

Patrician College of Arts and Science

Department of Computer Science

Programming in C

SAE1A

Odd Semester

Presented By :
M.H.Thasin Fouzia



Functions in C

- A **function** is a group of statements that together perform a specific task.
- Every C program has at least one function, which is main().

Syntax

```
return_type function_name(parameter)
{
    function body;
}
```

Function Declarations

A function declaration is the process of tells the compiler about a function name. The actual body of the function can be defined separately.

Syntax

```
return_type function_name(parameter);
```

Calling a function

When we call any function control goes to function body and execute entire code. For call any function just write name of function and if any parameter is required then pass parameter.

Syntax

```
function_name();
```

or

```
variable=function_name(argument);
```

PROTO-TYPES

A function prototype is a function declaration that specifies the data types of its arguments in the parameter list.

Prototype contains the correct number of arguments or parameters, and that each argument or parameter is of the correct data type.

Syntax

```
return_type function_name ( type arg1, type arg2..... );
```

PASSING ARGUMENTS

- This informs compiler about the function name, function parameters and return value's data type.
- On the basis of arguments there are two types of function are available in C language, they are;

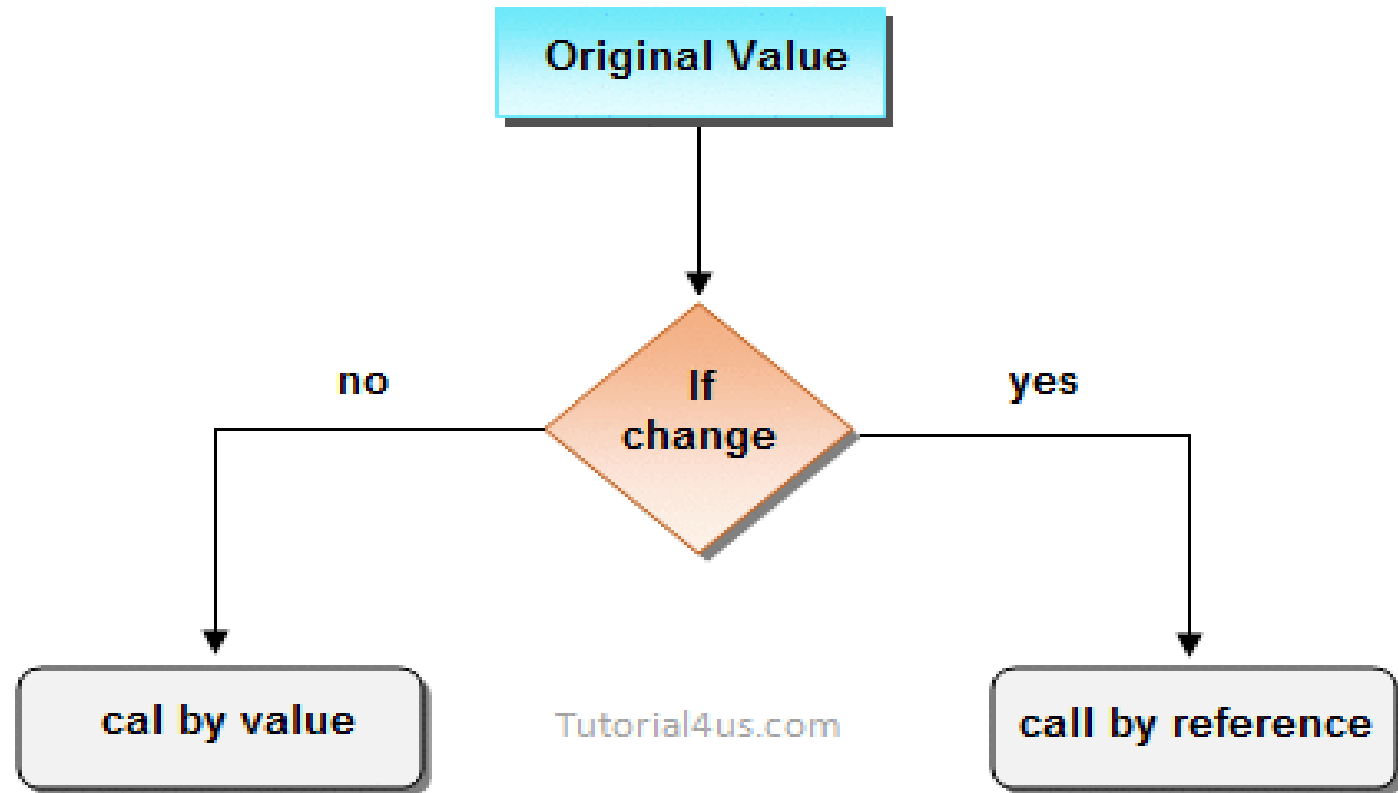
With argument/Without argument

If a function takes any arguments, it must declare variables that accept the values as a arguments. These variables are called the formal parameters of the function.

There are two ways that a C function can be called from a program. They are,

1.Call by value

2.Call by reference



Call by value

- In call by value method, the value of the variable is passed to the function as parameter.
- The value of the actual parameter cannot be modified by formal parameter.
- Different Memory is allocated for both actual and formal parameters. Because, value of actual parameter is copied to formal parameter.

Call by reference

- In call by reference method, the address of the variable is passed to the function as parameter.
- The value of the actual parameter can be modified by formal parameter.
- Same memory is used for both actual and formal parameters since only address is used by both parameters.

RECURSIONS

A function that calls itself is known as a Recursive function.

Recursive functions are very useful to solve many mathematical problems, such as calculating the factorial of a number, generating Fibonacci series, etc.

Syntax

```
returntype recursive_func ([argument list])  
{  
statements;   ... .. recursive_func ([actual argument]);  
... .. }  
... .. }
```

Types of Recursion

1. Direct Recursion: A function is said to be direct recursive if it calls itself directly.

2. Indirect Recursion: A function is said to be indirect recursive if it calls another function and this new function calls the first calling function again.



Thank you

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