OOP (Object Oriented Programming): is a technique used in programming based on classes and objects, where a class is the blueprint of the object and an object is an instance created from that class. An object can be described using properties and behaviors. It is used to make the code reusable, easy to maintain and it is based on four principles : Inheritance, Encapsulation, Abstraction and Polymorphism.

Constructor: A special method automatically called when an object is created to initialize it. It can be used to set attributes to some values passed as parameters to the constructor otherwise we will have to set the attribute values manually after creating the object. Note that in Dart if we used a default constructor with no parameters all the nullable attributes are set to null initially other attributes will cause a compile error or they will take the default values if provided. The constructor accepts normal parameters, optional parameters, named parameters or a combination of them. To make more than one constructor we use named constructors to define each one.

Encapsulation: it means that the private properties cannot be accessed from outside the file without using a getter or setter which gives us the ability to control the way the data is accessed. A property or method can be declared as private by adding _ (underscore) before its name.

Inheritance: it means that a class inherits all the accessible properties and methods of a parent class in addition to its properties and methods and it can override an inherited method. To declare inheritance we use the word extends in the form (child_class_name extends parent_class_name) . It can have multi levels like class1 extends class2 which extends class3 so class1 inherits all accessible properties and methods of class2 and class3.

Polymorphism: it means that a method can have different implementations and a reference type can refer to more than one object type – like if a class Student extends class Person we can say a Student object is a Person object, or when we override a method, it has two or more different implementations and a specific one is executed for each class.