

6-A-Day – Computer Science GCSE (6)

Q1

A classroom in a primary school has 6 stand alone computers. The school decides to connect them to form a LAN.

The school decides to use the star topology to create the LAN.

Describe what is meant by a star topology. You may use a diagram.

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..... [2]

Q2

A program includes the following code.

```
If A > B Then  
  A = B  
  B = A  
End If
```

State the final values of the variables A and B if the values at the beginning of the code are

A = 4 B = 9

Final value of A =

Final value of B =

A = 6 B = 2

Final value of A =

Final value of B =

[2]

Q3

The intention of lines 02 and 03 is to swap the contents of the variables A and B. This does not work.

Rewrite the code so that the contents of the variables are swapped correctly.

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..... [3]

Q4

A gym has many different types of exercise equipment. To use any equipment, members need to enter an individual 4-digit number. A computer system records how long each member has spent on each type of equipment and uses this information to charge the members.

Complete the table below with two input values which could be used to test that the computer system correctly checks that the member has entered their number correctly. For each item of test data

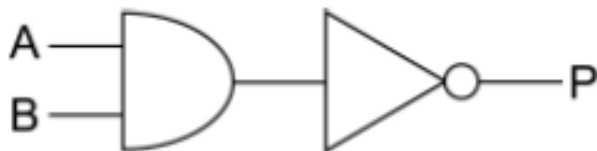
- Explain why it is used
- State the expected outcome

Test data	Reason for test	Expected outcome

[6]

Q5

The following logic circuit can be written as $P = \text{NOT} (A \text{ AND } B)$



(a) State the output (P) of the circuit if the inputs are:

(i) $A = 1$ $B = 0$

$P = \dots\dots\dots$

[1]

(ii) $A = 1$ $B = 1$

$P = \dots\dots\dots$

[1]

Q6

Draw the logic circuit for $P = (A \text{ OR } B) \text{ AND } C$

[2]

6-A-Day – Computer Science GCSE (7)

Q1

11 A dentist uses a database to store the details of patients and their appointments.

- (a) A database management system (DBMS) is used which includes forms, queries and reports.

Tick one box in each row to show whether each of the following statements best describes a form, a query or a report.

	Form	Query	Report
This can be used to print out all the appointments that the dentist has booked.			
This can be used to enter a patient's details when the patient registers with the dentist.			
This can be used to find out all the appointments that a certain patient has made.			

[3]

Q2

- (b) When a patient makes an appointment, the start time of the appointment needs to be validated.

State two validation checks which can be carried out on the start time of the appointment.

Check 1

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Check 2

..... [2]

Q3

- (c) Justify the use of separate entities to store the patient and appointment data.

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..... [3]

6-A-Day – Computer Science GCSE (8)

Q1	<p>Describe what is meant by</p> <p>3MHz CPU</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [2]</p> <p>quad-core CPU</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [2]</p>
Q2	<p>A small business has three stand-alone computers, a printer and an internet connection in an office.</p> <p>(a) State two advantages of connecting the computers to create a local area network.</p> <p>1</p> <p>.....</p> <p>.....</p> <p>2</p> <p>.....</p> <p>..... [2]</p>
Q3	<p>Calculate the denary value of the 8-bit binary number 10010111.</p> <p>You must show your working.</p> <p>.....</p> <p>[2]</p>

Q4

A desk-top computer's memory includes ROM and RAM.

Tick **one** box in each row to show whether each of the statements is true for ROM or RAM.

	ROM	RAM
Programs and data which are currently in use are loaded here.		
All the contents are lost when the power is turned off.		
It is used to boot up the computer when it is switched on.		

[3]

Q5

Karen wants to use handheld computers to take customers' orders in her restaurant. She is thinking of using custom written, open source software.

(a) State what is meant by custom written software.

.....
..... [1]

(b) State **two** reasons why Karen may decide to use custom written software.

1.
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2.
..... [2]

Q6

A teacher uses a database to store the marks of pupils from all year 9 classes.

(a) PUPIL and CLASS are two entities used in this database.

Explain the term entity.

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..... [2]

6-A-Day – Computer Science GCSE (9)

Q1	<p>A shopping centre uses several remote-controlled CCTV cameras for security. An operator uses a computer to watch, control and record the output of the cameras.</p> <p>State an input, output and storage device which will be needed by the computer. For each, explain the reason why it is needed.</p> <p>Input device</p> <p>..... [1]</p> <p>Reason</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [2]</p>
Q2	<p>Output device:</p> <p>..... [1]</p> <p>Reason</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [2]</p>
Q3	<p>Storage device:</p> <p>..... [1]</p> <p>Reason</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [2]</p>

6-A-Day – Computer Science GCSE (10)

Q1

A teacher uses a database to store the marks of pupils from all year 9 classes. PUPIL and CLASS are two entities used in this database.

