Programming technique by using java

Second class
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Lesson 4

Object Oriented Programming Language (OOP)

What Is an Object?

Objects are key to understanding *object-oriented* technology. Look around right now and you'll find many examples of real-world objects: your dog, your desk, your television set, your bicycle.

Real-world objects share two characteristics:

They all have ***state*** and ***behavior***.

Dogs have **state** (name, color, breed, hungry)

and **behavior** (barking, fetching, wagging tail).

Obiect:That is something (entity) contents set of data called attribute(**properties**)

defied with a set of **operation**.

Car object for example:

(properties :
Model :Ferrari
Color : Blue
Year : 2005

properties ::.
Start
Stop
Accelerate

Features of (opp)

Modern OOP languages provide the programmer with three capabilities that improve and simplify
the design of such programs:

1-classes(abstract data type)
2 data encapsulation,
3-inheritance,
4- *polymorphism* (or generic functionality).

A ***class***:
is the blueprint from which individual objects are created

The syntax of the Java programming language will look new to you, but the design of this class is based on the previous discussion of bicycle objects. The fields cadence,
speed, and gear represent the object's state, and the methods (changeCadence, changeGear, speedUp etc.) define its interaction with the outside world

You may have noticed that the Bicycle class does not contain a main method. That's because it's not a complete application; it's just the blueprint for bicycles that might be *used* in an application. The responsibility of creating and using new Bicycle objects belongs to some other class in your application.

Encapsulation is the procedure of covering up of data and functions into a single unit

A process, encapsulation means the act of enclosing one or more items within a (physical or logical) container (Class).

Have two function:

public: functions of all classes may access the

data or methods of a class that is defined with the *public* access level. This is the lowest level of data protection

private: data access is restricted to methods of that particular class only. This is the highest level of data protection.

Inheritance is the process by which objects can acquire the properties of objects of other class. In OOP, *inheritance* provides reusability, like, adding additional features to an existing class without modifying it. This is achieved by deriving a new class from the existing one. The new class will have combined features of both the classes.

Polymorphism

Polymorphism means the ability to take more than one form. An operation may exhibit different behaviors in different instances. The behavior depends on the data types used in the operation. Polymorphism is extensively used in implementing Inheritance.