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Lab Manual **:** 05
Course Code : CSE 207
Course Title : Data Structure
Instructor : Dr. Maheen Islam, Associate Professor, CSE, East West University

Objective:

The objective of this lab is to provide basic concept of recursion. At the end of the lab, students are able:

- To learn how to use recursion to solve a problem
- To learn how to perform different operations using recursion

Recursion:

Recursion is the process of repeating items in a self-similar way. In programming languages, if a program allows you to call a function inside the same function, then it is called a recursive call of the function.

```
void recursion() {
  recursion(); /* function calls itself */
}

int main() {
  recursion();
}
```

The C programming language supports recursion, i.e., a function to call itself. But while using recursion, programmers need to be careful to define an exit condition from the function, otherwise it will go into an infinite loop.

Recursive functions are very useful to solve many mathematical problems, such as calculating the factorial of a number, generating Fibonacci series, etc.

Exercise 1:

Write a C program to find power of any number using recursion**.**

Example:

Input any number: 5
Input power: 2
Output: 25

Exercise 2:

Write a C program to find GCD of two numbers using recursion.

Example:

Input first number: 10
Input second number: 15
Output GCD: 5

Exercise 3:

Write a C program to find LCM of two numbers using recursion.

Example:

Input first number: 12
Input second number: 30
Output LCM: 60

Exercise 4:

Write a program to check whether a number is palindrome or not using recursion.

Exercise 5:

Write a program to reverse a linked list using recursion