Activity No. 4			
Stacks			
Course Code: CPE010	Program: Computer Engineering		
Course Title: Data Structures and Algorithms	<b>Date Performed:</b> 10 / 04 / 2024		
Section: CPE21S4	Date Submitted: 10 / 05 / 2024		
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6 Output			

```
6. Output
```

```
Stack Empty?: 0
Stack Size: 3
Top Element of the Stack: 15
Top Element of the Stack: 8
Stack Size: 2
...Program finished with exit code 0
Press ENTER to exit console.
```

TABLE 4-1. Table Output of ILO A.

```
Enter number of max elements for new stack: 3
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
New Value:
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
New Value:
19
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
New Value:
24
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
Popping: 24
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
The element on the top of the stack is 19
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
19
13
Stack Operations:
1. PUSH, 2. POP, 3. TOP, 4. isEMPTY, 5. Show STACK
```

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

```
After the first PUSH top of stack is :Top of Stack: 1
Stack Display: 1
After the second PUSH top of stack is :Top of Stack: 5
Stack Display: 51
After the first POP operation, top of stack is:Top of Stack: 1
Stack Display: 1
After the second POP operation, top of stack :Stack is Empty.
Stack Display:
Stack Underflow.
Stack Display:
```

TABLE 4-3. Table Output of ILO B-2.

## 7. Supplementary Activity

Expression	Valid (Y / N)	Output	Analysis
(A + B) + (C - D)	Y	Expression: (A+B)+(C-D) Start and/or end symbol/s have the same pair.	Parentheses within the given expression are completely and correctly paired.
((A + B) + (C - D)	N	<pre>Expression: ((A+B)+(C-D) Start and/or end symbol/s does not have a pair.</pre>	Starting parenthesis does not have a pair.
((A + B) + [C - D])	Y	Expression: ((A+B)+[C-D]) Start and/or end symbol/s have the same pair.	Parentheses and square brackets within the given expression are completely and correctly paired.
((A + B] + [C - D]}	N	Expression: ((A+B]+[C-D]) Start and/or end symbol/s are mismatched.	Some brackets within the expression are incorrectly paired to one another

## 8. Conclusion

I have learned more about how stacks are used and use necessary operations to manipulate them. I think I have done the needed tasks in this experiment well, such as creating the display function for the task within the ILO B-1. As for the supplementary activity, I can say that I have struggled to create a condition for identifying the proper pairings of brackets from the given expressions, but I managed to accomplish it as well.

## 9. Assessment Rubric