Chapter 1

End of Chapter Exercises

1. *What is an algorithm?*

   There are some quite formal definitions, but in layman's terms an algorithm is a set of clear instructions to carry out a defined task.

2. *What is a program? Try giving an answer in no more than thirty words. Do you know someone who is very poor at understanding technology (usually they cannot program their video recorder or set the stations on their car radio)? If so, how would you explain to him or her what a computer program is?*

   A computer program is an algorithm expressed in a programming language to be carried out by a computer.

3. *Describe your wallet using three different levels of abstraction: low (as many details as you can think of), medium (the main points), and high (identifying characteristics only).*

   High: black leather. **Medium**: A black leather bifold with a single fastening. Two main currency pockets plus slots for cards. **Low**: A black leather bifold with a single fastening about 5 years old, contains £25 in cash: a £20 note (the old design with Edward Elgar on the back) and a £5 note; 4 debit card receipts, 1 ATM receipt, 1 debit card, 1 credit card, and my Engineering Council registration card...

4. *Put on my shoes is a highly abstract description of a common task. To describe the task at a lower level of abstraction requires some details to be known. Jot down some of the main pieces of information that are needed to be able to describe step-by-step the process of putting on a pair of shoes.*

   What sort of shoes: are they slip-ons, lace-ups, buckle fasteners, velcro fasteners, etc? Are they standard shoes, or are they boots? (ankle, calf-length, etc). You get the picture!

5. *Learning to write Java/C/Visual Basic/programming language of your choice is not the same thing as learning to program. Why not?*

   Learning the rules of a programming language is like learning a foreign language. Before you can make any progress you need first to be able to speak. In programming terms 'speaking' is problem solving. You need to be able to analyze and solve problems in an algorithmic manner. Once you can do that then you can learn the organizing rules of a specific programming language.

6. *What were the causes of the First World War?*

   Well, you might be a history student taking programming as a compulsory

course! The answer "the assassination in Sarajevo of Archduke Ferdinand by Gavrilo Princip" is too simplistic and will not receive credit.

Projects
There are no solutions provided for the projects in this chapter.