Concordia University
COMP 248 – Winter 2020
Assignment 1

Due Date:	By 11:55pm Friday January 31, 2020
Evaluation:	2% of final mark (see marking rubric at the end of handout)
Format:	Individual work
Late Submission:	none accepted
Purpose:	The purpose of this assignment is to help you learn Java identifiers, assignments, input/output and if and if/else statements.
CEAB/CIPS Attributes:	Design/Problem analysis/Communication Skills

General Guidelines When Writing Programs

Include the following comments at the top of your source codes

```
// -----------------------------------------------------
// Assignment (include number)
// Written by: (include your name and student id)
// For COMP 248 Section (your section) – Winter 2020
// -----------------------------------------------------
```

- In a comment, give a general explanation of what your program does. As the programming questions get more complex, the explanations will get lengthier.
- Include comments in your program describing the main steps in your program. Focus of your comments should be on the what rather than the how.
- Display a welcome message.
- Display clear prompts for users when you are expecting the user to enter data from the keyboard.
- All output should be displayed with clear messages and in an easy to read format.
- End your program with a closing message so that the user knows that the program has terminated.

Questions

Question 1 - Manipulating integer and doubles (6 pts)
Write a program that reads the numerators and denominators of two fractions into 4 variables of type integer. You can assume that the user will enter non-zero denominators. Your program then outputs the product and the sum of the two fractions as a fraction and as a percentage.

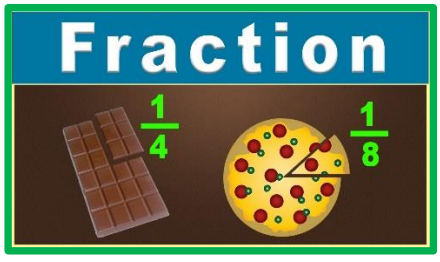

Figure 1:
https://www.youtube.com/watch?v=zQuUNE50JnM

Hint: Multiplying an integer by 1.0 converts it to a real number (a number with a decimal), or storing an integer value into a double variable convert it to a real number as well.

Following is a sample output screen. Data entered by the user is in green. Your program should work for any numbers entered, not just the ones in the sample below.

```
\-------------------------------------------------\
/                  Fraction Manipulator           /
\-------------------------------------------------\

Enter numerators and non-zero denominators
        * for the 1st fraction: 11 17
        * for the 2nd fraction: 11 4

The product of 11/17 and 11/4 is 121/68 or 1.7794117647058822

The sum of 11/17 and 11/4 is 231/68 or 3.3970588235294117

All done!!!
```

Figure 2. Sample output screen for Question 1

Note: Your program must display the same information but can be formatted differently.

Question 2 – Manipulating variables of type `String` (6 points)

Figure 3 - https://www.colourbox.com/vector/cartoon-city-background-vector-10206816

Write a program which

1. Display a welcome message.
2. Prompts the user for his/her favorite city which it then stores in a variable of type `String`.
3. Store the number of letters in the city name in a variable of type *int*.
4. Display the city name as it was entered by the user and the number of letters in it.
5. Display the city name all in upper case.
6. Display the city name with the second letter in upper-case.
7. Display the city name with the second to last letter in upper-case.
8. Display the city name with the middle letter in upper-case. *Note*: The middle letter is the letter at location `length()` of the word divided by 2.
9. Display a farewell message, so that the user knows that the program has terminated normally.

Restrictions: No looping statements allowed (or needed). This questions requires the use of the String functions `length()`, `substring()` and `toUpperCase()`.

Following is a sample output screen. Data entered by the user is in green. Youbelowr program should work for any one-word city name entered not just the one in the sample output.

```
        Nancy's City Name Manipulator
        -----------------------------

Please enter the name of your favorite city in lower case: istanbul

You entered istanbul which has 8 characters.

Here is the city name
        * With all letter in upper case: ISTANBUL
        * With the second letter in upper case: iStanbul
        * With the second to last letter in upper case: istanbUl
        * With the middle letter in upper case: istaNbul

Hope you are confortable manipulating String variables now ...
```

Figure 4. Sample output screen for Question 2

Note: Your program must display the same information but can be formatted differently.

Submitting Assignment 1

What to submit:

Zip the 2 source codes (the .java files only please, **not** the entire project) of this assignment as a .ZIP file (**NOT** .RAR) using the following naming convention:

a#_studentID, where # is the number of the assignment and *studentID* is your student ID number.

For example, for the first assignment, student 123456 would submit a zip file named a1_123456.zip

How to submit:

For sections U & W, please check your Moodle course webpage and for section EC please check your eConcordia webpage for instructions on how to submit your assignment.

Evaluation Criteria for Assignment 1 (20 points)

Source Code	
Comments for all 3 questions (5 pts.)	
Description of the program (authors, date, purpose)	2 pts.
Description of variables and constants	1 pt.
Description of the algorithm	2 pts.
Programming Style for all 3 questions (3 pts.)	
Use of significant names for identifiers	1 pt.
Indentation and readability	1 pt.
Welcome Banner or message/Closing message	1 pt.
Question 1 (6 pts.)	
Input numerator/denominators	1 pt.
Calculate product	1.5 pts.
Calculate sum	1.5 pts.
Display results in requested format	2 pts.
Question 2 (6 pts.)	
Input city name	1 pt.
Echo input with length	1 pt.
Display with all letters in upper case	1 pt.
Display with 2nd letter in upper case	1 pt.
Display with 2nd to last letter in upper case	1 pt.
Display with middle letter in upper case	1 pt.
TOTAL	**20 pts.**