**INTRODUCTION TO C PROGRAMMING LANGUAGE**

## Brief History

[Dennis Ritchie](https://en.wikipedia.org/wiki/Dennis_Ritchie) in 1972 at AT&T Bell Laboratories designed C. In the year 1989, **American National Standards Institute** approved a version knows as **ANSI C**.

## Important points about the C programming language

C is a structured programming language. We can break up a problem into small modules or function blocks and then join them together to get the complete program.

**C source code is compiled.**

A compiler reads the entire source code and converts it into object code also referred to as machine code or binary code. Source code is written in human understandable form so, it is necessary to translated it into machine code using compiler which the computer can execute easily.

It is a free-form language i.e. the compiler is not worried about from where we start writing our code.

C programs are a collection of modules or functions. These functions are either user-defined functions, written by a programmer, or standard library functions, provided by the compiler.

Many other programming languages like C++, Java, PHP, JavaScript etc. have borrowed their syntax or were inspired from the C programming language. In fact C++ is a superset of C and is also referred as "C with Classes".

## Writing C code

In order to write and compile C code we will need a compiler.

You can use any of the following IDEs for writing and compiling C program.

* [CodeLite](https://codelite.org/) - Mac, Windows, Linux
* [Code Blocks](http://www.codeblocks.org/) - Mac, Windows, Linux
* [NetBeans](https://netbeans.org/features/cpp/index.html) - Mac, Windows, Linux
* [CLion](https://www.jetbrains.com/clion/) - Mac, Windows, Linux

## .c extension

We save C source code in a file with the .c extension.

Example: foo.c

## Print "Hello World"

Open your IDE and create a new file lets say, helloworld.c and write the following code inside it.

#include <stdio.h>

int main(void) {

printf("Hello World");

return 0;

}

Lets talk about each line of the program.

## #include Directive

The first line of the program #include <stdio.h> is a **preprocessor directive** which instructs the compiler to include **stdio.h** header file from the C library for input/output.

C programs are generally divided into modules or functions. Some of these functions are written by us programmers and some of the functions are stored in the **C library**.

Functions stored in C library are grouped in categories and saved in files known as **header files**.

Header files are saved with a .h file extension.

Note! preprocessor directives are added at the beginning of a program.

## The main function

Next we have the main() function which is a special function in C programming as it tells about the starting point of the program.

Every C program must have only one main function.

If we create more than one main() function in a C program then we will get an error as the compiler will not know which one represent the starting point of the program.

### What is a function?

A **function** in C is a block of code that can take in some value, perform some tasks and can return a value.

We represent the start and end of a function block using the opening and closing curly { } brackets.

int main(void) {

}

Function code is written inside the opening and closing curly brackets.

### Return type

Functions can return value and the int keyword before the **main** function tells us that the **main** function can return **integer** value.

If a function is not going to return any value then we use the void keyword.

We will learn about functions in the Functions tutorial.

### Function Argument

Within the opening and closing parenthesis ( ) of a function we pass some values.

In the above code we have main(void) which means the **main** function takes no value.

void is a special keyword.

## The printf function

The printf() function in C is used to print output. It is a standard C function.

So, in the above code we are printing a string message that is enclosed within double quotes "Hello World".

### The semicolon ;

Every sentence in English ends with a full stop . similarly, every statement in C ends with a semicolon ; mark.

So, in the above program we end the statement with a semicolon.

printf("Hello World");

## return 0;

The last line inside the **main** function is a return statement.

Since the return type of the **main** function in the above program is set to int so, we are returning an integer value 0 at the end of the function.

## 1. Write a program in C to print "We are learning C".

This is fairly simple. All we have to do is use the printf() function.

#include <stdio.h>

int main(void)

{

printf("We are learning C.");

return 0;

}