The data for the first four pupils in the PUPIL table is shown below.

PupilNumber	Surname	FirstName	ClassCode
A01	Adams	Michelle	9DK
A02	Ali	Mohammed	9BH
A03	Ali	Shirelle	9DK
A04	Azor	Michelle	9FT

(i) State the primary key for the PUPIL table and explain your answer.

Primary Key [1]

Explanation

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..... [2]

Q2

The database also contains a CLASS table. The primary key for the CLASS table is ClassCode.

Explain why ClassCode has also been included in the PUPIL table.

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..... [3]

Q3

Describe what is meant by an array.

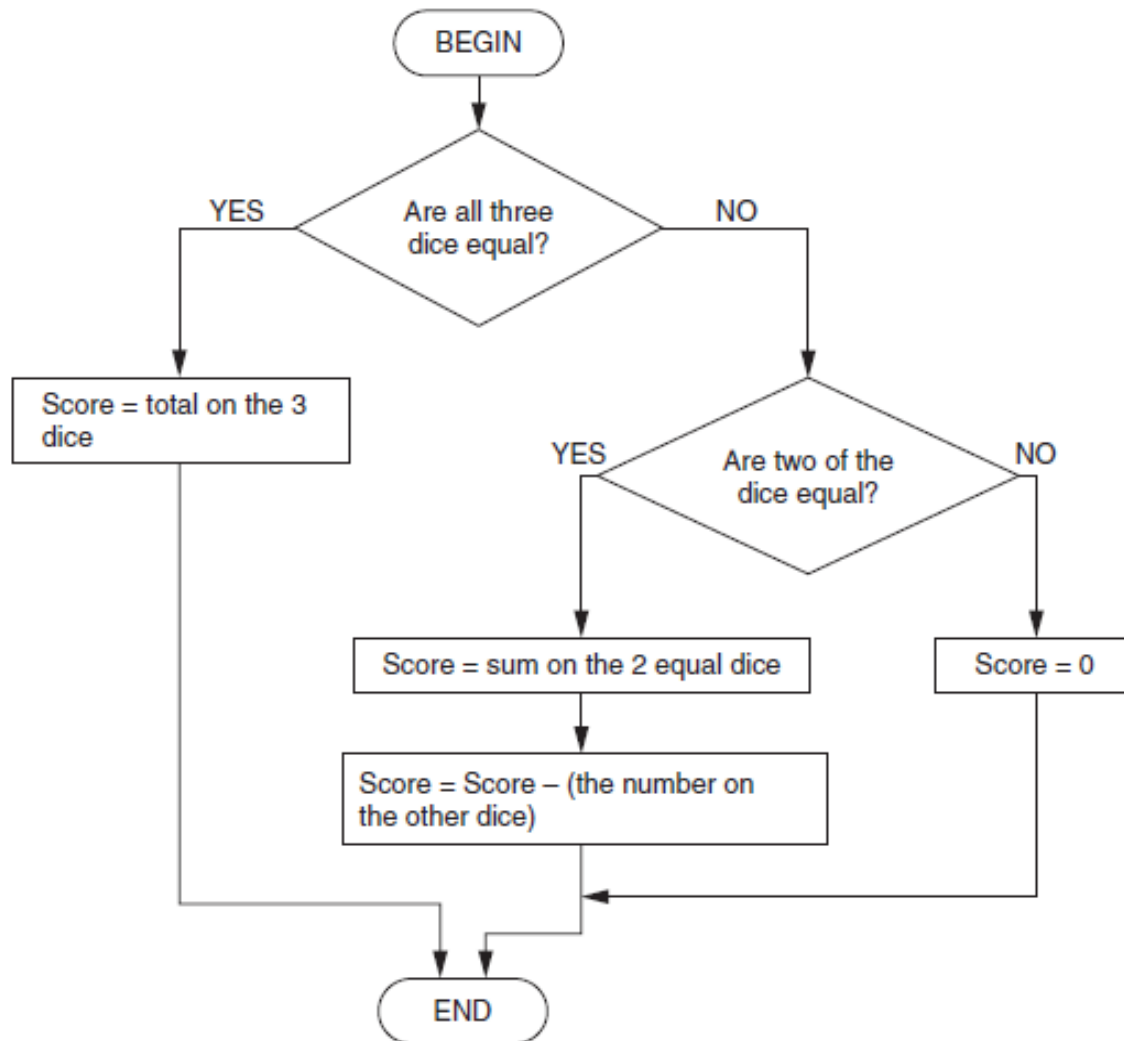
.....
.....
..... [2]

6-A-Day – Computer Science GCSE (11)

Q1

Frances is writing a program which simulates a dice game played with three ordinary 6-sided dice.

