



Figure 7.2 Simple state diagram for the BankAccount class

event (the attempt to withdraw £40), but they respond differently to the event because they are in different states at the time.

The state of the object here refers to the situation it is in while satisfying some condition (such as a bank account having some money) or waiting for an event (such as someone trying to withdraw or deposit money). An event is something that happens which has significance for the system and affects an object of at least one of the system's classes. We can tell if an object is in a particular state by looking at the values of some of its attributes and its links to other objects. For example, if a BankAccount object is in credit the value of the balance attribute will be a positive amount or zero, but if it is overdrawn the value of balance will be negative. In the Wheels case study, we can tell if a bike is hired out because there will be a link from the Bike object to an active Hire object.

An example of a simple state diagram

Figure 7.2 shows a simple state diagram for the BankAccount class, illustrating all the different ways in which objects of the class respond to events. The symbols used in state diagrams are illustrated in Figure 7.3

When reading the state diagram in Figure 7.2, we begin from the start state (the filled circle on the left). A state diagram can have only one start state, since all objects of a class are in the same state when created. The event 'open account and deposit money' creates an object of the BankAccount class and causes the object to move from the start state into the 'In credit' state. When a transition between two objects is triggered by an event, the transition is said to fire; it is shown in Figure 7.2 as a labelled arrow between the two states.

While in the 'In credit' state, the object may undergo different types of event, which affect it in different ways; for example as shown in Table 7.1.