

Customer

CustID	Name	FirstName	Street	Town	PhoneNo
1	Sykes	Jim	2 High Road	Greenwood	01395 211056
2	Perle	Lee	14 Duke Street	Greenwood	01395 237851
3	Hargreaves	Les	11 Forest Road	Prestwich	01462 501339
4	James	Sheena	4 Duke Street	Greenwood	01395 237663
5	Robins	Charlie	11Juniper Road	Greenwood	01395 267843

Figure 9.12 Example of a table of customers in a relational database

but you can find more information in books on Java, such as Deitel and Deitel (2003).

Implementing a class diagram in a relational database

If a system is to be implemented in an object-oriented programming language using data stored in a relational database, the developer needs to think about the transition between the object-oriented models and the constraints of the database. Although there is no standard way of adapting the models, there are guidelines, and these are discussed briefly in this section. First, we look at how data is stored in a relational database.

Tables. The foundation of a relational database is its tables. Each table represents an entity that is important in the system and about which it needs to store information. A table is similar to a class in an object-oriented system in that it provides a template or pattern for all instances of the entity it represents.⁴ The table is made up of rows and columns, where each column stores a field, or attribute of the entity, and each row stores a single record, typically the complete set of values for a single instance of the entity. Figure 9.12 shows a simple table to store details about customers in the Wheels bike hire system. Operations in the Wheels system that involve customers will all use data from this table.

Single classes. The basic rule, when implementing a class diagram in a relational database, is that one class maps onto one table. Figure 9.13 shows the Bike class from the Wheels class diagram. This figure does not include the Bike class operations, as our interest here is not the functionality of the system, but how the data is stored.

It is straightforward to implement this class as a table, with bike# as the primary key (the attribute in a relational table that

4. Although tables have some similarity to classes, they do not in themselves have any functionality, unlike classes, which have operations.