Software Engineering

Lesson #10 - Practice

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Agenda: Lesson #10 - Software Engineering - Practice

1	Interaction Overview Diagrams
2	Timing Diagrams
3	Class Work
4	Q & A

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1. **Interaction Overview Diagrams**
2. Timing Diagrams
3. Class Work
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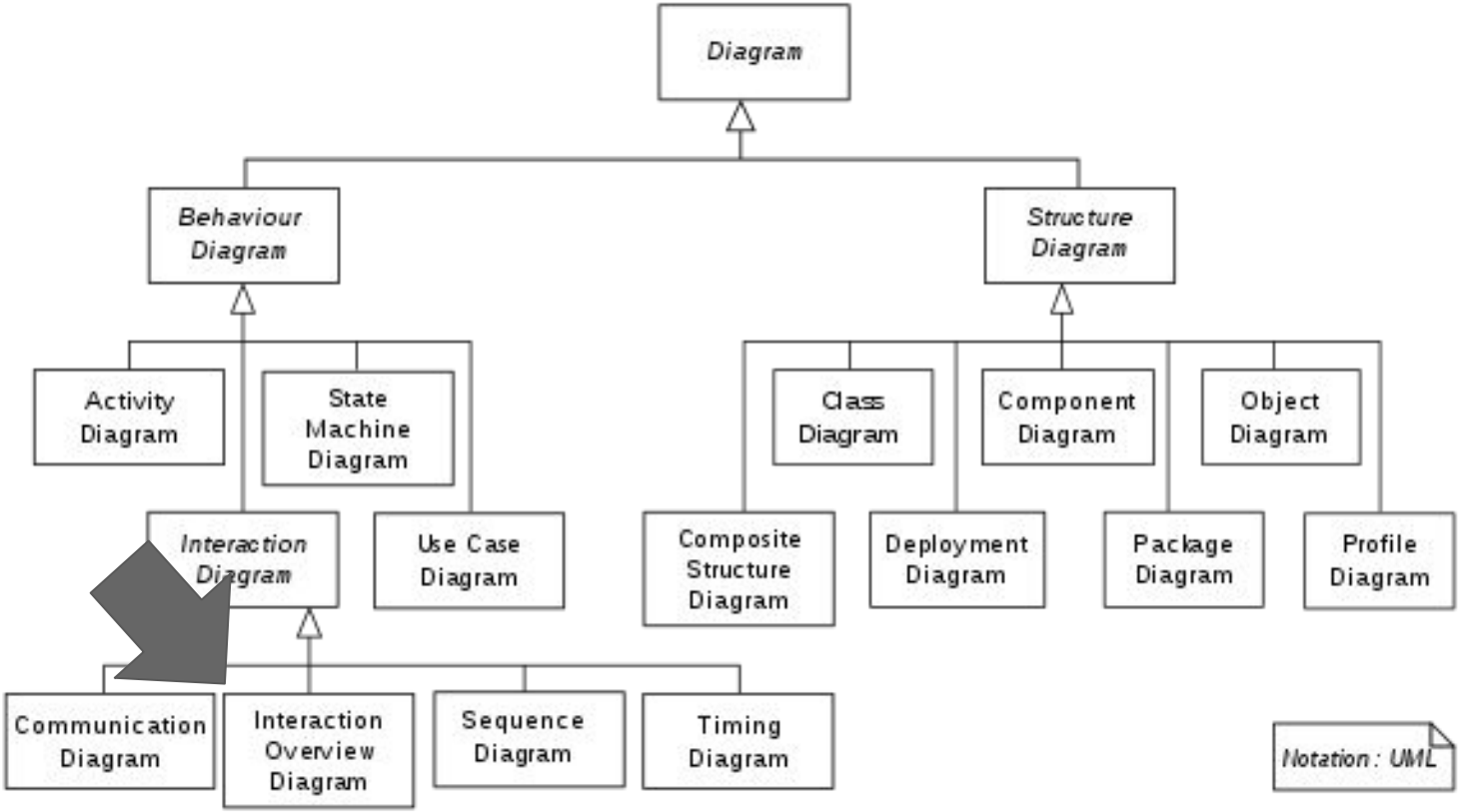
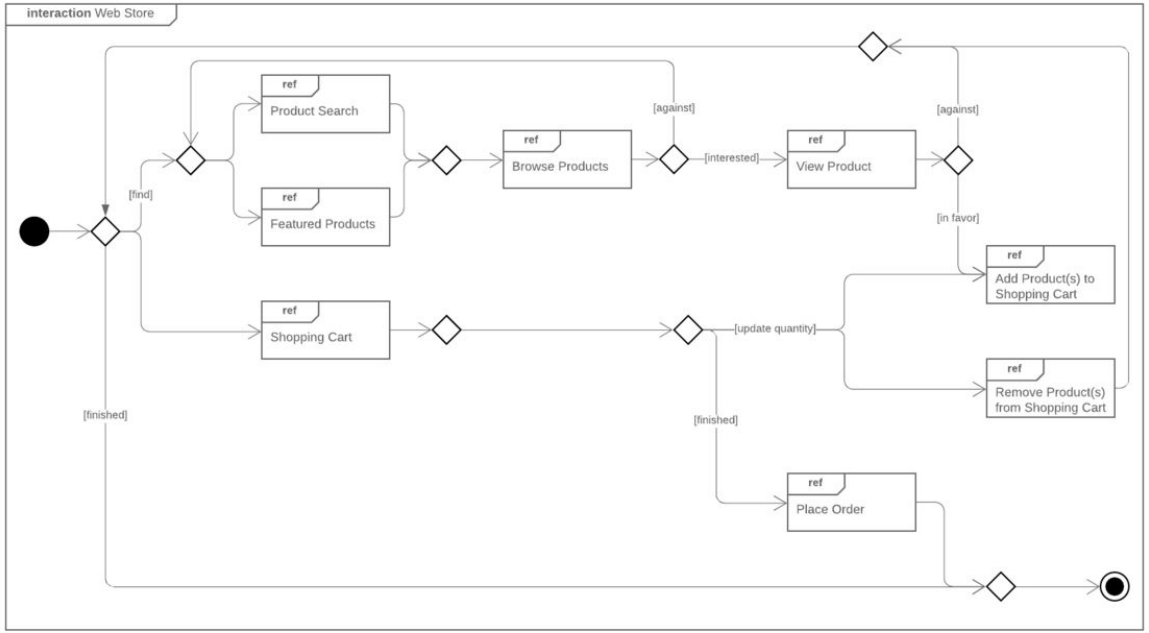
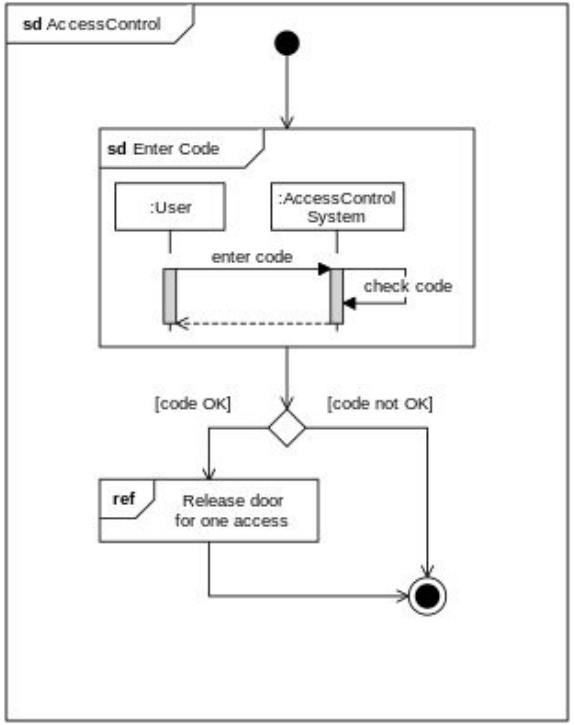
Interaction Overview Diagrams



Interaction Overview Diagrams





Interaction Overview Diagrams

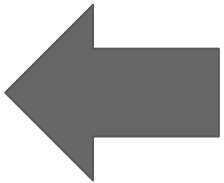
Interaction overview diagrams are a grafting together of activity diagrams and sequence diagrams

You can think of interaction overview diagrams either as activity diagrams in which the activities are replaced by little sequence diagrams, or as a sequence diagram broken up with activity diagram notation used to show control flow. Either way, they make a bit of an odd mixture.

Interaction Overview Diagrams

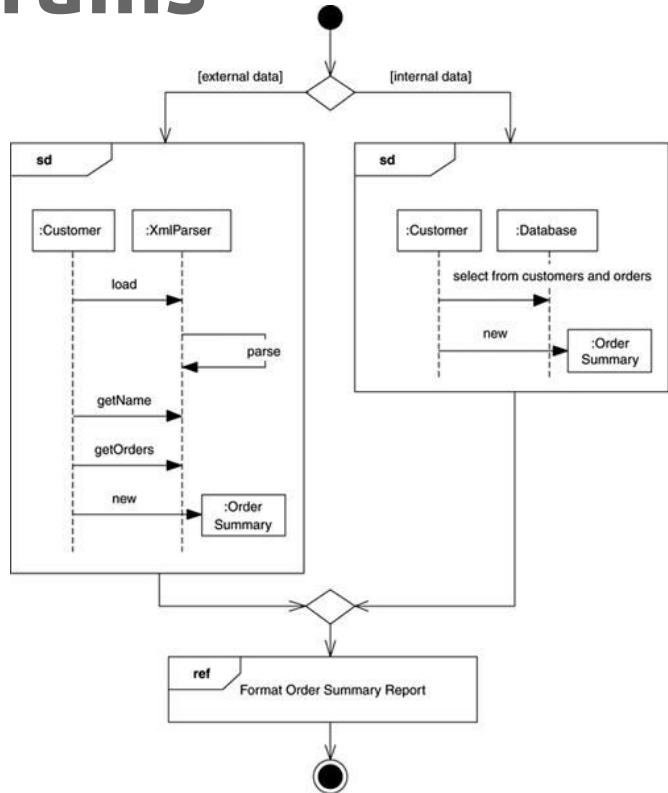
Behaviour UML diagrams

- Activity diagram
- Communication diagram
- Interaction overview diagram
- Sequence diagram
- State diagram
- Timing diagram
- Use case diagram



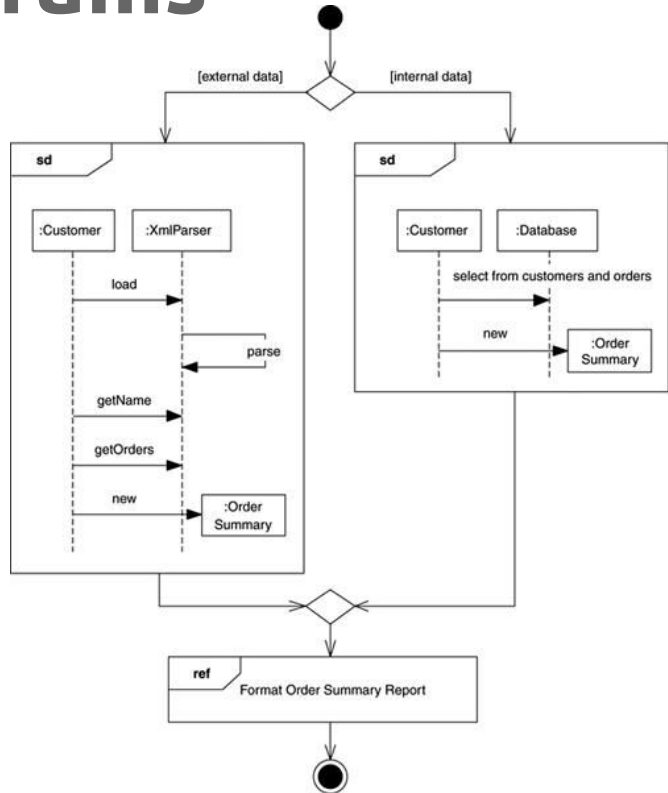
Interaction Overview Diagrams

Figure shows a simple example of one; the notation is familiar from what you've already seen in the activity diagram and sequence diagram chapters. In this diagram, we want to produce and format an order summary report.



Interaction Overview Diagrams

If the customer is external, we get the information from XML; if internal, we get it from a database. Small sequence diagrams show the two alternatives. Once we get the data, we format the report; in this case, we don't show the sequence diagram but simply reference it with a reference interaction frame.



When to Use Interaction Overview Diagrams

These are new for UML 2, and it's too early to get much sense of how well they will work out in practice. I'm not keen on them, as I think that they mix two styles that don't really mix that well. Either draw an activity diagram or use a sequence diagram, depending on what better serves your purpose.

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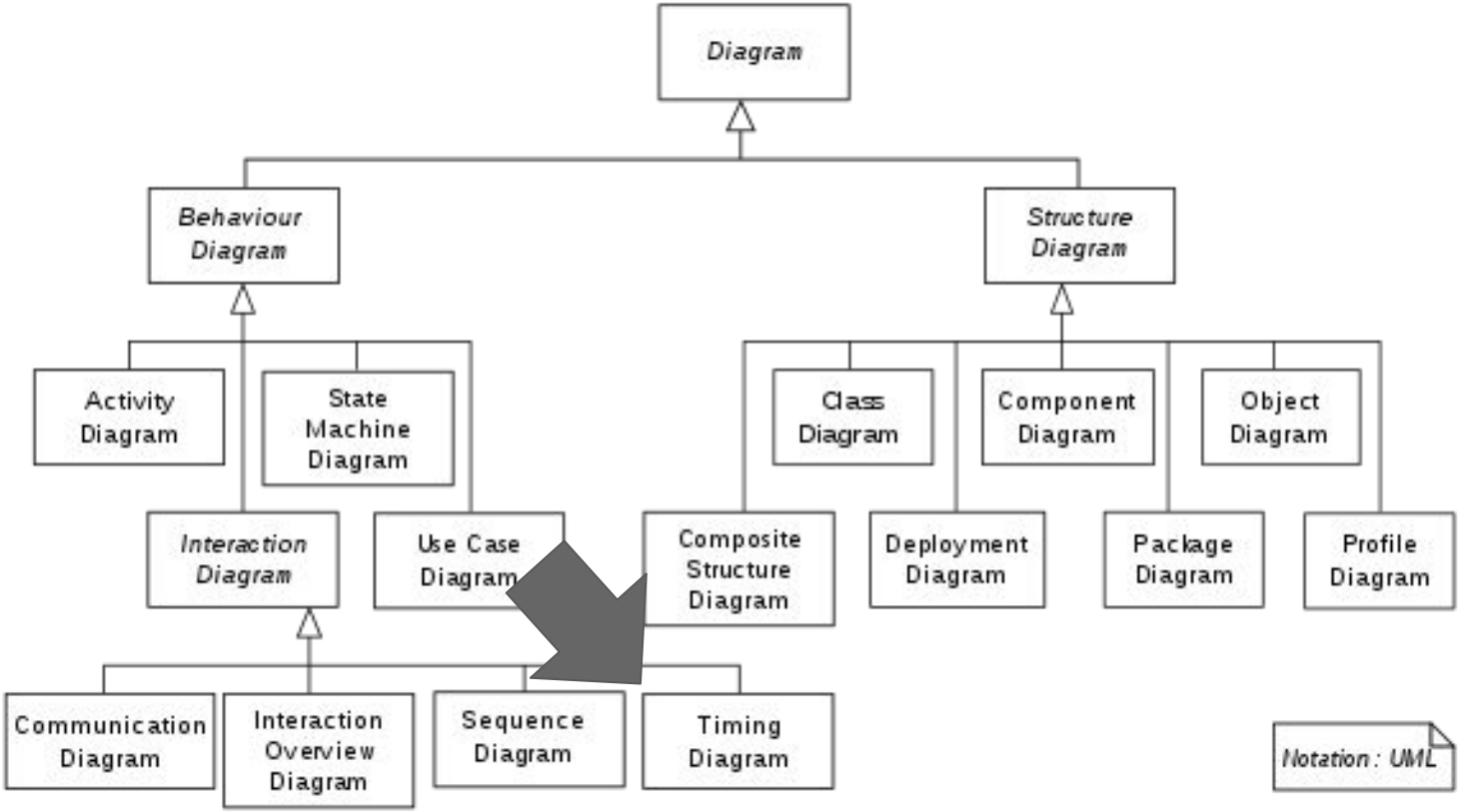
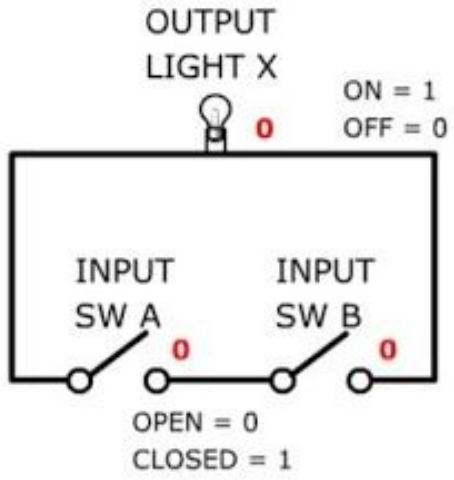
Timing Diagrams

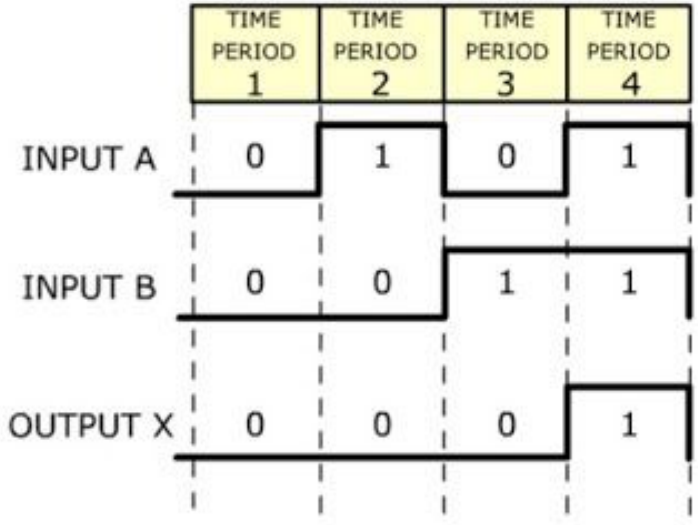


Timing Diagrams

Timing diagrams are another form of interaction diagram, where the focus is on timing constraints: either for a single object or, more usefully, for a bunch of objects. Let's take a simple scenario based on the pump and hotplate for a coffee pot. Let's imagine a rule that says that at least 10 seconds must pass between the pump coming on and the hotplate coming on. When the water reservoir becomes empty, the pump switches off, and the hotplate cannot stay on for more than 15 minutes more.

