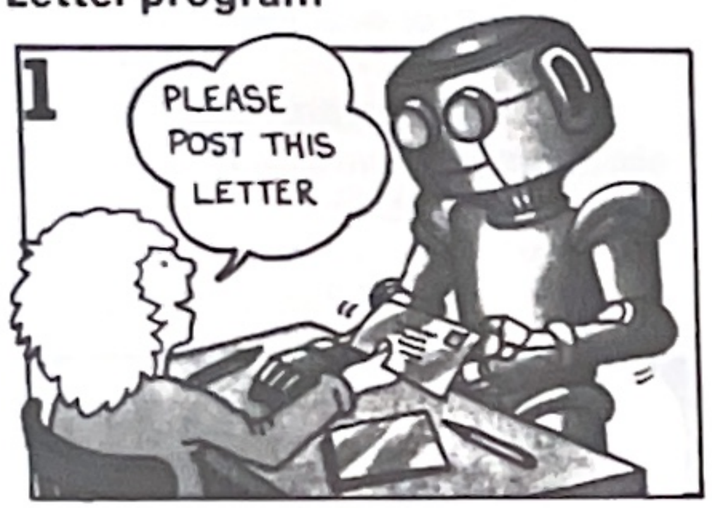
Writing programs

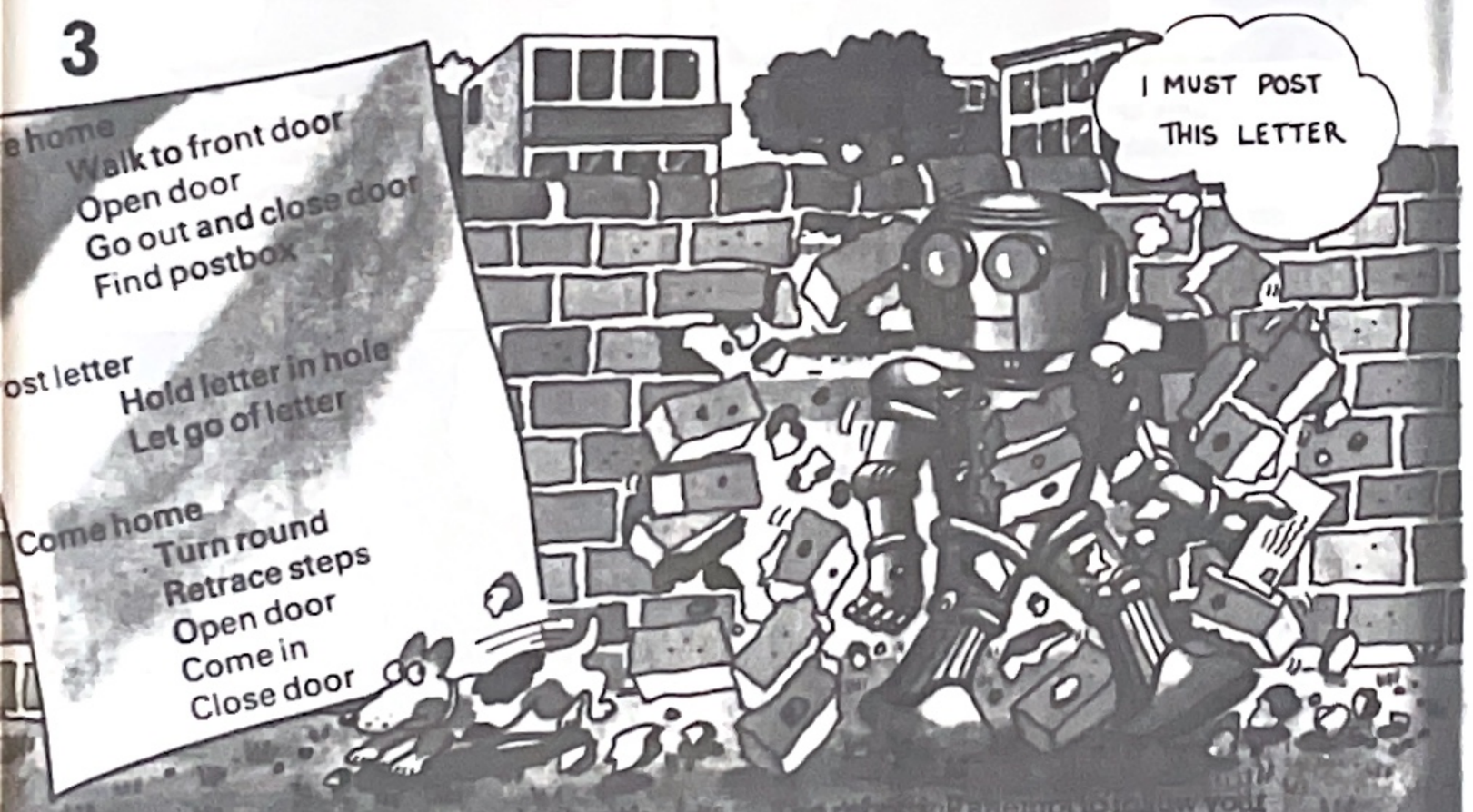
A program is like the rules for a game, or the recipe for a cake. If there is a mistake in the rules, or the recipe, you will not be able to play the game properly, or bake a good cake. In the same way, the results you get from a computer depend on the instructions you give it. To write a program for a computer you first need to study what you want to do very carefully and work out the main steps needed to achieve the result you want.

