Databases – 2022 ICT IGCSE 0417

1. March/2022/Paper_12/No.12

The manager of a car garage has asked a systems analyst to create a new database system for the checking of cars making sure they are safe to drive. The checking of cars is known as a service.

Each car has a unique licence plate.

The cars can either be powered by electric or petrol.

Cars are serviced every 10000 km, for example 10000 km, 20000 km.

The minimum cost of the service is 1500 rupees and the maximum is 5000 rupees depending on the model of car.

Different models of car are serviced.

The date of the service is agreed.

(a) Complete this table, filling in the field names and the most appropriate data types to create the database using the information given above. For any numeric field, specify the type of number.

Field name	Data type
Vehicle_licence_plate	
Powered_by	
	Numeric:integer
Cost_of_service	
	Text
Date_of_service	

[6]

(b) The systems analyst is planning to create a relational database.

Discuss the advantages and disadvantages of creating a relational database rather than a flat file database.

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.... [6]

2.

Two types of database are relational and flat file.

(a) Compare and contrast relational databases and flat file databases. Your answer must include similarities and differences.

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.... [8]

(b) Give, using an example, **one** reason why flat file databases are used in certain applications rather than relational databases.

Reason ....

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Example ....

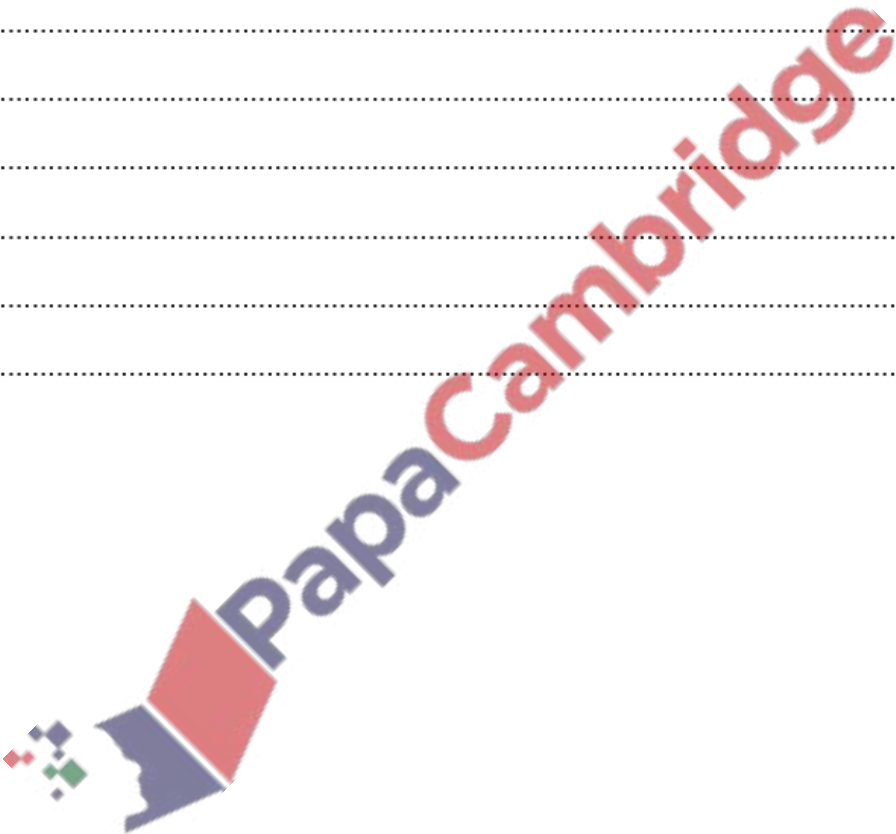...

[2]

The manager of a medical centre keeps the doctor's stock records in a database. The stock for any item is not allowed to fall below 15 items and the manager keeps a maximum of 100 items in stock.

The table shows examples of the stock.

Name_of_item	Serial_number	Number_in_stock	Name_of_supplier	Shelf_number
Medihoney	3081043612211	15	Capimed	0126
Sodium fusidate	1437210227870	60	Brooks Medical	0112
Crepe bandage	2541233164353	100	Capimed	0064
Crepe bandage	2834954736849	89	Cams Meds	0064

As data is entered it needs to be verified and validated.

