Chapter summary

Software produced using a structured development approach still has many problems particularly relating to maintenance, reuse and testing. These failings are perceived to be due to the lack of a suitable software construct. The object-oriented approach is based on the object, a software construct which should overcome the problems suffered by structured software.

Objects are based on the data in a system, but are also able to provide the required functionality. Every object belongs to a class, which determines its attributes, behaviour and relationships. A good class should demonstrate the qualities listed in the chapter. It should produce objects that are autonomous, cohesive and easy to understand. We have discussed how objects encapsulate data, together with operations to manipulate it, in a single construct, and hide the data behind a public interface of operations. We have also seen that abstract classes can be used to build some future proofing into the system.

There are three main ways in which classes can be linked: association, aggregation and inheritance. Inheritance is a powerful technique that allows us to create new classes by specializing existing ones; it is therefore an important tool in reuse of software. Inheritance also allows polymorphism, where an operation can be implemented in different ways by different classes.

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