Calculator

CSCI-2210-01

University of New Haven

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Submitted to:

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Team Information

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Assignment

Dear Students,

Please create a calculator that gets two numbers and an arithmetic operator as inputs. It is expected that your calculator returns meaningful results. Your calculator should:

1. accept any numerical data including integer and real.
    a. (0.5 points)
2. support variety of arithmetic operators including addition, subtraction, multiplication, division, square roots, and exponentiation
    a. .(1.5 points)
3. be user-friendly such that its users understand the meaning of outputs, receive meaningful outcomes in all conditions, and have time to read all the instructions and outcomes.
    a. (0.5 points)
4. has the capability to handle any unexpected inputs or arithmetic operations.
    a. (0.5 points)

Overview

The way that my calculator works is when the user runs the program it starts off with the home screen that introduces the user to the calculator. The home screen also states the instructions of the calculator which are quite short and simple. The only instruction is in order to pick an operation from the menu you have to just type the number associated with that operation inside of the []'s (figure 1.1). Finally, on the home menu, you have to choose your first operation from the three choices. The first choice is 1 which is the basic operations of "Add, Subtract, Multiply, Divide". The second choice is 2 which is the square root operation and the third and final operation is 3 which is the exponential operation.

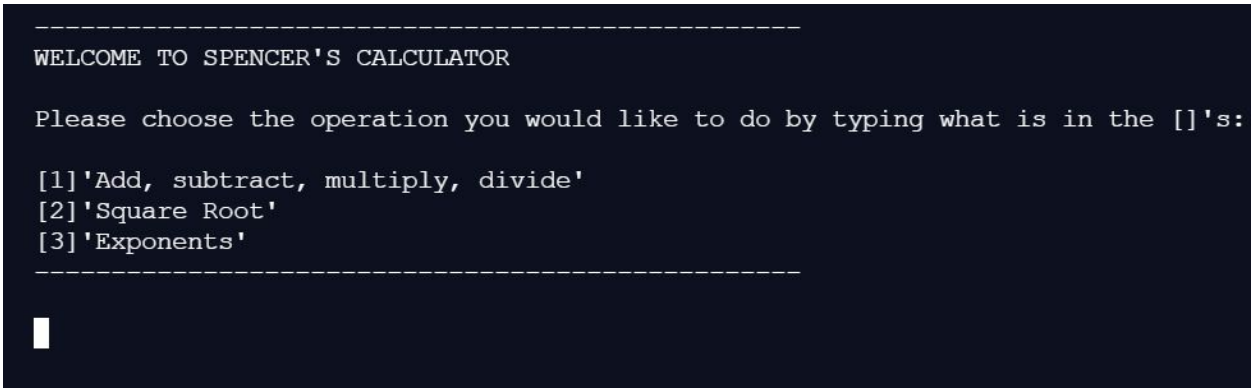

Figure 1.1

Once you choose your first operation from the home menu you either go to another menu or you go right into your operation. I utilized java methods to make the coding more modular and allows for the easy expansion of the code to add more operations if need be. If you choose 1 as your first operation you go into what I call the Basic menu that asks the more specific operation you would like to do either adding, subtracting multiplying, or dividing (figure 1.2).

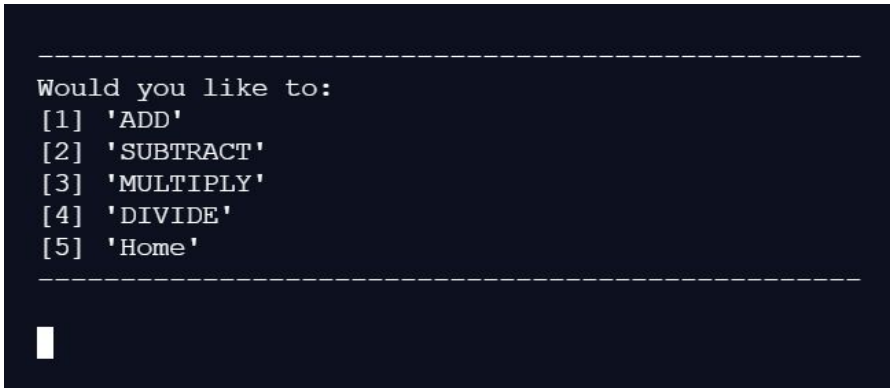

Figure 1.2

When you choose one of the more specific operations from the menu you are taken to the specific method that handles that certain operation (figure 1.3). The user is prompted to give two separate numbers for the operation to be completed. The numbers are put through the function that coordinates with the operation then the program prints out the answer in the form of

"Num1" "(+,-,/,x)" "num2" "answer

Once the answer has been printed out to the screen through the System.out.println() operation within Java, the program reloads to the basic menu. Then you can choose to go back to the home screen through the menu item 5.

```
--------------------------------------------------
Please enter the first number:
234
Please enter the second number:
12
234.0 + 12.0 = 246.0
--------------------------------------------------
Enter another operation:

--------------------------------------------------
Would you like to:
[1] 'ADD'
[2] 'SUBTRACT'
[3] 'MULTIPLY'
[4] 'DIVIDE'
[5] 'Home'
--------------------------------------------------
```

Figure 1.3

Once you go back to the home menu through the Basic menu then you may go to either the Square root operation or the exponential operation These two operations use the Math library that is imported in the line of code "import java.Lang.Math" and the build-in operation from this library. The square root operation uses Math.sqrt() (figure 1.5) and then the exponential operation uses Math.pow(a,b) (figure 1.4).

```
--------------------------------------------------
Please enter the number:
9
Please enter the exponent:
3
9.0 ^ 3.0 = 729.0
--------------------------------------------------
Enter another operation:

--------------------------------------------------
WELCOME TO SPENCER'S CALCULATOR

Please choose the operation you would like to do by typing what is in the []'s:

[1]'Add, subtract, multiply, divide'
[2]'Square Root'
[3]'Exponents'
--------------------------------------------------
```

Figure 1.4

```
--------------------------------------------------
Please enter the number:
9
The Square Root of 9.0 is 3.0
--------------------------------------------------
Enter another operation:

--------------------------------------------------
WELCOME TO SPENCER'S CALCULATOR

Please choose the operation you would like to do by typing what is in the []'s:

[1]'Add, subtract, multiply, divide'
[2]'Square Root'
[3]'Exponents'
--------------------------------------------------
```

Figure 1.5