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Please write clearly, in BLOCK CAPITALS and black ink

Centre number Candidate number

Forename(s)

Surname

Date of Exam Time allowed: 1 hour 45 minutes

GCSE Computer Science

Paper 2: Computing concepts

Total Marks

PAPER 2B

Instructions

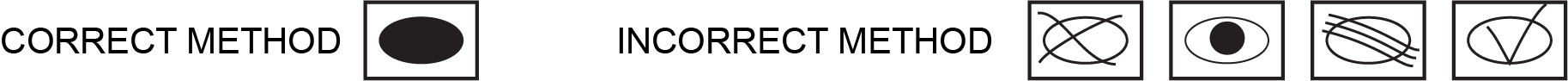
* Write in black ink or black ball-point pen. Use pencil only for drawing.
* Write your answer to each question in the space provided
* Answer all questions
* Do all rough work in this book
* Cross through any work you do not want marked
* **You are not allowed to use a calculator**

Information

* The total mark for this paper is **90**
* The student version of this paper has **18** pages

**Advice**

* For multiple-choice questions, completely fill in the lozenge next to the answer you want to select.



* Icon

  Description automatically generatedTo change your answer, cross out your original answer like this: Icon

  Description automatically generated
* If you want to go back to an answer you previously crossed out, circle the answer you now want to select like this:

**Answer ALL questions.**

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** |  |  |

A bit pattern is shown in **Figure 1**.

**Figure 1**

01110010

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **1** |

Convert the bit pattern shown in **Figure 1** into decimal.

[1 mark]

128 64 32 16 8 4 2 1  
 0 1 1 1 0 0 1 0  
64 + 32 + 16 + 2

114 (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **2** |

State the result, in binary, of applying a single left binary shift to the number in   
**Figure 1**.

[1 mark]

11100100

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **3** |

State the effect of applying a single left shift to a binary number.

[1 mark]

The number is doubled.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **4** |

Shade **one** lozenge to indicate the amount of storage required to store the bit pattern in **Figure 1**.

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | one bit | Icon  Description automatically generated |
| **B** | one byte |  |
| **C** | one kilobyte | Icon  Description automatically generated |
| **D** | one megabyte |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **5** |

Shade **one** lozenge to indicate which of the following binary is used to represent.

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | data | Icon  Description automatically generated |
| **B** | instructions | Icon  Description automatically generated |
| **C** | both data and instructions |  |
| **D** | neither data nor instructions |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **6** |

Calculate the result of adding the following three binary numbers.

1 1 0 0 1 0 +  
1 0 0 1 0 0 0 1 +  
 1 0 0 0 1 0

[2 marks]

00110010 +  
10010001 +  
00100010  
  
01100100 (carry)

11100101 (2)

One mark for each nibble.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **7** |

The ASCII code for ‘C’ is represented by the number 67.

Give the ASCII code numbers that represent the word CAB.

[1 mark]

67 65 66

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **1** | **.** | **8** |

Mobile phone text (SMS) messages may contain emoji characters such as a grinning face.

Explain why these are encoded using Unicode rather than ASCII.

[2 marks]

ASCII only has 128 available characters (accept 256 characters for extended ASCII) / ASCII only allows a limited number of characters for normal letters / ASCII is only 7 bits / 8 bits / 1 byte long. (1)

Unicode uses more bits / bytes (1) allowing it to store more characters such as those used for emoji (1).

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **2** |  |  |

A podcaster records interviews to solid state storage on a portable recorder for their podcast.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **2** | **.** | **1** |

Explain why the recording needs to be converted to a digital form before it can be stored on the recorder.

[2 marks]

Sound is analogue / continuous. (1)  
The solid-state storage stores binary/ones and zeros. (1)  
Computers use digital data / discrete values. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **2** | **.** | **2** |

The portable recorder allows the sampling rate to be changed from 44 kilohertz   
(44 kHz) to 50 kHz.

