**Different Programming Terms**

Programming:

Programming is the process of giving instruction to the computer to perform specific tasks.

Programming Languages:

The instructions to computer are given in specific languages that computer can understand these languages are called programming languages.

eg: Python, Java, Java Script, Php etc.

Code Translator:

Code translators are tools or programs that convert code written in one programming language or format into another. They are often used to make software compatible with different environments or to simplify the development process. There are different types of code translators, such as:

1. **Compilers**: Convert high-level programming languages (like C++) into machine code that a computer can execute directly.
2. **Interpreters**: Execute high-level code line by line without converting it entirely into machine code beforehand.
3. **Transpilers**: Translate code from one high-level language to another (e.g., TypeScript to JavaScript).
4. **Decompilers**: Reverse the process, converting compiled code back into a high-level language for analysis or modification.
5. **Cross-Compilers**: Generate code for a platform different from the one on which the compiler is running.

Program:

A Program is a set of instruction written in programming language that a computer can execute to perform specific task or to solve a problem

Variables:

Variables in programming are the containers used to store data or information that can be accessed and modified during program execution. They act as named labels that reference values in a program's memory.

Algorithm

A step-by-step set of instructions to solve a problem or perform a task.

**Example:** Steps to sort a list of numbers in ascending order.

Syntax:

The rules or the structure of writing code in specific programming language.

Conditional statement:

They are used to make decisions in a program (if, else)

Loops:

Structure that repeats a block of code. (for, while)

Functions:

Reuseable block of code that perform specific tasks.

Debugging:

The process of identifying and fixing error in your code.

IDE (Integrated Development Environment):

The software tools like VS code or PyCharm that make the writing, execution, debugging and testing code easier

Compilation:

The process of converting High-level language into machine readable format before execution as a whole.

Interpretation:

The process of converting High-level language into machine readable format line by line during execution

Library:

A collection of pre written code that can be used to simplify tasks.

Framework:

A structure or tools that help to build an application faster.

API (Application Programming Interface):

APIs allows different programs to communicate with each other. For example: Google Maps provides an API that other apps use to display direction and location.

Version Control:

Version control like Git allows you to track changes to your code and collaborate with others

Model:

A **Model** is a component in the **MVC (Model-View-Controller)** architecture. It is responsible for managing data and business logic in an application.

**Key Characteristics of a Model:**

1. **Data Representation**: Defines the structure of data (e.g., user, product).
2. **Database Interaction**: Handles fetching, updating, and deleting records from a database.
3. **Business Logic**: Enforces rules and processes on how data should behave.