Day 7 - OOP

OOP In Javascript

JS is a Prototype Based Object Oriented Programming Language.

- Primitive Data Types - String, Number, Boolean, null
- Object Data Types - Array, Object, Function, Wrapper String, Number

Why we use class or learn OOP ?

→ Normal Vs Class

```
const person = {}
person.name= "MONIB"
console.log(person)
// Imagine we have 1000 person and if we write code like this. I
// But if use class it will make our job easy.
```

new Person() means behind the scene constructor function call hocche

- constructor
- methods → changeName, sendEmail, print

Access Modifier

we can define _name & this is called private. And it is community driven convension. Amra developer ra eta mone korbo. Amader language etar code e kono view or use case dicche nah.

→ _sendMessage private method

Getter & Setter

_name jeta thakbe seta same e thakbe kintu get & set use kore amra private property access and change korte pari.

4 Pillars Of OOP

- Abstraction
- Encapsulation
- Inheritance
- Polymorphism

Abstraction

⇒ Abstraction means hiding implementation details and Provide only necessary API.

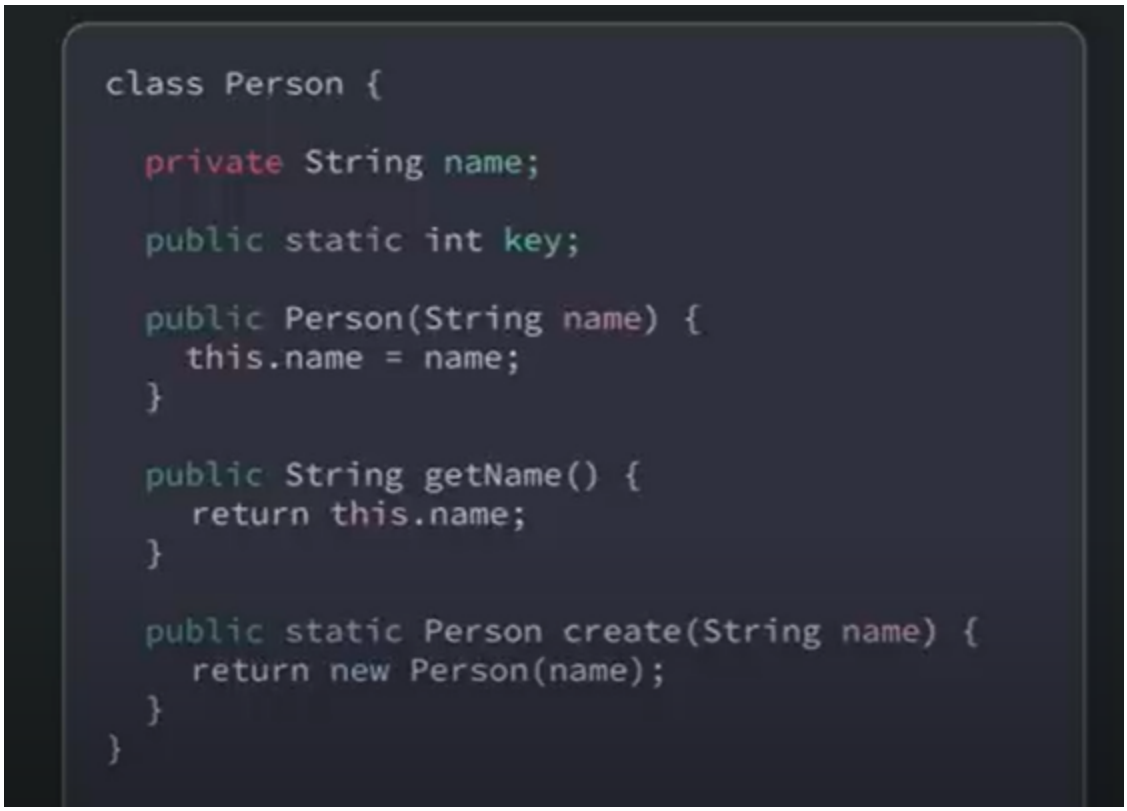
For Example: MP3 Player → play() volume button(), next button() , Math, Date

