16-May-2025 Lecture-5

Solid Design Principles.

Problems :-

- Maintainability
- Readability
- Bugs

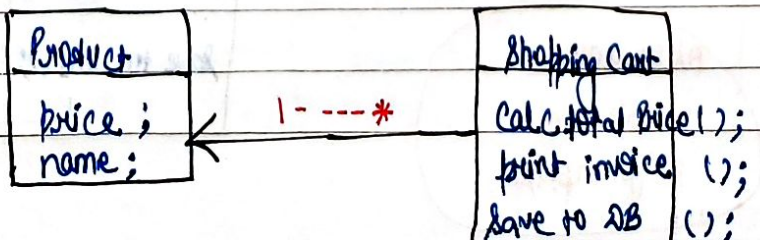
SOLID

S: Single Responsibility Principle (SRP)
O: Open - close principle (OCP)
L: Liskov Substitution principle (LSP)
I: Interface Segregation principle (ISP)
D: Dependency Inversion principle (DIP)

S: Single Responsibility Principle :

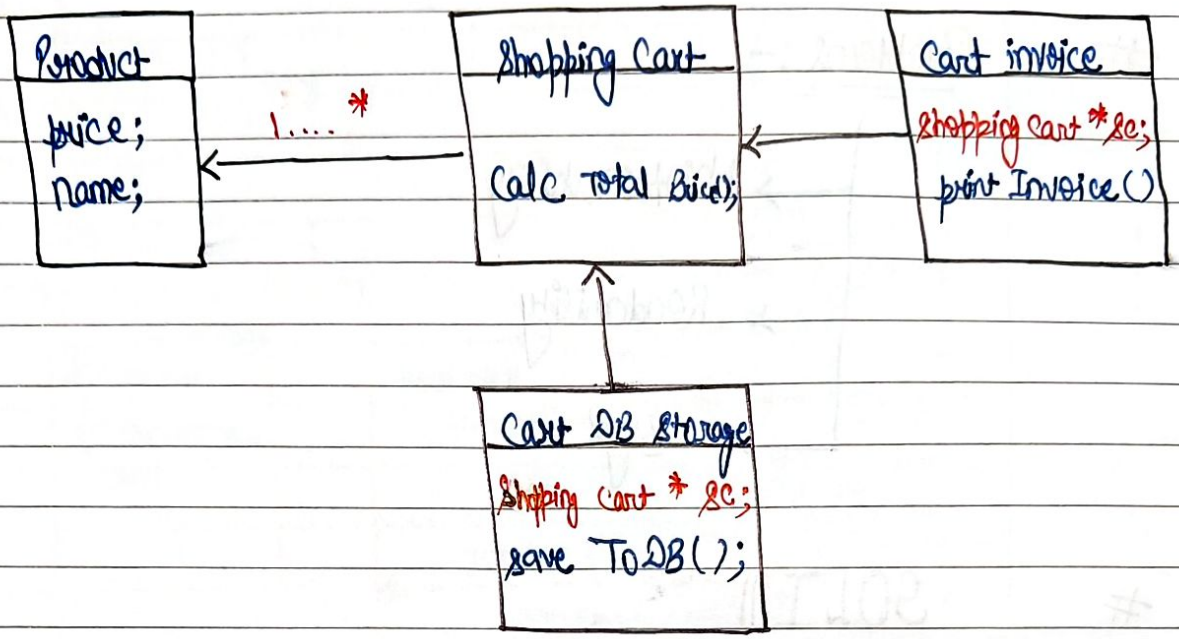
1. A class should have only one reason to change.
2. A class should do only one thing.

Ex :-



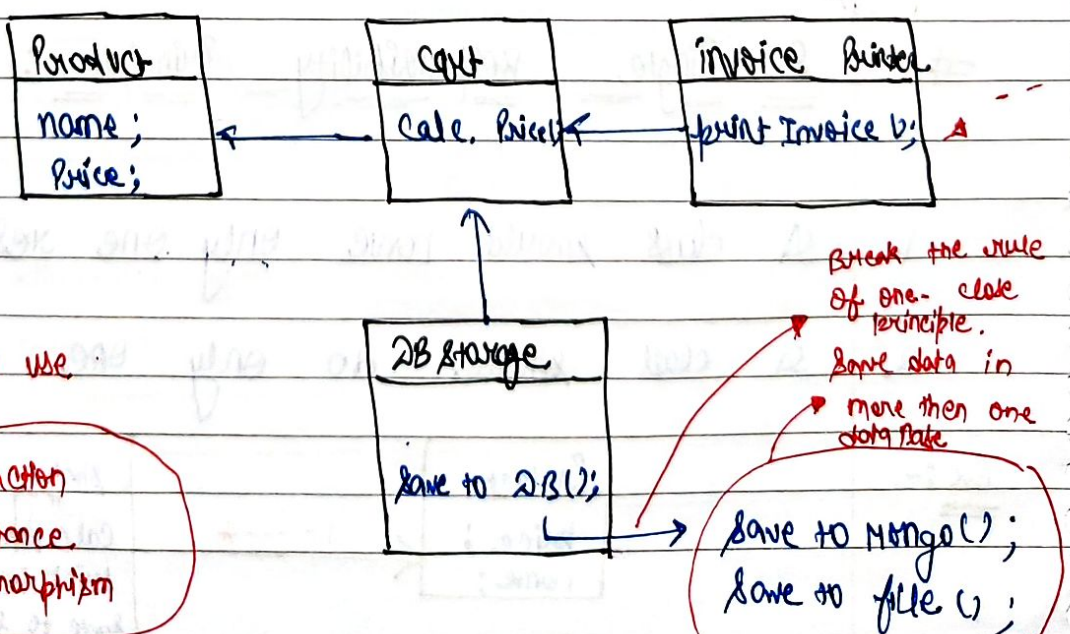
__/__/____

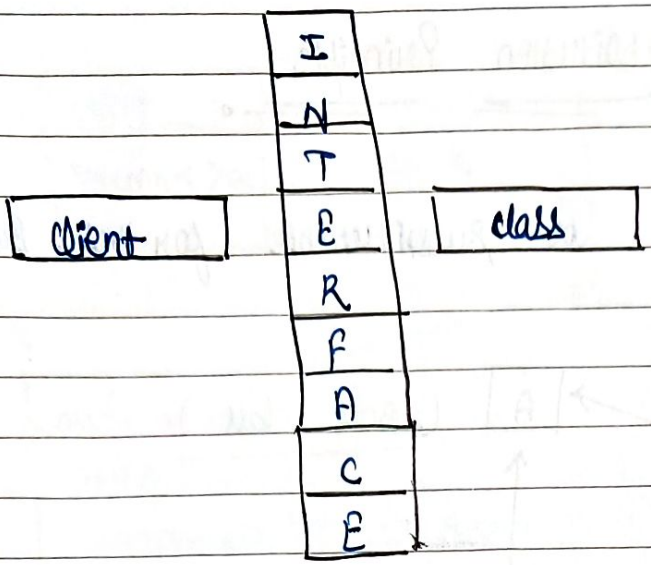
* One shopping cart break down into different parts :-