State the effect of changing the sampling rate on both the sound quality and the size of the file created for each recording.

[2 marks]

**Sound quality:**

If the sampling rate is increased, (the number of samples per second is increased, leading to) the sound quality being increased.

**File size:**

If the sampling rate is increased, the file size created will also increase.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **2** | **.** | **3** |

The portable recorder settings are set to the following for recording:

Sample resolution: 20 bits

Sampling rate: 50 kHz

A short 80 second interview clip is recorded for the podcast.

Calculate the file size of the interview recording. Your answer should be given in megabytes.

You should show your working.

[5 marks]

File size (bits) = sampling rate x sample resolution x time in seconds

File size = 50 000 x 20 x 80

= 1 000 000 x 80

= 80 000 000 bits

= 80 000 000 / 8

= 10 000 000 bytes

= 10 000 / 1 000 000

= 10 MB / 10 Megabytes

Award 5 marks for 10 MB or 10 megabytes.

If the correct answer is not given, award marks as follows:

Multiplying any two of 50 000, 20, 80 even if the result is incorrect. (1)

Multiplying all of 50, 20, 80 even if the result is incorrect. (1)

Attempt to divide the result by 8 to convert to bytes. (1)

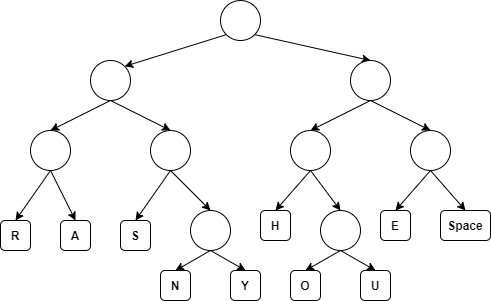
Attempt to divide the result by 1 000 000 to convert to megabytes. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **3** |  |  |

One method of data compression is Huffman coding. Each character in the text to be compressed is placed into a tree. The position of a character in the tree is based on how often the letter is used in the text.

A Huffman tree for the text HENRY HAS A HOUSE HERE is shown in **Figure 2**.

**Figure 2**



The letter U will be represented by the bit pattern 1011. This is because, from the top of the tree, U is located to the right, then left, then right, then right.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **3** | **.** | **1** |

Using the Huffman tree in Figure 2, complete the table to show the Huffman code for the characters A, Y and Space.

[3 marks]

|  |  |
| --- | --- |
| **Character** | **Huffman code** |
| A | 001 (1) |
| Y | 0111 (1) |
| Space | 111 (1) |

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **3** | **.** | **2** |

State the word that is encoded using the tree in **Figure 2** and the following Huffman code:

0000010110

[2 marks]

RAN

Correctly identifying R as the first letter. (1)  
Identifying the whole word as RAN. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **3** | **.** | **3** |

The text A HEN requires 16 bits when using Huffman coding and the Huffman tree in **Figure 2**.

Calculate the number of bits that are saved by compressing the text A HEN using the Huffman tree in **Figure 2** rather than uncompressed ASCII. Show your working.

[3 marks]

Huffman coding requires: 16 bits

Uncompressed ASCII requires:

5 characters x 7 bits = 35 bits

Bits saved = 35 – 16 = 19 bits

Identify the need for 7 bits for each ASCII character. (1)  
Multiply by 5 characters. (1)  
Subtract 16 from the answer. (1)

Maximum of 1 mark if the correct answer is given with no working shown.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **4** | **.** | **1** |

Complete the truth table for the OR logic gate.

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | **B** | **A OR B** |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

A Boolean expression is given for a circuit in **Figure 3**.

**Figure 3**

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **4** | **.** | **2** |

Complete the truth table for three combinations of input for the expression in **Figure 3**.

