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TUTORIAL 1

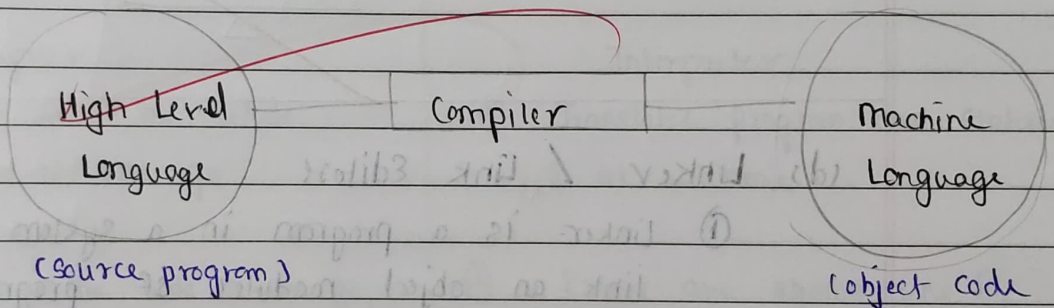
SYSTEM SOFTWARE

Q.1.) Define the following terms:

(a) Compiler

① A compiler is a software that typically takes a high level language (like C++ and Java) code as input and converts the input to a lower language at once.

② It list all the errors if the input code does not follow the rules of its language.



(b) Interpreter

① The software by which the conversion of the high level instructions is performed line-by-line to machine level language, other than compiler and assembler is known as INTERPRETER.

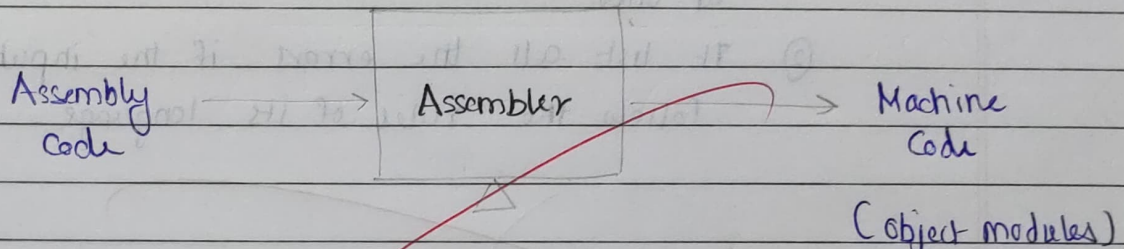
② If an error is found on any line, the execution stops till it is corrected.

③ It translates source code into some effecient intermediate representation and immediately executes this.

(c) Assembler

① Assembler is a program for converting instructions in low-level Assembly code into relocatable machine code and generating along information for the loader.

② It generates instructions by evaluating the mnemonics (symbols) in operation field and find the value of symbols and literals to produce machine code.



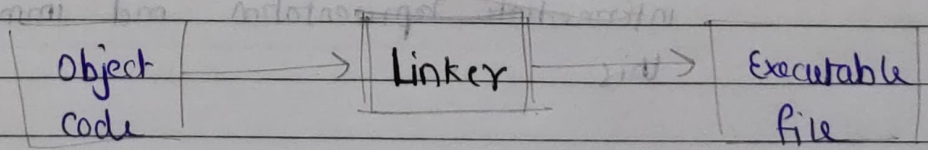
(d) Linker / Link Editors

① Linker is a program in a system which helps to link an object modules of program into a single object file.

② It performs the process of Linking (Collecting and maintaining piece of code into a single file)

③ Linker also links a particular module into system library.

④ It takes object modules from assembler as input and forms an executable file as output for loader.



(c) Loader

① Loader is the program of the OS which loads the executable from the disk into the primary memory (RAM) for execution.

② It allocates the memory space to the executable module in the main memory and then transfers the control to the beginning instruction of the program.

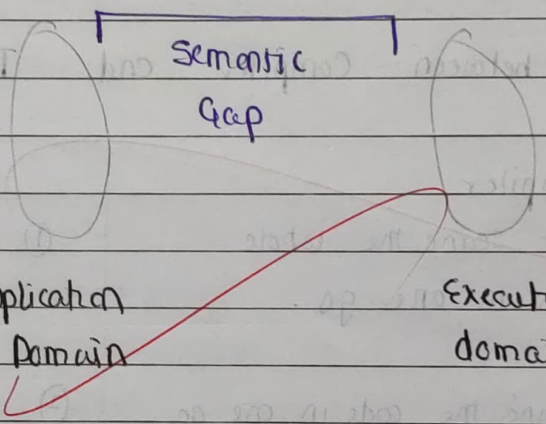
② Difference between Compiler and Interpreter.

Compiler	Interpreter
① Compiler scans the whole program in one go.	① Translates program one statement at a time.
② As it scans the code in one go, the errors (if any) are shown at the end together.	② Errors are shown line by line.
③ Main Advantage of compiler - Execution time	③ Due to interpreters being slow in executing the object code, it is preferred less.
④ Does not require source code for later execution.	④ requires source code for later execution.
⑤ Eg: C, C++, C# etc.	⑤ Eg Python, Ruby, Perl

(3) Explain the Semantic Gap.

(3) ① The semantic gap characterizes the difference between two descriptions of an object by different linguistic representation for eg. languages or symbols.

② According to Hein, the semantic gap can be defined as "the difference in meaning between construct ~~code~~ formed within different representation systems."



③ Consequences of Semantic Gap:
① Large development times
② Large development effort
③ Poor Quality Software

Semantic Gap can be solved via Software engineering.