**Principles of Programming Languages (Lab 3)**

**Problem:**

Write a program to search for an element in a linked list of characters (insert characters using random number generator) using recursion and then without using recursion in C.

**Input:**

No input is required for the data elements of the linked list. Characters in linked list are assigned through random number generator and the size of linked list is taken as 1000.

The program however is a menu driven program which asks which operation to carry out. So the program takes input as integer values (Specifically 0,1 or 2).

**Output:**

The output of the program is “Element Found” if the character is found and “Character was not found” if unable to find the character.

**Algorithm:**

Create a linked list (n=1000)

Assign data elements as characters randomly using seeded random function

Display current linked list contents

Display menu with options of recursive and non recursive search

Choose any one

Menu gets displayed again until do while loop for the main menu fails

**Remarks:**

Recursive search always took less time in comparsion to iterative search.

Coercion rules in C has been tested in the code at multiple instances. One example being

char c = rand() % 26 + 65;

Here an integer value assigned to a character c is implicitly typecasted.