

# Functions

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# Functions

A program is just a set of definitions of variables and functions. Communication between the functions is by arguments and values returned by the functions, and through external variables.

```
1 return-type function-name(argument declarations)
2 {
3 declarations and statements
4
5 return expression;
6 }
```

```
1 #include<stdio.h>
2 long int factorial(int){
3     int i, fac = 1;
4     for(i=1; i<=n; i++)
5         fac = fac*i;
6     return fac;
7 }
8 int main(){
9     int n;
10    long int result;
11    printf("Enter a positive integer: ");
12    scanf("%d", &n);
13    if(n < 0){
14        printf("Enter a non-negative number.\n");
15        return 0;
16    }
17    result = factorial(n);
18    printf("Factorial of %d = %ld", n, result);
19    return 0;
20 }
```

# Recursion

C functions may be used recursively; that is, a function may call itself either directly or indirectly.

```
1 #include<stdio.h>
2 long int factorialRec(int){
3     if (n>=1)
4         return n*factorialRec(n-1);
5     else
6         return 1;
7 }
8 int main(){
9     int n;
10    long int result;
11    printf("Enter a positive integer: ");
12    scanf("%d", &n);
13    if(n < 0){
14        printf("Enter a non-negative number.\n");
15        return 0;
16    }
17    result = factorialRec(n);
18    printf("Factorial of %d = %ld", n, result);
19    return 0;
20 }
```