CS351L
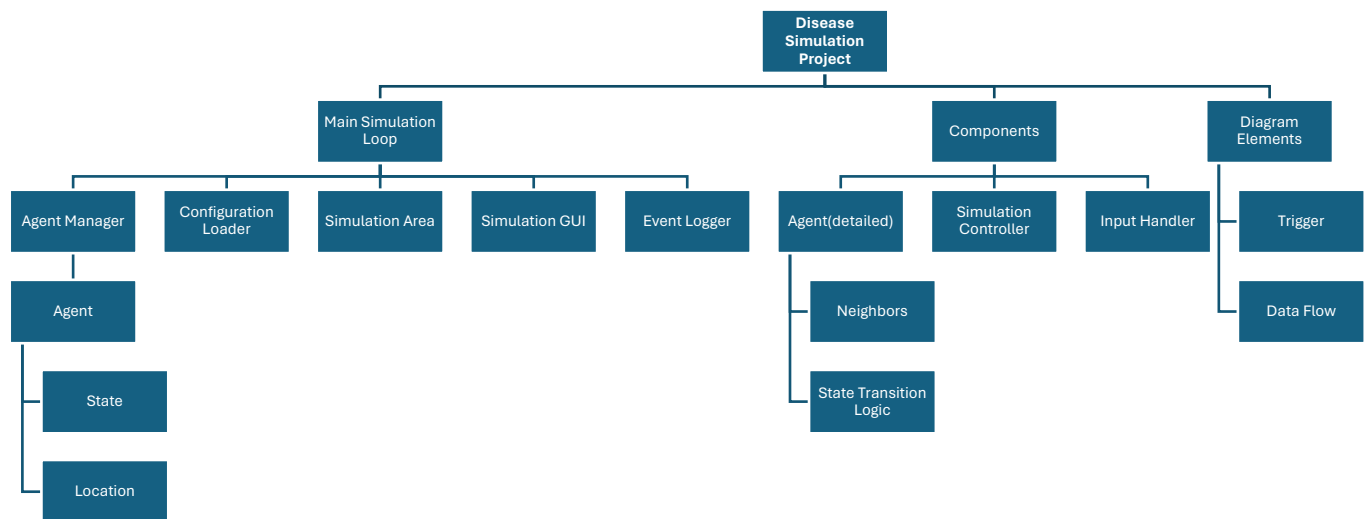# Design of Large Programs
Disease Simulation

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Proposed Design:

Disease Simulation Project

- Main Simulation Loop
  - Agent Manager
    - Agent
      - State
      - Location
  - Configuration Loader
  - Simulation Area
  - Simulation GUI
  - Event Logger
- Components
  - Agent(detailed)
    - Neighbors
    - State Transition Logic
  - Simulation Controller
  - Input Handler
- Diagram Elements
  - Trigger
  - Data Flow

Description:

Main Simulation Loop

Agent Manager: Manages the creation, state transitions, and interactions of all agents within the simulation.

Configuration Loader: Loads and parses the configuration file to set up the simulation parameters.

Simulation Area: Represents the spatial area where agents are located and interact.

Simulation GUI: Displays the simulation in real-time, showing the agents and their states, and allows user interaction such as starting or rerunning the simulation.

Event Logger: Logs significant events during the simulation, such as state transitions and interactions between agents.

Components

Agent: Represents an individual in the simulation, capable of being in one of several states (Vulnerable, Sick, Immune, Dead, Ghost).

State: Defines the current condition of an agent, influencing its behavior and interactions.

Location: Tracks the spatial position of the agent within the simulation area.

Neighbors: A dynamic list of other agents within a specific distance, potentially influencing or being influenced by the agent's state.

State Transition Logic: Handles the logic for changing agent states, based on the simulation rules and agent interactions.

Simulation Controller: Manages the progression of time within the simulation, including triggering updates to agents' states and the GUI based on simulation parameters.

Input Handler: Captures and processes user inputs from the GUI, such as starting the simulation, loading a new configuration, or adjusting simulation parameters in real-time.

Diagram Elements

Trigger: Indicates event-driven updates, such as state changes or interactions between agents, based on proximity or other simulation rules.

Data Flow: Shows the flow of information between components, such as configuration settings from the Configuration Loader to the Agent Manager or state updates from agents to the Simulation GUI.