



# Coding:

## **1. Programming Languages:**

- Programming languages are used to create instructions for computers to follow.
- Common programming languages include Python, Java, JavaScript, C++, and Ruby.

## **2. Syntax:**

- Syntax refers to the rules and structure of a programming language.
- Proper syntax is essential for writing code that computers can understand and execute.

## **3. Variables:**

- Variables are used to store data in a program.
- They have names, types, and values, and can be changed throughout the program.

## **4. Data Types:**

- Data types define the type of data that can be stored in a variable.
- Common data types include integers, floating-point numbers, strings, and booleans.

## **5. Operators:**

- Operators perform operations on variables and values.
- Examples include arithmetic operators (+, -, \*, /), comparison operators (==, !=, <, >), and logical operators (and, or, not).

## **6. Control Structures:**

- Control structures are used to control the flow of a program.
- Examples include if statements, loops (for, while), and switch statements.

## **7. Functions:**

- Functions are blocks of code that perform a specific task.
- They can accept inputs (parameters) and return outputs (return values).

## **8. Comments:**

- Comments are used to add explanations or notes to the code.
- They are ignored by the computer when the code is executed.

## **9. Debugging:**

- Debugging is the process of finding and fixing errors (bugs) in code.
- Techniques include using print statements, debugging tools, and stepping through code.

#### **10. Version Control:**

- Version control systems like Git are used to track changes to code and collaborate with others.
- They allow developers to work on different versions of code simultaneously and merge changes together.

#### **11. Algorithmic Thinking:**

- Algorithmic thinking involves breaking down problems into smaller, more manageable steps.
- It is essential for designing efficient algorithms and writing clean, maintainable code.