1. **What is OOP? List OOP concepts?**

* OOP: Stand for **Object-oriented programming.**
* OOP is a programing approach that are base on class and object

Which can contain data and code, that manipulate that data.

* Concepts of OPP are:
* **Class:** A blueprint for creating objects. It defines a set of attributes and methods that objects created from the class.
* **Object:** An instance of a class. Objects are the runtime entities that represent real-world entities and can interact with each other.
* **Encapsulation:** is an **Object-oriented programming concepts that allows programmers to wrap data and code inside an enclosure. By using Encapsulation program can hide the member of one class from another class.**
* **Polymorphism:** the term Polymorphism is the combination of poly + morphs which means many forms
* Polymorphism is a way in which we can define multiple function in a single name that is single name and multiple meaning.
* There are two types of polymorphism.
* Compile time polymorphism/ Static polymorphism.
* Run time polymorphism/Dynamic polymorphism.
* **Inheritance:** is a process in which one object acquires all the property and behaviors of its parent object automatically.
* The property of one class into another class is called inheritance.

Inheritance provides reusability of code.

* The class which inherits the member of another class called derived class/child class/sub class and the class whose members are inherits is called base class/parent class/super class.
* Ther are five types of inheritance:
* **Single:** In single inheritance, A subclass can inherit from only one superclass.
* **Multiple:** A subclass can inherit from more than one superclass.
* **Multi-level:** In Multi-level inheritance, a derived class will be inheriting a base class and as well as the derived class also
* **Hierarchical:** In Hierarchical inheritance, one class serves as a superclass for more than one subclass.
* **Hybrid:** In Hybrid inheritance,is a combination of two or more types of inheritance.
* **Abstraction:** Abstraction and encapsulation are related features in object-oriented programming.
* Abstraction can be achieved using abstract class.
* Abstract classes contain abstract method, which are implemented by the derived class.
* An abstract base class cannot be instantiated it means the object of that class cannot be created.

1. **What is the difference between OOP and POP?**

|  |  |
| --- | --- |
| OOP | POP |
| OOP stand for Object Oriented Programming | POP stand for Procedural Oriented Programming |
| An object-oriented program follows the bottom-up approach. | A procedure-oriented program follows the top-down approach. |
| Access control is supported such as public, private and protected | No access modifiers are supported. |
| OOP base on class and object | POP base on function |
| OOP supports code reusability. | No code reusability is provided by POP. |