

Anirudh Balachandran
RUID: 159002515

PA2

CALC:

This program asks us to add, subtract or multiply two numbers given their input type and the output format that we were required to use. After the user inputs these details along with the operation they wish to execute, the program runs the file and all the required operations are executed in a sequential order depending on their sequence in the main and the program ends with the result being outputted in the required format and all the memory that was malloced being freed. The main challenge in this program was to successfully convert the input number which was in the form of a string to an integer where the necessary operations could be carried out. Apart from that, another thing that I found challenging was dealing with certain special test cases and outputting the correct value. After analyzing my program, I figured that it will take $O(n)$ to execute all the statements because the number of operations and commands done depends upon the size of the numbers and hence will take that same amount of time to run. Lastly both calc and format can be simply run using the Makefile that has been created to hold and compile both these programs.

Algorithm:

The program accepts the two numbers and checks if the input is the correct format and if not outputs the appropriate error message. After passing through these statements the two numbers are converted to decimal value by sending them to the appropriate conversion method. Next the two converted numbers are added, subtracted or multiplied depending on the given input. Next the result is sent back to the main and checked for the value type that has to be outputted and the result is accordingly outputted in the correct format and type. If type entered is not valid then an appropriate error message is outputted and this signals the end of the program. The memory that has been malloced has also been freed by this time in the program.