Answers to Chapter 7 questions

The answers for the activities are suggestions; there are many other possible answers.

Activity 7.1

1 Payroll
2 Registration
3 Attendance records
4 Recording marks
5 Student records
6 Run an internal network for students
7 Run an internal network for administration
8 Timetabling
9 Exam registration
10 Room bookings

Activity 7.2

C++	general purpose, lots of different applications for example electronic ticketing
Delphi	writing standalone applications with GUIs
Java	object-oriented programs that run on any platform
Pascal	teaching programming
Python	control and testing
Visual Basic	RAD for event driven applications
1 PHP	open source scripting language used for web development
2 Modula 3	industrial and research projects and teaching
3 Perl	databases and email handling
4 Swift	building Apple applications
5 MATLAB	vector operations

Activity 7.3

1 MASM	x86 – games, high speed data manipulation
2 TASM	6502 – used to write routines for use with high-level languages developed by Borland

Activity 7.4

1 8080/Z80	load – OA, add – 87, store – 47
2 x86-64	load – A4, add – 04, store – AA

Activity 7.5

I'm using Microsoft Visual Studio with VB.net; this is an IDE because it offers me an editor and a debugger as well as other built-in tools including a forms designer.

End-of-chapter questions

1 To translate a program written in a high-level language, you can use a compiler or an interpreter. To translate a program written in a low-level language you must use an assembler.
2 a Program A
b Because the statements are made up of commands that use simple English words to describe what is to be done.
c Program A

3 A programmer can understand a program written in a high-level language more easily than a program written in a low-level language. This makes high-level language programs easier to debug and maintain. The development time for a program written in a high-level language is usually shorter than that of a similar program written in a low-level language.

4 A program written in a low-level language takes up less space in memory than a similar program written in a high-level language. Also a program written in a low-level language usually has a faster execution time than a similar program written in a high-level language. Programs written in a low-level language can make direct use of specific hardware whereas programs written in a high-level language can only use routines already provided with the hardware.

5 A program written in a high-level language cannot be executed by a computer. A compiler translates a whole program into machine code provided there are no syntax errors. An interpreter executes each program statement, written in a high-level language, until a syntax error is found. A compiler provides a translated machine code program that can be run independently; an interpreter does not – the high-level language statements are executed in order, no machine code program is produced.

6 To develop a program I would use an interpreter for the following reasons:
- Debugging is easier since the interpreter stops the execution of the program when an error is found.
- No need to wait for the program to recompile after an error has been corrected.
- Program execution can start from the correction point.