Object identification using noun analysis. Noun analysis is a rather long-winded technique for identifying objects. However, it is straightforward and reassuringly mundane if you are a bit unsure of what you are trying to do. The steps are as follows.

- First, find a complete but concise description of the system requirements. The Problem Definition (see Chapter 2) is often a good place to look. Use case descriptions are also useful for this purpose, although for a complete description of the system you would have to look at all of the use case descriptions.
- Pick out all of the nouns and noun phrases and underline them. This usually provides a rather long list of possible (or candidate) objects, many of which are obviously unsuitable and some of which are unsuitable in more subtle ways.
- Reject unsuitable candidates by applying a list of rejection criteria.

For our object analysis we will use the list of requirements produced at the end of Chapter 2, reproduced in Figure 5.2.

The new Wheels system must:

R1 keep a complete list of all bikes and their details including bike number, type, size, make, model, daily charge rate, deposit (this is already on the Wheels system)
R2 keep a record of all customers and their past hire transactions
R3 work out automatically how much it will cost to hire a given bike for a given number of days
R4 record the details of a hire transaction including the start date, estimated duration, customer and bike, in such a way that it is easy to find the relevant transaction details when a bike is returned
R5 keep track of how many bikes a customer is hiring so that the customer gets one unified receipt not a separate one for each bike
R6 cope with a customer who hires more than one bike, each for different amounts of time
R7 work out automatically, on the return of a bike, how long it was hired for, how many days were originally paid for, how much extra is due
R8 record the total amount due and how much has been paid
R9 print a receipt for each customer
R10 keep track of the state of each bike, e.g. whether it is in stock, hired out or being repaired
R11 provide the means to record extra details about specialist bikes.

Figure 5.2 Requirements for the Wheels system