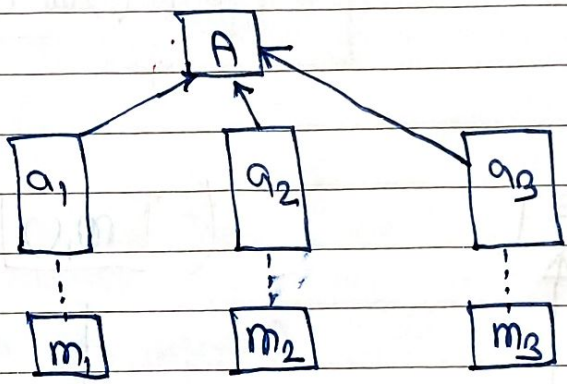


Open - close principle :-

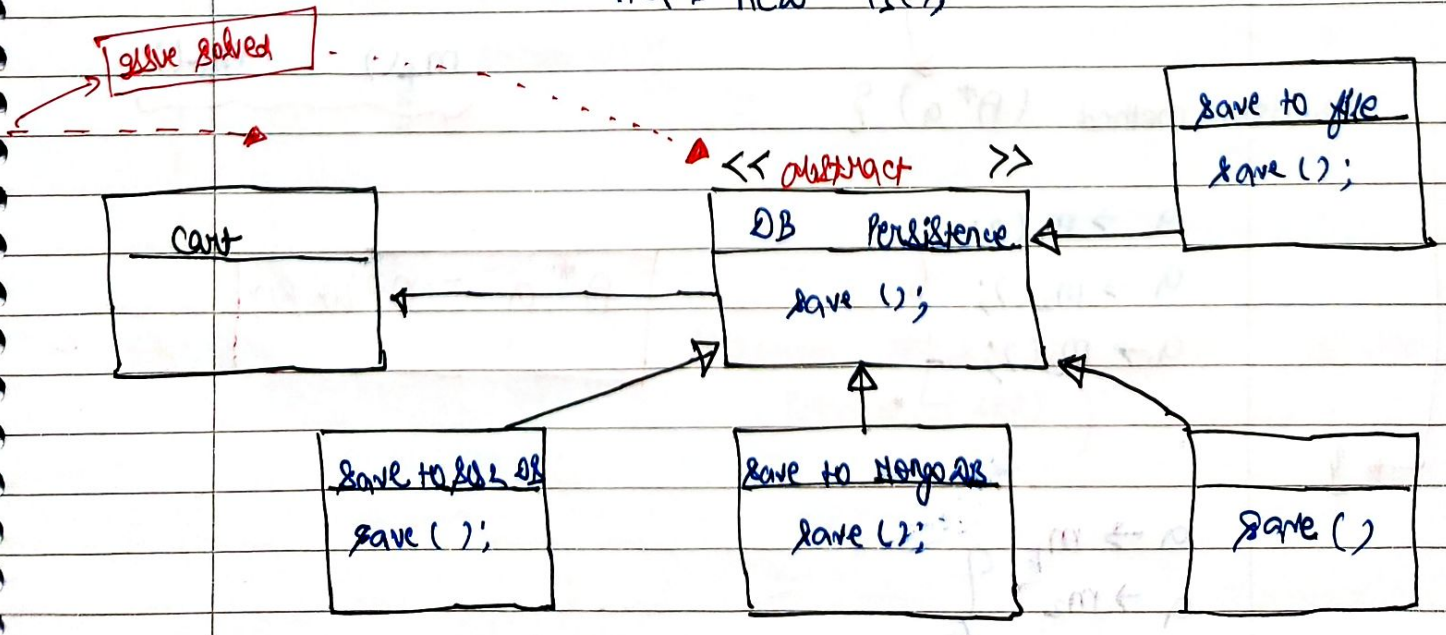
1. A class should be open for extension but close for modification.