Timing Diagrams





Timing Diagrams

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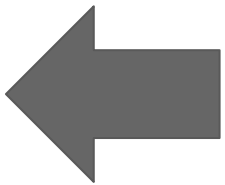
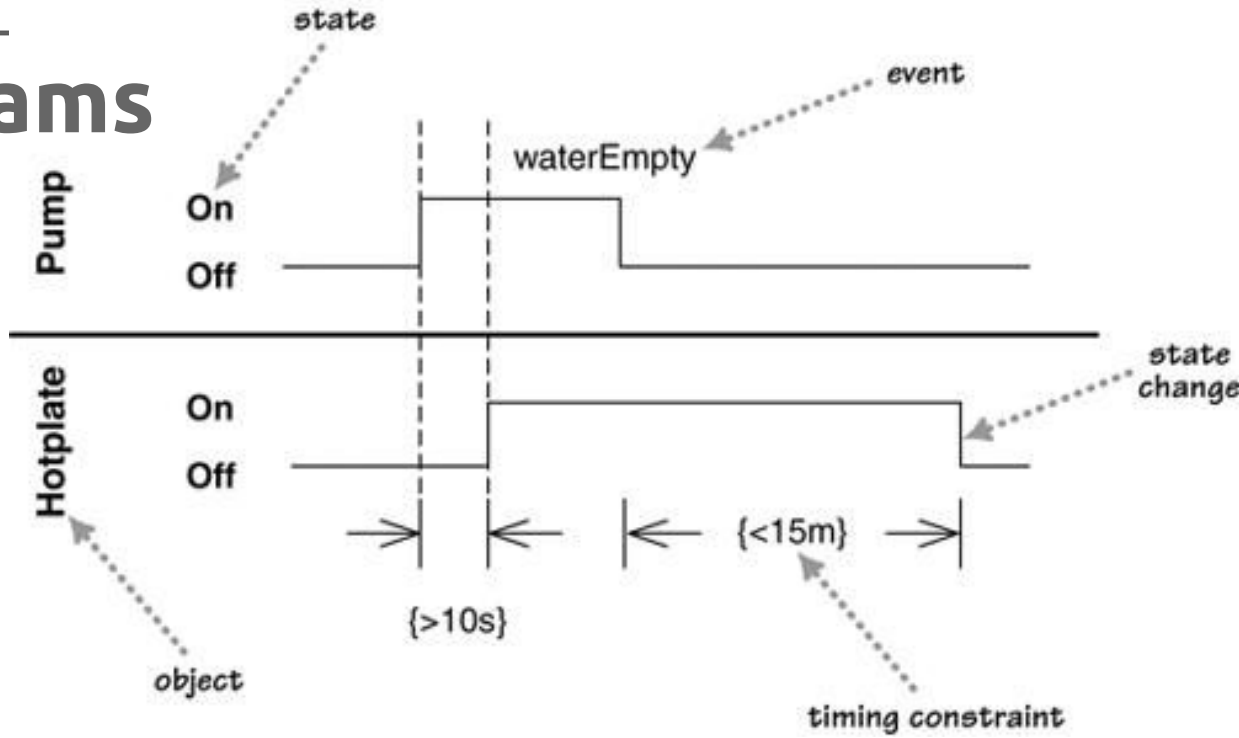


Timing Diagrams

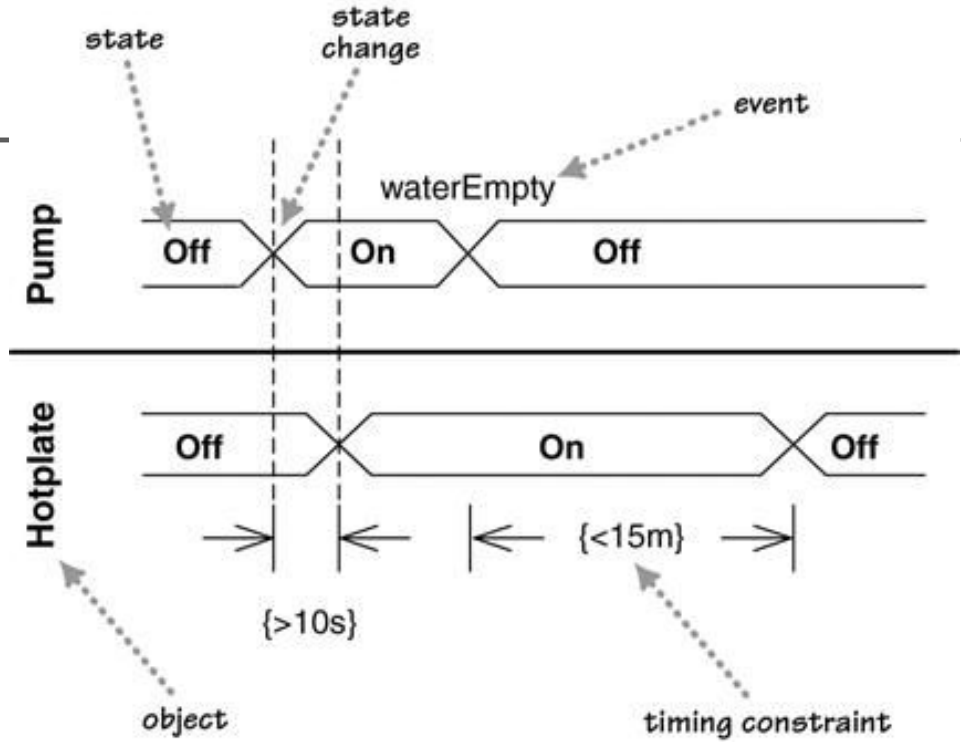
Figures 17.1 and 17.2 are alternative ways of showing these timing constraints. Both diagrams show the same basic information. The main difference is that Figure 17.1 shows the state changes by moving from one horizontal line to another, while Figure 17.2 retains the same horizontal position but shows state changes with a cross. The style of Figure 17.1 works better when there are just a few states, as in this case, and Figure 17.2 is better when there are many states to deal with.

