



Arab Academy for Science and Technology and Maritime Transport

College of Engineering and Technology

Computer Engineering Department

CC112 Structured Programming

Lecture 11

LECTURE 11

Functions

FUNCTIONS

- Functions are the building blocks of C in which all programs activity occurs.
- Function in programming is a segment that groups a number of program statements to perform specific task.
- A C program has at least one function `main()`.



TYPES OF C FUNCTIONS

- Library Function
- User defined Function



LIBRARY FUNCTION

- Library functions are the in-built function in C programming system.
- For example: `main()`, `printf()`, `scanf()`



USER-DEFINED FUNCTION

- C permits programmer to define their own function according to their requirement known as user defined functions.
- A programmer wants to find factorial of a number and check whether it is prime or not in same program. Then, two separate user-defined functions in that program: one for finding factorial and other for checking whether it is prime or not.



SYNTAX OF A FUNCTION DEFINITION

Type-specifier function_name (parameter list)
{
Body of the function
}

Type-specifier

- Specifies the type of value that the function returns using the return statement.



SYNTAX OF A FUNCTION DEFINITION

Parameter List

- Is a comma-separated list of variables that receive the values of the arguments when the function is called.
- A function may be without parameters, in which case the parameter lists contains only the keyword **void**.



SYNTAX OF A FUNCTION DEFINITION

The return Statement

- It causes an immediate exit from the function it is in. That is, it causes program execution to return to the calling code.
- It can be used to return a value.



SYNTAX OF RETURN STATEMENT

return (expression);

OR

return;

For example:

return;

return a;

return (a+b);



USER-DEFINED FUNCTION TYPES

Value-Returning

- Always returns a **single value** to its caller and is called from within an expression.

Void

- Never returns a value to its caller, and is called as a **separate statement**.



SYNTAX OF FUNCTION CALL

function_name(argument(1), .argument(n));

- Control of the program cannot be transferred to user-defined function unless it is called (invoked).



Return type

```
#include <stdio.h>  
void sayHello ( void )
```

Function body

```
{  
    printf("Hello World!\n");  
}
```

Function name

```
int main()  
{
```

Function call

```
    sayHello();
```

```
    return 0;
```

```
}
```

WORKING OF FUNCTION

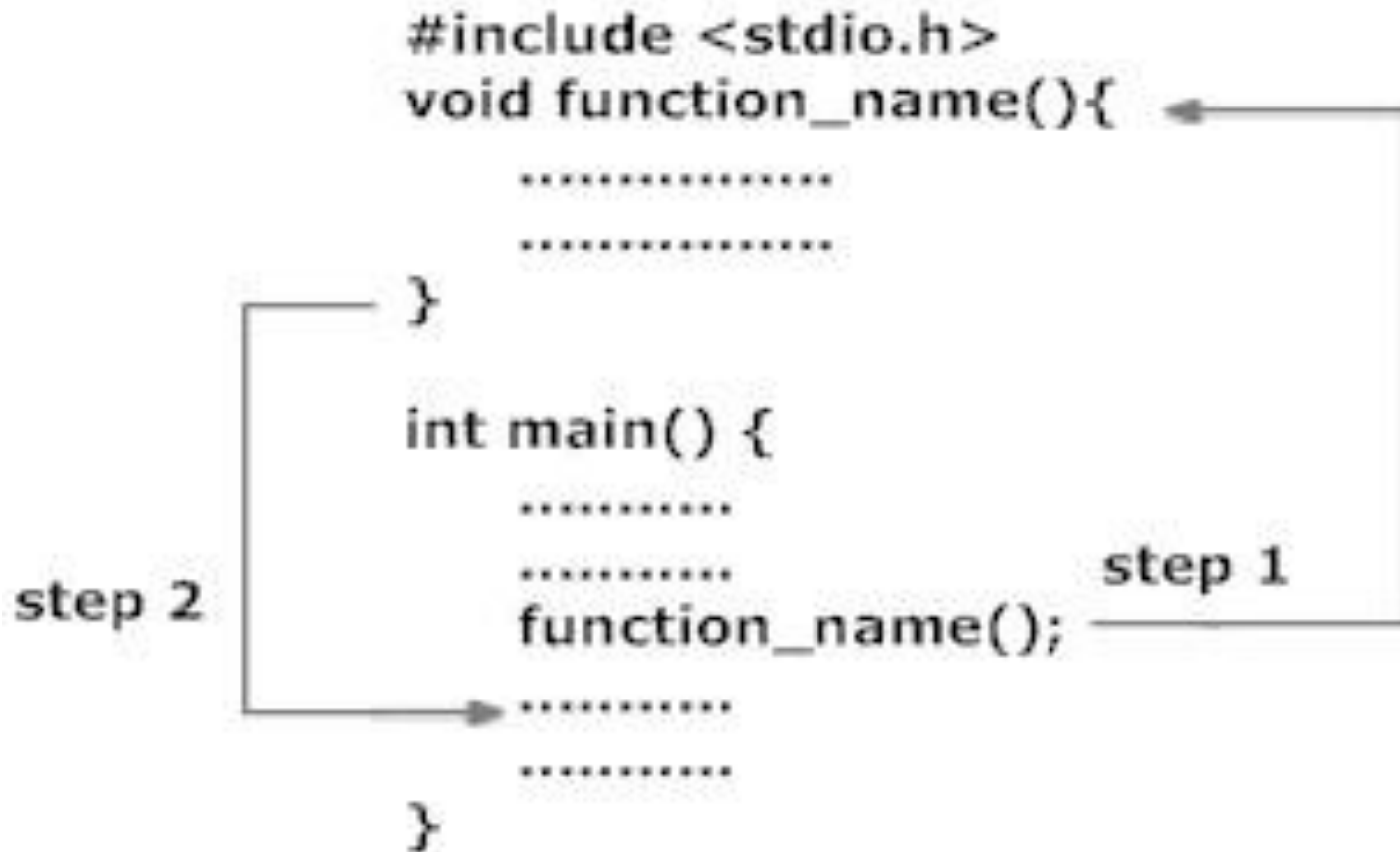


Fig: Working of Functions



FUNCTION PROTOTYPE (DECLARATION)

- Every function in C programming should be declared before they are used. These type of declaration are also called function prototype.
- Function prototype gives compiler information about function name, type of arguments to be passed and return type.



- Write a program that displays prime numbers from 2 till 50 in a function.
- Write a program that reads an array of 10 elements in a function, then send this array to another function and returns the maximum number

THANK YOU