[3 marks]

|  |  |  |  |
| --- | --- | --- | --- |
| A | B | C | P |
| 0 | 0 | 0 | 0 (1) |
| 0 | 0 | 1 | 0 (1) |
| 0 | 1 | 0 | 1 (1) |

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **4** | **.** | **3** |

Complete the logic circuit for the Boolean expression given in **Figure 3**.

[3 marks]

Diagram

Description automatically generated

A and B are inputs to an OR gate (1)

C is an input to a NOT gate (1)

The output is from an AND gate

A maximum of 2 marks if not fully correct.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **5** |  |  |

In recent years, there has been an increase in the number of people using wearable technologies, such as smart watches.

Discuss the advantages and disadvantages of wearable technologies.

In your answer you should include an explanation of the reasons for the increase in recent years and consider any legal, ethical and environmental issues related to the use of wearable technologies.

[9 marks]

|  |  |  |
| --- | --- | --- |
| **Level** | **Description** | **Mark range** |
| 3 | Answer demonstrates a **sustained line** of reasoning with a **substantiated** explanation for the increase in the number of people using wearable technologies that includes both technological and social reasons.  There is a **logically structured** consideration of the advantages and the disadvantages associated with the use of wearable technologies– including relevant points covering **at least two** of legal, ethical and environmental issues. | 7-9 |
| 2 | Answer includes an explanation for the increasing use of wearable technologies that includes both technological and social reasons.  There is a logically structured consideration of the advantages and the disadvantages associated with the use of wearable technologies– including **one or two** relevant points related to legal, ethical and environmental issues. | 4-6 |
| 1 | The answer includes either a description of some of the reasons for the increasing use of wearable technologies and/or brief consideration of the advantages and/or disadvantages associated with wearable technologies. | 1-3 |
| No creditworthy answer | | 0 |

**Guidance – Indicative Response (increase in use of wearable technology)**

Small components such as the CPU.  
Better battery technologies to power sophisticated components.  
Better display technologies allow more useful information in a small space / high resolution / high PPI.  
Increase in people wanting to improve health/fitness, and technology helps them to achieve this.  
Solid state storage is more durable and has become far cheaper in the last 20 years – enabling reliable devices that can be used whilst doing exercise.

**Guidance – Indicative Response (advantages of wearable technology)**

Users can easily be contacted.  
Checking a message/incoming call number on a watch is easier than pulling out a phone from a pocket.  
Measurements such as heart rate, blood pressure can now be monitored from a wearable device – this helps people in exercising and become fitter/healthier.  
Using wearable technology may mean that the user doesn’t need to carry around a smartphone all the time / the technology is more portable.  
As the user is wearing the technology, they won’t be able to forget it  
Wearable technology is harder to steal – e.g. comparison of stealing a smartwatch with a smartphone.  
The ability to track users may be useful in tracking down lost people.  
Governments or security services may be able to use tracking technology to keep citizens safe from terrorism and other attacks

**Guidance – Indicative Response (disadvantages of wearable technology)**

People may find that they are never disconnected from technology and suffer negative psychological effects from this.  
If the wearable technology can track the user’s location, a huge amount of private data will be stored on it, and may be uploaded to 3rd party corporations.  
This data could be tracked by governments or security services.  
Many users may feel this gives governments/security services too much access.to personal data, individuals movements/location  
Such devices require raw materials / rare metals to manufacture.  
There will be energy required to manufacture and ship the products.  
The devices are likely to be quickly superseded by better versions, leading to working devices being discarded / sent to landfill.  
Personal information stored on the device needs to be stored and processed within the data protection act.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **6** |  |  |

**Figure 4** shows an example of some assembly code.

MOV R0, #7  
 MOV R1, #15  
 JMP calc  
back:  
 MOV #16, R2

calc:  
 SUB R2, R1, R0  
 JMP back

**Figure 4**

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **6** | **.** | **1** |

Shade **one** lozenge to indicate what action is needed before the program can be run.