Timing Diagrams



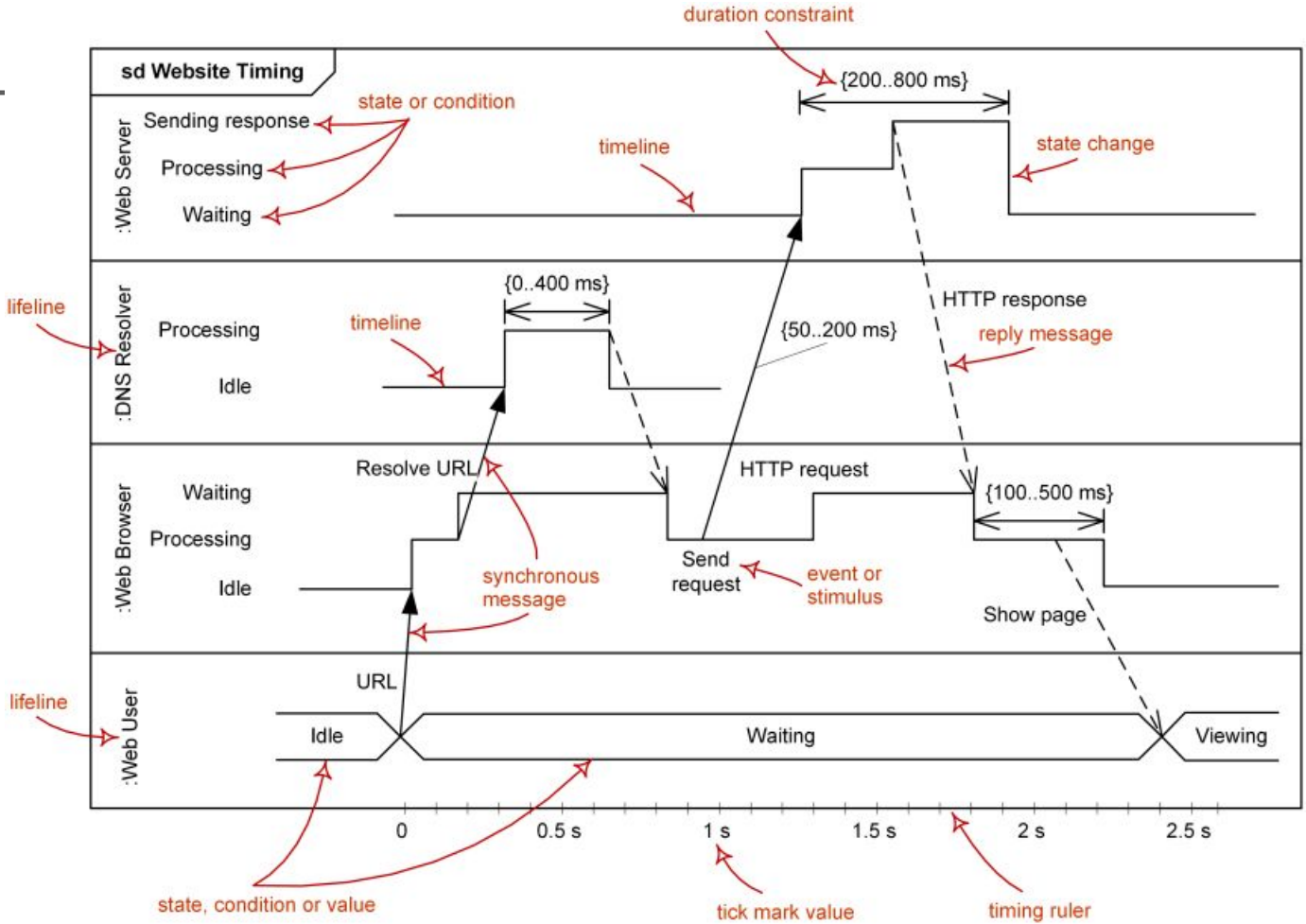
Figures 17.1- Timing diagram showing states as lines

