Natural languages vs. programming languages

A language is a means (and a tool) for expressing and recording thoughts.

For example body language, mother tongue

Computers have they’re own called machine language

The commands it recognizes re very simple.

A complete set of known commands is called an **instruction list**. Or **IL**

**What makes a language?**

We can say that each language (machine or not) consists of:

- alphabet

Set of symbols sed to build words of certain language

- lexis

(aka a dictionary)   
 a set of words the language offers its users

- syntax

A set of rules (formal or informal, written or spoken)

- semantics

A set of rules determining if a certain phrase makes sense

**Machine language vs. high-level language**

The IL is, in fact, the alphabet of a machine language.

This is the simplest and most primary set of symbols we can use to give commands to a computer.

Unfortunately, this language is a far cry from a human mother tongue.

We need smt that we humans and computers can read,   
 A BRIDGE BETWEEN THE TWO WORLDS

Such languages are called high-level programming languages. These languages enable humans to express commands to computers that are much more complex than those offered by ILs

A program written in a high-level programming language is called a **source code**

Similarly, file containing the source code is called **source file**

**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.

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

* *Alphabetically* - program needs to be written in a recognizable script
* *Lexically* - u need to master each language dictionary
* *Syntactically* - each language has its rules and they must be obeyed
* *Semantically* - the program has to make sense

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

1. **Compilation**

**-** The source program is translated once   
 (must be done each time when you modify the code)

- Program that performs this is called a compiler or translator

- Now you can distribute the file

1. **Interpretation**

**-** You can translate the source program each time it has to be run.

It interprets the code every time it is intended to be executed

- Program that performs this is called an interpreter

- You cannot distribute the code as-is, end-user would need the interpreter