(a) When the player rolls the three dice, the player is given points according to the algorithm expressed in the flow diagram below.



State the value of the score if the dice rolled are

3 4 5 Score :

Q2

4 4 4 Score :

Q3

5 5 6 Score :

6-A-Day – Computer Science GCSE (12)

Q1

A small business has three stand-alone computers, a printer and an internet connection in an office.

(b) Describe, using a diagram, how the computers can be connected to each other using a bus topology, stating what hardware will be needed.

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..... [6]

Q2

Add the following two 8-bit binary numbers and explain the result.
You must show your working.

$$\begin{array}{r} 1\ 0\ 0\ 1\ 0\ 1\ 1\ 1 \\ +\ 1\ 1\ 0\ 1\ 1\ 0\ 0\ 0 \\ \hline \\ \hline \end{array}$$

.....
..... [3]

Q3

Karen wants to use handheld computers to take customers' orders in her restaurant. She is thinking of using custom written, open source software.

State **two** reasons why Karen may decide to use custom written software.

1.
.....
2.
..... [2]

Q4

The routine for rolling the dice is written as a sequence below.

```
BEGIN RollTheDice
  DiceResult(1) = Random Number between 1 and 6
  DiceResult(2) = Random Number between 1 and 6
  DiceResult(3) = Random Number between 1 and 6
END
```

Rewrite this routine so that it uses iteration.
You may use a diagram.

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..... [4]

Q5

A grocery shop uses a database with a DBMS to keep records of its stock.

(a) Explain what is meant by a DBMS.

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..... [3]

Q6

A rock band uses an internet website to advertise its music.

(a) The website uses HTML.

(i) Describe HTML.

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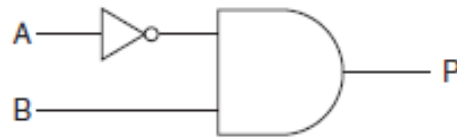
..... [2]

Q3	<p>Explain the importance of HTML in the creation of web pages.</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [2]</p>
Q4	<p>Explain the importance of compressing files when transmitting them via the internet.</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [2]</p>
Q5	<p>Describe the difference between lossy and lossless compression and give an example where each would be used.</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>..... [4]</p>
Q6	<p>Draw the circuit diagram which will represent the circuit $P = \text{NOT} (A \text{ AND } B)$</p> <p style="text-align: right;">[2]</p>

6-A-Day – Computer Science GCSE (14)

Q1

The following logic circuit can be written as $P = (\text{NOT } A) \text{ AND } B$



Complete the following truth table for the circuit given above.

A	B	P
0	0	0
0	1	
1	0	
1	1	

[3]

Q2

Describe the following types of common utility programs.

(a) Antivirus

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.....
.....
..... [2]

Q3

(b) Disk defragmenter

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..... [2]

Q4

Convert the hexadecimal number 6A to denary.
You must show your working.

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..... [2]

Q5

Explain why hexadecimal numbers are often used to represent binary numbers.

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..... [2]

Q6

The data type of WheelSize is integer and the data type of Circumference is real number.
Explain the difference between an integer and a real number.

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..... [2]

6-A-Day – Computer Science GCSE (15)

Q1

A program contains the following code to calculate the circumference of a bicycle wheel, using the wheel size (diameter).

```
BEGIN
  CONSTANT Pi = 3.14
  INPUT WheelSize
  Circumference = Pi * WheelSize
  OUTPUT Circumference
END
```

(a) The code uses one constant and two variables.

(i) State the names of the constant and the variables.

Constant:

Variables:

[2]

Q2

Explain **one** difference between a constant and a variable.

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..... [2]

Q3

Convert the hexadecimal number 6A to binary.

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..... [2]

Q4

Convert the binary number 00111101 to hexadecimal.

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..... [2]

Q5

A list of file extensions for common file standards used on the internet is shown below.

JPG PDF MP3 MPEG ZIP

The rock band allows some files to be downloaded by fans.

Complete the table below to show which file format **from the list given above** may be used for each of the following files.

File	File Format
A high resolution image of the band to use as a desktop background.	
Sheet music of their songs ready to be printed in the correct format for guitar players.	
A short video extract from their latest concert tour.	
A compressed collection of 200 plain text files containing the lyrics of all their songs.	
An audio recording of a song from their album.	

[5]

Q6

Explain what is meant by a DBMS.

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..... [3]