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | An assembler needs to translate the assembly code into machine code. |  |
| **B** | The assembly code is a low-level language, so can be directly run. | Icon  Description automatically generated |
| **C** | The assembly code must first be compiled before it can be run. |  |
| **D** | All the above are correct. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **6** | **.** | **2** |

A company has a program that is currently saved as machine code.

When the company sells the software, they tell customers that they will need a specific type of CPU for the software to work.

Give **one** reason why it won’t work with a different type of CPU.

[1 mark]

The machine code contains instructions that are for a specific CPU / family of processors (1)  
The program will have been compiled/assembled for that specific CPU (1)  
Machine code will use instructions that are specific to a specific CPU / family of processors (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **6** | **.** | **3** |

A programmer has made a program using the high-level language Python. Python is an example of an interpreted language.

Explain **one** disadvantage of using an interpreted language rather than a compiled language.

[2 marks]

An interpreted language will be translated to machine code / call appropriate machine code subroutines line by line (1) so it will execute slower than a compiled language (1) (which will already have been compiled into machine code).  
An interpreted language will provide the source code which the programmer may not wish to give to other people. (1)  
Accept other disadvantages of using interpreted languages. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **1** |

Both RAM and ROM are types of main memory.

Shade **one** lozenge to indicate the features of RAM and ROM.

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | Both RAM and ROM are volatile |  |
| **B** | RAM is non-volatile and ROM is volatile | Icon  Description automatically generated |
| **C** | RAM is volatile and ROM is non-volatile |  |
| **D** | Both RAM and ROM are non-volatile |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **2** |

One type of physical storage is optical storage. Give **one** other type of physical storage.

[1 mark]

Solid state. (1)  
Magnetic storage. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **3** |

Describe the operation of optical storage.

[3 marks]

A disc / media / CD / DVD / Blu-ray is placed into the device. (1)  
The disc rotates. (1)  
A laser reads the reflections from the surface of the disk / pits and lands. (1)  
The pits and lands are used to represent binary data 1s and 0s. (1)  
The laser moves across the disc following the track of data / the disk contains a single/spiral track. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **4** |

Explain the role of registers in a central processing unit (CPU).

[2 marks]

They store very small amounts of data (1) that are very fast to read from / write to. (1)  
They are used to temporarily store data copied from RAM (1), results from calculations (1), the currently used data (1), the currently used instruction (1) the program counter / location of the next instruction in memory. (1)

Accept any other specific register found on a CPU.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **5** |

Explain the effect of increasing cache size on the performance of a CPU.

[2 marks]

Increasing cache size will improve the performance of the CPU / decrease the time needed to access data from RAM (if it is already held in the cache). (1)

This is because the CPU is able to read/write to Cache faster than it can to RAM. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **6** |

A portable music player makes use of solid state storage. Explain **one** advantage of using solid state rather than optical storage.

[2 marks]

Solid state storage has no moving parts (1) so is more reliable (1).  
Solid state storage stores data in a smaller area (1) so makes more portable devices (1).  
Solid state storage uses less energy (1) so smaller batteries can be used / the device will last longer on one charge (1).  
Solid state storage typically can read/write data faster (1) meaning that higher quality files / uncompressed files can be read (1).

The portable music player is an example of an embedded system.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **7** |

Give **two** other examples of embedded systems.

[2 marks]

Washing machine (1)  
Microwave oven (1)  
Tumble dryer (1)  
Digital radio (1)  
Engine management system (1)  
Satellite Navigation (1)  
Digital telephone (1)

Accept other examples of embedded system.

Accept mobile phone.  
Do not accept smartphone as it is a more general computer system.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **7** | **.** | **8** |

Explain how an embedded system differs from a non-embedded system.

[2 marks]

An embedded system will have one purpose that it was built for (1)

…whereas a non-embedded system will have multiple uses / software can be installed on it. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **8** | **.** | **1** |

The Internet is a well-known example of a computer network.

