CSET 3600 Course Project. Spring 2020

Total Points: 25

Instructor – Jared Oluoch, Ph.D.

Project Description

Build a simple "English Language" calculator that does the following:

- ✓ takes three inputs from the keyboard, two of them single digits (0 to 9)
- ✓ takes a char from the keyboard, representing one of five operations from the keyboard: +(addition), -(subtraction), *(multiplication), /(division), and ^(exponentiation)
- ✓ outputs the description of the operation in plain English, as well as the numeric result

For instance, if the two numbers are 5 and 3, and the operation is *, then the output should be ***five multiplied by three is 15***

If the two numbers are 2 and 9, and the operation is -, then the output should be

two minus nine is -7

If the two numbers are 5 and 2, and the operation is ^, then the output should be

five to the power two is 25

Hint: to perform the exponentiation, use the pow method of the Math class.

If the two numbers are 5 and 0, and the operation is /, then the output should be

Division by zero is not allowed

Here the operation will not be performed.

If the two numbers are 25 and 3, and the operation is +, then the output should be

Invalid number

because 25 has two digits.

As for the operators, they should be translated into English as follows:

+ plus

- minus

* multiplied by

/ divided by

^ to the power

You should use the *switch …. case* selection to translate the input values into words.

You need to consider these special situations:

- ✓ For division, there is a special constraint: you cannot divide by 0, and you should therefore test whether the second number is 0. If it is 0, then you should output a message saying you are not allowed to divide by 0.

- ✓ The "operator" is not one of the preceding five operators; in that case, output a message saying that the operator is not a valid one.

- ✓ One or two of the numbers is not a valid digit; again, you should output a message to that effect.

- ✓ Hint: You can deal with these special situations in the *default* statement of the *switch* block and possibly use some *boolean* variables to keep track of this information, as you may need it later in your program.

Deliverables

1) Clearly written and well-documented java code. The code must provide a description of what the code accomplishes. Comments must be provided in the code as needed. The code must be saved with .java extension. (15 points).

2) A Use Case Diagram showing different actors in the program. (5 points).

3) A class diagram showing the relationship of all class(s), variables, and methods. (5 points)

The deliverables must all be contained in a zipped file named as follows: lastname_cset3600_project_spring20.

Grading Criteria

1) Does the code achieve the stated objective accurately and without any error?

2) Does the code have well-written comments to guide the reader?

3) Does the code flow logically from one point to the next

4) Is the code lean, clean, and elegant?

5) Does the code avoid redundancy?

6) Are the variables well defined?

7) Does the code follow the java naming convention?

Due Date: Monday, May 4, 2020 by 5:00 PM.