

Assignment 1:State

Time Estimate: 9 Hours

Due: End of Week 7

Course: Design Patterns

Chapters Covered:

- 3.4, 3.5, 10.1, 10.2, 10.3, 10.4, 10.5, and 10.6

INSTRUCTION

This assignment is designed to provide a foundational understanding of software architecture and design patterns. You will review architectural principles, explore early-stage system structuring, and apply relevant patterns through diagramming and analysis. This is an **individual assignment** that builds foundational thinking for future implementation work.

TASK

a. System Architecture Breakdown (2 hours)

- Read Chapters 3.4 and 3.5.
- Choose a familiar software system (e.g., online bookstore, ride-sharing app).
- Briefly describe:
 - The system's overall **architecture** (e.g., layered, client-server)
 - At least **three subsystems** and their responsibilities
 - How those subsystems interact with each other
- Include a **basic block diagram** showing these subsystems and relationships

b. Design Pattern Exploration (2.5 hours)

- Read Chapters 10.1–10.6.
- Summarize the **Controller** and **Expert** patterns in your own words (150–200 words each).
- Give one real-world example (not from the book) where each pattern could be used.

c. UML Diagramming (3.5 hours)

- Create the following diagrams for the system you selected:
 - **Use Case Diagram** with at least 3 actors/use cases
 - **Class Diagram** showing how Controller or Expert pattern could apply
 - **Activity Diagram** for one core workflow
- Use any UML tool such as draw.io or Lucidchart
- Label relevant classes or methods where patterns are applied

d. Pattern Application Reflection (1 hour)

- Reflect on how using these patterns improves your system design
- Answer:
 - What problem did each pattern help you solve?
 - How would this help in a large team or evolving codebase?

SUBMISSION DETAILS

- **Submit via:** Canvas LMS
- **File Naming Convention:**

StudentID_Assignment1_CS4203Fall2025

- Submit a PDF with:
 - Pattern summaries
 - Block and UML diagrams
 - Written reflection

Late work subject to the standard course penalty.