Assignment 2 (Due: Dec 2)

1. Write a C++ program for implementing a command line calculator.

    a. The program should take an expression in infix notation as a command line argument. If no command line argument is given, the program should run in interactive mode by taking expression from the user.

    b. Make sure that the input is valid, that means it contains balanced brackets and valid operators and operands.

    c. The calculator should at least support the operators + - * / and brackets ( ).

    d. Convert the infix notation to postfix notation.

    e. Evaluate the postfix expression, and show the result. For example, if the program is calculator.exe, running calculator.exe "101 - (**2** + 43)" should convert the infix expression into postfix expression 101 **2** 43 + - and show the result 56. The operands may consist of 1 or more digits.

    f. Write proper documentation about how to use your application.

    g. Bonus:

        i. The input might be given as more than one command line argument, for example, instead of writing calculator.exe “101 + 200” (two command line arguments), the user might enter calculator.exe 101 + 200 (four command line arguments).

        ii. Add functions like log and power.

        iii. Add memory (MS, MR, M+) for interactive mode.

Instructions:

- Start from day 1. Submit to MS Teams before due time. Do not delay submission for the last moment. Late submissions will not be accepted.
- Before submission, remove all the debugging and temporary files. Only submit the .cpp and .h files (no visual studio or other files). Delete the .vs hidden folder before submission.
- Select .cpp and .h files and compress them using your full registration number and name, (e.g., `04071512007-Ali-Ahmad.zip`).
- Avoid using conio.h, as it is not part of standard C++. Don’t use clear screen function. Don’t use getch function (you may use the standard getchar() function instead).
- The source code should be properly indented and commented.
- Any genuine efforts in each part, would result in at least 50% marks (for that part). Make sure you put your best efforts to solve every part. Each part carries its own marks.
- You are getting 50% marks for any genuine efforts in all the parts to encourage you to learn, even if your program does not compile and is full of bugs. Therefore, please do not plagiarize! Plagiarism includes taking or giving help in any form including but not limited to code, concept or idea for the solution, algorithm, or pseudocode. Taking help from any source including but not limited to classmates, seniors, internet, or LLMs (Chat GPT, Gemini, Meta, etc.) is strictly prohibited. In case your code is plagiarized, you’ll get -50% absolute marks of the whole assignment. For example, if the assignment is of 50 marks, you will get -25 marks. **Even a single plagiarized statement will count as plagiarism for the whole assignment**. Plagiarism in two assignments may result in getting failed in the course.