

Questions

1) Arrays and records are data structures that can be used in programming.

a) Describe the purpose of an array.

[1]

b) Give **two** reasons why records are sometimes used instead of arrays.

[2]

2) Examine the OCR ERL below:

```
postcode = ["W1 1AA", "W1 1AB", "W1 1AC", "W1 1AD", "W1 1AE"]
for position = 0 to 4
    print(postcode[position])
for
```



a) Explain why the for loop finishes at array position 4.

[2]



b) What will the output be on the screen?

[1]

3) Define the term two-dimensional array.

[1]

4) A list of houses which include the house number, street name and postcode for each house are stored in a two-dimensional array. A user can be asked for a postcode, and the house number and street of all houses with that postcode will be displayed, e.g. 5a Turtle Grove.

Examine the OCR ERL below:

```
houses = [ ["22", "Dolphin Street", "W1 1AA"],
            ["33", "Whale Circus", "W1 2AA"],
            ["5a", "Turtle Grove", "W1 3DQ"],
            ["105", "Octopus Lane", "W2 2BC"],
            ["45", "Dolphin Street", "W1 1AA"] ]
```

```
postcode = input("Please enter a postcode:")
```

```
for position = 0 to 4
```

```
    if houses[L1,2] == L2 then
```

```
        print(houses[L1,L3] + " " + houses[L1,L4])
```

```
    endif
```

next position



a) Which variable should be written at point **L1** in the code?

- A houses
- B position
- C postcode
- D house

[1]

b) Which variable should be written at point **L2** in the code?

- A houses
- B position
- C postcode
- D house

[1]

c) What value should be written at point **L3** in the code?

- A -1
- B 0
- C 1
- D 2

[1]

d) What should be written at point **L4** in the code?

[1]



e) If the user inputs "W1 1AA", what will be displayed on the screen?

[1]

[TURN OVER]

- 5) Students' test results are stored in a 2D array. Part of the array for 4 of the tests is shown below:

Students:		May	Kim	Stuart	Leo	Caleb	Naomi
Tests	Binary	60	58	42	60	48	40
	Logic Gates	25	30	24	32	28	19
	Truth Tables	45	34	46	49	30	31
	Networks	42	29	51	35	31	41

For example, Caleb scored 48 in the binary test. There are no half marks.

- a) Explain why an array is used to store the data. [2]

- b) i) Identify the data type that should be used to store the scores in this array. [1]

- ii) State why this data type is the most appropriate. [1]

- c) The code to display the score for Leo in the logic gates test is:

```
print(scores[3,1])
```



- (i) Write the code to output the score for Kim in the Truth Tables test.

`print(scores[1,2])` (1)



- (ii) State the output if the following code is run:

```
print(scores[4,3])
```



- (iii) Write an algorithm to calculate the total of all the scores for Naomi. You must not use any custom or built-in methods or functions.



- d) There are 25 students in the class. Write an algorithm to display the average score for all students in all tests.



6) Examine the database table for students below:

Surname	Forename	Date of Birth	Gender	Class
Schmidt	Anna	12/05/2003	F	10TR
Abraham	Aaron	14/02/2003	M	10QU
Boden	Michelle	18/09/2002	F	10TR
Jones	Judith	30/08/2003	F	10QU
Soni	Sudhir	19/12/2002	M	10TR
Le Tissier	Matthew	03/06/2003	M	10PR



a) Identify an appropriate datatype for Gender.

[1]



b) Write an SQL query to show only the names of all male students in 10TR.

[4]



7) Write code to add "I am good at programming" to the end of a file named "filename.txt".

[5]



Extension:

8) Write code to read the whole of a file named "[trees.csv](#)", assign the data to an array and display the data on screen. The file has 4 trees and no titles.



[4]