American International University-Bangladesh

Data Structure Lab [G]
Summer 2022-23
Lab Tasks 04 || Stack

1. Write a C++ function that uses a stack to reverse the elements of an integer array in place (modify the original array).

   Sample input: {1, 2, 3, 4, 5}

   Sample output: {5, 4, 3, 2, 1}

2. Implement a basic calculator that supports addition, subtraction, multiplication, and division using a stack. Assume the expression is well-formed and contains only integers and operators separated by spaces.

   Sample input: "3 + 5 * 2"

   Sample output: 13

3. Write a C++ function that checks if the brackets (including parentheses, square brackets, and curly braces) in a given string are balanced and properly nested using a stack.

   Sample input: "{[()()]}"

   Sample output: true

4. Write a program that converts an infix expression to postfix notation using a stack.

   Sample input: "1 * 2 + 3 * 4"

   Sample output: "1 2 * 3 4 * +"

5. Write a C++ function that takes a postfix expression as a string and evaluates it using a stack. The postfix expression contains only integers and operators, separated by spaces.

   Sample input: "5 3 + 6 *"

   Sample output: 48