

CASE (Computer Aided Software Engineering) refers to any piece of software that has been designed to help people develop systems. In theory, a CASE tool can be a simple drawing program or basic debugger, but today almost all CASE tools cover the whole of the system life cycle, and provide automated support for all development activities, both technical and managerial. For object-oriented systems, tools such as Rational Rose™ and Together™ allow developers to produce UML models of the system which are syntactically correct, consistent with each other and which can be refined and developed to produce executable code. The diagrams in this book were originally produced using both Rational Rose™ and Together™, but the code has been written from scratch in order to show how the system develops from diagrams to code, and to emphasize certain points that we think are important when you are learning about object-oriented development. However, it would have been perfectly possible to generate the skeleton of a running program from the diagrams shown here. Even though we did not use this facility, we still benefited from the ‘nanny’ characteristics of the CASE tools, which remembered details of previous diagrams, allowed us to navigate between diagrams that were related, and pointed out when we made stupid mistakes.

## Introduction to the case study

The case study which is used as the basis for examples and exercises in this book is a typical bicycle hire shop. If you have ever hired a bicycle, you will already be familiar with some of the details; in fact, if you have ever hired anything, such as a car or even a video, you will see that the basic processes are very similar.

The bike hire shop is called Wheels, and was started by Mike Watson, the current owner, about ten years ago. Mike has always been a keen cyclist, and still competes regularly in local races and rides for charity. He has an encyclopaedic knowledge of all types of bike, and is very proud of the range and quality of his stock. The business has done well, and now occupies large premises near the centre of town with a big storage and workshop area in the basement. Wheels attracts a lot of passing custom because of the position of the shop, and also gets many returning customers who know that they will be given a good quality bike that will suit their needs.

As well as Mike, who is very much involved in the day-to-day running of the business, there is a full-time shop manager, Annie Price, the head mechanic, Naresh Patel, and three other mechanics who work part-time. There is a computer in the reception area, and all the Wheels bikes are recorded on file, with details such as the