Encapsulation

⇒ Object is a capsul. If we want to implement Abstruction perfectly then we need encapsultion.

components of class:

- State - Private / Public
- Methods - Private / Public
- Static States - Don’t need to call or use contructor or create instance
- Static Methods -



```
class Person {

  private String name;

  public static int key;

  public Person(String name) {
    this.name = name;
  }

  public String getName() {
    return this.name;
  }

  public static Person create(String name) {
    return new Person(name);
  }
}
```

⇒ Public method guloi abstraction hisebe use korte parbo. Example: Math.floor, Date.getName

Class er vitor er necessary sob gulo state, static state, constructor, method, static method sob gulo k aksathe encapsulate korechi.

→ Encapsulation means that each object in your code should control its own state.

Inheritance - True Relationship

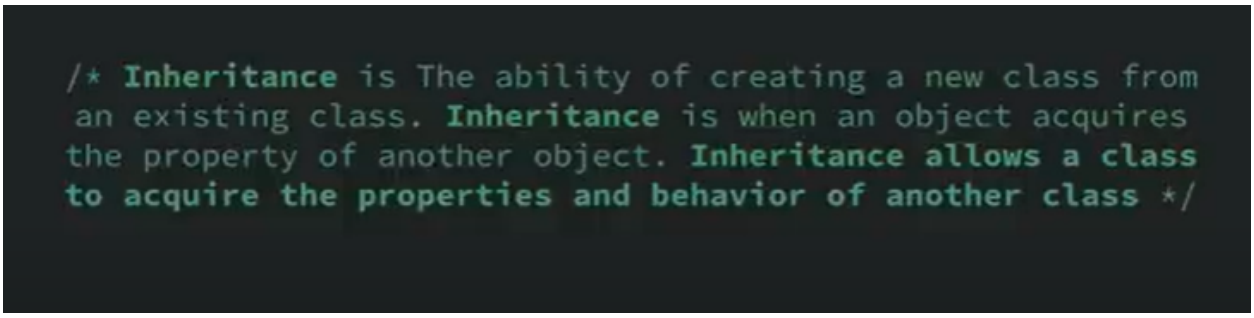
⇒ Ecommerce App Relations -

- user, admin, customer
- product - digital - physical

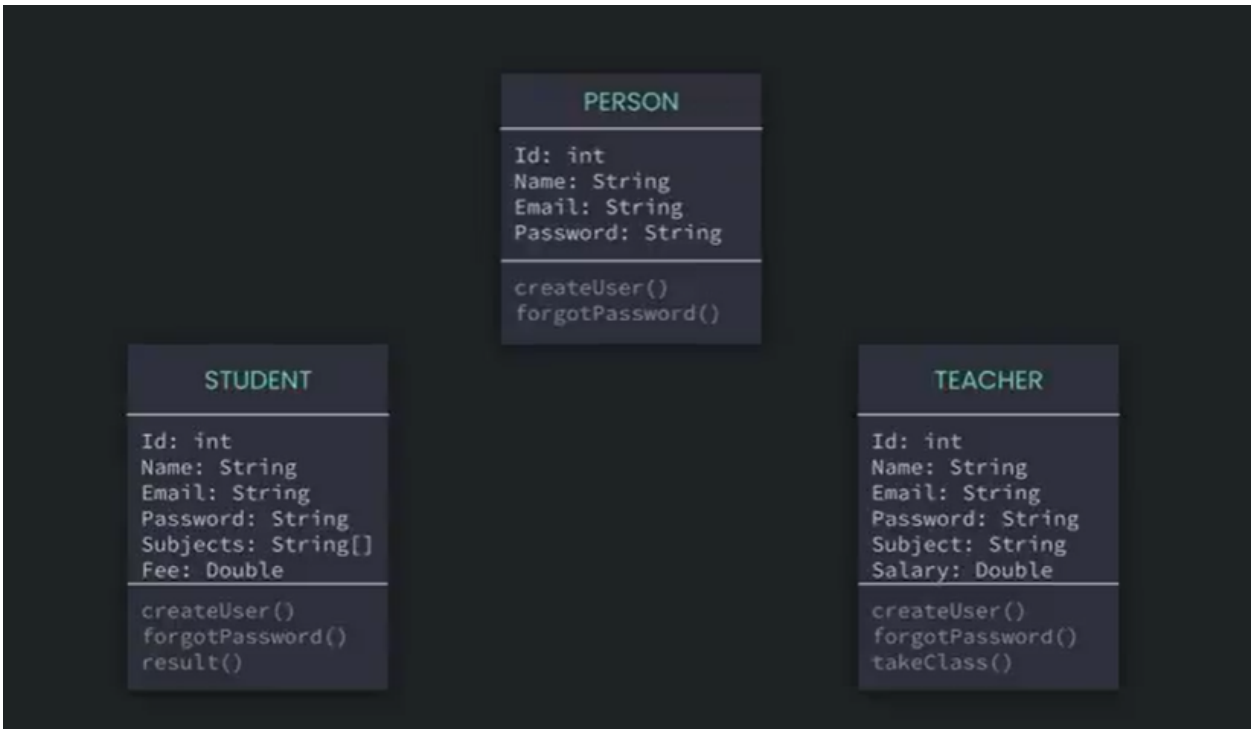
→ We have tons of Differnt & Moving Object. We make relation among all of these things.

