



Figure 8.8 Activity diagram for the 'Handle bike return' use case, showing parallel activities

activities is known as a join. The transitions at the beginning and end of parallel activities must match; all outgoing transitions from the fork must eventually meet at the corresponding join.

Different types of activity structures, such as sequence, selection, iteration and parallel activities, can all occur in the same diagram, although this can sometimes make the diagram cluttered and difficult to read. Figure 8.9 shows a modified version of the activity diagram for the 'Handle bike return' use case, including selection and parallel activities. The diagram now shows what happens when a bike is overdue or returned damaged.

## Swimlanes

None of the example activity diagrams shown so far in this chapter has given any indication of which person, agent or object carries out a given activity. Diagrams like these are actually very useful in the early stages of development when we want to think about what happens during processing without worrying about who or what has responsibility for a specific activity. Later on, however, it is useful in relation to each activity to be able to identify who, what, or which object in the system carries it out. We can add this information to an activity diagram by dividing the diagram into vertical zones, known as swimlanes. Swimlanes are separated from each other by lines and the top of each swimlane is labelled with