**Assignment 3**

**Contributors:** Francisco E. Alderete, Richard Padilla, Karl Dill, Venkata Surya Dasari

We went with Python as not all of us are Java experts and wanted to try a different language. The program is initiated in the ‘main’ at the end of the main.py. There is a superclass called SimpleCalculator() that contains methods all the state classes inherit to process the input math problem. After the main initiates the program in InitialState() a quick check is made to make sure the first input is a digit 1-9 and then moves to the FirstInput() state. Otherwise it goes to the Error() state.

FirstInput is the main processor of the equation string. It has an initial check for the end of file, which leads to the final total calculation and to the EndOfFile() state. Otherwise it either goes to the DigitBuilding() state if it detects a digit, or it goes into the SecondInput() state if it detects a math operator (+,- only). Any other symbol or whitespace sends it to an error state. Math operators are stored in a variable and calculated anytime FirstInput sees a math symbol. The math operator is initialized as + which allows it to always work because the first total count is always 0+current number no matter what since we can’t have leading negative numbers. After that it can go plus or minus however it wants.

DigitBuilding() uses the equation n=n\*10+c to build digits and can build any digit of any length, then goes back to FirstInput state. SecondInput() contains a check for the character after a math symbol. It only accepts digits 1-9 as the requirements do not allow leading zeroes or any repeat symbol characters. It also resets the current number to zero so the total calculation doesn’t get a number twice. Then it goes back to FirstInput.

