Notation Part 2

Object Orientated Analysis and Design

Benjamin Kenwright

Outline

- Review
- What do we mean by Notation and UML?
- Types of UML View
- **Continue UML Diagram Types**
- Conclusion and Discussion
- Summary

Review

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- **Sequence Diagrams**
- Interaction Overview Diagrams
- Composite Structure Diagrams
- State Machine Diagrams
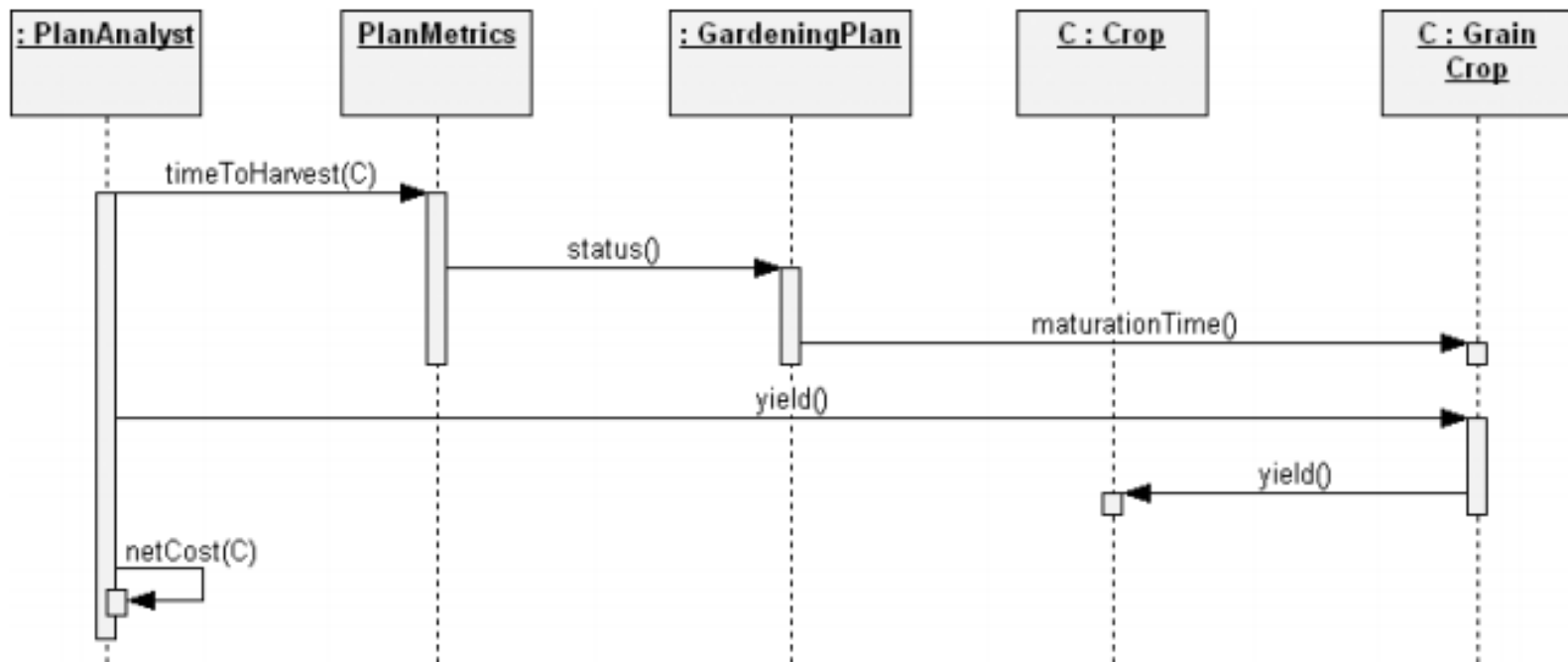- Timing Diagrams
- Object Diagrams
- Communication Diagrams

Sequence Diagrams

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- **Sequence Diagrams**
- Interaction Overview Diagrams
- Composite Structure Diagrams
- State Machine Diagrams
- Timing Diagrams
- Object Diagrams
- Communication Diagrams

