

Factorial of a number  
with recursion and  
with out recursion

# Factorial of a number without recursion

```
long int factorial(long int n)
{
    long int f=1;
    for(long int i=2; i<=n; i++)
        f = f * i;
    return f;
}
```

## Main function which calls factorial function

```
#include <stdio.h>
#include<conio.h>
long int factorial(long int);//function declaration
void main(){
    long int n, f;
    printf("Enter a number:");
    scanf("%ld", &n);
    f=factorial(n);//function calling
    printf("factorial=%ld", f); getch();
}
```

# Factorial of a number by recursion

```
long int factorial(long int n)
{
    if(n==1) return 1;
    else
        return (n * factorial(n-1));
}
```

# Factorial of (5)

$$5! = 5 * 4!$$

$$= 5 * 4 * 3!$$

$$= 5 * 4 * 3 * 2!$$

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

$$= 5 * 4 * 3 * 2 * 1$$

$$= 120$$