LABWORK 2:

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INTRODUCTION:

In this lab work, we have implemented stack data structure using array and linked list. We have done following operations.

(a) push(element): Adds an element into the stack

(b) pop(): Removes an element from the stack

(c) isEmpty(): Checks if the stack is empty

(d) isFull(): Checks if the stack is full

(e) top(): Gives the element at the top

IMPLEMENTATION:

Using array and linked list data structures, we have implemented the above operations.

In array,

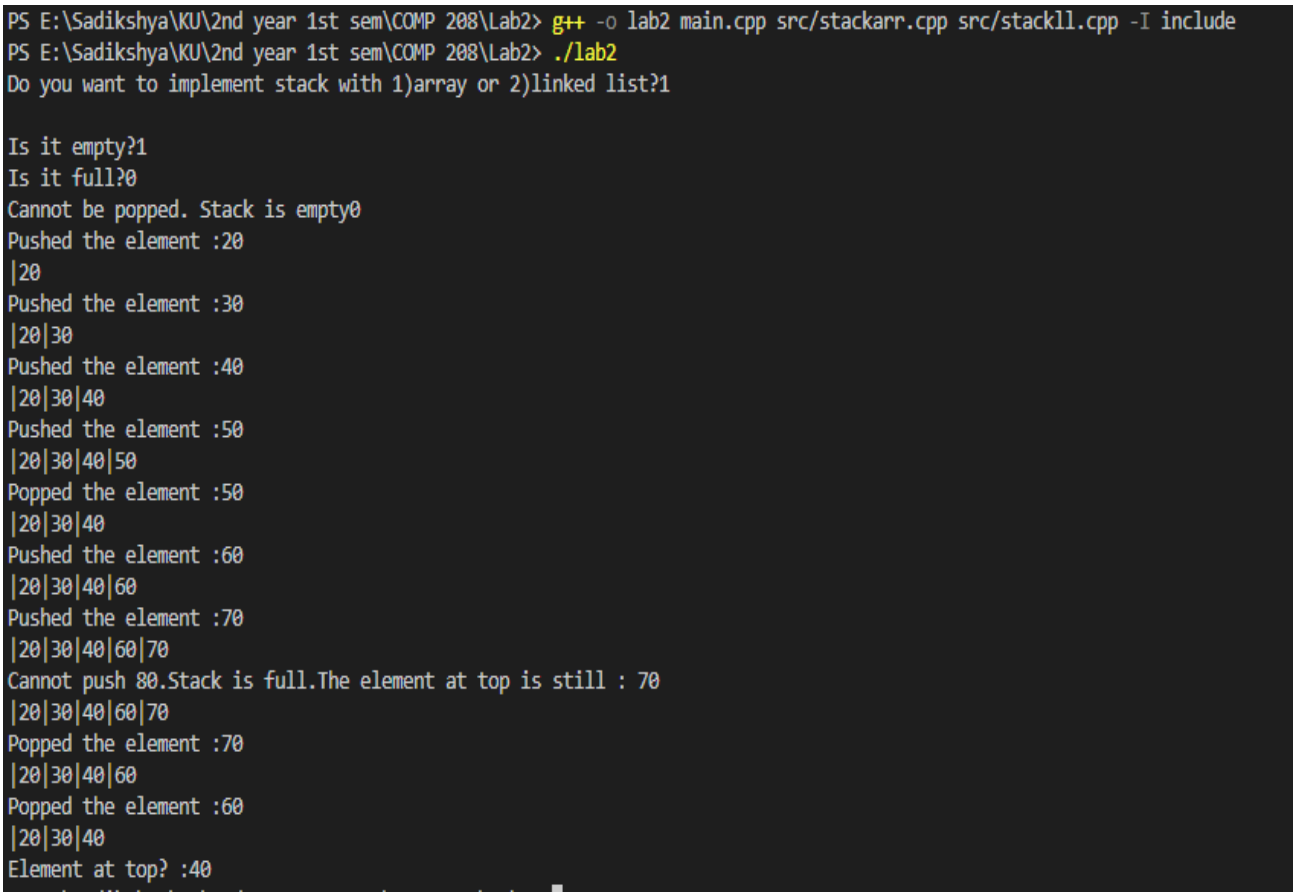
- We have checked whether the array is completely filled or not for isFull() operation.
- We have checked if array is empty for isEmpty() operation.
- We have added element to next index of array for push(element) operation.
- We have removed recently added element in array for pop() operation.

In linked list,

- We have added new node to Head of linked list for push(element) operation.
- We have removed a node from Head of linked list for pop() operation.
- We have returned head element of linked list for top() operation.
- We have checked if HEAD pointer is null or not, for isEmpty() operation.
- We have checked if there are declared number of nodes in linked list or not, for isFull() operation.

OUTPUT:

Below inserted are the screenshots of output of the program.



```
PS E:\Sadikshya\KU\2nd year 1st sem\COMP 208\Lab2> ./lab2
Do you want to implement stack with 1)array or 2)linked list?2

Is it empty?1
Is it full?0
Cannot be popped. Stack is empty0
Pushed the element :20
|20| -|-->
Pushed the element :30
|30| -|-->|20| -|-->
Pushed the element :40
|40| -|-->|30| -|-->|20| -|-->
Pushed the element :50
|50| -|-->|40| -|-->|30| -|-->|20| -|-->
Popped the element :50
|40| -|-->|30| -|-->|20| -|-->
Pushed the element :60
|60| -|-->|40| -|-->|30| -|-->|20| -|-->
Pushed the element :70
|70| -|-->|60| -|-->|40| -|-->|30| -|-->|20| -|-->
Cannot push 80.Stack is full.The element at top is still : 70
|70| -|-->|60| -|-->|40| -|-->|30| -|-->|20| -|-->
Popped the element :70
|60| -|-->|40| -|-->|30| -|-->|20| -|-->
Popped the element :60
|40| -|-->|30| -|-->|20| -|-->
Element at top? :40
```