Sequence Diagram

A sequence diagram traces the execution of a scenario in the same context as an object diagram. To a large degree, a sequence diagram is simply another way to represent an object diagram
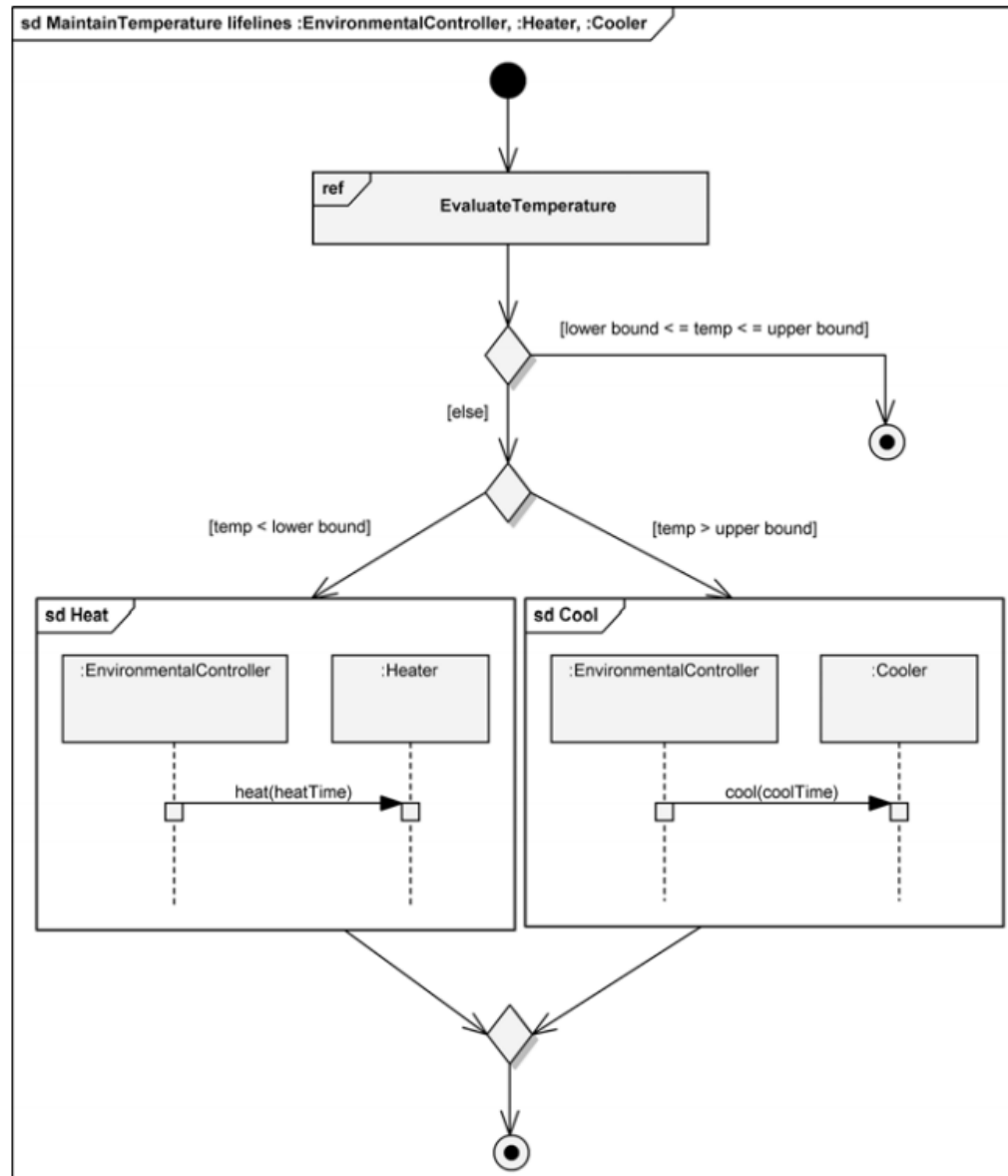
Example

