GNG1106 - Lab 4

Objectives:

1. Understand and learn to use decision structures, particularly the **switch** statement.

2. Become proficient with standard IO functions

3. Learn to test and debug your program and develop a good programming habit

```c
#include <stdio.h>

int main()
{

        int a, b;
        char op;

        printf("Enter an integer arithmetic expression involving a single operation (leave no space)\n");
        scanf("%d%c%d", &a, &op,  &b);
        switch(op)
        {

                // Enter your code here

        }

        return 0;
}
```

Figure1. Screenshot of a code template for Deliverable 1

Instructions

1. **Pre-Lab Submission (20%):** Ensure you have submitted your pre-lab before attending the lab session.

2. **Deliverable 1 (30%):** For this deliverable, you will write a program that works like a "one-operation calculator" for integers. Specifically, the program prompts the user to enter an arithmetic expression involving two integers and one arithmetic operation (i.e., addition "+", subtraction "-", multiplication "*", or division "/") and prints the evaluated result of the expression. For example, if the user enters "8+5", the program prints "13". The user must enter the expression without space in between the characters. For the division operation, the program works like the integer (fixed-point) division in C, for example, 3/4=0. If the expression contains an invalid operator or symbol that does not correspond to one of the four arithmetic operators, the program prints an error message to indicates this. Figure 1 contains a template of this code, and you only need to fill the

part inside the **switch** statement. Run your program with a number of test cases to assure it runs correctly. Submit the code.

3. **Deliverable 2 (20%):** Modify the code in Deliverable 1 for the devision operation to achieve the following. In expression "a/b", if a is not a multiple of b, the program does not give the result of division but prints a message indicating a is not divisible by b. Test your program and submit the code.

4. **Deliverable 3 (20%):** Modify the code in Deliverable 1 so that it works for both integers and numbers with decimals and the division works as in mathematics, for example 3/4=0.75. Test and submit your code.

5. **Deliverable 5 (10%):** Write a brief explanation (3-4 sentences) about any errors encountered during the lab, how they were resolved, and the lesson you have learned.

Check out and Submission

You must check out with your TA before submitting the deliverables. During the check out, your TA may inspect your work and to-be-submitted deliverables, and ask you questions to further check your understanding. At the end of the check out, your TA will give you an initial mark for the in-lab component of this lab and let you know. You must then submit the deliverables before the due time of this lab. While this initial mark is likely to be the final, your TA reserves the right to reduce this initial mark after checking more carefully the deliverables you submit.

Grading Criterion:

•   **Correctness (60%):** Correct syntax, logic and execution.

•   **Style (40%):** Descriptive variables names and appropriate indentation (including those in switch statement)