factorial

5!=5*4*3*2*1

n!=n*n-1*n-2.....*2*1

```
//n!=n*n-1*n-2.....*2*1
//through iteration
function fact(n){
  let result =1;
  for(let i=n;i>0;i--){
    result = result *i
  }
    return result
}
 fact(5)

//=======Through Recursion==========

//fact(n) = n* fact(n-1)
//       = n* n-1 * fact(n-2)
//       =n * n-1 * n-2 ..... 1


function fact(n){
  //if(n<=0) return "invalid input"
    if(n==1) return 1
    return n*fact(n-1)
}
```

```
console.log(fact(6))

======fibonacci==========

//1,1,2,3,5,8,13,21,34.....

//Program to take n input and find the nth

number in the fibonacci series

//fibo(5) = fibo(4) + fibo(3)

//fibo(n) = fibo(n-1) + fibo(n-2)

function fibo(n){
    if(n<=2) return 1
    return fibo(n-1) + fibo(n-2)

}

================================

//[3,5,2,8] = 3*8*2*8 = 3*product([5,2,8])=240
                =3 * 5 * product([2,8])
                = 3* 5 * 2 * product([8])
                = 3* 5 * 2 * 8 *product([])
                = 3* 5 * 2 * 8 * 1
//[8,1,4] = 8*1*4 = 32
//slice actually remove the first and give all array

function mult(n){
  if(n.length==0) return 1
 return n[0] * mult(n.splice(1))
```

```
}

---------- find the power---

//Math.pow(2,3) = 2**3 =8

//pow(3,5) = 3* pow(3,4)
        = 3* 3 * pow(3,3)
        = 3* 3 * 3 * pow(3,2)
        = 3* 3 * 3 * 3 * pow(3,1)
        = 3* 3 * 3 * 3 * 3 *pow(3,0)
        =3* 3 * 3 * 3 * 3 *1
function pow(b,exp){
   if(exp==0) return 1
   return b * pow(b,exp-1)
}
```