

## 1. Problem Name: Validate Container Unloading Sequence Using Stack.

### Problem Code & Output:

```
Start here x set1.cpp x
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      int n;
6      cout << "Enter the number of containers: ";
7      cin >> n;
8
9      int* loaded = new int[n];
10     int* unloaded = new int[n];
11
12     cout << "Enter the loaded sequence (space separated): ";
13     for (int i = 0; i < n; i++) {
14         cin >> loaded[i];
15     }
16
17     cout << "Enter the unloaded sequence (space separated): ";
18     for (int i = 0; i < n; i++) {
19         cin >> unloaded[i];
20     }
21
22     int* stack = new int[n];
23     int top = -1;
24     int j = 0;
25
26     for (int i = 0; i < n; i++) {
27         stack[++top] = loaded[i];
28         while (top >= 0 && stack[top] == unloaded[j]) {
29             top--;
30             j++;
31         }
32     }
33
34     if (j == n) {
35         cout << "Valid" << endl;
36     } else {
37         cout << "Invalid" << endl;
38     }
39
40     delete[] loaded;
41     delete[] unloaded;
42     delete[] stack;
43
44     return 0;
45 }
46
```

```
Start here x set1.cpp x
12     cout << "Enter the loaded sequence (space separated): ";
13     for (int i = 0; i < n; i++) {
14         cin >> loaded[i];
15     }
16
17     cout << "Enter the unloaded sequence (space separated): ";
18
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```

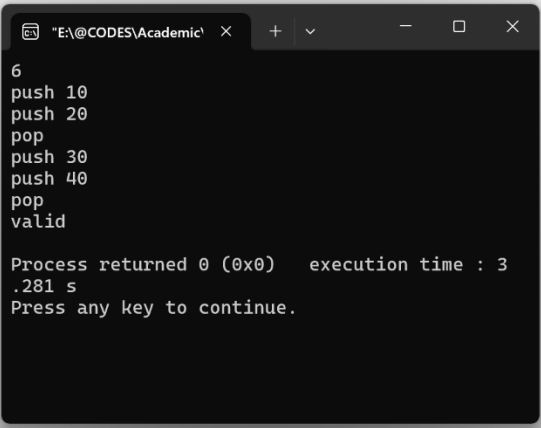
```
"E:\CODES\Academic\DSA\I" x + v - □ x
Enter the number of containers: 5
Enter the loaded sequence (space separated): 1 2 3 4 5
Enter the unloaded sequence (space separated): 4 5 3 2 1
Valid

Process returned 0 (0x0)   execution time : 11.115 s
Press any key to continue.
```

## 2. Problem Name: Validate Customer Service Sequence Using Queue.

### Problem Code & Output:

```
Start here x set2.cpp x
1 #include <iostream>
2 #include <string>
3 using namespace std;
4
5 int main() {
6     int n;
7     cin >> n;
8     int current_size = 0;
9     bool valid = true;
10
11     for (int i = 0; i < n; i++) {
12         string op;
13         cin >> op;
14         if (op == "push") {
15             int x;
16             cin >> x;
17             if (valid) {
18                 current_size++;
19             }
20         } else if (op == "pop") {
21             if (valid) {
22                 if (current_size > 0) {
23                     current_size--;
24                 } else {
25                     valid = false;
26                 }
27             }
28         }
29     }
30
31     if (valid) {
32         cout << "valid" << endl;
33     } else {
34         cout << "invalid" << endl;
35     }
36
37     return 0;
38 }
39
```



```
E:\@CODES\Academic x + - □ x
6
push 10
push 20
pop
push 30
push 40
pop
valid

Process returned 0 (0x0) execution time : 3
.281 s
Press any key to continue.
```