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### Group project: calculator

For our project we proposed a basic calculator with simple functions that a C program could be executed simply. In our calculator we chose to include the plus, minus, multiply, divide, exponent, and log function. Our challenge was to make these calculations work correctly without the use of the math.h library. We could not use this library for our code because the library has the built in log and exponent function, these being built it would be too easy to code so our objective would rather be to challenge our self and the knowledge of C.

To start off our code we included the stdio.h library for basic functions. We initialized the main function and declared our operator terms. The op variable will stand for all of the possible switch cases that could be chosen for which function you want to calculate. We had to then declare the two variables needed for the mathematical process. We doubled the first, and second inputs to allow the use of numbers with decimals as well. We then made a long double with the name of result that equals 1. This will allow the result to be multiplied by the first input for the exponent function. For the next line of code we made a print statement that explains the first step of the calculator. The calculator will be inputted with the operand and whatever was chosen will be scanned and stored into the memory. This scanned and stored will be saved as the op. What is next outputted with a print statement is the two operands that you need to complete this function. These are then scanned and saved into the first and second variables needed to run through the switch cases.

In order to get this code to work we decided to use the switch cases for each separate mathematical function. Firstly we had to use the op variable to determine what switch case to use. If the user wanted to do addition they would then input + when the command line text prompted an operator.

The additional coding was super simple with the built in basic functions of C. All we had to do was implement the addition of first and second and print it in the same line. The same was used for the subtraction, multiplication and division. In order to get the exponential function working was to create a switch case that has a while loop embedded. To make the while loop work it made sure the second value was not a zero. This was because we cant raise a number to the power 0. If that was applicable it went to the next line. Result was taken and stored as the first value. What next happened was the second repeated until the value comes down to 0, repeating the process until the correct value is found. The while loop ends and the new result is printed out.

We are still currently working on the log function because it is a little more complicated in our opinion. We have tried a couple different options but are still not meeting the correct outcome. Our default for if they put an incorrect operator is a print statement that explains that there is an error and that the operator is not correct.