**Lab Assignment 02**

**Marks**

1. Implement a template based Queue using a dynamic array which supports the enqueue, dequeue and front operations. **15**
2. Implement Template based Stack using a singly linked-list. **15**
3. Write a program to convert an infix expression to a postfix expression. The expression will contain the following characters [ a-z , + , - , \* , / , ( , ) ]. **15**

| **Sample Input** | **Sample Output** |
| --- | --- |
| a+(b+c)\*d-e | abc+d\*+e- |
| (a+b)\*(c+d) | ab+cd+\* |

1. Evaluate it using stack. All the numbers are single digit numbers in the input so you don’t have to worry about multi digit numbers. **15**

| **Sample Input** | **Sample Output** |
| --- | --- |
| 4+(5+6)\*8-1 | 91 |
| (2+4)\*(5+6) | 66 |

Congratulations you just built a mini calculator if you solved it correctly.

1. Implement Template based Deque using a doubly linked-list which supports push\_front, push\_back, pop\_back, pop\_front, front, back operations. **15**
2. Given a string, check if it's a palindrome using a Deque. **15**

| **Sample Input** | **Sample Output** |
| --- | --- |
| abcba | Yes |
| abcca | No |

Hint: Check the first and last character. If they are equal then pop them and continue this process until the string becomes empty.

1. Write a function **void deleteValue(list<int> & l , int value)’** -> This function will delete the first occurrence of the element that is equal to the input **value** from the stl list. **10**

**Sample Input:** STL list containing [7, 3, 8, 4, 5, 4], value : 4

**Sample Output:** STL list containing [7, 3, 8, 5, 4]