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

Problem Code & Output:

Start here × set1.cpp ×

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cout << "Enter the number of containers: ";
    cin >> n;

    int* loaded = new int[n];
    int* unloaded = new int[n];

    cout << "Enter the loaded sequence (space separated): ";
    for (int i = 0; i < n; i++) {
        cin >> loaded[i];
    }

    cout << "Enter the unloaded sequence (space separated): ";
    for (int i = 0; i < n; i++) {
        cin >> unloaded[i];
    }

    int* stack = new int[n];
    int top = -1;
    int j = 0;

    for (int i = 0; i < n; i++) {
        stack[++top] = loaded[i];
        while (top >= 0 && stack[top] == unloaded[j]) {
            top--;
            j++;
        }
    }
```

Start here × set1.cpp ×

```cpp
    cout << "Enter the loaded sequence (space separated): ";
    for (int i = 0; i < n; i++) {
        cin >> loaded[i];
    }

    cout << "Enter the unloaded sequence (space separated): ";
```

```
"E:\@CODES\Academic\DSA\I
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.
```

```cpp
            j++;
        }
    }

    if (j == n) {
        cout << "Valid" << endl;
    } else {
        cout << "Invalid" << endl;
    }

    delete[] loaded;
    delete[] unloaded;
    delete[] stack;

    return 0;
}
```

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

Problem Code & Output:

Start here | set2.cpp

```cpp
#include <iostream>
#include <string>
using namespace std;

int main() {
    int n;
    cin >> n;
    int current_size = 0;
    bool valid = true;

    for (int i = 0; i < n; i++) {
        string op;
        cin >> op;
        if (op == "push") {
            int x;
            cin >> x;
            if (valid) {
                current_size++;
            }
        } else if (op == "pop") {
            if (valid) {
                if (current_size > 0) {
                    current_size--;
                } else {
                    valid = false;
                }
            }
        }
    }

    if (valid) {
        cout << "valid" << endl;
    } else {
        cout << "invalid" << endl;
    }

    return 0;
}
```

```
"E:\@CODES\Academic\
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.
```