There are Two types of relation in OOP

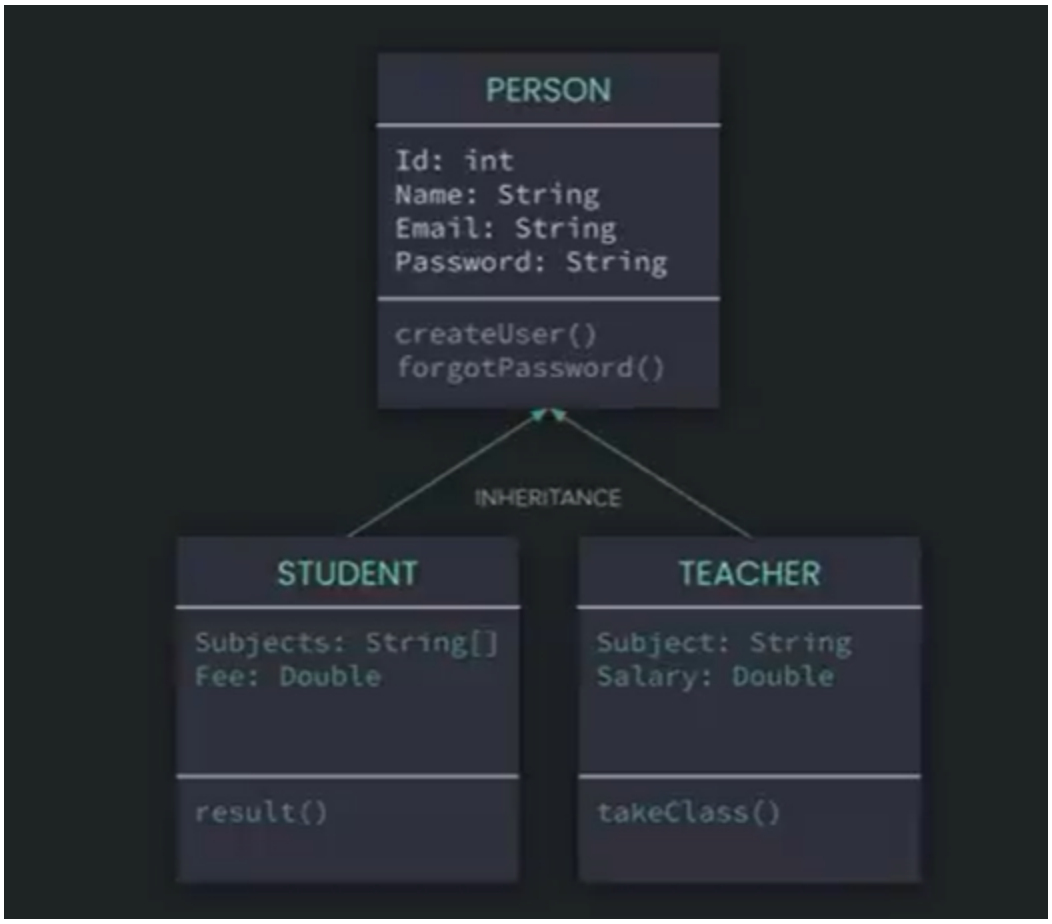
- Is a relation - Inheritance
- Has a relation - Composition & Aggregation



