

## CS2023 - DATA STRUCTURES AND ALGORITHMS

### IN-CLASS LAB EXERCISE

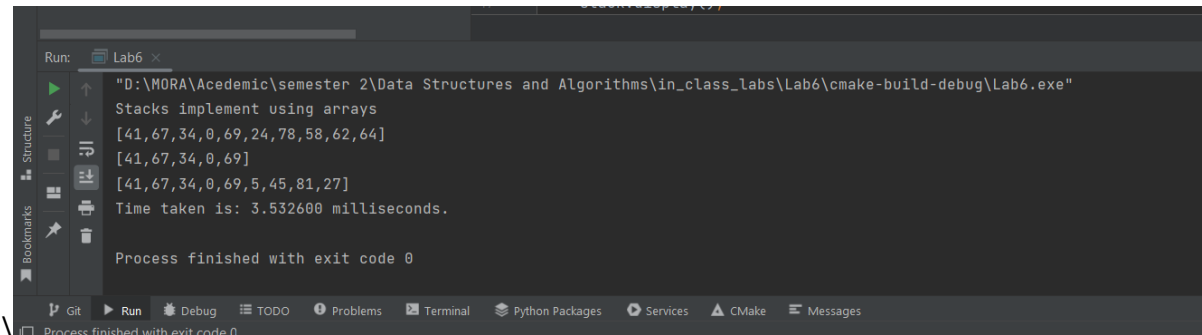
NAME:MUTHUWANA M.A.N.R

INDEX:210400N

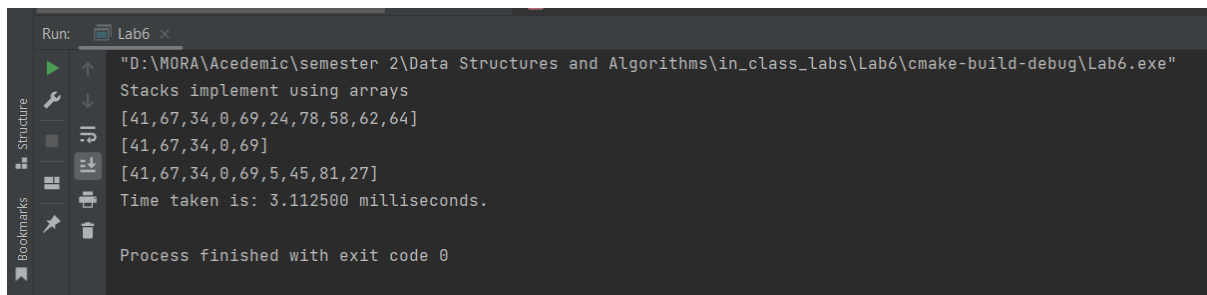
Stack implement using array

Git hub link:<https://github.com/NRM10101/InclassAssingments-DSA/blob/main/main.cpp>

some tests for random number(<100) inputs( push and pop and display operation)



```
Run: Lab6 x
"D:\MORA\Acedemic\semester 2\Data Structures and Algorithms\in_class_labs\Lab6\cmake-build-debug\Lab6.exe"
Stacks implement using arrays
[41,67,34,0,69,24,78,58,62,64]
[41,67,34,0,69]
[41,67,34,0,69,5,45,81,27]
Time taken is: 3.532600 milliseconds.
Process finished with exit code 0
```