(a) Explain why verification is carried out.

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.... [2]

(b) Write down the field name from the table that would be the most appropriate for each of these validation checks. Each answer must be different.

Check digit ....

Length ....

Type ....

[3]

(c) Name the most appropriate field from the table that could be used as a primary key in the database.

.... [1]

4

4.

A customer is booking a seat on a theatre's online booking system. The customer reserves seats using the theatre's website and a debit card. The website displays the seats that are available and a database stores the customer details, the payment details and the seat details.

When the customer enters their debit card details for a seat, the theatre's computer communicates with the bank's computer.

(a) Describe **four** checks that the bank's computer will make on the customer's bank account.

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3 ....

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4 ....

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[4]

5.

(d) The completed file could have been created using a database.

Describe **two** reasons why databases are used in certain applications rather than spreadsheets.

1 ....

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2 ....

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[2]

6. June/2022/Paper_13/No.2

Name an appropriate validation routine for each statement. Each answer must be different.

(a) The last digit in a code used to ensure the other digits have been entered correctly.

.... [1]

(b) This validation routine ensures a password is always 8 characters.

.... [1]

(c) This validation routine ensures data has been entered into a field.

.... [1]

(d) This validation routine ensures that a date is entered as DD/MM/YYYY.

.... [1]
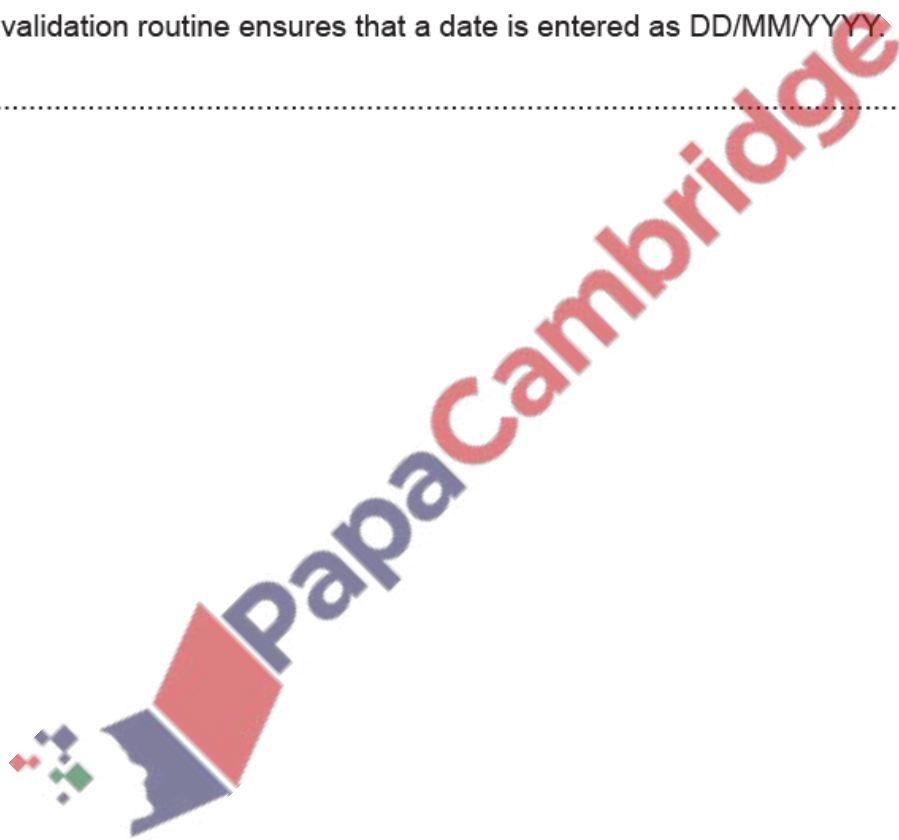
(b) Part of the database is shown.

