CC4 Laboratory Activity #5
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Topics Covered: Stacks

Estimated Completion Time: 1 meeting (2 hours)

Objectives:

1. To appreciate and understand how the stack data structure behaves when inserting and deleting elements.

2. To be able to simulate how stacks push and pop elements.

Problem: Create a running program that simulates how the stack data structure works by:

a. Asking the user to choose whether to PUSH, POP or EXIT.
b. Writing the appropriate program logic to check whether it is possible to Push or Pop based on the Top Index and thereby displaying error messages otherwise.

Sample Output:

PUSH

```
Enter the size of the Stack:
4
Options:
[1]PUSH
[2]POP
[3]EXIT
1
Push a number:
42
STACK :[42]
TOP :0
Options:
[1]PUSH
[2]POP
[3]EXIT
1
Push a number:
54
STACK :[42, 54]
TOP :1
Options:
[1]PUSH
[2]POP
[3]EXIT
1
Push a number:
78
STACK :[42, 54, 78]
TOP :2
Options:
[1]PUSH
[2]POP
[3]EXIT
1
Push a number:
45
STACK :[42, 54, 78, 45]
TOP :3
Options:
[1]PUSH
[2]POP
[3]EXIT
1
Sorry,The Stack is Full!
STACK :[42, 54, 78, 45]
TOP :3
Options:
[1]PUSH
[2]POP
[3]EXIT
```

POP

```
STACK :[42, 54, 78, 45]
TOP :3
Options:
[1]PUSH
[2]POP
[3]EXIT
2
STACK :[42, 54, 78]
TOP :2
Options:
[1]PUSH
[2]POP
[3]EXIT
2
STACK :[42, 54]
TOP :1
Options:
[1]PUSH
[2]POP
[3]EXIT
2
STACK :[42]
TOP :0
Options:
[1]PUSH
[2]POP
[3]EXIT
2
STACK :[]
TOP :-1
Options:
[1]PUSH
[2]POP
[3]EXIT
2
Sorry,The Stack is Empty!
STACK :[]
TOP :-1
Options:
[1]PUSH
[2]POP
[3]EXIT
```