

3 How can I tell the difference between states and events?

Students often get confused about what is a state and what is an event, and it is sometimes difficult to make the distinction between them. The main difference is that an event is regarded as being almost instantaneous and uninterruptible, whereas a state lasts longer – it has duration. For example, in the Wheels system ‘bike damaged’ is regarded as an event that cannot be interrupted because it is in the past and has happened. On the other hand, ‘Under repair’ is a continuous state that a bike may be in for some time. It is helpful to label events and states with completely different names; for example, in Wheels we could have an event ‘bike hired’ leading to a state ‘Hired’, but it is much clearer to label the event ‘customer hires bike’ and the state ‘On hire’.

4 What is the relationship between state diagrams and interaction diagrams?

The two types of diagram show related information (the behaviour of objects in use cases), but the emphasis is completely different. A state diagram shows how the different objects of a single class behave through all the use cases in which the class is involved. An interaction (sequence or collaboration) diagram concentrates on a single use case and shows how all the objects involved behave during the use case (see also the answer to Question 2, above).

5 How do I know whether to include all the fancy stuff, like concurrent states and different types of event?

There is no hard and fast rule for this, but you should remember that, as with all models, there is a risk of including too much detail and making the diagram so cluttered that it is unreadable. If the extra information is important to the overall understanding of how the system works, you should include it, otherwise leave it out. You may also find that the same information can be shown (possibly more effectively) in one of the other types of diagram and in that case it should not be duplicated.

Chapter summary

This chapter introduces state diagrams, which are used to model the ways in which the objects of a class respond to events that affect them. It describes when to use a state diagram, explains the notation used, and provides guidelines on how the diagrams are constructed. The basic steps that we describe for drawing a state diagram in this chapter are: