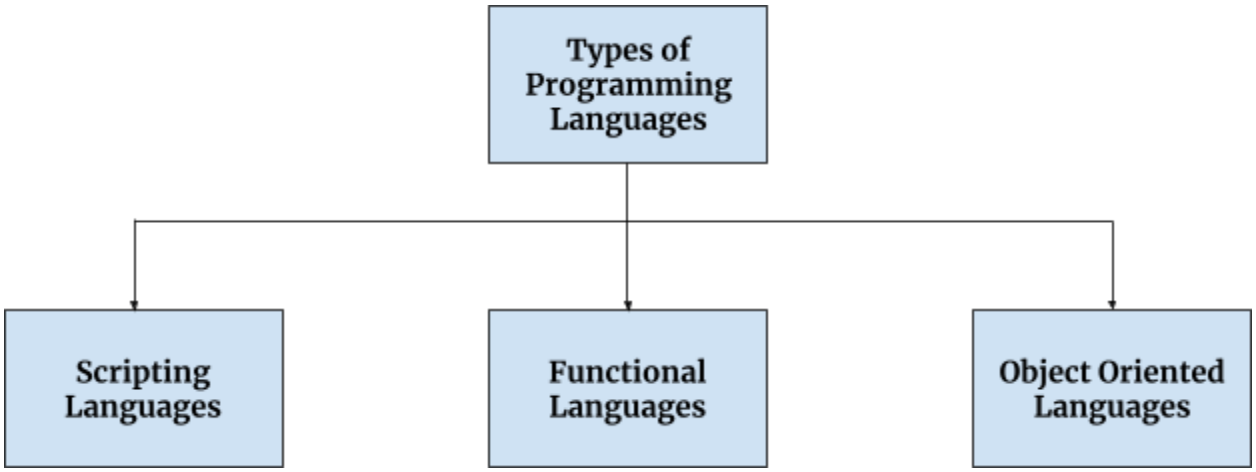
Introduction to Programming

Programming is the process of designing a step by step plan that will make a computer do what you want it to.

Computers only understand Binary, which is a format of 0's and 1's. It is very difficult for humans to instruct computers using this format, so we created programming languages.

Programming language is a standard way of communicating instructions to a computer.



A **scripting language** is a programming language that supports scripts, which are programs traditionally written in a human-readable form and executed by a scripting engine.

Examples of scripting languages include:

- JavaScript
- Python
- Ruby
- PHP

A **functional language** is a programming language where the code consists of functions that are applied to arguments.

Functional languages are usually declarative, meaning that the programmer specifies what the program should do, without explicitly specifying how it should be done.

Functional languages are often influenced by mathematics, and they can be used to create concise and elegant programs.

Functional languages are usually used for specific tasks that can be expressed well in a functional style.

Some well-known functional languages include Haskell, Lisp, and Scheme.

Object-oriented programming (OOP) is a programming paradigm that uses objects and their interactions to design and write programs.

OOP languages are different from traditional programming languages in that they help to model real-world objects and their relations.

OOP languages typically have four main features: encapsulation, inheritance, polymorphism, and delegation.

Encapsulation is the concept of wrapping data and code together into a single unit (known as an object). This helps to keep data and code safe from being unintentionally modified or accessed.

Inheritance is the ability of one object to "inherit" the properties of another object. This helps to create relationships between objects and to reuse code.

Polymorphism is the ability of an object to take on different forms. This can be useful for creating different versions of an object for different purposes.

Delegation is the ability of an object to hand off some of its responsibilities to another object. This helps to divide responsibilities between objects and to make code more modular.

Some common object-oriented programming languages include C++Java, C#, and Python.

General programming points

- Computer programming is a process of speeding up a task or action by creating a set of written instructions for running a specific sequence of commands or tasks.
- Programming is a form of communication.
- It is a way of thinking.
- There are many programming languages, each with its own syntax and semantics.
- To be a good programmer, you need to be able to think abstractly and be able to break a problem down into smaller, more manageable pieces.