

Function

FUNCTION

- Function is a self contained program module written for specific purpose.
- Function increases readability. reduces complexity, facilitate enhancement.
- In order to use function we must understand three things:

1. Function Declaration

2. Function Definition

3. Function Calling

Function Declaration

- Function declaration is necessary if function calling occurs before function definition.

Syntax: return type function name (argument list);

Example1:

```
int sum(int a, int b);
```

//sum function takes two integers and returns a integer item.

```
int sum(int, int); //parameter name can be omitted
```

Example2:

```
void printSum(int);
```

//printSum function takes one integer returns nothing.

Function Definition

Syntax: return type function name(argument list) {statements;}

Example1:

```
int sum(int a, int b)
{
    int s;
    s = a + b;
    return s;
}
```

Note that each argument must contain both type and name and separated by comma.

Example2:

```
void printSum(int s)
{
    printf("\n Sum = %d", s);
}
```

Example3:

```
void printLine(int n)
{
    printf("\n");
    for(int i=0; i<n; i++)
        printf("-");
}
```

Function Calling

- if a function returns something it can be assigned to a variable or it can be used in an expression just like normal variable or it can be passed as argument to another function.

Example1:

```
int a=5, b=6, s;
```

```
s = sum(5, 6); // s = 11
```

or

```
s = sum(a, b); // s = 11
```

or

```
s = sum(a, b) * sum(a, b); // s = 121
```

or

```
printf("sum=%d", sum(5,6)); // sum = 11
```

- Note that in function declaration only type of the arguments is required;
- in function definition both type and argument name is necessary where as
- in function calling value or variable or expression for the argument is required.

Example2

```
int a = 5, b = 6, s;
```

```
s = sum (a + b, a * b); //s = 41
```

Example3

```
printSum (50); //Sum=50
```

```
/*program to find sum of two numbers
by using function*/
#include <stdio.h>
#include <conio.h>
int sum(int, int); //function declaration
void main(){
    int a, b, s;
    printf("Enter two numbers: ");
    scanf("%d %d", &a, &b);
    s=sum(a,b); //function calling
    printf("\nSum=%d", s);
    getch();
}
```

```
//function definition
/*should be written below the
main function*/
int sum(int a, int b)
{
    int s;
    s = a + b;
    return s;
}
```

INPUT		OUTPUT
5	6	Sum = 11
0	1	Sum = 1

```
/*program to find Square of a number
by using function*/
#include <stdio.h>
#include <conio.h>
int square(int);//function declaration
void main(){
    int a, s;
    printf("Enter a number: ");
    scanf("%d", &a);
    s = square(a);//function calling
    printf("\nSquare of %d is %d", a, s);
    getch();
}
```

```
//function definition
/*should be written below the
main function*/
int square(int a)
{
    int s;
    s = a * a;
    return s;
}
```

INPUT	OUTPUT
5	Square of 5 is 25
1	Square of 1 is 1