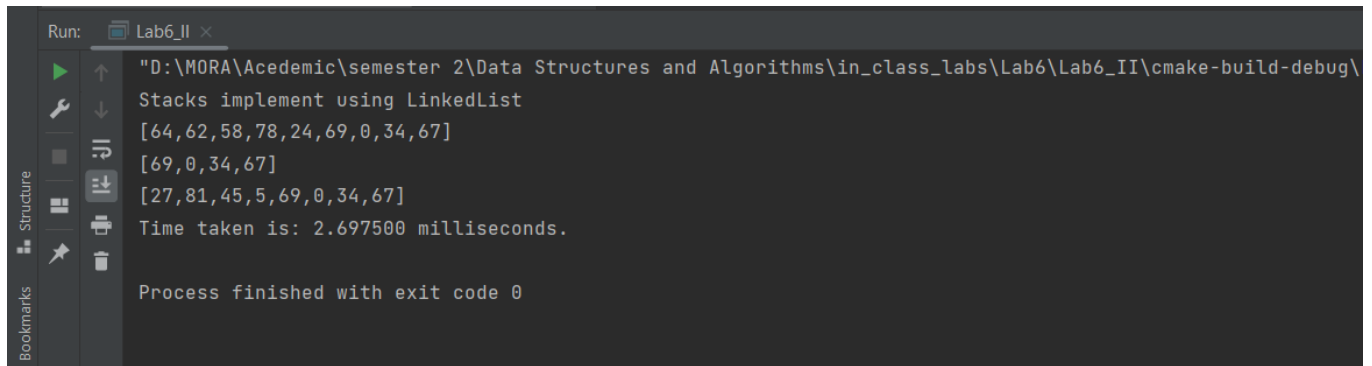


```
Run: Lab6 x
"D:\MORA\Acedemic\semester 2\Data Structures and Algorithms\in_class_labs\Lab6\cmake-build-debug\Lab6.exe"
Stacks implement using arrays
[41,67,34,0,69,24,78,58,62,64]
[41,67,34,0,69]
[41,67,34,0,69,5,45,81,27]
Time taken is: 3.112500 milliseconds.
Process finished with exit code 0
```

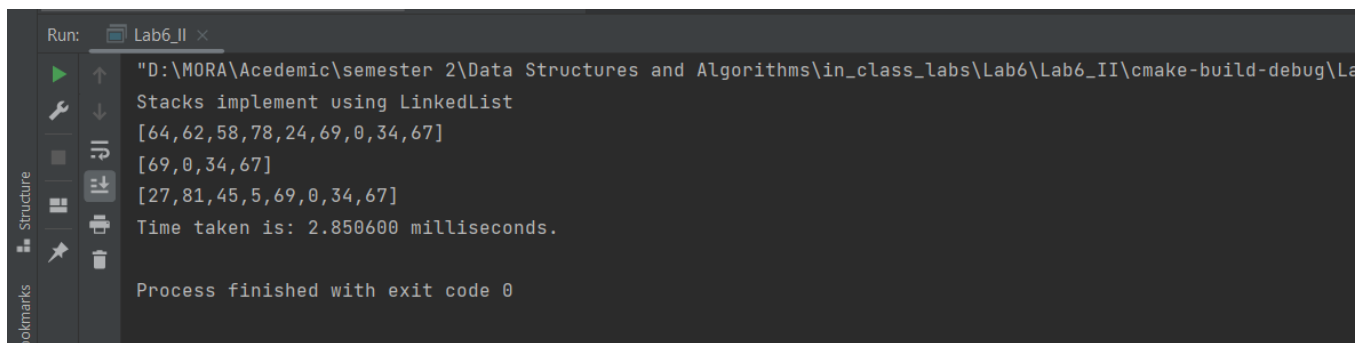
## Stack implement using LinkedList

Git hub link:<https://github.com/NRM10101/Data-Structures-and-Algorithms/blob/main/main.cpp>

some tests for random number(<100) inputs( push , pop and display operation)



```
Run: Lab6_II x
"D:\MORA\Acedemic\semester 2\Data Structures and Algorithms\in_class_labs\Lab6\Lab6_II\cmake-build-debug\La
Stacks implement using LinkedList
[64,62,58,78,24,69,0,34,67]
[69,0,34,67]
[27,81,45,5,69,0,34,67]
Time taken is: 2.697500 milliseconds.
Process finished with exit code 0
```



```
Run: Lab6_II x
"D:\MORA\Acedemic\semester 2\Data Structures and Algorithms\in_class_labs\Lab6\Lab6_II\cmake-build-debug\La
Stacks implement using LinkedList
[64,62,58,78,24,69,0,34,67]
[69,0,34,67]
[27,81,45,5,69,0,34,67]
Time taken is: 2.850600 milliseconds.
Process finished with exit code 0
```

## **Discussion:**

When we consider stack implementation by linked list of above code, we prefer the beginning of the linked list as the top of the stack.

### **PUSH:**

- Time complexity of adding a node at the beginning : $O(1)$

### **POP:**

- Time complexity of removing the first node:  $O(1)$