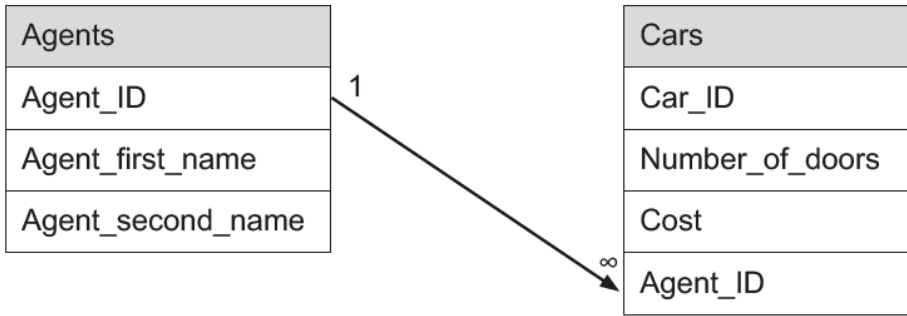


The sales director of a large company buys cars from an agent before issuing them to managers for use as company cars. She needs to keep records of all the agents she deals with and the details of each car. The records are stored as a relational database consisting of two tables.

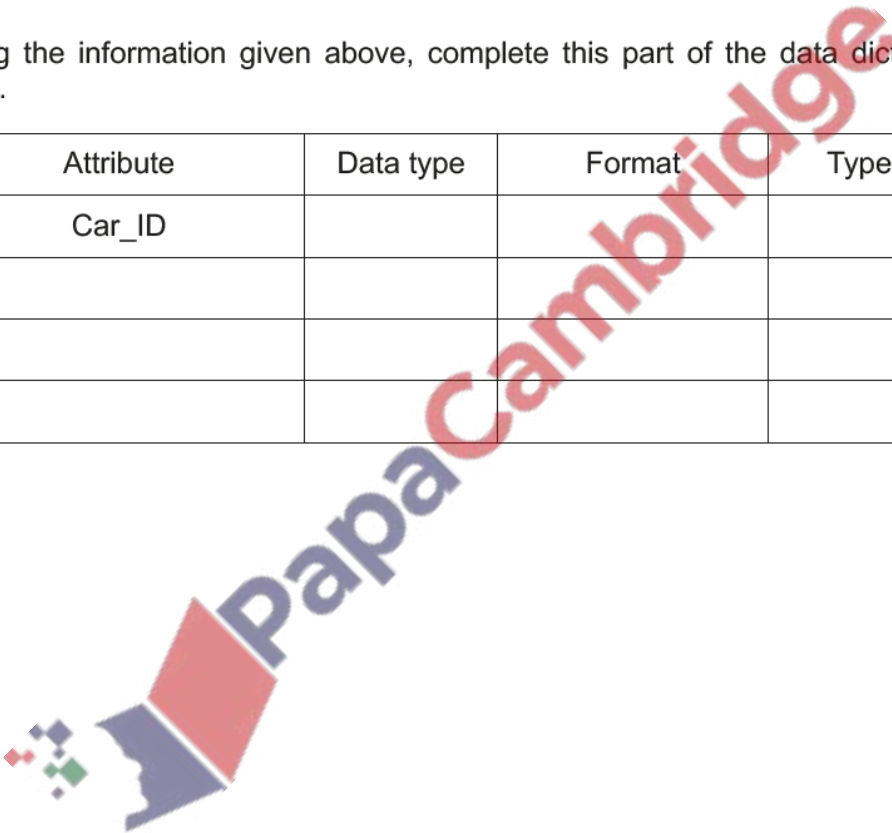


A typical record from the Cars table would be: S8562T, 5, \$39500, B345

(a) Using the information given above, complete this part of the data dictionary for the **Cars** table.

Attribute	Data type	Format	Type of key
Car_ID			

[5]



(b) Evaluate, by weighing up the advantages and disadvantages, the use of a relational database rather than a flat file database in this situation.

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(c) The sales director wishes to find the details of the agent who sold her the car with an ID of R4962Z. She has used a static parameter query to find these details.

Explain why she should have used a dynamic parameter query.

