The Mediator Design Pattern

Simplifying Communication Between Objects

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Date: [Your Presentation Date]

Introduction

Definition (GoF):

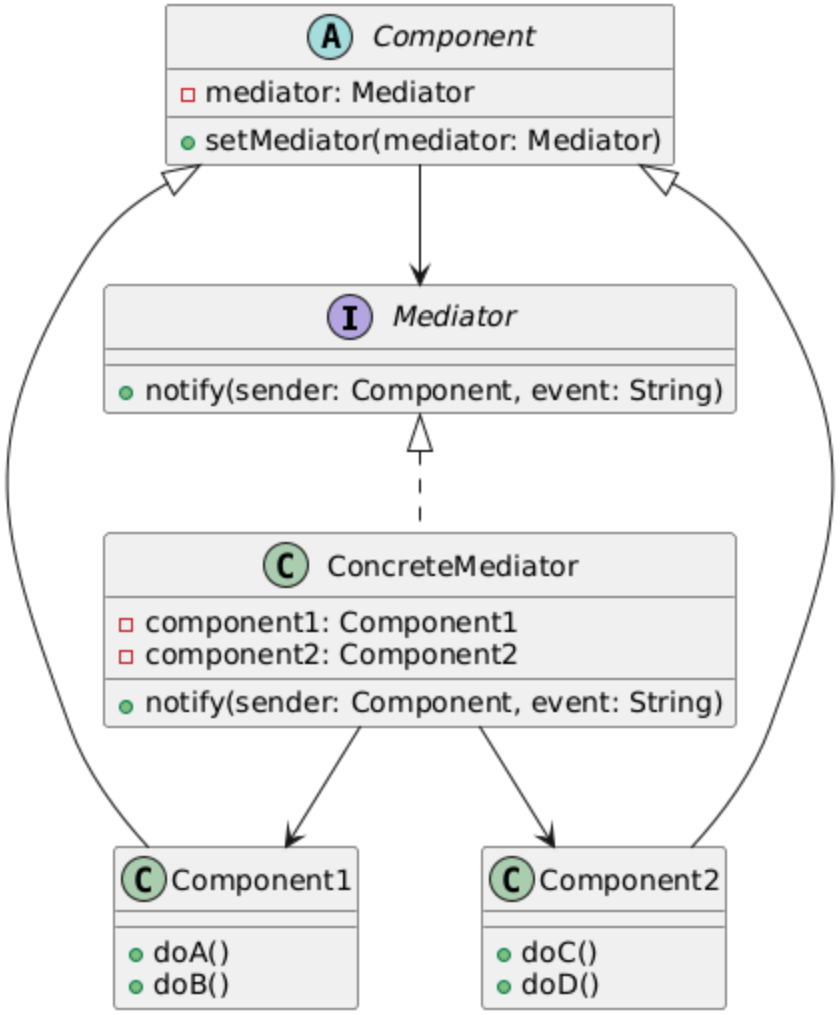
> *"The Mediator pattern defines an object that encapsulates how a set of objects interact..."*

- **Pattern Category:** Behavioral
- **Goal:** Centralize complex communications and control logic

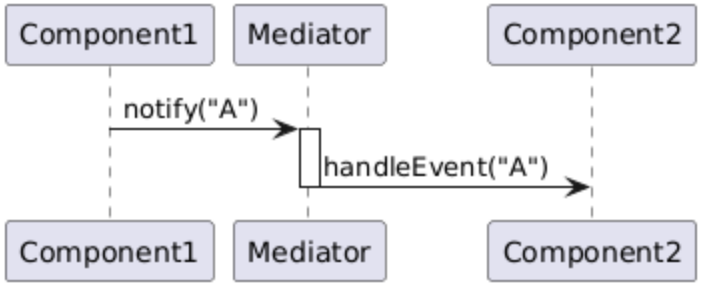
Problem It Solves

- Many-to-many interactions = tight coupling
- Example: UI components talking directly
- **Problem:** Fragile, tangled code
- **Solution:** Use a Mediator to manage communication

Class Diagram



Sequence Diagram



Real-World Examples

- **UI Dialog Box** – buttons, fields interact via Mediator
- **Chatroom App** – users communicate through central server
- **Game Engine** – Mediator coordinates entities and UI

Advantages & Disadvantages

Advantages:

- Reduces direct dependencies
- Centralizes logic
- Easier maintenance

Disadvantages:

- Can become a God Object
- Adds indirection

Personal Commentary

> *"Like an air traffic controller – it ensures safe, centralized coordination."*

- Great for UI and IoT coordination
- Makes systems more robust and flexible

Scientific Reference

Title: *Design Patterns: Elements of Reusable Object-Oriented Software*

Authors: Gamma, Helm, Johnson, Vlissides

Publisher: Addison-Wesley, 1994

Also consulted modern IEEE articles on pattern usage

Wrap-Up & Q/A

Recap:

- Solves complex communication
- Mediator = centralized logic
- Common in UI and system coordination

Any Questions?