

AP Assignment – 6

Name : Lalit Kumar

UID : 22BCS16378

Ques . 1 Implement Stack using an Array

Problem link : <https://www.geeksforgeeks.org/problems/implement-stack-using-array/1>

The screenshot displays the GeeksforGeeks website interface for the problem 'Implement Stack using Array'. The browser's address bar shows the URL <https://www.geeksforgeeks.org/problems/implement-stack-using-array/1>. The page features a navigation bar with links to Courses, Tutorials, Jobs, Practice, and Contests. The main content area is divided into two sections: 'Output Window' and 'Code Editor'. The 'Output Window' on the left shows 'Problem Solved Successfully' with a green checkmark. It includes statistics: 'Test Cases Passed: 1115 / 1115', 'Attempts: Correct / Total: 1 / 1', 'Accuracy: 100%', 'Points Scored: 1 / 1', and 'Time Taken: 0.02'. The 'Code Editor' on the right shows the C++ code for the solution, which includes a `MyStack` class with `push` and `pop` methods. The code is as follows:

```
27 int top;
28 public:
29     MyStack(){top=-1;}
30     int pop();
31     void push(int);
32 };
33
34
35 void MyStack ::push(int x) {
36     // Your Code
37     arr[++top]=x;
38 }
39
40
41 // Function to remove an item from top of the stack.
42 int MyStack ::pop() {
43     // Your Code
44     if(top== -1)
45         return -1;
46     return arr[top--];
47 }
48
49
50
51
52 // Driver code Ends
```

The bottom of the page shows a Windows taskbar with various application icons and a system clock indicating 16:58 on 18-03-2025.

Ques . 2 Implement Queue using an Array

Problem link : <https://www.geeksforgeeks.org/problems/implement-queue-using-array/1>

geeksforgeeks.org/problems/implement-queue-using-array/1

Output Window

Compilation Results Custom Input Y.O.G.I. (AI Bot)

Problem Solved Successfully ✓

Test Cases Passed
170 / 170

Attempts : Correct / Total
1 / 1

Accuracy : 100%

Points Scored
1 / 1

Time Taken
0.79

Your Total Score: 98 ↑

```
64 public :  
65     MyQueue() {front=0; rear=0;}  
66     void push(int);  
67     int pop();  
68 };  
69 //  
70  
71 // Function to push an element x in a queue.  
72 void MyQueue ::push(int x) {  
73     arr[rear]=x;  
74     rear++;  
75 }  
76 // Function to pop an element from queue and return that element.  
77 int MyQueue ::pop() {  
78     if(front==rear){  
79         return -1;  
80     }  
81     int temp=arr[front];  
82     front=(front+1)%100005;  
83     return temp;  
84 }  
85  
86  
87  
88  
89
```

Ques 3 . Implement Circular Queue using an Array

Problem link:<https://leetcode.com/problems/design-circular-queue/submissions/1577854408/>

leetcode.com/problems/design-circular-queue/submissions/1577854408/

Problem List < > ⌕

Description Editorial Solutions Accepted × Submissions

All Submissions

Accepted 59 / 59 testcases passed

Runtime

1 ms | Beats 77.18%

Memory

23.49 MB | Beats 80.08%

```
21 MyCircularQueue(int k) {  
22     // head = NULL;  
23     // tail = NULL;  
24     // size = k;  
25  
26     this->n = k;  
27     arr = new int[k];  
28     this->front = -1;  
29     this->rear = -1;  
30 }  
31  
32 bool enqueue(int value) {  
33     // // full  
34     // if (size == 0) {  
35         // return false;
```

Ques 4 : Implement Two Stacks in One Array

Problem link : <https://www.geeksforgeeks.org/problems/implement-two-stacks-in-an-array/1>

The screenshot shows the GeeksforGeeks website interface for the problem 'Implement Two Stacks in One Array'. The 'Output Window' on the left displays the following results:

- Problem Solved Successfully ✓
- Test Cases Passed: 1111 / 1111
- Attempts: Correct / Total: 1 / 1
- Accuracy: 100%
- Points Scored: 4 / 4
- Time Taken: 0.05
- Your Total Score: 102 ↑

The code editor on the right shows the following C++ code:

```
31 // Function to push an integer into the stack2.
32 void push2(int x) {
33     // code here
34     if(top2-1==top1) return;
35     top2--;
36     arr[top2]=x;
37 }
38
39 // Function to remove an element from top of the stack1.
40 int pop1() {
41     // code here
42     if(top1==0) return -1;
43     int ans=arr[top1];
44     top1--;
45     return ans;
46 }
47
48 // Function to remove an element from top of the stack2.
49 int pop2() {
50     // code here
51     if(top2==size) return -1;
52     int ans=arr[top2];
53     top2++;
54     return ans;
55 }
56
```

Ques5 : Implement queue using stack

The screenshot shows the LeetCode website interface for the problem 'Implement Queue using Stacks'. The 'Code' editor on the right shows the following C++ code:

```
13
14 public:
15     MyQueue() {}
16
17     void push(int x) {
18         in_stack.push(x);
19     }
20
21     int pop() {
22         if (out_stack.empty()) {
23             transfer();
24         }
25         int topElement = out_stack.top();
26     }
27
```

The 'Test Result' section shows 'Accepted' with a runtime of 0 ms.