

# Design Patterns and Antipatterns

Term 2 - Week 6 - Academic Year 2022-23

# Summary

- Definitions
- Anti-patterns
- Design patterns
- Quiz

# Definitions

- Anti-pattern:
  - A common response to a design pattern that is generally ineffective and counterproductive.
- Design pattern
  - A general, reusable solution to a commonly occurring problem in software design.

# Anti-Patterns

- 3 different types:
  - Architectural
    - During the design of a system's structure.
  - Management-related
  - Development
    - During system implementation

# Anti-Patterns

- **Analytical Paralysis**
  - Over-analysis of the problem during planning (i.e., aiming for perfection), and essentially paralyzing the process.
- **God Object**
  - Excessive concentration of multiple unrelated functions.
- **Singleton**
  - Ensuring within an application that there will only exist one instance of a class during runtime.
- **Hard coding**
  - Code that is strongly tied to its system or environment pattern/a specific use case.

# Design Patterns

- 3 types:
  - Creational
  - Behavioural
    - Ensuring communication between objects
  - Structural
    - Design relationships between objects

# Design Patterns

- **Builder** (Creational)

- Progressively add the components to create an object in a container (the Builder), then “build” the object when ready. (e.g., StringBuilder)

- **Decorator** (Structural)

- Add functionality to an object at run-time without altering its structure. It's essentially like some sort of wrapper that envelops the object.

- **Command** (Behavioural)

- Object used to encapsulate all of the information needed to perform an action or trigger an event at a given time.

Any Questions?