

Activity 12-1: UML Sequence Diagrams

Why?

UML sequence diagrams are the main UML modeling tool for showing interactions between collaborating individuals. Designing these interactions is an important part of mid-level design.

Learning Objectives

- Understand the syntax and semantics of UML sequence diagrams
- Make interaction models using UML sequence diagrams

Success Criteria

- Be able to distinguish correct from incorrect UML sequence diagrams
- Be able to explain what the constituents of UML sequence diagrams mean
- Be able to draw UML sequence diagrams that model interactions between objects

Resources

ISED section 12.1

Vocabulary

Interaction, lifeline, self, synchronous and asynchronous message, guard, execution occurrence, executing, suspended, active, frame, interaction fragment, optional, alternative, break, and loop fragments

Plan

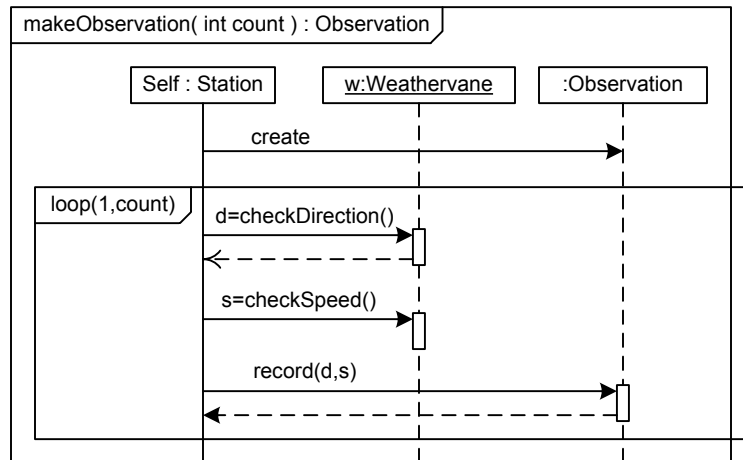
1. Review *ISED* section 12.1 individually.
2. Answer the Key Questions individually, and then evaluate the answers as a team.
3. Do the Exercises as a team, and check your answers with the instructor.
4. Do the Problems and Assessment as a team.
5. Turn in the Problems and Assessment as a team deliverable.

Key Questions

1. What do the vertical and horizontal dimensions of sequence diagrams represent?
2. What does an object do when it sends a synchronous message?
3. Are specifications on message arrows required?
4. What is an interaction fragment?
5. How is a destroyed object depicted in a sequence diagram?

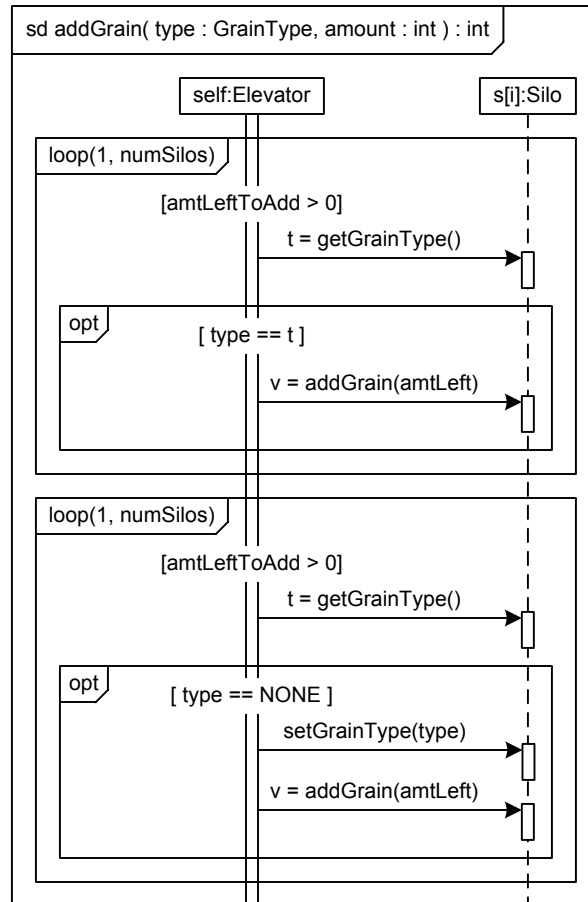
Exercises

1. What Java control structures have corresponding sequence diagram interaction fragments, and which do not?
2. The following UML sequence diagram models an interaction in an automated weather station. Circle all the errors in the diagram.



Problems (Deliverable)

1. According to the diagram above, what sort of messages are sent to the Weathervane object?
2. How many Observation objects are created?
3. Can a `record()` operation be called before its parameters have been set?
4. What is the type of the self object?
5. What is the name of the Weathervane object?
6. In which class is the `makeObservation()` operation?
7. The sequence diagram below models an interaction that occurs when grain arrives at a grain elevator and is stored in a silo. A silo can only hold one type of grain at a time (otherwise corn would be mixed with wheat, for example). Explain in English what is happening in this interaction.



Assessment (Deliverable)

1. Did this activity help you achieve the learning objectives?
2. How could the instructor improve this activity?