computes the maximum of two given numbers;
You need to read the numbers from the console and display the maximum to the console.

Exercise 7 (10pts):

Write a Java program that computes the arithmetic mean of your grades for first three exams.
The grading scale is 1-10. Use 2 decimals for mean value.
Input: Output:
8 8 9 8.33

Exercise 8 (10pts):

This is problem 2.15 in the text book.

Exercise 9 (10pts):

This is problem 2.7 in the text

Exercise 10 (10pts):

Define the following concepts in your own words:

1. Java Virtual Machine (1pts)
2. Compilation Process (2pts)
3. CPU is one of the main components of computer hardware, briefly define a CPU (1pts)
4. What is a variable in Java? Provide two example of two variable declaration and initialization (2pts)
5. What is a String in Java? Provide an example (1pts)
6. What is Scanner? (1pts)
7. What is a Java Library? Provide an example. (2pts)

For exercise 11 and 12, you will need to conduct your own research for the proper library that you will need to use to answer exercise 11 and 12. Please cite your sources as comments for those two exercises if you use external sources.

Exercise 11 (5pts): (BONUS) Write a Java program that gets your system IP address and display it on screen. Output (it's just an example, you may have a different output).
IP of my system is: 192.168.8.116 7.

Exercise 12 (5pts): (BONUS) Write a Java program that gets you system time and date and display them on screen. Input:
Output(it's just an example, you may have a different output):
Sun Sep 15 15:12:40 2013