**Design Patterns**

…represent the best practices used by experienced object-oriented software developers. Design patterns are solutions to general problems that software developers faced during software development

- commonly patterns used:

Text

Description automatically generated with medium confidence

Graphical user interface, text

Description automatically generated

* The Strategy Pattern

Trying to build ducks simulation, we get that design

A screenshot of a computer

Description automatically generated with medium confidence

We didn’t get inheritance benefits at all, Because

Text

Description automatically generated

So we use programming to an interface instead:

A picture containing graphical user interface

Description automatically generated

Getting that design

A picture containing diagram

Description automatically generated

So we get the benefit of being able to choose which algorithm each object gets

And can change these algorithms at runtime

And also get the benefit of code reuse , if multiply objects need same algorithm

We use strategy pattern

Diagram

Description automatically generated

Text

Description automatically generated

- Composition (HAS-a) is better than Inheritance (IS-a)  
it’s more flexible

* The Adapter Pattern

Text

Description automatically generated

Diagram

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

* The Observer Pattern

Observer pattern is used when there is one-to-many relationship between objects such as if one object is modified, its dependent objects are to be notified automatically.

Text

Description automatically generated

Diagram

Description automatically generated

* The Decorator Pattern

Decorator pattern allows a user to add new functionality to an existing object without altering its structure.

Text

Description automatically generated

Diagram

Description automatically generated

* The Iterator Pattern

a behavioral design pattern that lays down a way to access elements of a collection sequentially.

Text

Description automatically generated

Diagram

Description automatically generated

* The Factory Patterns

an Interface that defers the creation of the final object to a subclass.

Diagram

Description automatically generated

-------------------------------------

Text

Description automatically generated

Diagram

Description automatically generated

