

Assignment 3: Command

Time Estimate: 8 Hours

Due: End of Week 15

Course: Design Patterns

Chapters Covered:

- 16.6, 16.7, 17.1, 17.2, and 17.3

INSTRUCTION

This assignment focuses on applying Model-View-Controller (MVC) principles and improving an existing design through structured refactoring. You will analyze system components, separate concerns, and propose practical changes to increase maintainability.

TASK

a. MVC Design (3 hours)

- Choose a simple system (e.g., to-do app, calculator, game menu).
- Define the **Model**, **View**, and **Controller** components.
- Create:
 - A **UML Class Diagram** with MVC components labeled.
 - A **Sequence Diagram** showing a complete user interaction.

b. Refactoring Plan (3 hours)

- Assume that the system is currently **tightly coupled**.
- Identify **3 areas** for refactoring:
 - One for **flexibility** (e.g., use interfaces).
 - One for **reuse** (e.g. extract method / class).
 - One for **testability** (e.g., decoupling logic from UI).
- For each:
 - Describe the **problem**.
 - State the **refactoring** (name it).
 - Provide updated **UML snippet** (if applicable).

c. Tool Use + Reflection (2 hours)

- Research and explain how one tool (e.g. IntelliJ, Eclipse) helps with refactoring.
- Reflect:
 - Which refactor would have the **biggest impact**?
 - How would these changes affect **future development**?

SUBMISSION DETAILS

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

StudentID_Assignment3_CS4213Fall12025

- Submit a PDF or ZIP file that includes:
 - UML Class and Sequence Diagrams
 - Refactoring Plan
 - Tool description + Reflection

Late work subject to the standard course penalty. Peer review is not required for this assignment.