Interaction Overview Diagrams

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- Sequence Diagrams
- **Interaction Overview Diagrams**
- Composite Structure Diagrams
- State Machine Diagrams
- Timing Diagrams
- Object Diagrams
- Communication Diagrams

Interaction Overview Diagram

- Interaction overview diagrams are a combination of activity diagrams and interaction diagrams

- Intended to provide an overview of the flow of control between interaction diagram elements

Example

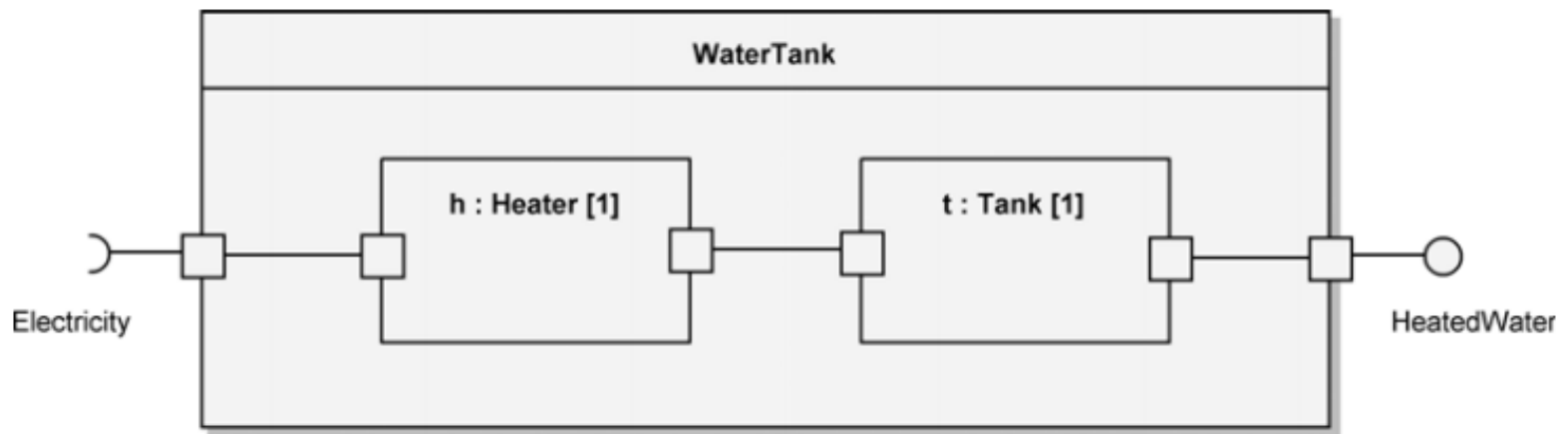The Interaction Overview Diagram for `MaintainTemperature`

Composite Structure Diagrams

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- Sequence Diagrams
- Interaction Overview Diagrams
- **Composite Structure Diagrams**
- State Machine Diagrams
- Timing Diagrams
- Object Diagrams
- Communication Diagrams

Composite Structure Diagram

- Composite structure diagrams provide a way to depict a structured classifier with the definition of its internal structure.

- This internal structure is comprised of parts and their interconnections, all within the namespace of the composite structure.

