# Project #2
# CS 2210 – Fall 2022
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I. Requirements: Implement the classes written in Project #1 with Netbeans Swing in a GUI environment, and implement stricter error-handling.

II. Design: For the GUI, I just designed everything as it was recommended in the project instructions.
To implement the event handlers, I first tried to check when the input text fields went out of focus, but then I just realized I could check that when I pressed the "Run!" button, so I changed the design so that the only events that are checked are moving from dialog to frame and vise versa and computing at the run button.

III. Security Analysis: As my inputs check whether or not it is a number, I don't think that you can just put code into the inputs and mess with my program. However, I think that if you put in big enough numbers you might be able to mess with memory (although I am not familiar with Java's memory handling procedures).
I do not believe there are any other security issues with my program.

IV. Implementation: The numeric package was implemented as you would expect, I made a package called "numeric" and pasted my code from project #1 into it (with some tweaks). I then created the NegativeNumberException class and file in the numeric package. I implemented the NNE in the Factorial.java class, so that running Factorial.compute can throw the NNE.
This was an event-driven program, so I implemented all of the code with event handlers. As mentioned earlier, I only used the exit buttons and the run buttons to handle events.

V. Testing: I tested whether or not the numbers produced the right value, and then check if it would give the right exception if I put in anything that is not a number. For GCD I made sure putting in a negative still worked, and for Factorial I made sure my NNE was working properly. I also put very large numbers into the Factorial field and saw that it gave back "infinity."

VI. Summary/Conclusion: The program appears to function properly. It gives the correct answer for all valid strings and throws the correct exception for illegal strings.

VII. Lessons Learned: I have re-familiarized myself with how to code in Java and how to use the Linux environment, coding with the vi editor.