→ Recursion:- A function is calling that itself to solve a particular problem is called a recursion.

- Recursion is nothing but solving bigger problem in terms of smaller problem.
- To Execute the recursive program we used stack data structure.
- Every recursion program should have termination condition.

→ Recurrence relation of factorial:

$$fact(n) = \begin{cases} 1, & \text{if } n \leq 1 \\ n * fact(n-1), & \text{otherwise} \end{cases}$$

→ Recurrence relation of fibonacci series:

$$fib(n) = \begin{cases} n, & \text{if } n==0 \;||\; n==1 \\ fib(n-1) + fib(n-2), & \text{otherwise} \end{cases}$$

→ Recurrence relation of GCD:

$$GCD(m,n) = \begin{cases} \infty, & \text{if } m==0 \;\&\; n==0 \\ m, & n==0 \\ n, & m==0 \\ GCD(n\%m, m), & \text{otherwise} \end{cases}$$

→ Recurrence relation of multiplication of two number:

$$mul(m,n) = \begin{cases} 0, & m==0 \;||\; n==0 \\ m + mul(m, n-1), & \text{otherwise} \end{cases}$$