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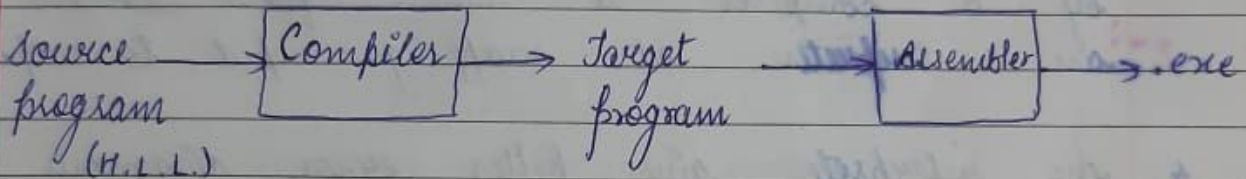
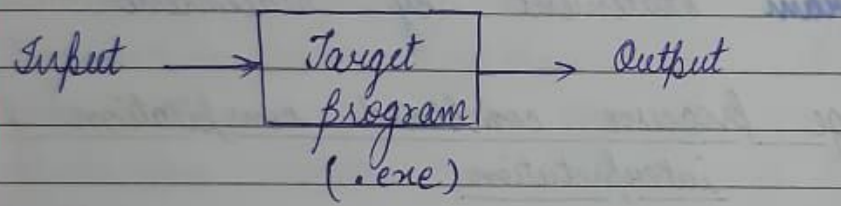
UNIT - 1

Compiler : A compiler is a program that can read a program in one language and translate it into an equivalent program in other language (target language).

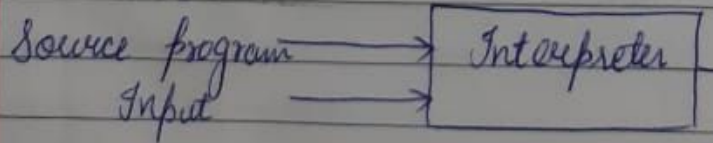




Language Processor

* An important role of compiler is to report any error in the source program that it detects during the translation process.
* If the target program is an executable machine language program it can be called by the user to process input and produce output.

Interpreter



★ An interpreter is another common kind of language processor, instead of producing a target program and a translation, an interpreter executes the operation specified in the source program on input supplied by the user.

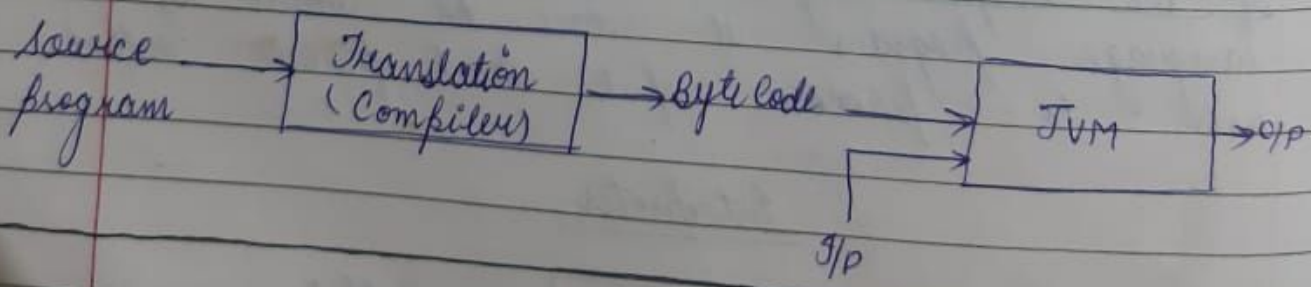
★ The machine language target program produced by a compiler is much faster than an interpreter at mapping input to output.

★ An interpreter give better error diagonosis than a compiler because it executes the source program statement by statement.

Java language processor combined compilation & interpretation

(a) Java source program first convert into an intermediate form called byte codes.

(b) The byte codes are then interpreted by virtual machine (JVM).



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Assembler

(a) Assembler is a translator / language processor.

(b) Assembler depends upon the architecture of the processor.

Assembly language program → [Assembler] → .exe file.

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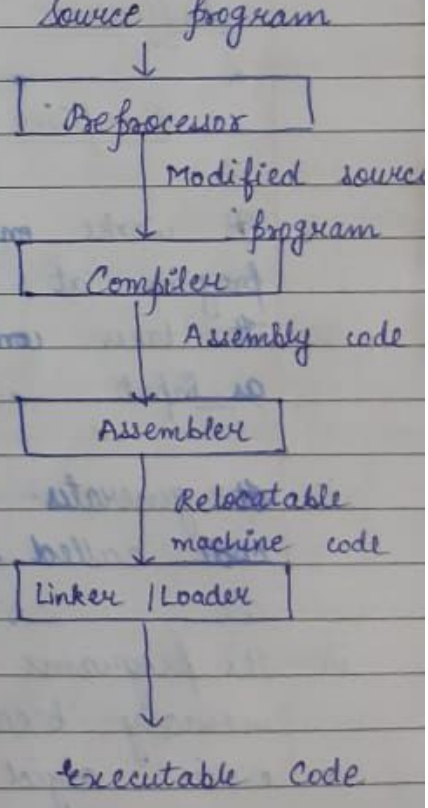
Language processing system



Preprocessor : Collecting the source program, expand short hands called macros, include the file which are written in #include format.

Compiler : It converts this modified source program into assembly language program.

Assembler : This assembly language program is converted into a relocatable machine code with the help of assembler.

Relocatable Machine code : You can load machine code at any point in computer memory and you can run this code.

Relocatable Machine code cooperates with program movement.

Linker / Loader: Linker resolves external memory addresses where the code in one file may refer to location in other file.

The purpose of linker is to link all the object file (.obj file) into a single file and load that file into main memory with the help of loader.

Difference between Compiler & Interpreter

Compiler	Interpreter
i. It works on complete program at once. It takes complete program as input.	i. It works line-by-line. It takes one statement at a time as the input.
ii. It generates intermediate code called object code.	ii. Interpreter doesnot generate intermediate code.
iii. It's programs takes more memory because the entire object code has to reside in main mem.	iii. It doesnot generate object code, as a result the interpreted program are more memory efficient.

v. Compile once and Run anytime. Compiled program doesnot need to be compiled every time.	v. Interpreted programs are interpreted line by line, everytime they run.
vi. Difficult to debug.	vi. Easy to Debug.
vii. C, C++, COBOL are the examples.	vii. PHP, Python, VB are the examples.

Phases of COMPILER