

DESIGN PATTERNS

Singleton Pattern

- ☐ Participants:
- ☐ ResourceManager
- ☐ CitizenManager
- ☐ CityManager
- ☐ TimeManager
- ☐ ZoneManager
- ☐ Purpose: Ensure single instance of core management systems

Command Pattern

- ☐ Participants:
- ☐ Abstract Command: Command
- ☐ Concrete Commands:
- ☐ BuildCommand
- ☐ DemolishCommand
- ☐ ChangePolicyCommand
- ☐ UpdateResourcesCommand
- ☐ SimulationCommands
- ☐ Purpose: Encapsulate operations as objects

State Pattern

- ☐ Participants:
- ☐ Context: Building
- ☐ Abstract State: BuildingState
- ☐ Concrete States:
- ☐ Abandoned
- ☐ Operational
- ☐ UnderConstruction
- ☐ UnderMaintenance
- ☐ Purpose: Manage building lifecycle states

Observer Pattern

- ☐ Participants:
- ☐ Abstract Subject: Observable
- ☐ Abstract Observer: Observer
- ☐ Concrete Subjects:
- ☐ Building
- ☐ Zone
- ☐ Government
- ☐ Concrete Observers:
- ☐ Citizen
- ☐ Statistics
- ☐ Purpose: Notification system for changes

Visitor Pattern

- ☐ Participants:
- ☐ Abstract Visitor: BuildingVisitor
- ☐ Concrete Visitors:
- ☐ InspectionVisitor
- ☐ MaintenanceVisitor
- ☐ Elements:
- ☐ Building
- ☐ Commercial
- ☐ Industrial
- ☐ Residential
- ☐ Landmark
- ☐ Purpose: Separate algorithms from object structure

Strategy Pattern

- ☐ Participants:
- ☐ Strategy Interface: TaxStrategy
- ☐ Concrete Strategies:
- ☐ HighIncomeTaxStrategy
- ☐ LowIncomeTaxStrategy
- ☐ Context: TaxPolicy
- ☐ Purpose: Define family of algorithms

Factory Pattern

- ☐ Participants:
- ☐ Factory: BuildingAttributeFactory
- ☐ Product: BuildingAttributes
- ☐ Purpose: Create building attributes

Memento Pattern

- ☐ Participants:
- ☐ Originator: Policy
- ☐ Memento: PolicyMemento
- ☐ Caretaker: Government
- ☐ Purpose: Capture and restore policy states

Facade Pattern

- ☐ Participants:
- ☐ Facade: SimulationFacade
- ☐ Subsystems:
- ☐ SimulationEngine
- ☐ Various Managers
- ☐ Purpose: Provide unified interface

Composite Pattern

- ☐ Participants:
- ☐ Component: Zone

- ☐ Composite: ZoneManager
- ☐ Leaf: Individual zones
- ☐ Purpose: Treat collections of zones uniformly

Builder Pattern

- ☐ Participants:
- ☐ Builder: RoadBuilder
- ☐ Product: Road
- ☐ Complex Part: RoadNetwork
- ☐ Purpose: Construct complex road networks