What is difference between Compiler and Interpreter

Compiler:
A compiler translates the entire source code of a program into machine code (binary) before execution. The resulting machine code is then executed directly by the hardware.

Interpreter:
An interpreter translates and executes the code line-by-line or statement-by-statement without producing a separate machine code file.

EXECUTION :

COMPILER: The program runs after the compilation process is complete.

Interpreter: Code is executed immediately as it's interpreted.

SPEED:

Compiler: Faster execution after compilation since the machine code is ready to run.
Interpreter: Slower execution as translation happens during runtime.

Output

Compiler: Generates a separate executable file (e.g., .exe in Windows).

Interpreter: Does not generate an executable file; executes code directly.

Error Handling

Compiler: Displays all errors after analyzing the entire program. The program won't execute until all errors are fixed.

- Interpreter: Stops execution as soon as it encounters an error, making debugging easier.