Example

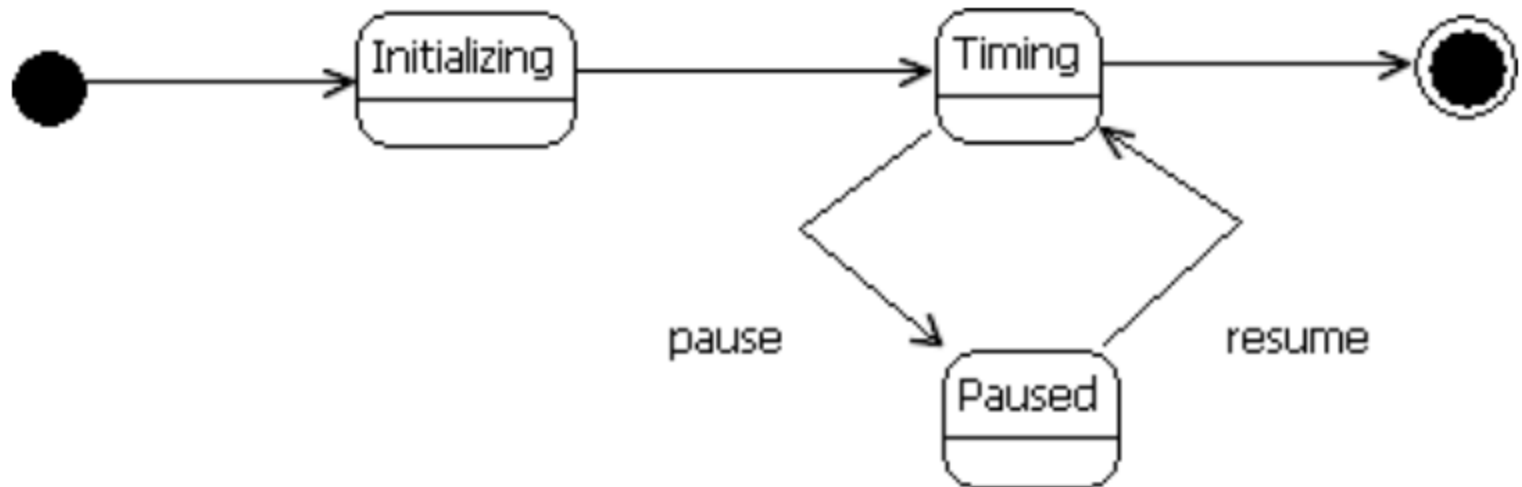The Composite Structure Diagram for `WaterTank`

State Machine Diagrams

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- Sequence Diagrams
- Interaction Overview Diagrams
- Composite Structure Diagrams
- **State Machine Diagrams**
- Timing Diagrams
- Object Diagrams
- Communication Diagrams

State Machine Diagram

- A state machine diagram is used to design and understand time-critical systems

- A state machine diagram expresses behavior as a progression through a series of states, triggered by events, and the related actions that may occur

- These are also known as behavioral state machines

Example
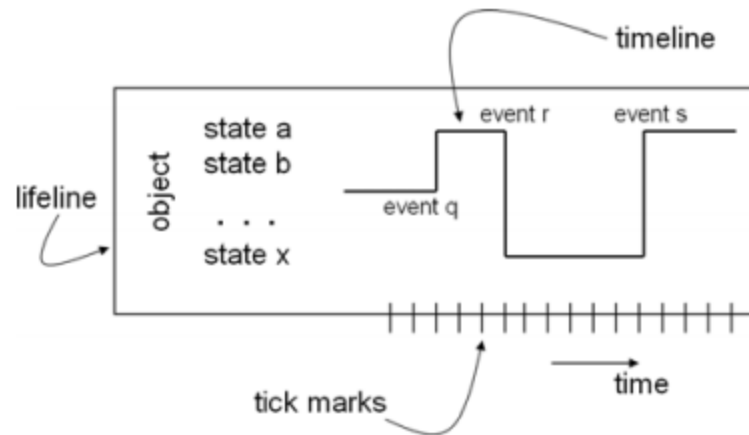

States and Transition Events for the Duration Timer

Timing Diagrams

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- Sequence Diagrams
- Interaction Overview Diagrams
- Composite Structure Diagrams
- State Machine Diagrams
- **Timing Diagrams**
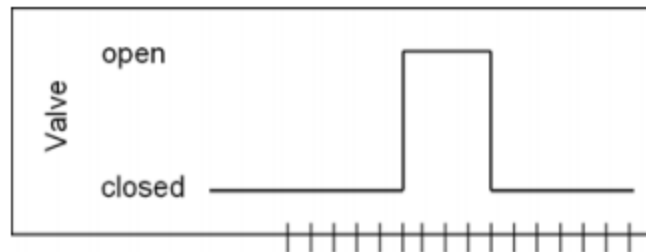- Object Diagrams
- Communication Diagrams