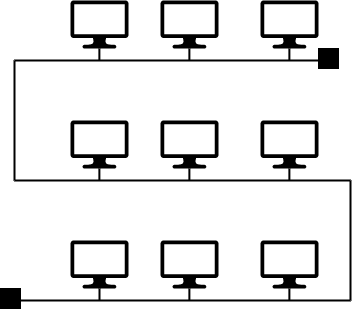
Shade **one** lozenge to indicate the type of network which the Internet forms.

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | LAN | Icon  Description automatically generated |
| **B** | PAN |  |
| **C** | WAN |  |
| **D** | All of the above (A, B and C) |  |
| **E** | None of the above (None of A, B and C) | Icon  Description automatically generated |

|  |
| --- |
|  |
|  |

Figure 5 shows an office’s computer network topology.



**Figure 5**

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **8** | **.** | **2** |

State the type of topology that has been used in Figure 5.

[1 mark]

Bus / A bus network/topology. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **8** | **.** | **3** |

Describe **one** disadvantage in the office using this type of network topology.

[2 marks]

If any part of the cable is cut/has a fault (1) then the connection will be lost for all devices (1).  
The cable is shared by all devices (1) which leads to weaker security / leads to slower speeds/reduced bandwidth for each device (1).  
Accept other disadvantages.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **8** | **.** | **4** |

One common network protocol is TCP. Describe what this protocol is used for.

[2 marks]

Established a connection between two devices / nodes on a network (1) (so that they can send data to each other).  
Carries out error checking / error recovery of data transmitted. (1)  
Re-transmits data if errors occurred. (1)  
Delays transmission when the network is congested. (1)  
Rearranges packets of data into order. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **8** | **.** | **5** |

Different protocols operate in different network layers.

Shade **one** lozenge to indicate the network layer that both TCP and UDP operate in.

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | Application layer | Icon  Description automatically generated |
| **B** | Internet layer |  |
| **C** | Link layer |  |
| **D** | Transport layer |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **8** | **.** | **6** |

Give **one** protocol that operates in the Internet layer.

[1 mark]

Internet Protocol / IP. (1)

Accept IPv4, IPv6 or other protocols that operate on the Internet layer such as ICMP or IPsec.

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **9** | **.** | **1** |

Define the term cyber security.

[2 marks]

The processes / practices / technologies (1) designed to protect networks / computers / programs / data (1) from attack / damage / unauthorised access (1).

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **9** | **.** | **2** |

A company has written to all employees to tell them that they will no longer be allowed to use removable media on the company computers due to the cyber security threat.

Describe how removable media could be a cyber security threat to an organisation.

[2 marks]

An employee / hacker could have a virus / malware / hacking tools (1) on the media / USB stick / SD card.

When the media is inserted into the computer / USB port / SD card slot (1)…

the virus can infect the computer / the hacker can make use of the malware / hacking tools (1).

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **9** | **.** | **3** |

Social engineering is the art of manipulating people, so they give up confidential information. One method of social engineering is blagging (pretexting).

State **two** other techniques used in social engineering.

[2 marks]

Phishing. (1)  
Shouldering / shoulder surfing. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **0** | **9** | **.** | **4** |

Describe how blagging could be used to obtain confidential information.

[2 marks]

An invented scenario / reason / pretext (1) is used to engage a targeted victim (1) in a way that increases the chance of them divulging information / perform actions that they would be unlikely to perform in ordinary circumstances (1).

Accept a specific example of blagging being used as social engineering.

**For example:**

A hacker phones a receptionist letting them know that they are phoning as they are the assistant of the managing director who urgently needs some information (pretext). (1)  
The receptionist is more likely to provide the information as the they want to follow the request of the managing director. (1)  
The receptionist knows that they shouldn’t pass the information on to strangers, but as the phone call is from (what they believe is) a company employee, they provide the information. (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **0** | **.** | **1** |

Give **two** functions provided by an operating system.

