DAY 1 --- Assignment 1

Ques: Mention the difference between interpreter and compiler.

Ans:

Compiler:

A compiler is a computer program that transforms code written in a high-level programming language into the machine code. A compiler takes **entire program** and converts it into object code which is typically stored in a file. The object code is also refereed as binary code. The time of code execution is significantly less. The drawback of using a compiler is that you can only make changes in the program by going back to your source code.

Interpreter:

An Interpreter directly executes instructions written in a programming or scripting language without previously converting them to an object code or machine code. An interpreter converts high-level programming language into machine language **line-by-line** while interpreting and running the program. An interpreter reads the program line-by-line; it shows the error if present at that specific line. Hence, debugging is comparatively easy while working with an Interpreter.

Difference Types	Compiler	Interpreter
Translation type	A compiler translates complete high-level programming code into machine code at once.	An interpreter translates one statement of programming code at a time into machine code.
Advantage	As the source code is already converted into machine code, the code execution time becomes short.	As the source code is interpreted line-by-line, error detection and correction become easy.
Disadvantage	If you want to change your program for any reason, either by error or logical changes, you can do it only by going back to your source code.	Interpreted programs can run on only those computers which have the same interpreter.
Machine code	It stores the converted machine code from your source code program on the disk.	It never stores the machine code at all on the disk.
Running time	A compiler takes an enormous time to analyze source code. However, overall compiled programming code runs faster as compression to an interpreter.	An interpreter takes less time to analyze source code as compared to a compiler. However, overall interpreted programming code runs slower as compression to the compiler.
Execution	The process of program execution takes place separately from its compilation process. Program execution only takes place after the complete program is compiled.	The process of program execution is a part of interpretation steps, so it is done line-by-line simultaneously.
Error execution	The compiler shows the complete errors and warning messages at program compilation time. So it is not possible to run the program without fixing program errors. Doing debugging of the program is comparatively complex while working with a compiler.	An interpreter reads the program line-by-line; it shows the error if present at that specific line. You must have to correct the error first to interpret the next line of the program. Debugging is comparatively easy while working with an Interpreter