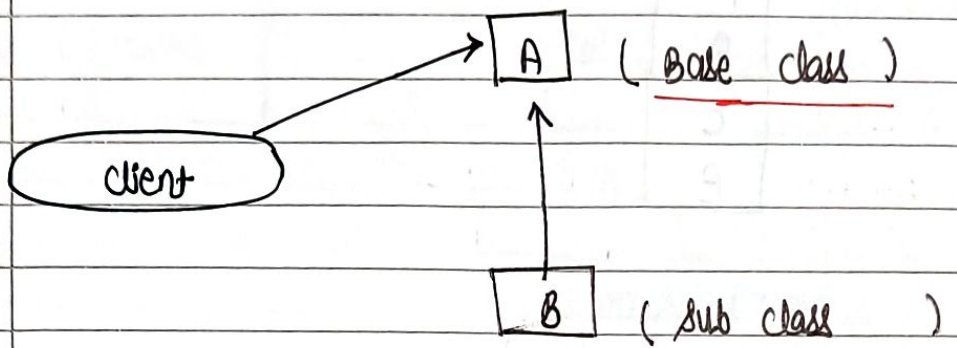


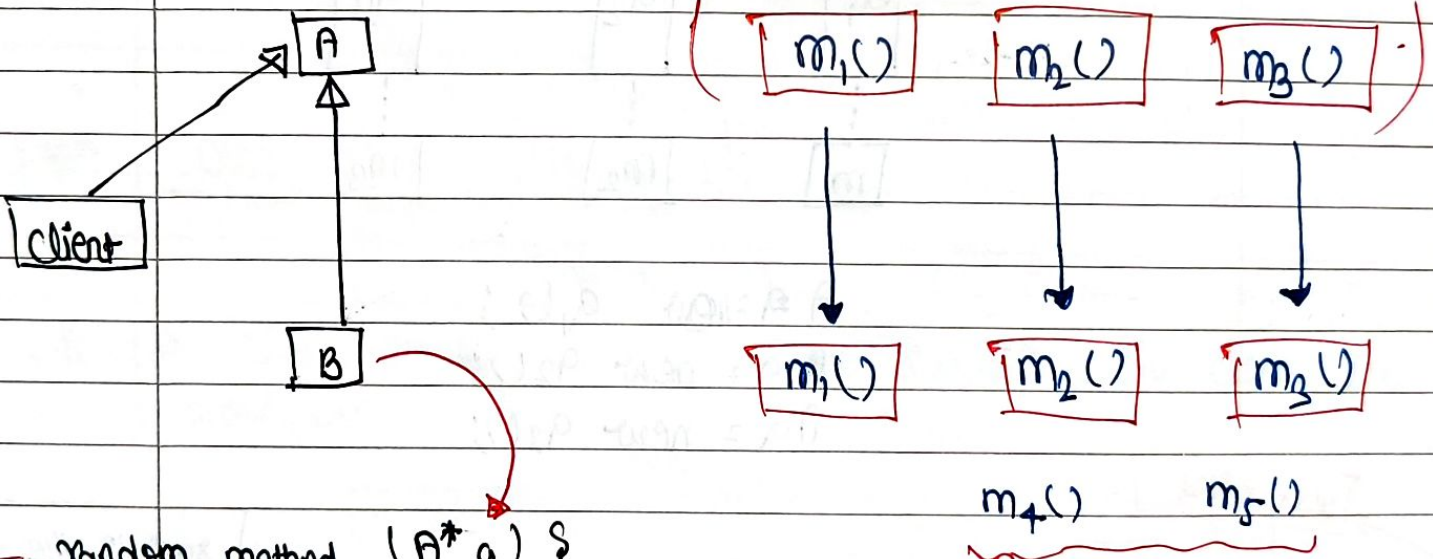

```
A a = new a1();
A a = new a2();
A a = new a3();
```



L : Liskov Substitution Principle.

1. Sub class should be substitutable for their Base class.



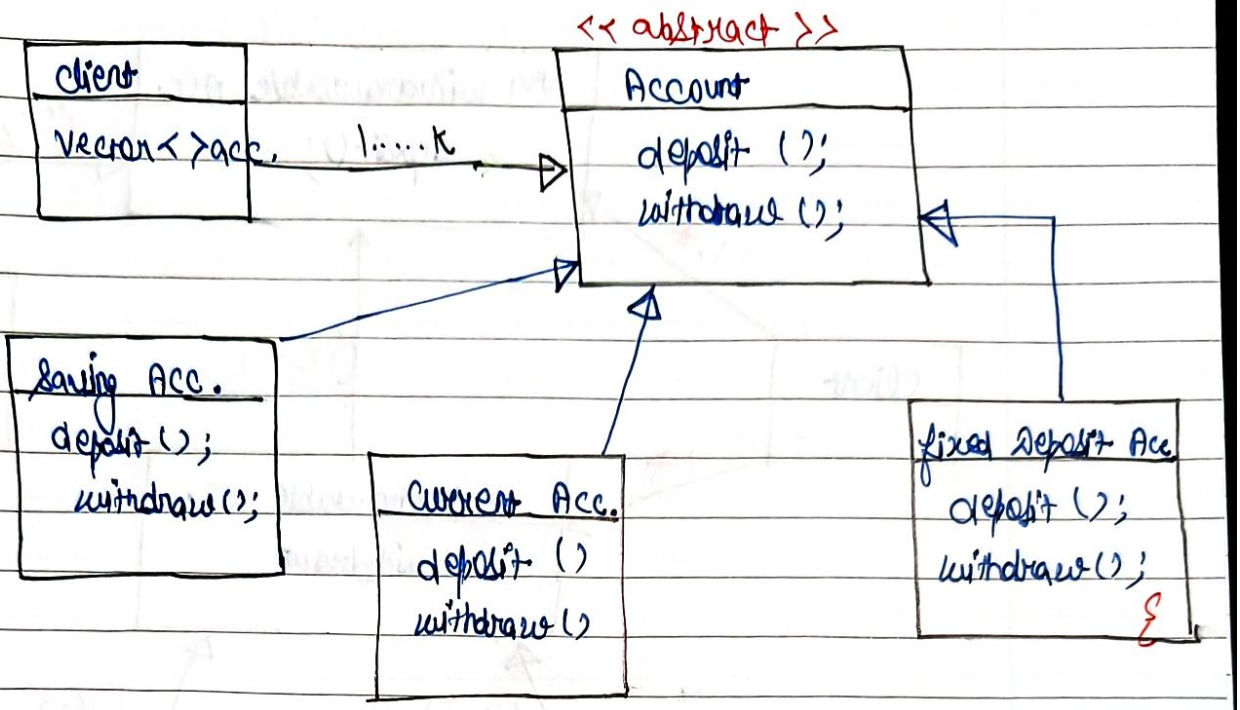



```
random method (A* a) {
    a → m1();
    a → m2();
    a → m3();
}
```

```
A* a = new B();
```

```
a → m1
a → m2
a → m3
```

