There are six stages of compiling a program:

* Lexical analysis
* Symbol table construction
* Syntax analysis
* Semantic analysis
* Code generation
* Optimization

**Lexical Analysis:**

The lexical analysis reads the characters from the input program and creates a sequence of lexical components and deletes the elements that are not necessary for the executable program. In this stage the tokens are created by the programmer.

**Symbol Table Construction:**

A table is created to store the operations and the data.

**Syntax Analysis:**

In this stage an abstract syntax tree is created. The tokens created are checked to know if they are in the correct order to be matched in the programming language. If there is an error, an error message will appear.

**Semantic Analysis**:

It is checked that everything is correct in the program used.

**Code generation:**

An executable code is created, which is in binary code, from all the data and previous steps.

**Optimization:**

The optimization helps the code to be more efficient and may identify repeated codes.

Programming languages can be divided into two different levels:

High Level Language is a language used in programming which is easy to read and understand by humans, it is used english words to program.

Example: Java, Python

Low Level Language is a language which is closer to be represented by 0 and 1, that’s mean is a language which is understood by the computers.

Examples: Machine Language and Assembly Language.

# References

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