**CSE225L  
Final**Marks: 30 Time: 60 min

1. Write a C++ program that checks if a **given string is a palindrome** using a recursion. A palindrome is a word, phrase, number, or other sequences of characters that reads the same forward and backward.  
   Sample:

**Enter a string: level**

**Not a palindrome**

1. Generate a graph (directed, unweighted, acyclic) from the user input and find the shortest path.

**Sample input:**

Enter the number of edges: 6

Enter an edge (start end): A B

Enter an edge (start end): A C

Enter an edge (start end): B D

Enter an edge (start end): B E

Enter an edge (start end): C F

Enter an edge (start end): D E

Enter the start node: A

Enter the end node: E

**Sample Output:**

**A->B->E**

1. You are given an infix arithmetic expression as a string. Your task is to convert the **infix expression to postfix notation** using a stack-based approach.

**Example:**

Input: **"3 + 4 \* (2 - 1)"**

Output: **"3 4 2 1 - \* +"**

Input: **"a + b \* (c - d)"**

Output: **"a b c d - \* +"**