Recursion

⊛ Any function which is calls itself is called recursive.

by recursion

```
int fact(int n){
  if(n==0){
    return 1;
  }else{
    return n * fact(n-1);
  }
}
```

n=5*4*3*2*1

5-1=4

5*4×3*2×1×1 = 120

without recursive

n! 5! 6!

5×4×3×2×1=120

```
fact(n){
  int f=1;
  while(n--!=0){
    f=f×n;
  }
```

1×5=5×4=20×3=60

60×2=120

n=0!

n=1!

1

```
int fact(int n){
  if(n==0 || n==1){
    return 1;
  }else{
    return n * fact(n-1);
  }
}
```

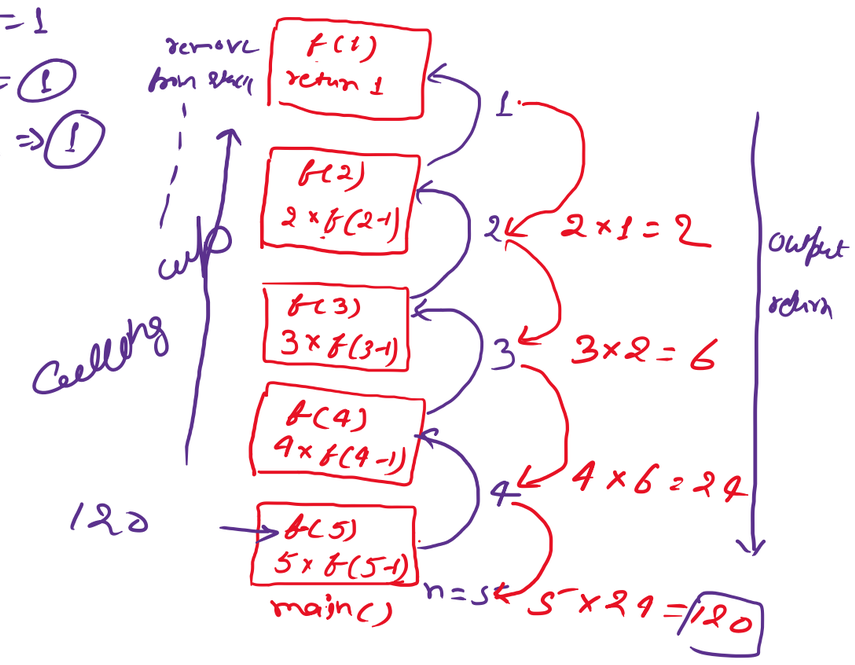
base case

Recursive case

n=1!=1

1×1=1

n=0! ⇒ 1



n! ⇒ n*(n-1)!

n!=1 if n=0 or 1

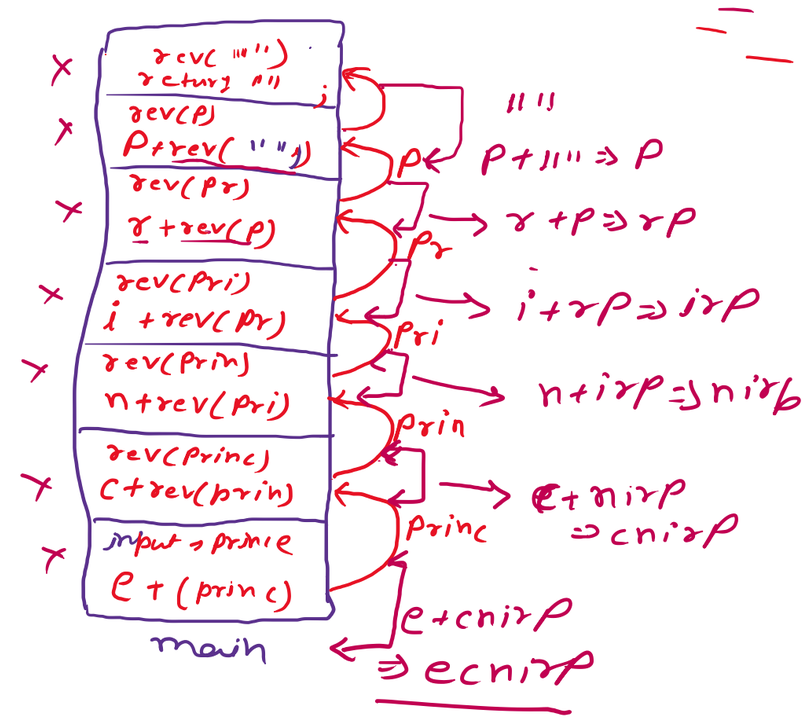
n! = n×(n-1)! → if(n>1)

⊛ ⇒ Reverse String using Recursive ⇒

String str = "prince";

```
public String reverseString(String str){
  if(str==null || str.isEmpty()){
    return str;
  }
  return str.charAt(str.length()-1) + revString(str.substring(0, str.length()-1));
}
```

"" ⇒ empty string



20-07-2023 Covered topic

1. What is recursion?
2. find the factorial using recursion
3. String reverse using recursion

21-07-2023 topic

1. fibonacci series using recursion
2. tower of hanoi
3. and some other example using recursion