Assembler

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WHAT IS ASSEMBLER

- In computer science an assembler is an program that turns assembly language into machine code.

- An assembler is a program that convert basic computer instructions into patterns of bits

- that the computer's processor can use to perform its basic operations.

- Some people call these instructions assembler language and others use the term assembly language

- Most computers come with a specified set of very basic instructions that correspond to the basic machine operations that the computer can perform.
- **For example**, a "Load" instruction causes the processor to move a string of bits from a location in the processor's memory to a special holding place called a register.
- Assuming the processor has at least eight registers, each numbered, the following instruction would move the value (string of bits of a certain length) at memory location 3000 into the holding place called register 8:

- L 8,000
- The programmer can write a program using a sequence of these assembler instructions.
- This sequence of assembler instructions, known as the **source code** or source program,
- then is specified to the assembler program when that program is started.
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- The assembler program takes each program statement in the source program and generates a corresponding bit stream or pattern (a series of 0's and 1's of a given length).
- The output of the assembler program is called the **object code** or object program relative to the input source program.

- The sequence of 0's and 1's that constitute the object program is sometimes called machine code.

- The object program can then be run (or executed) whenever desired.

- In the earliest computers, programmers actually wrote programs in machine code, but assembler languages or instruction sets were soon developed to speed up programming.
- Today, assembler programming is used only where very efficient control over processor operations is needed

- It requires knowledge of a particular computer's instruction set,
- however. Historically, most programs have been written in "higher-level" languages such as COBOL, FORTRAN, PL/I, and C.
- These languages are easier to learn and faster to write programs with than assembler language

- The program that processes the source code written in these languages is called a compiler.
- Like the assembler, a compiler takes higher-level language statements and reduces them to machine code.

- Assembly language is machine dependent yet mnemonics that are being used to represent instructions in it are not directly understandable by machine .

high Level language is machine independent. A computer understands instructions in machine code, i.e. in the form of 0s and 1s. It is a tedious task