

Homework

Implementing Design Patterns

Implement a software application that integrates three complementary design patterns.

Objective

Select and implement three complementary design patterns in a single software application of your choice. The application should solve a (un)real-world problem or address a specific need you've identified. The goal is to demonstrate how design patterns can work together to create a scalable, maintainable, and efficient software design.

Deliverables

- A brief description of your application idea and the problem or need it addresses.
- Source code for your prototype, clearly highlighting where and how each of the three design patterns is implemented.
- A reflection document discussing your design decisions, the integration of design patterns, and insights gained from this exercise.
- Hand in is possible as a GitHub link to a repository which includes a README

Important

No pattern libraries are allowed. Write the patterns from scratch.

Task

1. Brainstorm Application Ideas

Think about daily challenges, personal interests, or common tasks that could be addressed with software. Consider areas like personal productivity, education, entertainment, lifestyle, or any domain you're passionate about.

2. Design Your Application

Outline the core functionalities of your application and how it will address the problem or need you've identified. Sketch a basic design that shows how the three design patterns will be integrated.

3. Implement the Patterns

Develop a prototype of your application, focusing on the correct implementation of the patterns. Ensure that the patterns are used in a way that they complement each other and contribute to the overall design.

4. Reflect on Your Design

After implementation, write a reflection on your design process. Discuss why you chose your particular application idea, how the selected design patterns enhance your application, and any challenges you faced during development.

Ideas

Alien language translator, Zombie survival guide app, Time travel planner, DIY superhero gadget creator, Virtual treehouse designer, Underwater habitat explorer, Wizard spell book manager, Retro video game emulator organiser, Psychic ability enhancer, Dream journal and lucid dreaming guide, Space colony builder, Mythical creature adoption centre, Mad scientist lab organiser, Pirate treasure map creator, Magical potion recipe book, Intergalactic travel agency, Haunted house escape planner, Superpower workout challenges, Quantum computer simulator, Steampunk gadget configurator