

Activity No. <n>	
<Replace with Title>	
Course Code: CPE010	Program: Computer Engineering
Course Title: Data Structures and Algorithms	Date Performed: 10/4/24
Section: CPE21S4	Date Submitted: 10/4/24
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6. Output

```
1 Stack Empty? 0
2 Stack Size: 3
3 Top Element of the Stack: 15
4 Top Element of the Stack: 8
5 Stack Size: 2
```

Table 4-1. Output of ILO A

```
1 Enter number of max elements for new stack: 5
2 Stack Operations:
3 1. PUSH, 2. POP, 3. TOP, 4. isEmpty, 5. DISPLAY
4 1
5 New Value:
6 3
7 Stack Operations:
8 1. PUSH, 2. POP, 3. TOP, 4. isEmpty, 5. DISPLAY
9 1
10 New Value:
11 8
12 Stack Operations:
13 1. PUSH, 2. POP, 3. TOP, 4. isEmpty, 5. DISPLAY
14 1
15 New Value:
16 15
17 Stack Operations:
18 1. PUSH, 2. POP, 3. TOP, 4. isEmpty, 5. DISPLAY
19 5
20 Elements in the stack: 15 8 3
21 Stack Operations:
22 1. PUSH, 2. POP, 3. TOP, 4. isEmpty, 5. DISPLAY
23 2
24 Popping: 15
25 Stack Operations:
26 1. PUSH, 2. POP, 3. TOP, 4. isEmpty, 5. DISPLAY
27 3
28 The element on the top of the stack is 8
29 Stack Operations:
30 1. PUSH, 2. POP, 3. TOP, 4. isEmpty, 5. DISPLAY
31 5
32 Elements in the stack: 8 3
```

Table 4-2. Output of ILO B.1.

```

1 After the first PUSH top of stack is :Top of Stack: 1
2 After the second PUSH top of stack is :Top of Stack: 5
3 After the first POP operation, top of stack is:Top of Stack: 1
4 After the second POP operation, top of stack :Stack is Empty.
5 After the third POP operation, top of stack :Stack Underflow.
6 Stack is Empty.

```

Table 4-2. Output of ILO B.2.

7. Supplementary Activity

Expression	Valid Y/N?	Output(console screenshot)	Analysis
$(A+B)+(C-D)$	Y	Expression is balanced.	The expression $(A+B)+(C-D)$ is balanced because the opening and closing parentheses match correctly.
$((A+B) + (C-D)$	N	Expression is unbalanced	The expression $((A+B)+(C-D))$ is not balanced because there is an extra opening parenthesis at the beginning of the expression.
$((A+B)+[C-D])$	N	Expression is not Balanced	The expression $((A+B)+[C-D])$ is not balanced because the opening and closing brackets do not match correctly. The expression starts with a parenthesis but ends with a square bracket.
$((A+B)+[C-D])\}$	N	Expression is not balanced	The expression $((A+B)+[C-D])$ is not balanced because it has mismatched brackets: a parenthesis is not closed, and a square bracket is not matched with another square bracket, and a curly brace is not matched with

			another curly brace.
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8. Conclusion

Through this exercise, I developed my ability to examine and assess mathematical equations that contain curly braces, brackets, and parentheses. I realized that for an equation to be legitimate, the parenthesis and brackets needed to be balanced.

The process was going over each statement in detail and making sure that the brackets, curly braces, and parentheses matched. Additionally, I learnt how to evaluate postfix expressions using a C++ stack implementation and translate infix expressions to postfix notation.

Writing C++ code to evaluate a postfix expression was the additional task, and it really helped me understand how the stack data structure is implemented in programming.

I believe I performed well in this task since I answered the user's queries in a precise and thorough manner. I can, however, do better by being more cautious in my analysis to prevent errors and, in some situations, by responding more succinctly. All in all, this exercise enhanced my capacity to solve problems and communicate difficult ideas in an understandable and succinct way.

9. Assessment Rubric