Timing Diagrams

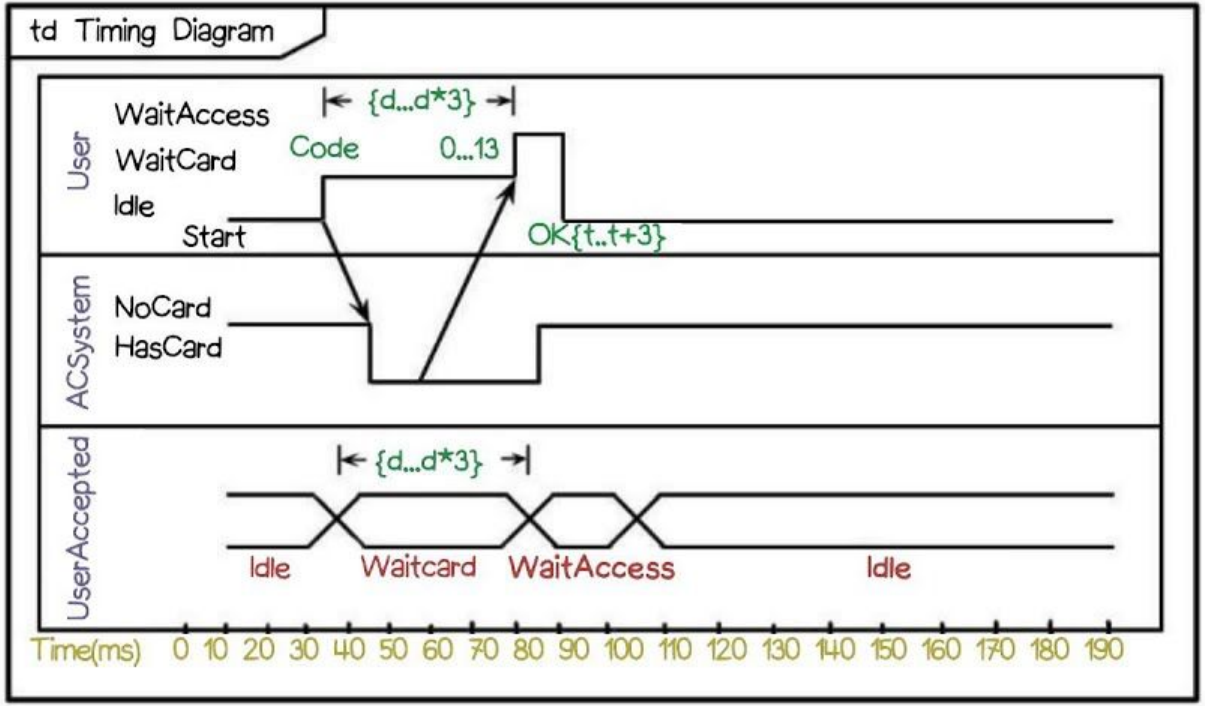


Figures 17.2- Timing diagram
showing states as areas. The dashed lines that I've used on the {>10s} constraints are optional. Use them if you think they help clarify exactly what events the timing constraints.

Timing Diagrams



Timing Diagram



When to Use Timing Diagrams

Timing diagrams are useful for showing timing constraints between state changes on different objects. The diagrams are particularly familiar to hardware engineers.

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Software Engineering, 10. Global Edition

No classwork for today

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Q & A