Timing Diagrams

- Timing diagrams are a type of interaction diagram

- Their purpose is to show how the states of an element or elements change over time and how events change those states

Example

A Generic Timing Diagram

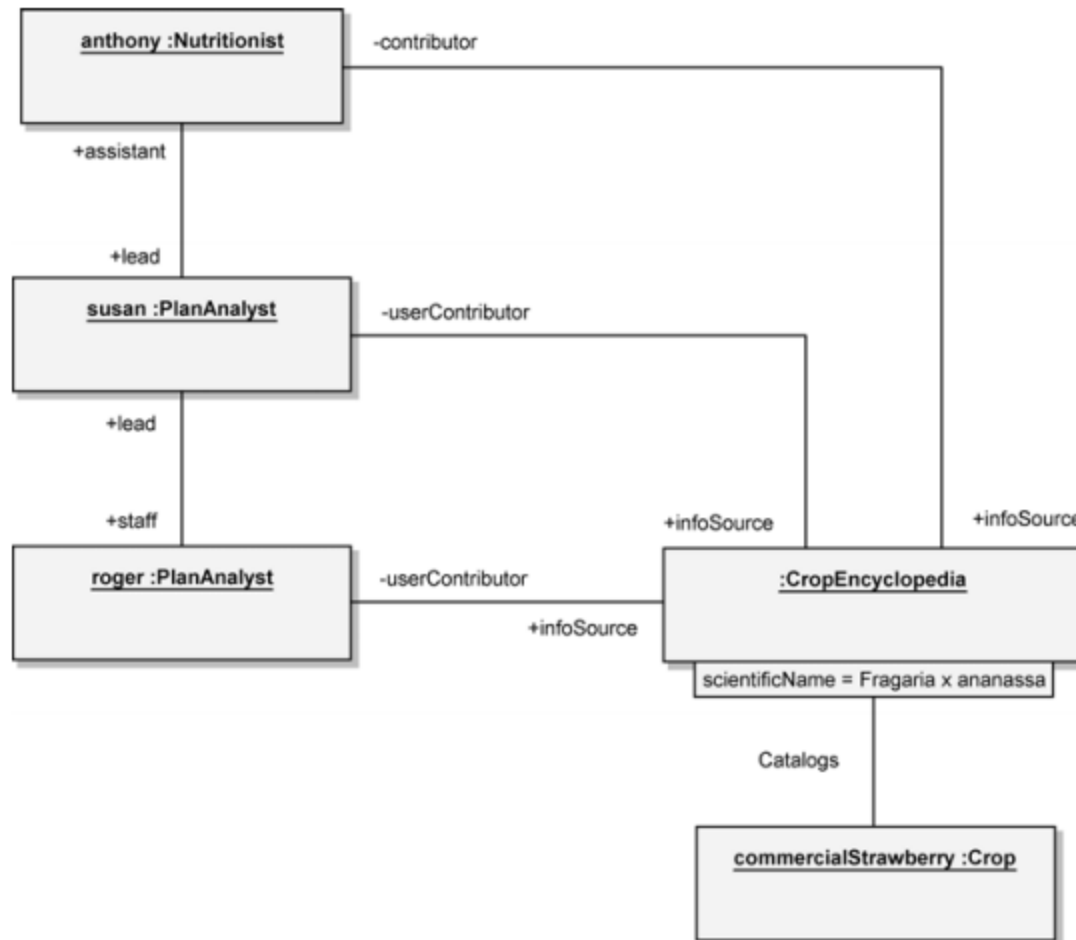A Timing Diagram for the `Valve` Object

Object Diagrams

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- Sequence Diagrams
- Interaction Overview Diagrams
- Composite Structure Diagrams
- State Machine Diagrams
- Timing Diagrams
- **Object Diagrams**
- Communication Diagrams

Object Diagram

- An object diagram is used to show the existence of objects and their relationships in the logical design of a system

