**OBJECT ORIENTED PROGRAMMING:**

**What is object-oriented programming?**

Object-oriented programming (OOP) is a computer programming model that organizes software design around data, or objects, rather than functions and logic. An object can be defined as a data field that has unique attributes and behavior.

**What are the main principles of OOP?**

Object-oriented programming is based on the following principles:

* **Encapsulation.**It is nothing but a wrapping up of data inti a single unit
* **Ex:** Capsules .
* **Abstraction.** Hiding the data into a single unit.
* **Ex:** ATM mission
* [**Inheritance**](https://www.techtarget.com/whatis/definition/inheritance)**.**Acquiring the properties from parent class to child class.
* Ex: Car
* The class car inherits its properties from the class Automobiles which inherits some of its properties from another class vehicles.
* [**Polymorphism**](https://www.techtarget.com/whatis/definition/polymorphism)**.**The word polymorphism means having many forms.
* Ex: a person who at the same time can have different characteristics.
* What are the benefits of OOP?

Benefits of OOP include:

* **Modularity.** Encapsulation enables objects to be self-contained, making troubleshooting and collaborative development easier.
* **Reusability.** Code can be reused through inheritance, meaning a team does not have to write the same code multiple times.
* **Productivity.** Programmers can construct new programs quicker through the use of multiple libraries and reusable code.
* **Easily upgradable and scalable.**Programmers can implement system functionalities independently.
* **Interface descriptions.** Descriptions of external systems are simple, due to message passing techniques that are used for objects communication.
* **Security.** Using encapsulation and abstraction, complex code is hidden, software maintenance is easier and [internet protocols](https://www.techtarget.com/searchunifiedcommunications/definition/Internet-Protocol) are protected.
* **Flexibility.** Polymorphism enables a single function to adapt to the class it is placed in. Different objects can also pass through the same interface.