Letter program



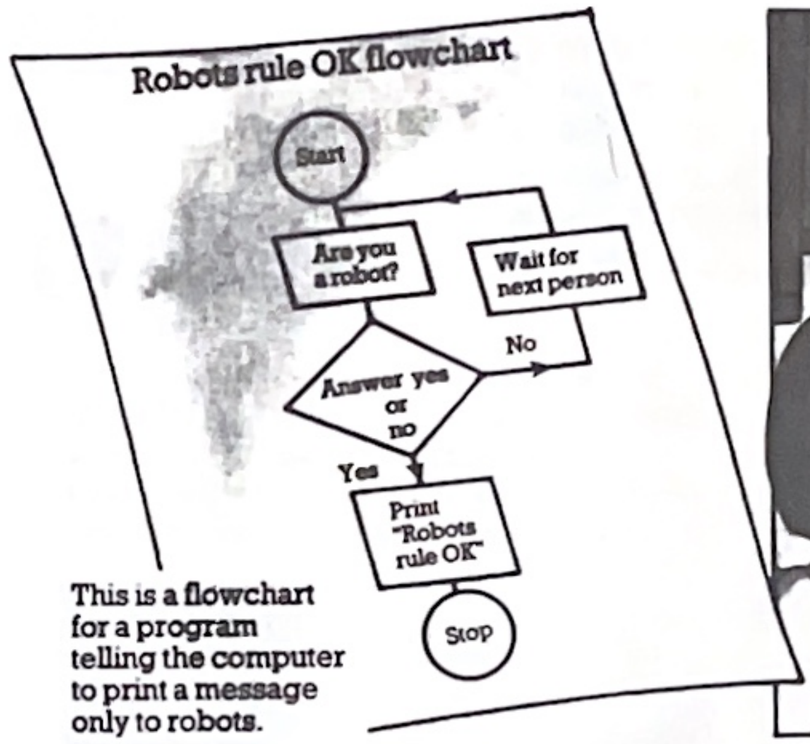
Imagine trying to write a program to tell a robot to post a letter. A simple instruction as shown above would be too difficult for the robot's computer brain to understand.

You need to work out exactly what the robot needs to do to post the letter. Its computer needs instructions telling it what to do at every stage.