- Stated another way, an object diagram represents a snapshot in time of an otherwise transitory stream of events over a certain configuration of objects.
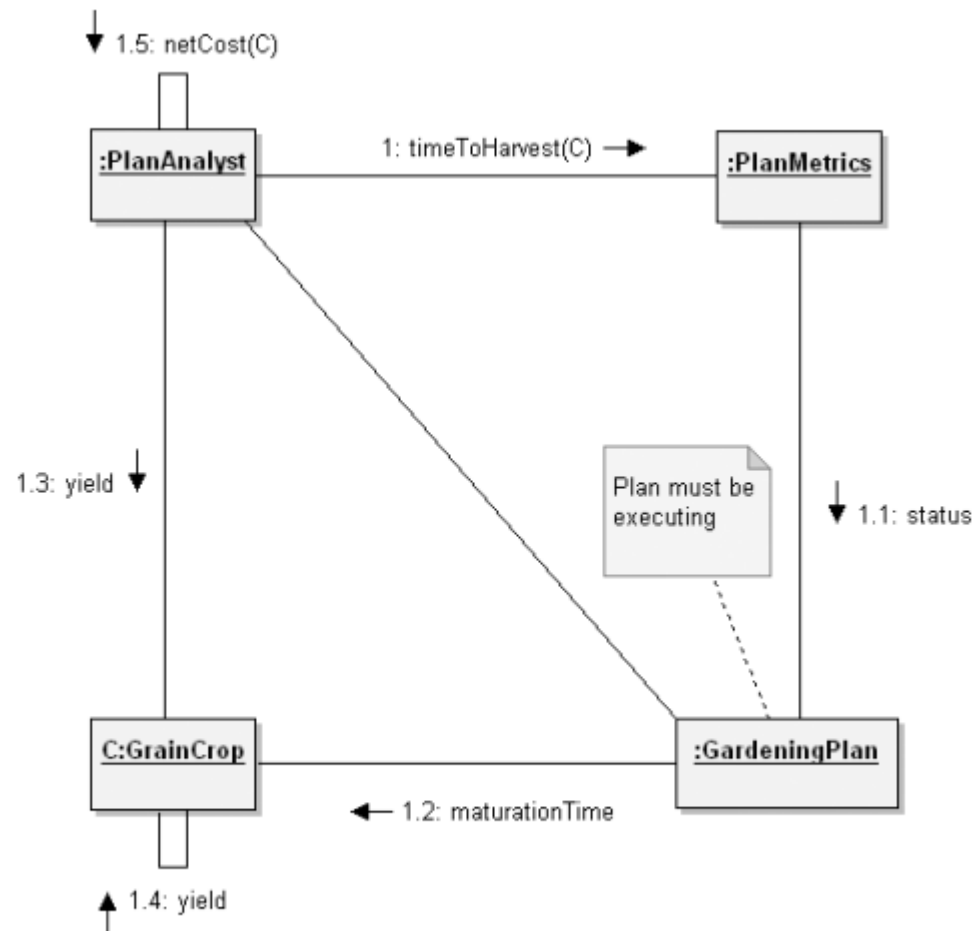
Example

Object Relationships

Communication Diagrams

- Package Diagrams
- Component Diagrams
- Deployment Diagrams
- Use Case Diagrams
- Activity Diagrams
- Class Diagrams
- Sequence Diagrams
- Interaction Overview Diagrams
- Composite Structure Diagrams
- State Machine Diagrams
- Timing Diagrams
- Object Diagrams
- **Communication Diagrams**

Communication Diagram

■ A communication diagram is a type of interaction diagram that focuses on how objects are linked and what messages they pass as they participate in a specific interaction

Example

Communication Diagram for the Hydroponics Gardening System

Summary

- Clear idea of Notation in Object Orientated Analysis and Design
- Visualising System
- UML Diagrams (Types)
- **UML Diagrams**

This Week

- Review Slides
- Read Chapter 6
- Online Quizzes
- Version Control (GitHub)

Questions/Discussion