Student_name	Date_of_birth	Gender	Exam_mark	Average_mark
Seth	25/02/2007	M	22	43.4
Adom	17/07/2007	M	67	73.1
Maria	02/05/2007	F	78	67.9
Lesedi	15/12/2006	F	45	50.0

Write down the field name which is the most appropriate for the data type, based on the data shown in the table. Your answers must be different in each case.
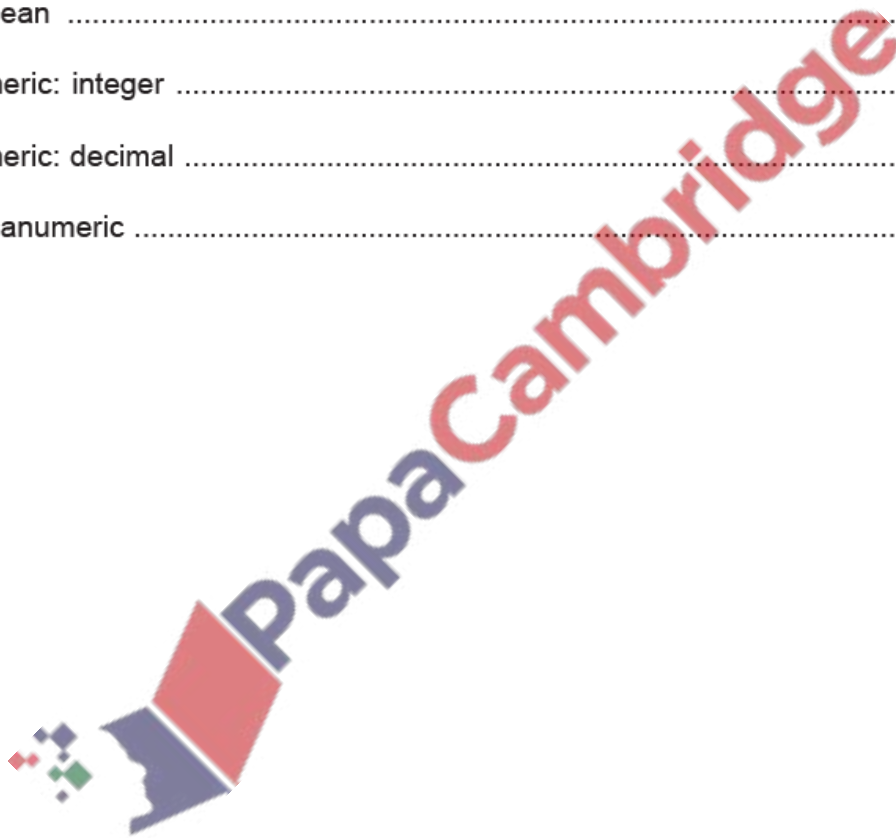
Boolean ....

Numeric: integer ....

Numeric: decimal ....

Alphanumeric ....

[4]

8.

The secretary of a sports club is setting up a database of members to replace the current manual system. He will need to create a database structure.

(a) Describe the steps involved in setting up and testing the database structure before it can be used in the new system.

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.... [4]

When the new system is completed it needs to be implemented. The secretary of the sports club can implement it using direct changeover or parallel running.

(b) Describe the term parallel running, giving **one** benefit and **one** drawback of using this method of implementation.

Parallel running ....

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Benefit ....

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Drawback ....

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[3]

9.

A school librarian is setting up a database of all the revision books he has in stock. The school library sells revision books to students. The books range in value from $1 to $10 and are available either in electronic book type (E) or physical book type (P).

(a) The librarian is planning to set up a number of different types of validation rule for the fields to check data entry. Write down the most appropriate field name from the table that could be used with each of the validation rules. Your answers must be different in each case.

Name_of_book	Department	ISBN	Book_type	Cost
Modern History	HIS	0140621393432	P	$5.20
GCSE ICT	ICT	0006132237	E	$1
A Level Calculus	MAT	0006153516	E	$1
Human Biology	SCI	0006511376	E	$2.30

Presence ....

Lookup ....

Range ....

Length ....

[4]

The librarian needs to set up a primary key field.

(b) Write down the most appropriate field name from the table that could be used as a primary key field.

.... [1]