Example: School management System → Person , Student, Teacher



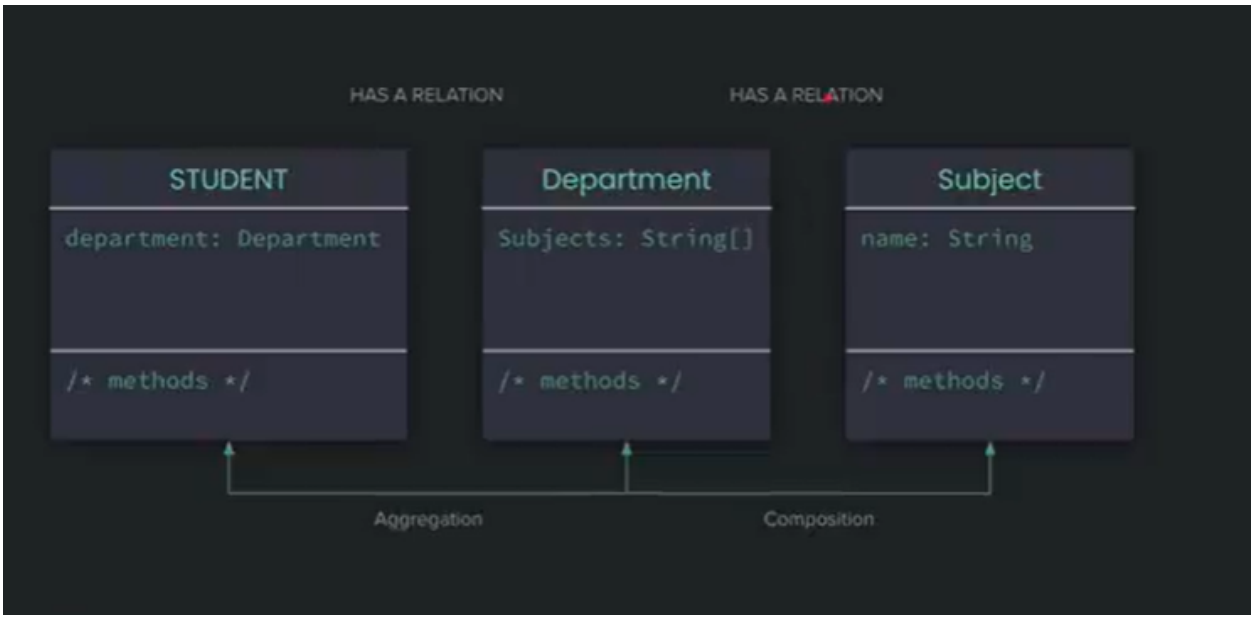
This is Inheritance. Borrow Properties from PERSON. Inheritance means is a relationship.



Student is not a department. Student has a department.

→ Aggregation: Child remove or destroy hoye geloi Parent Thakbe ei concept ta holo aggregation like here department is Parent and student is child. Stand alone vabe child create or destroy hote pare aggregation e.

→ Composition: Parent Destroy hoye gele Department destroy hoye gele tar child subject er kono value nei. Etai composition.



Polymorphism - Bohurupi

```
/* Polymorphism is derived from 2 Greek words: poly and morphs.
    The word "poly" means many and "morphs" means forms. So
            polymorphism means "many forms" */
```