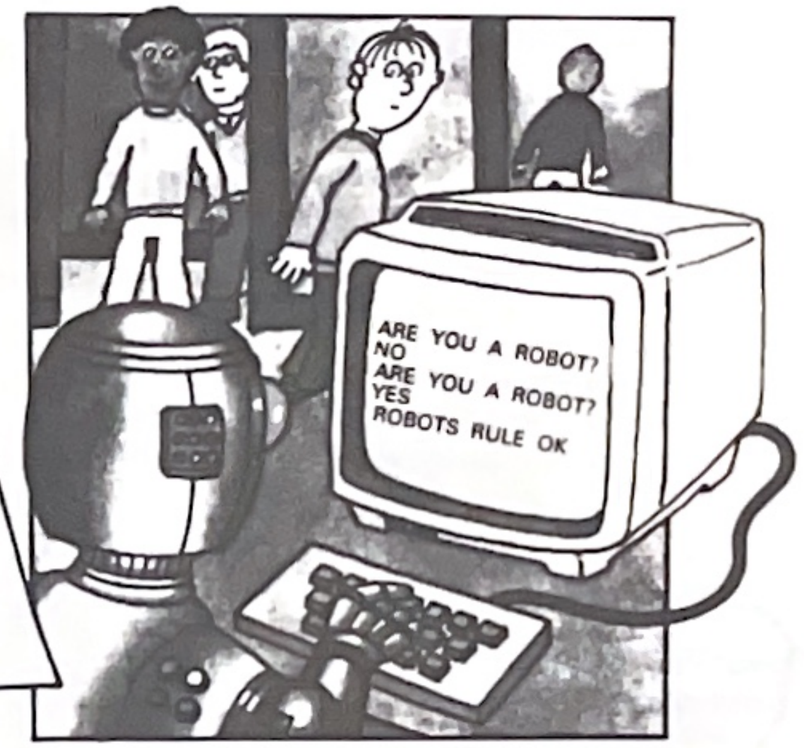


Program diagrams

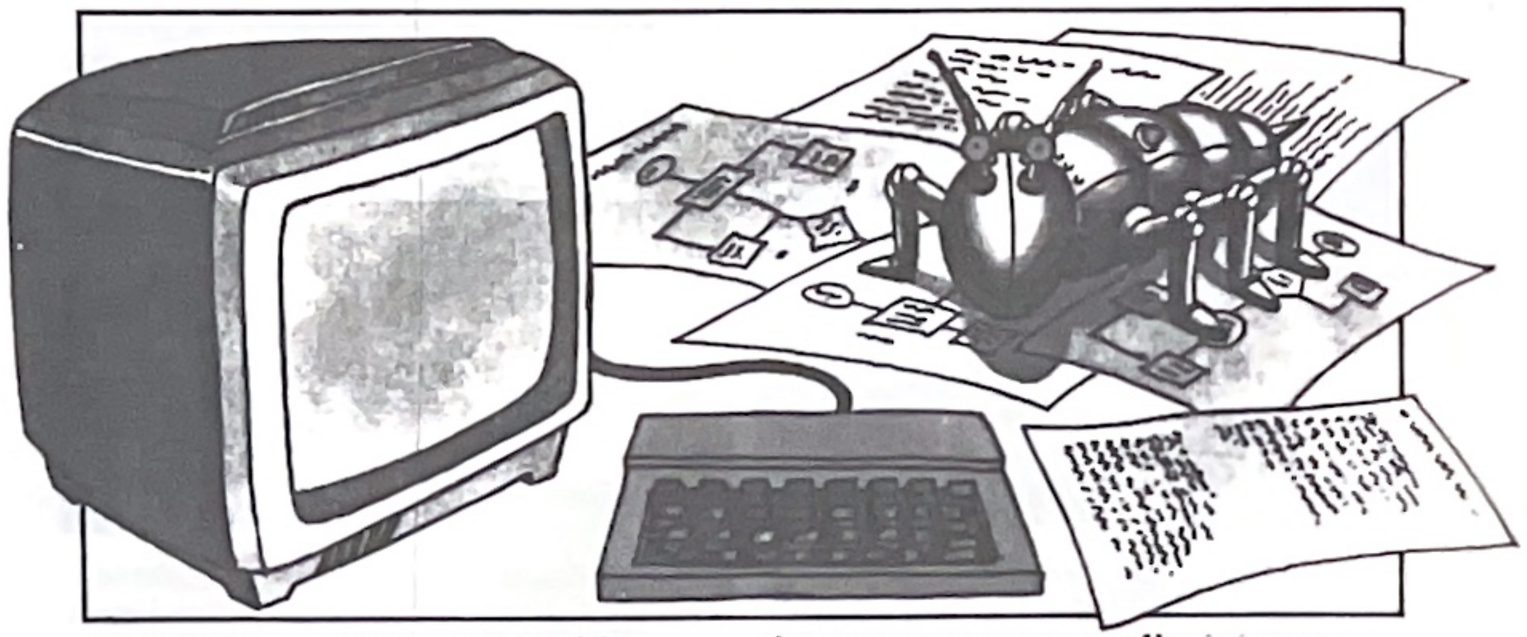
When you are writing a program it sometimes helps to draw a diagram like the one below, showing the main steps you need to solve the problem. A diagram like this is called a flowchart. It shows each of the steps the computer needs to carry out, and the order they should come in.



This is a flowchart for a program telling the computer to print a message only to robots.



A flowchart has different shaped boxes for different steps in the program. The beginning and end of the program have round boxes, instructions telling the computer to do something are in rectangular boxes and decision boxes, where the computer can do different things depending on the information it receives, are in diamond-shaped boxes. The lines show the possible routes the computer can follow.



After working out all the details of the program you can translate it into BASIC and test it on the computer. The program will probably not work straight away though, as there will probably be some bugs in it. These may be typing mistakes made when you typed the program into the computer, or errors of logic in your program. Before you can get the program to work you have to find all the bugs and correct them.* Sometimes, a bug makes a program produce a slightly different result which you may prefer. Useful bugs like this are called "pugs".

*There are some tips to help you find bugs on pages 42-43.