National University of Computer and Emerging Sciences, Lahore Campus

Course: Data Structures
Program: BS(CS)
Duration: 20 minutes

Semester: Fall 2023
Total Marks: 15
Exam: Quiz 2B

Q#1:- Reverse a Queue using Stack (5)

```
void reverseQueue(queue<int>& Queue)
{
    stack<int> Stack;
    while (!Queue.empty()) {
        Stack.push(Queue.front());
        Queue.dequeue();
    }
    while (!Stack.empty()) {
        Queue.enqueue(Stack.top());
        Stack.pop();
    }
}
```

Q#2:- Given a sequence of n numbers, the task is to check if any two adjacent numbers in the sequence are equal. If two adjacent numbers are equal, remove both of them from the sequence. After all possible pairwise destructions are performed, print the number of numbers left in the sequence. (10)

Example:

Input: 5 2 2 6 3 3 7 7

Output: 2

Explanation:

In the input sequence, the numbers 2 and 2, as well as 3 and 3, destroy each other, leaving the sequence as 5 6 7 7.

Finally, 7 and 7 destroy each other, resulting in a sequence with 2 numbers.

Complete the following function, implement using stack.

```
int removeConsecutiveSame(int arr[])
{
    stack<int> st;
}

int removeConsecutiveSame(vector <int> v)
{
    stack<int> st;

    // Start traversing the sequence
    for (int i=0; i<v.size(); i++)
    {
        // Push the current string if the stack
        // is empty
        if (st.empty())
            st.push(v[i]);
        else
```

```
        {
            int num= st.top();

            // if equal, pop the top
            if (num == v[i])
                st.pop();

            // Otherwise push the current string
            else
                st.push(v[i]);
        }
    }

    // Return stack size
    return st.size();
}
```