

## User Defined Functions :

The functions which are created by user for program are known as 'User defined functions'.

There are two ways to call a function (used when invoking functions)

### ❑ Call by Value:

- Copy of argument pass to a function
- Changes in function do not effect original

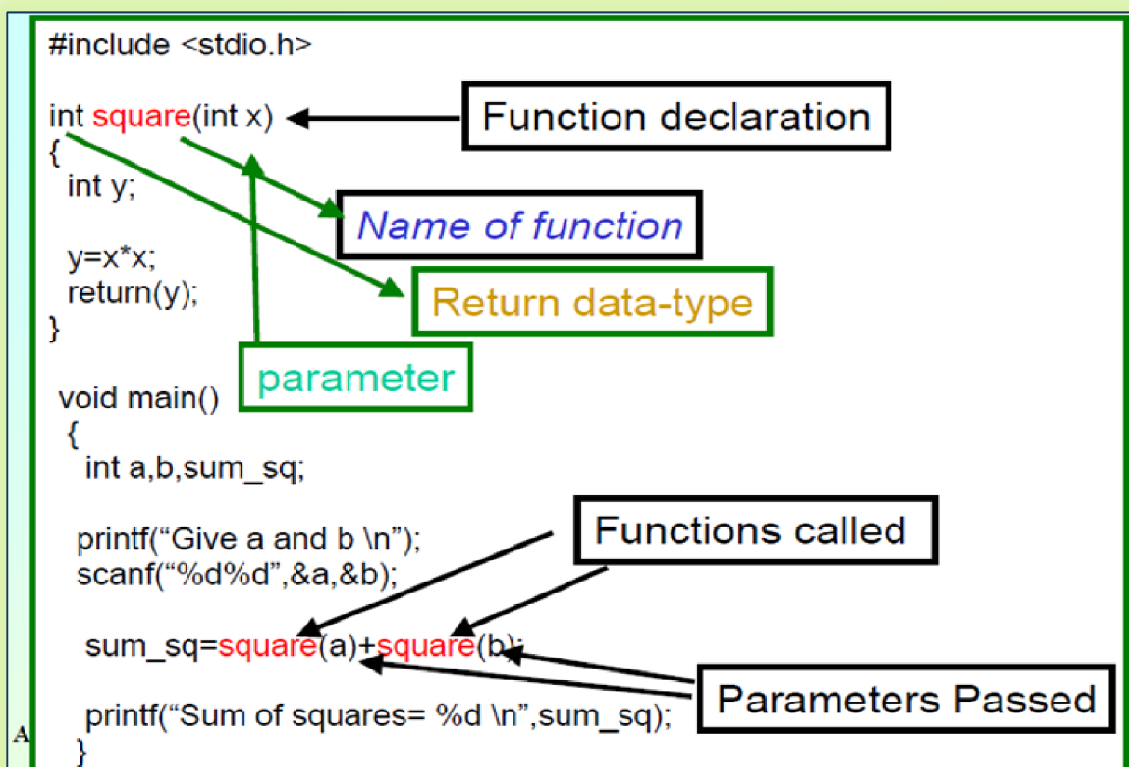
### ❑ Call by reference:

- Passes original arguments to a function
- Changes in function effect original

## Syntax:

```
// Function definition
<return_type> <function_name>(argu_list);
void main()
{
    // Function Call
    <function_name>(<arguments>);
}
// Function declaration
<return_type><function_name>(<argu_list>)
{
    <function_body>;
}
```

## Example : Call by Value



```
#include <stdio.h>

int square(int x)
{
    int y;
    y=x*x;
    return(y);
}

void main()
{
    int a,b,sum_sq;

    printf("Give a and b \n");
    scanf("%d%d",&a,&b);

    sum_sq=square(a)+square(b);

    printf("Sum of squares= %d \n",sum_sq);
}
```

The diagram illustrates the call by value process with the following annotations:

- Function declaration:** Points to the `int square(int x)` line.
- Name of function:** Points to the `square` identifier in the function signature.
- Return data-type:** Points to the `int` return type in the function signature.
- parameter:** Points to the `int x` parameter in the function signature.
- Functions called:** Points to the `square(a)` and `square(b)` calls in the `main` function.
- Parameters Passed:** Points to the `a` and `b` arguments being passed to the `square` function.

## Here the some example of call by value

**Example 1:** Write a function to input any number and print the factorial value of the number.

```
#include<stdio.h>
#include<conio.h>
int fact(int);
void main()
{
int x,y;
clrscr();
printf("Enter any number \n");
scanf("%u",&x);
y=fact(x);
printf("%d",y);
getch();
}
int fact(int j)
{
int k;
for(k=1;j>1;j--)
k=k*j;
return(k);
}
```

**Example 2:** Write a function to input any number and check the number is even or odd.

```
#include<stdio.h>
#include<conio.h>
int even(int);
void main()
{
int x,y;
clrscr();
printf("Enter any number\n");
scanf("%d",&x);
y=even(x);
y==1 ? printf("Number is even") : printf("Number is odd");
getch();
}
int even(int z)
{
if(z%2==0)
return 1;
else
return 0;
}
```

**Example 3:** Write a function to input any two numbers and check which number is greater.

```
#include<stdio.h>
#include<conio.h>
int greate(int,int);
void main()
{
int x,y,z;
clrscr();
printf("Enter any two number\n");
scanf("%d%d",&x,&y);
```

```
z=greater(x,y);
z==1 ? printf("x is greater number ") : printf("y is greater number");
getch();
}
int greater(int a,int b)
{
if(a>b)
return 1;
else
return 0;
}
```

**Try Yourself:**

1. Write a function to input any year and check the year is leap year or not leap year.
2. Write a function to input any number and check the number is positive or negative.
3. Write a function to input the selling and cost price and check the profit or loss.