[2 marks]

To manage processes on the CPU(s) / processor management. (1)  
Memory management. (1)  
Installation /removal of applications / application management. (1)  
Managing input/output (I/O) devices. (1)  
Security features. (1)

Accept other common features of operating systems such as providing a user interface or file management.  
Do not accept application software that is frequently provided with operating systems such as a web browser or calculator.

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **0** | **.** | **2** |

One example of utility software is a formatting utility.

Describe the purpose of **one** other type of utility software.

[3 marks]

Disk defragmentation. (1)  
When a file is deleted the space it occupied is made available. (1) If a larger file than this space is to be stored, one part will be stored in this space, while the other part will be stored elsewhere (1). These parts are called fragments. Defragmentation software places fragments into the same location (1) to improve the file access time. (1)

Accept other examples with 1 mark for the name of the utility software and 2 marks for the description of its purpose.

Other examples of other utility software include:

Disk cleaner, backup software, encryption software, anti-virus software, file manager, task manager

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **1** |  |  |

A seaside town has a crazy golf course. Customers are able to download an app which allows them to record the number of putts they make for each hole. The database is stored on a server on the Internet.

The player details are stored in a table named Players.

At the end of each hole, the user uploads the number of putts they took to finish the hole (TotalPutts) along with the hole’s number (HoleNumber). A number of players can play together, in which case they will all have the same GameNumber.

The contents of the tables are shown in **Figure 6**.

**Figure 6**

**Players**

|  |  |  |  |
| --- | --- | --- | --- |
| **PlayerID** | **Firstname** | **Lastname** | **Age** |
| 1 | Chantelle | Ortega | 23 |
| 2 | Dennis | Hirst | 15 |
| 3 | Ellena | Rowe | 14 |
| 4 | Jason | McCarthy | 9 |
| 5 | Anushka | Patel | 17 |

**Putts**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PlayerID** | **StrokeID** | **GameNumber** | **HoleNumber** | **TotalPutts** |
| 1 | 14 | 5 | 18 | 3 |
| 2 | 15 | 5 | 18 | 4 |
| 1 | 16 | 6 | 1 | 1 |
| 1 | 17 | 6 | 2 | 3 |
| 4 | 18 | 6 | 1 | 2 |
| 3 | 19 | 6 | 1 | 1 |
| 5 | 20 | 7 | 5 | 2 |

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **1** | **.** | **1** |

State the field in the Putts table that is a foreign key.

[1 mark]

PlayerID (1)

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **1** | **.** | **2** |

Shade **one** lozenge to indicate what the data in **Figure 7** is.

**Figure 7**

*3 Ellena Rowe 14*

[1 mark]

|  |  |  |
| --- | --- | --- |
| **A** | A field | Icon  Description automatically generated |
| **B** | A record |  |
| **C** | A table |  |
| **D** | A primary key |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **1** | **.** | **3** |

Write an SQL query that could be used to find the player’s first name, last name, game number and hole number for any holes in one (where the player took only one putt on the hole).

[5 marks]

Correct fields in SELECT clause (1)  
FROM clause and one correct table (1)  
Second correct table in the FROM clause (1)  
correct condition in WHERE clause (1)  
correct conditions and correct usage of AND in WHERE clause / correct conditions and correct usage of AND in WHERE clause and correct usage of ON with INNER JOIN (1)

SELECT FirstName, LastName, GameNumber, HoleNumber  
FROM Players, Putts  
WHERE Players.PlayerID = Putts.PlayerID  
AND TotalPutts = 1

SELECT FirstName, LastName, GameNumber, HoleNumber  
FROM Players INNER JOIN Putts ON Players.PlayerID = Putts.PlayerID  
WHERE TotalPutts = 1

Acknowledgements

Artwork



*Change of Heart*

© Karen Stamper (30 cm × 30 cm)

Paper collage and acrylic on board

www.karenstampercollage.com