Calculator Project

Problem Description:

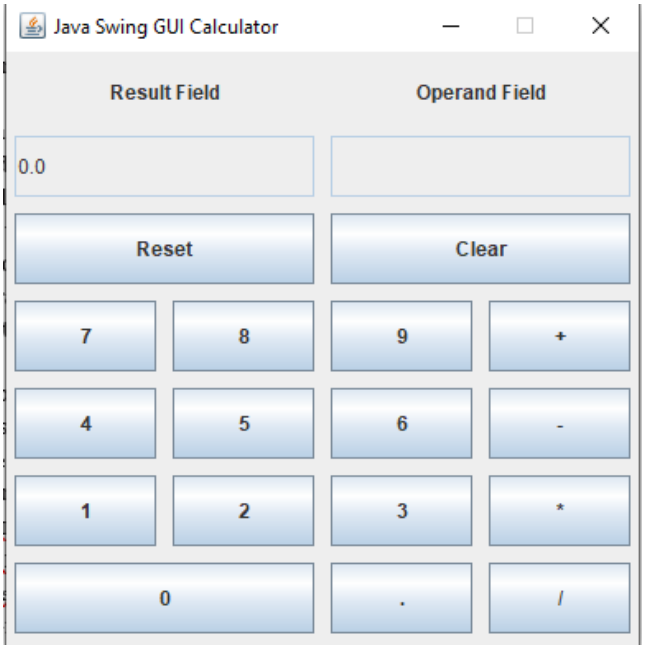
Design and code a Swing GUI calculator. You can use Display **17.19** as a starting point, but your calculator will be more sophisticated. Your calculator will have two text fields that the user cannot change: One labeled `"Result"` will contain the result of performing the operation, and the other labeled `"Operand"` will be for the user to enter a number to be added, subtracted, and so forth from the result. The user enters the number for the `"Operand"` text field by clicking buttons labeled with the digits `0` through `9` and a decimal point, just as in a real calculator.

Allow the operations of addition, subtraction, multiplication, and division. Use a `GridLayout` manager to produce a button pad that looks similar to the keyboard on a real calculator.

When the user clicks a button for an operation, the following occurs: the operation is performed, the `"Result"` text field is updated, and the `"Operand"` text field is cleared. Include a button labeled `"Reset"` that resets the `"Result"` to `0.0`. Also include a button labeled `"Clear"` that resets the `"Operand"` text field so it is blank.

Hint: Define an exception class named `DivisonByZeroException`. Have your code throw and catch a `DivisonByZeroException` if the user attempts to "divide by zero." Your code will catch the `DivisonByZeroException` and output a suitable message to the `"Operand"` text field. The user may then enter a new substitute number in the `"Operand"` text field. Because values of type `double` are, in effect, approximate values, it makes no sense to test for equality with `0.0`. Consider an operand to be "equal to zero" if it is in the range `-1.0e-10` to `+1.0e-10`.

Your calculator should look something like the following:



You are always encouraged to come up with a better version than the one shown here.