


SOLUTIONS MANUAL



 **Simple Program Design**
A Step-by-Step Approach
Fifth Edition

Lesley Anne Robertson

Chapter 2

Pseudocode

Objectives

- To introduce common words, keywords and meaningful names when writing pseudocode
- To define the three basic control structures as set out in the Structure Theorem
- To illustrate the three basic control structures using pseudocode

Overview

This chapter introduces pseudocode and provides examples of how to write typical pseudocode statements in an algorithm. Spend time looking at the pseudocode with your students so that they are familiar with it before they start to write it. For example, note the different occasions that a student may use the word ‘get’ rather than ‘read’, or ‘print’ rather than ‘write’.

The six basic computer operations are listed, along with pseudocode words and keywords to represent them. These operations are:

- 1 To receive information.
- 2 To put out information.
- 3 To perform arithmetic.
- 4 To assign a value to a variable or memory location.
- 5 To compare two variables and select one of two alternate actions.
- 6 To repeat a group of actions.

Typical pseudocode examples are provided as illustrations of these basic computer operations. The pseudocode keywords IF, THEN, ELSE and ENDIF are introduced to represent selection; and DOWHILE and ENDDO are introduced to represent repetition.

The Structure Theorem is introduced. It states that it is possible to write any computer program by using only three basic control structures: sequence, selection and repetition. Each control structure is defined, and its association with each of the six basic computer operations is indicated. Pseudocode examples for each control structure are provided.

Sample examination questions

- 1 A computer can perform six basic computer operations. Name these.
- 2 Name the four keywords used in pseudocode to represent the selection control structure.
- 3 Which control structure do the keywords DOWHILE and ENDDO represent?
- 4 Why is it important to use meaningful names?

Answers to sample examination questions

- 1 The six basic computer operations are:
 - i To receive information.
 - ii To put out information.
 - iii To perform arithmetic.
 - iv To assign a value to a variable or memory location.
 - v To compare two variables and select one of two alternate actions.
 - vi To repeat a group of actions.
- 2 The four keywords used to represent the selection control structure are IF, THEN, ELSE and ENDIF.
- 3 The repetition control structure uses the keywords DOWHILE and ENDDO.
- 4 Meaningful names are required in a program for readability and ease of maintenance. The name of a variable should accurately reflect its purpose.