

Exercise walk-through

8.3

File handling

IGCSE Computer Science

What we will cover

- 1 Variables, constants, data types
- 2 The three structures
- 3 Operators & strings
- 4 Procedures & functions
- 5 Arrays
- 6 File handling

age



16

a variable is a named box
that holds a value

Arrays

index	1	2	3	4	5
scores	90	75	60	88	50

↑
`scores[2]` is 75

1-D: a list, one index

	column		
	1	2	3
1			
2			
3			

← `grid[2,3]`

2-D: a table, [row, column]

An **array** holds many values of the **same type** under one name, picked out by an **index** : one for a list (`scores[2]`), two for a table (`grid[2,3]`) – perfect for a FOR loop.

Topic 8 – key takeaways

1**Structures**

sequence, selection, iteration

2**Loops**

FOR known; WHILE before; REPEAT after

3**Subroutines**

procedure acts; function returns a value

4**Arrays & files**

array = same type by index; file survives runs

Exercises 2.1-2.2

2.1 State one reason a program stores data in a file rather than in a variable. [1]

2.2 State the three steps used to handle a file, in order. [3]

Exercises 2.1-2.2

2.1 State one reason a program stores data in a file rather than in a variable. [1]

2.1

- a variable is lost when the program stops
 - a file **keeps the data after the program stops** (non-volatile)
-

2.2 State the three steps used to handle a file, in order. [3]

2.2

- three steps, in order
- **open, read or write, close**

Exercise 2.3

2.3 Choose **one** option. The pseudocode to store a hotel name held in the variable `Name` to the text file `Hotels.txt` is: [1]

☐

A READFILE "Hotels.txt", Name

B WRITEFILE "Hotels.txt", Name

C WRITEFILE Name, "Hotels.txt"

D STOREFILE "Hotels.txt", Name

Exercise 2.3

2.3 Choose **one** option. The pseudocode to store a hotel name held in the variable `Name` to the text file `Hotels.txt` is: [1]

☐

A READFILE "Hotels.txt", Name

B WRITEFILE "Hotels.txt", Name

C WRITEFILE Name, "Hotels.txt"

D STOREFILE "Hotels.txt", Name

2.3 B

- WRITEFILE stores data; the file name comes **first**, then the variable

Exercise 3.1

3.1 A program must keep its data after it stops running. The data should be stored: [1]

☐

A in a variable

B in a constant

C in a file

D in an array

Exercise 3.1

3.1 A program must keep its data after it stops running. The data should be stored: [1]

☐

A in a variable

B in a constant

C in a file

D in an array

3.1 C

- data that must survive after the program stops is stored **in a file**
- A, B and D live in RAM and are lost when the program ends

Exercise 3.2 (a)

3.2 A program writes a player's name to a file, then later reads it back.

(a) Write pseudocode to open `scores.txt`, write the name in variable `playerName` to it, and close it. [3]

Exercise 3.2 (a)

3.2 A program writes a player's name to a file, then later reads it back.

(a) Write pseudocode to open `scores.txt`, write the name in variable `playerName` to it, and close it. [3]

(a)

- open for writing; write the name; close

```
OPENFILE "scores.txt" FOR WRITE  
WRITEFILE "scores.txt", playerName  
CLOSEFILE "scores.txt"
```

Exercise 3.2 (b)

3.2 A program writes a player's name to a file, then later reads it back.

(b) State what could go wrong if the file is **not** closed after writing.

[1]

Exercise 3.2 (b)

3.2 A program writes a player's name to a file, then later reads it back.

(b) State what could go wrong if the file is **not** closed after writing. [1]

(b)

- the data may **not be saved**, or the file may be left **locked or corrupted**

Exercise 3.3

3.3 A school stores all the students' attendance data in a file called `Attendance.txt`. Write an algorithm in pseudocode to read **a line of text** from the file and store it in the variable `StudentAttendance`.

[4]

Exercise 3.3

3.3 A school stores all the students' attendance data in a file called `Attendance.txt`. Write an algorithm in pseudocode to read **a line of text** from the file and store it in the variable `StudentAttendance`. [4]

3.3

```
DECLARE StudentAttendance : STRING
OPENFILE "Attendance.txt" FOR READ
READFILE "Attendance.txt", StudentAttendance
CLOSEFILE "Attendance.txt"
```

- declares `StudentAttendance` as a `STRING`
- opens the file **for read**
- reads a line **into** `StudentAttendance`
- closes the file

Exercise 3.4

3.4 A program stores the text in the variable **Message** in a new file **Note.txt**, then later reads it back into the variable **Check** and outputs it. Write this algorithm in pseudocode. [5]

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3.4 A program stores the text in the variable **Message** in a new file **Note.txt**, then later reads it back into the variable **Check** and outputs it. Write this algorithm in pseudocode. [5]

3.4

```
OPENFILE "Note.txt" FOR WRITE
WRITEFILE "Note.txt", Message
CLOSEFILE "Note.txt"
OPENFILE "Note.txt" FOR READ
READFILE "Note.txt", Check
CLOSEFILE "Note.txt"
OUTPUT Check
```

- opens **Note.txt** **for write**
- writes **Message** to the file
- closes the file before opening it again
- opens it **for read** and reads the line into **Check**
- closes the file and outputs **Check**