



Computer Programming Overview

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I assume today is your first day when you heard about computer programming. You are curious to know what exactly is computer programming? Before you understand what is computer programming, you need to understand what is computer program?

I'm making an assumption that you know a little about what is computer and how to use it for Internet browsing, Exploring Facebook or Checking e-mail using Gmail, etc.

What is Computer Program?

A computer program is a sequence of instructions written using a Computer Programming Language to perform a specified task by the computer

I assume, you did not understand what I have written about computer program but let's see two important terms, which I have used in the above definition:

Sequence of instructions

Computer Programming Language

To understand these terms, consider a situation when someone asks you about how to go to a nearby KFC. What exactly do you do to tell him the way to go to KFC?

You will use Human Language to tell the way to go to KFC something as follows:

First go straight, after half kilometer, take left from the red light and then drive around one kilometer and you will find KFC at the right.

Here, you have used English Language to give several steps to be taken to reach to

KFC. If they will be followed in the following sequence, then you will reach KFC:

1. Go straight
2. Drive half kilometer
3. Take left
4. Drive around one kilometer
5. Search for KFC at your right side

Now, try to map the situation with computer program. Above sequence of instructions is actually a **Human Program** written in **English Language**, which instructs on how to reach to KFC from a given starting point. This same sequence could have been given in Spanish Language, Hindi Language, Arabic or any other human language provided someone, who is asking about the way, knows about such languages.

Now, let's go back and try to understand about a computer program, which is a sequence of instructions written in a Computer Language to perform a specified task by the computer. Following is a simple program written in **Python** programming Language:

```
print "Hello, World!"
```

Above computer program instructs computer to print "Hello, World!" on computer screen.

A computer program is also called a **computer software**, which can range from two lines to millions of lines of instructions.

Computer program instructions are also called program source code and **computer programming** is also called **program coding**.

A computer machine without a computer program is just a dump box and thus computer program brings a computer machine to live state.

Like human has several languages to communicate their message, computer scientists have developed several computer-programming languages to provide instructions to the computer (i.e., to write computer programs). We will see several computer programming languages in subsequent chapters.

What is Computer Programming?

If you understood what is **computer program**, then I will say *the act of writing computer programs is called computer programming*.

As I mentioned earlier, there are 100s of programming languages, which can be used to write computer programs and following are few of them:

Java

C

C++

Python

PHP

Perl

Ruby

What Computer Program can do?

Today computer programs are being used in almost every field, household, agriculture, medical, entertainment, defense, communication, etc. Following are few applications of computer programs:

MS Word, MS Excel, Adobe Photoshop, Internet Explorer, Chrome, etc., are example of computer programs.

Computer programs are being used to develop graphics and special effects in movie making.

Computer programs are being used to perform Ultrasounds, X-Rays, and other medical examinations.

Computer programs are being used in our mobile phones for SMS, Chat, and voice communication.

Who is Computer Programmer?

If you understood what is computer program and what is computer programming, then simply apply common sense to understand who is computer programmer?

Someone, who can write computer programs or in other words, someone who can do computer programming is called Computer Programmer

Based on computer programming language expertise, we can name computer programmers as follows:

C Programmer

C++ Programmer

Java Programmer

Python Programmer

PHP Programmer

Perl Programmer

Ruby Programmer

What is Algorithm?

From programming point of view, an **algorithm** is a step-by-step procedure to resolve any problem. An algorithm is an effective method expressed as a finite set of well-defined instructions.

Thus, a computer programmer lists down all the steps required to resolve a problem before jumping to write actual code. Following is a simple example of an algorithm to find out a largest number from a given list of numbers:

1. Get a list of numbers $L_1, L_2, L_3, \dots, L_N$
2. Assume L_1 is the largest, **Largest** = L_1
3. Take next number L_i from the list and do the following
4. If **Largest** is less than L_i
5. **Largest** = L_i
6. If L_i is last number from the list then
7. Print value stored in **Largest** and come out
8. Else repeat same process starting from step 3

Above algorithm has been written in very crude way just because to make it clear to beginners, otherwise if you will study computer algorithm subject then you will find standardized way of writing computer algorithm.

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