DATA STRUCTURES AND ALGORITHMS LABORATORY

Week 1 – Lab 1
Dr. Sanga Chaki
Assistant Professor
CSE Department, IIIT Pune.

Assignment Sl No: 1
Assignment Date: 05.01.2025

Course Evaluation Pattern: Three components:
1. Mid Semester Examination
   a. Total Marks: 10
   b. Assessment based on: Quiz and Viva
2. End Semester Examination
   a. Total Marks: 30
   b. Assessment based on: On spot code writing, Quiz and Viva
3. Continuous Assessment
   a. Total Marks: 60
   b. Assessment based on:
      i. Attendance
      ii. Lab report copy – content and timely submission
      iii. In-class evaluation and coding

Instructions for Lab Report Copy:
1. Hand-written, hard copy lab report needs to be maintained.
2. Each assignment should have three parts:
   a. Problem
   b. Code solution
   c. Output
3. Each week's work needs to be mandatorily submitted in the following week.
4. Each week's entry needs to be maintained in the first page of the report.
5. First page of report should look like following:

Sl No	Topic	Assignment Date	Submission Date	Signature of Faculty

Instruction: Please format your code outputs properly. There should be clear instructions to the user printed on your screen, before you take user input through your code. You should also properly display your output with clearly understandable legends. This should be followed in all labs.

1. Write a C program to show the use of the following string library functions. You can use string.h

    a. strcat

    b. strcpy

    c. strlen

    d. strcmp

2. Write programs in C to implement the following string library functions: Note: you cannot use string.h.

    a. strcat

    b. strcpy

    c. strlen

    d. strcmp

2. Write a program in C to reverse and print a given string

3. Write a program in C to check if a given string is a palindrome or not.

    a. By using reverse of the given string

    b. Without using the reverse of the given string

4. Write a program in C to count the total number of alphabets, digits, and special characters in a string. In the alphabets, count the vowels and consonants.

5. Write a program in C to read a string and replace lowercase characters with uppercase and vice versa.

6. Write a C program to find first and last occurrences of a particular input character in an input string.

7. Write a C program to find highest frequency character in an input string.

8. Write a C program to find the first occurrence of a given substring in an input string. If it is not found, display an appropriate message.

9. Write a C program to replace each vowel with the next vowel in an input string. Replace a with e, e with i, i with o, o with u and u with a. Example: if input is IIITPune, output will be OOOTPani.

10. Write a C program to replace each consonant with the preceding consonant in the alphabet for an input string.