



C Programming

Tutorial for Beginners

LECTURE - 18





C Programming

Tutorial for Beginners

What is Function?

A piece of code within a program, which is written to perform a specific task is called "**Function**"

- ❖ It is **independent** of remaining code of the program
- ❖ Functions are the building blocks of C program.
- ❖ A program may **contain many functions**. Each function has a **unique name**. A function may be called for executing by the main() function of any other function of the program with reference of its name.
- ❖ Function provides **structure programming approach**. "A large program is divided into smaller units are called **function** or **module** or **sub-program**".



C Programming

Tutorial for Beginners

Advantages of Function

1. Easy to write programs
2. Easy to understand
3. Easy to modify program
4. Eliminate duplicate code
5. Reusability

Types of Function

There are two type of functions

- i. **Built-In Functions**
- ii. **User Defined Functions**



C Programming

Tutorial for Beginners

Function Declaration / Prototype

Prototype mean sample or model. Specifying the structure or model of user defined function is called “**Function declaration**”.

Like variables, **functions should be declared** before they are defined. Function declaration statement provides the information to the compiler about the user defined function. It provides the following **information** to the compiler:

1. **The name of the function**
2. **The data type returned by the function**
3. **The number and type of parameters used in function**



C Programming

Tutorial for Beginners

Function Declaration / Prototype

The general syntax to declare a function is as follows:

```
return-type  function-name (parameter list);
```

Examples

```
⇒ int power(double, int);
```

```
⇒ float temp(void);    OR    float temp();
```

```
⇒ void display(void);    OR    display();
```



C Programming

Tutorial for Beginners

Where to declare function ... ?

Function can be declared in your program:

1. Before main() function
2. Inside main() function or any other user-defined function.

If you declare function inside main() function or any other user defined function then it can be called inside it. It is called scope of that function. This type of function is called "**Local Function**".

If function is declared before main() function then it can be called any where in your program. It is called "**Global Function**".



C Programming

Tutorial for Beginners

Function Definition

The actual code or set of statements that is written for a function to perform a specific task is called "**Function Definition**".

- ❖ Function definition is always **outside main() function**.
- ❖ It can be written **before or after** main () function.
- ❖ If function definition is written before main() function, the **function declaration is omitted**.
- ❖ Function definition can also be written in a **separate file**. In this case, it is included in the program using **#include preprocessor** directive.



C Programming

Tutorial for Beginners

Function Definition

The function definition consists of two parts:

1. **Function header**
2. **Function body**

```
return-type function-name (parameter list)
{
    set of statements;
}
```

Example

```
int cube (int n)
{
    int res;
    res = n*n*n;
    return res;
}
```




C Programming

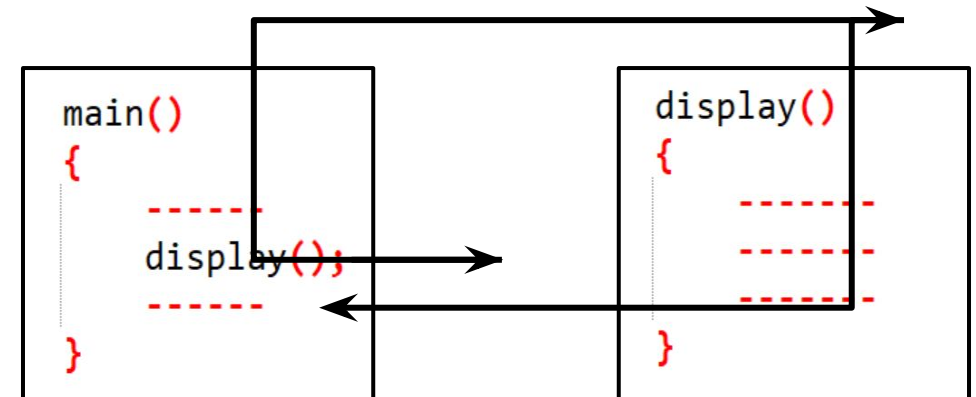
Tutorial for Beginners

Function Call

The process to execute a function to perform specific task is called **function definition**. A function is called with reference to its name.

1. If a **function has parameters**, then actual values in the form of variables or constants are also given in parentheses after the name of the function.
2. If a function as **no parameter**, then the parentheses are left blank.

Working





C Programming

Tutorial for Beginners

C Program Examples

1. Write a program that input **two numbers** and find **sum** of these numbers and display result on screen.
2. Write a program that input **two numbers** and displays the result of **first number raise to the power of second number**.
3. Write a program to input **grade** and **salary** from user and pass both values to function, function will calculate **25% bonus** if grade is **18** or more. It calculate **15% bonus** if grade is less than **18**.

