**Compilation vs. interpretation**

Computer programming is the act of composing the selected programming language's elements in the order that will cause the desired effect. The effect could be different in every specific case – it's up to the programmer's imagination, knowledge and experience.

Of course, such a composition has to be correct in many senses:

* **alphabetically** – a program needs to be written in a recognizable script, such as Roman, Cyrillic, etc.
* **lexically** – each programming language has its dictionary and you need to master it; thankfully, it's much simpler and smaller than the dictionary of any natural language;
* **syntactically** – each language has its rules and they must be obeyed;
* **semantically** – the program has to make sense.

Unfortunately, a programmer can also make mistakes with each of the above four senses. Each of them can cause the program to become completely useless.

Let's assume that you've successfully written a program. How do we persuade the computer to execute it? You have to render your program into machine language. Luckily, the translation can be done by a computer itself, making the whole process fast and efficient.

There are two different ways of **transforming a program from a high-level programming language into machine language**:

**COMPILATION** - the source program is translated once (however, this act must be repeated each time you modify the source code) by getting a file (e.g., an .exe file if the code is intended to be run under MS Windows) containing the machine code; now you can distribute the file worldwide; the program that performs this translation is called a compiler or translator;

**INTERPRETATION** - you (or any user of the code) can translate the source program each time it has to be run; the program performing this kind of transformation is called an interpreter, as it interprets the code every time it is intended to be executed; it also means that you cannot just distribute the source code as-is, because the end-user also needs the interpreter to execute it.

Due to some very fundamental reasons, a particular high-level programming language is designed to fall into one of these two categories.

There are very few languages that can be both compiled and interpreted. Usually, a programming language is projected with this factor in its constructors' minds - will it be compiled or interpreted?