Introduction to Object-Oriented Programming

Why OOP so popular:

1. Reuse code – Write once, use many times
2. Organize Code – Code is easier to read and maintain
3. Handles complexity – Makes it easier to solve big problems by breaking them into smaller pieces.

Core concepts: Classes, Objects, Encapsulation, Inheritance, Polymorphism, Abstraction

Objects and Classes:

What is Class?

- A class is a blueprint.
- Assume you are designing a car.
- You create a blueprint which describe what a car should have, like wheels, doors or engine.
- This blueprint is nothing but a class.

What is Object?

- An object is an actual car that is built using this blueprint(car).
- It's a real instance of the class.

```
package classobjects;

public class Car {
    String color;
    int speed;

    void start(){
        System.out.println("The Car is starting...");
    }

    void stop(){
        System.out.println("The car is stopping..");
    }
}
```

```java
package classobjects;

public class CarObject {
    public static void main(String[] args) {
        Car myCar = new Car(); // Created object
        myCar.color="Black";
        myCar.speed=100;

        Car yourCar = new Car();
        yourCar.speed=120;
        yourCar.color="RED";

        System.out.println("Yours Car's colour is
"+yourCar.color);

        System.out.println("My Car's colour is "+myCar.color);
        myCar.start();
    }
}
```