* Language :

A programming language is a formal language that is used to communicate instruction to a computer.

→ A programming language consists of a set of rules, symbols and syntax that allow programmers to write code that the computer can understand and execute.

→ Programming languages are used to create software and applications, automate task and solve problems. They enable programmers to write code in a more human-readable and understandable format which is then translated into machine readable binary code that the computer can execute.

→ There are many different programming language, each with its own syntax and semantics and each designed for specific types of task or applications. Some of the most popular programming languages include java, python, C++, javaScript, Ruby and PHP.

* Programming languages are often classified into different categories -

Here are the three main categories of programming languages -

i) Low-level languages -

These are programming language that are designed to be used directly with computer hardware.

Eg:- Assembly language, machine language

2. Middle-level languages -

These programming languages are combine elements of both low-level and high-level languages.

Eg:- C and C++

3) High-level languages -

These are programming languages that are designed to be easy to use and understand, with a focus on ~~code and~~ readability and productivity. It is more portable and easier to learn than low-level languages.

Eg:- Java, Python, Ruby and JavaScript

* Programming Paradigm -

↓

Style of writing programs and codes

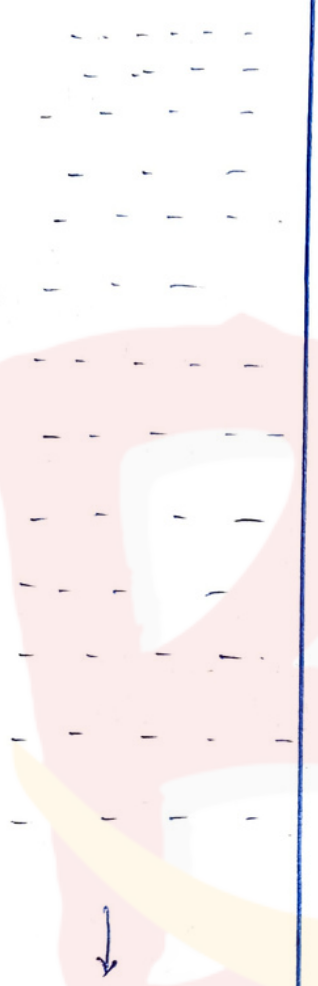
(Way of organising the programs)

i) Monolithic Programming

ii) Procedural or Modular programming

iii) Object Oriented programming

→ Monolithic Programming



Everything is in single frame.

→ Procedural Programming

```
function1()
{
    ....
    ....
}
function2()
{
    ....
    ....
}
main()
{
    fun1();
    fun2();
    :
}
```

Every smaller task are divided into function.

→ object oriented Programming

```
class info
{
    data1;
    data2;
    function1()
    {
        ....
    }
    function2()
    {
        ....
    }
};
main()
{
    info i;
    i.fun1();
    i.fun2();
    ....
}
```

In this we use class and it contain all data and operation together.

* Differences b/w procedural and object oriented prg-

Procedural	Object Oriented
1) Procedural programming is often used for smaller or less complex programs.	1) OOP is often used for large, more complex programs.
2) It focuses on creating function that operate on data.	2) It focuses on creating object that contains both data and methods.
3) It uses top-down approach.	3) It uses bottom-up approach.
4) We don't have any access specifiers.	4) We have access specifiers like public, private, protected etc.
5) It doesn't provide any security.	5) It provides security.
6) It is difficult to debug and extend any application	6) It is easy to debug and extend any applicatn
7) Eg:- C, PASCAL	7) Eg:- Java, C++

* Steps for program development and Execution -

1. Writing and Editing
2. Compiling
3. Linking library
4. Loading
5. Execution

} Software that performs all these steps together is known as IDE. (Integrated Development Environment)

IDE - Turbo C++, DevCPP, Codeblocks, X Code
Eclipse, Visual Studio.