----- OOPS------

1.What is Oops and what are the four pillars of oops?

Object-oriented programming is a method of programming based on a hierarchy of classes, and well-defined and cooperating objects.

(or)

OOP stands for Object Oriented Programming .It is a Procedural Programming is about writing procedures or methods that performs operations on the data ,while object-oriented programming is about creating objects that contain both data and methods.

2.what are the four pillars of oops?

The four pillars of oops is

1.Abstraction

2.Encapsulation

3.Inheritence

4.Polymorphism

3.What is abstraction?

Hiding the complex implementation details and showing only the necessary features of the object. This allows the user to interact with the object at a higher level without needing to understand the inner workings.

- If a class contains one or more abstract methods and one concrete method then the class should be abstract.

- Example:
- abstract class employee{
  public abstract void get_details();
  public void get_address(){}
  }

Note: we have 2 types of methods,they are:

1.Concrete: Implementation is there

2.non-concrete: abstract method or implementation is not there.

4.what is Encapsulation?

- It refers to binding the data and methods in a single entity.
- In Encapsulation we use Private variables due to security of data.
- To acess private variables we use public methods is called encapsulation in java.
- To access and update the private attributes, getter and setter methods are used. These methods provide controlled access to the attributes.

5.what is inheritance?

- It is defined as allowing a new class to inherit properties and behaviours(fields and methods) from an existing class.
- The existing class is a parent class or super class.
- The new class is called the child class or sub class.
- It used mainly to promotes code and reusability.
- The “super ” keyword uses to refer immediate parent class object.

Types of inheritance:

1.single inheritance

2.Multilevel Inheritence

3.Hierarchical Inheritence

- **Method Overriding**:

- A subclass can provide a specific implementation for a method that is already defined in its superclass. This is known as method overriding.

Note:

- A subclass is created using the ‘extend’ keyword.
- Syntax Example: ‘class Subclass extends Superclass{…}’

6.what is polymorphism?

- It enables a single interface to represent different underlying many forms
- It allows same operation to be performed differently on different classes

Types of polymorphism:

- Compile time polymorphism—achieved through method and operator overloading.

- Run time polymorphism---Achieved through method overriding.

Note:

1.Method overloading: Multiple methods in same class with same name but diff parameters

2.Method overriding: A subclass that provide implementation of a method that is already defined in its superclass.