__/__/____

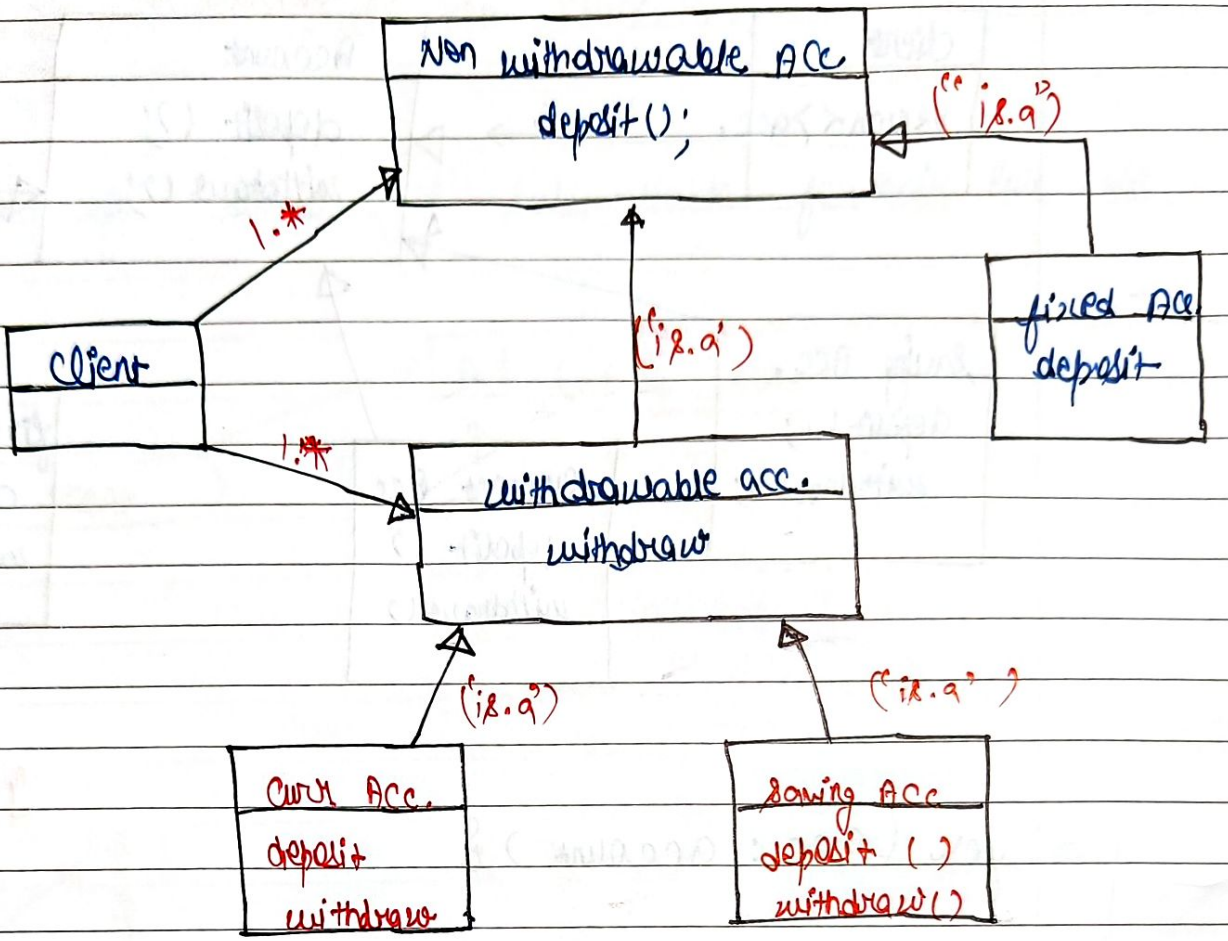


throw exception;
}

```
for (acc : account ) {
    if (acc → fix deposit )
        deposit;
    else {
        deposit();
        withdraw();
    }
}
```

→ (this UML Diagram breaks the Liskov Substitution Principle (LSP))

__/__/____



(follows Liskov Substitution Principle).