Java Software Development

Homework 2

Problem Description

- Write a program that solves a quadratic equation

$$ax^2 + bx + c = 0$$

- In the program, enter three numbers from keyboard of type `double` representing ***a, b*** and ***c*** of the above quadratic equation, respectively. Afterwards, enter a string representing the number format of the result to be displayed on the screen.

- The roots of a quadratic equation can be found using the formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- You can use `java.lang.Math` APIs to perform basic numeric operations.

Problem Description

- If `a` is positive, you should print the result in descending order. Otherwise, you should print the result in ascending order.
- For example, you entered `1`, `5`, `6` and `0.0` in your program, and the output of the program should be `-2.0` and `-3.0`.
- For another example, you entered `-1`, `5`, `-6` and `00.00` in your program, and the output of the program should be `02.00` and `03.00`.
- The two roots are separated by a new line character (`'\n'`).
- You can assume that the two roots are both real numbers. That is, the value of $b^2 - 4ac$ is not negative.

Sample Input and Output

Keyboard Input	1 5 6 0.0
Output	-2.0 -3.0

Keyboard Input	-1 5 -6 00.00
Output	02.00 03.00

Keyboard Input	2.25 1.5 -2 0.000
Output	0.667 -1.333

Submission

- Please archive your source code to `STUDENT_ID.zip` (download the example zip file from Moodle) and upload to Moodle before deadline.
- Your zip file should follow the following format.
  - `STUDENT_ID.zip`

    ```
    |- src
    |- META-INF
    |    |- MANIFEST.MF
    ```

  - All the source files (*.java) are put in the src directory.
  - The entry point (i.e. main class) of the program is specified in the MANIFEST.MF file.
- No late submission is accepted.