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SURVEY OF PROGRAMMING LANGUAGES

RESEARCH ON **PREPROCESSOR, ASSEMBLIER AND LOADER**

An assembler is a [program](https://techterms.com/definition/program) that converts [assembly language](https://techterms.com/definition/assembly_language) into machine code. It takes the basic commands and operations from assembly code and converts them into [binary](https://techterms.com/definition/binary) code that can be recognized by a specific type of [processor](https://techterms.com/definition/processor).

Assemblers are similar to [compilers](https://techterms.com/definition/compiler) in that they produce executable code. However, assemblers are more simplistic since they only convert low-level code (assembly language) to machine code. Since each assembly language is designed for a specific processor, assembling a program is performed using a simple one-to-one mapping from assembly code to machine code. Compilers, on the other hand, must convert generic high-level [source code](https://techterms.com/definition/sourcecode) into machine code for a specific processor.

Most programs are written in high-level [programming languages](https://techterms.com/definition/programming_language) and are compiled directly to machine code using a compiler. However, in some cases, assembly code may be used to customize functions and ensure they perform in a specific way. Therefore, [IDEs](https://techterms.com/definition/ide) often include assemblers so they can build programs from both high and low-level languages.

**-Preprocessor**

A preprocessor is a [program](https://en.wikipedia.org/wiki/Computer_program) that processes its input data to produce output that is used as input to another program. The output is said to be a preprocessed form of the input data, which is often used by some subsequent programs like [compilers](https://en.wikipedia.org/wiki/Compiler). The amount and kind of processing done depends on the nature of the preprocessor; some preprocessors are only capable of performing relatively simple textual substitutions and [macro](https://en.wikipedia.org/wiki/Macro_(computer_science)) expansions, while others have the power of full-fledged [programming languages](https://en.wikipedia.org/wiki/Programming_language).

**-Loader**

A loader is the part of an [operating system](https://en.wikipedia.org/wiki/Operating_system) that is responsible for loading [programs](https://en.wikipedia.org/wiki/Computer_program) and [libraries](https://en.wikipedia.org/wiki/Library_(computing)). It is one of the essential stages in the process of starting a program, as it places programs into memory and prepares them for execution. Loading a program involves reading the contents of the [executable file](https://en.wikipedia.org/wiki/Executable) containing the program instructions into memory, and then carrying out other required preparatory tasks to prepare the executable for running. Once loading is complete, the operating system starts the program by passing control to the loaded program code.

All operating systems that support program loading have loaders, apart from highly specialized computer systems that only have a fixed set of specialized programs.

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