

## AP Assignment – 6

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### 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>

The screenshot shows a web browser with the URL <https://www.geeksforgeeks.org/problems/implement-queue-using-array/1>. The page displays the 'Output Window' for a C++ solution. The 'Compilation Results' section shows 'Problem Solved Successfully' with a green checkmark. The 'Test Cases Passed' section shows '170 / 170'. The 'Attempts : Correct / Total' section shows '1 / 1'. The 'Accuracy : 100%' section shows '100%'. The 'Points Scored' section shows '1 / 1'. The 'Time Taken' section shows '0.79'. The 'Your Total Score: 98' is also displayed. The code editor on the right shows the C++ implementation of a queue using an array.

```
64 public :
65     MyQueue() {front=0; rear=0;}
66     void push(int);
67     int pop();
68 };
69
70 // Function to push an element x in a queue.
71 void MyQueue ::push(int x) {
72     arr[rear]=x;
73     rear++;
74 }
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/>

The screenshot shows a web browser with the URL <https://leetcode.com/problems/design-circular-queue/submissions/1577854408/>. The page displays the 'Accepted' status for the submission. The 'Runtime' section shows '1 ms | Beats 77.18%'. The 'Memory' section shows '23.49 MB | Beats 80.08%'. The 'Test Result' section shows 'Accepted Runtime: 0 ms'. The code editor on the right shows the C++ implementation of a circular queue.

```
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. The browser tabs include 'Firewall Authentication', '(13) YouTube', 'CU-Assignments', 'Queue Using Array', 'Design Circular Queue', and 'Two Stacks in an Array'. The address bar shows the problem link. The page header includes navigation links like 'Courses', 'Tutorials', 'Jobs', 'Practice', and 'Contests'. The main content area displays the problem title 'Implement Two Stacks in One Array' and a 'Problem Solved Successfully' message. The 'Output Window' shows 'Compilation Results' with 'Test Cases Passed: 1111 / 1111', 'Attempts: 1 / 1', 'Accuracy: 100%', 'Points Scored: 4 / 4', and 'Time Taken: 0.05'. The code editor shows C++ code for implementing two stacks in one array using two pointers, top1 and top2.

```
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==size) 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 }
```

## Ques5 : Implement queue using stack

The screenshot shows the LeetCode website interface. The browser tabs include 'Firewall Authentication', '(13) YouTube', 'CU-Assignments', 'Queue Using Array', 'Design Circular Queue', 'Two Stacks in an Array', and 'Implement Queue using Stacks'. The address bar shows the problem link. The page header includes navigation links like 'Problem List', 'Run', 'Submit', and 'Premium'. The main content area displays the problem title 'Implement Queue using Stacks' and a 'Accepted' message. The 'Runtime' section shows '0 ms | Beats 100.00%', 'Memory' shows '9.68 MB | Beats 65.84%', and a 'Test Result' section shows 'Accepted Runtime: 0 ms'. The code editor shows C++ code for implementing a queue using two stacks, in\_stack and out\_stack.

```
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();
```