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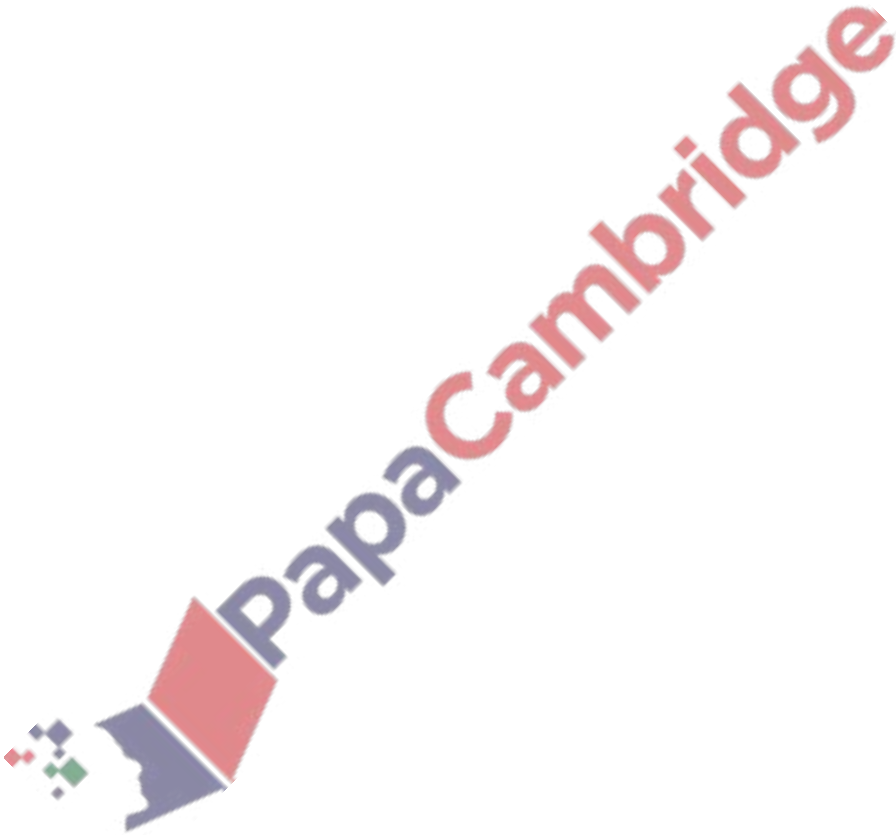
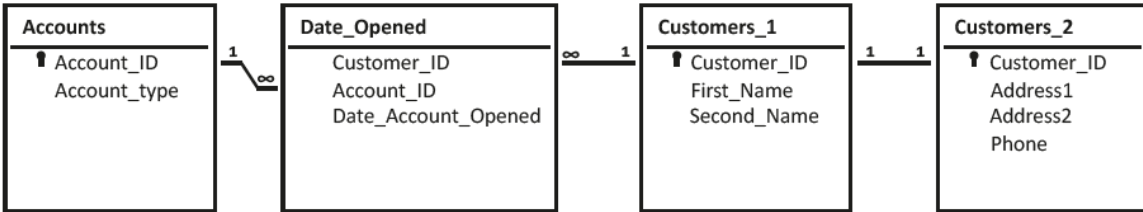
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4. Nov/2021/Paper_13/No.10

A bank keeps the following information about its customers and accounts in a database:

- all the types of account customers can open
- details of when customer accounts are opened
- the names of each customer
- customers' contact details.

Tables in the database are linked as shown:



- (b) The tables were created with the field names shown. The field names were assigned correctly and then data was entered.

The software rejected the relationships as they were being set up.

Describe **two** reasons the software would have rejected the relationships.

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5. Mar/2021/Paper_12/No.4

A sports club secretary has entered data from a source document into a database on his own computer. The original document contains correct data but he made some errors when copying the data into the database. Membership number is text data type and Membership fee paid is currency.

Membership number	Date of birth	Membership fee paid (\$)
45237	13/04/1996	35
34859	09/12/1998	46
28695	12/11/1992	43
61892	01/02/2001	12
56123	27/06/1999	15

Source document

Membership number	Date of birth	Membership fee paid (\$)
45237	13/04/1996	35
3485	09/12/1998	46
28695	12/12/1992	43
61892	01/02/2001	12
56123	27/06/1999	5

Database

The **three** errors were:

- 15 has been copied as 5
- 34859 has been copied as 3485
- 12/11/1992 has been copied as 12/12/1992

(a) (i) Explain, in detail, why one of the errors could **only** have been detected using verification.

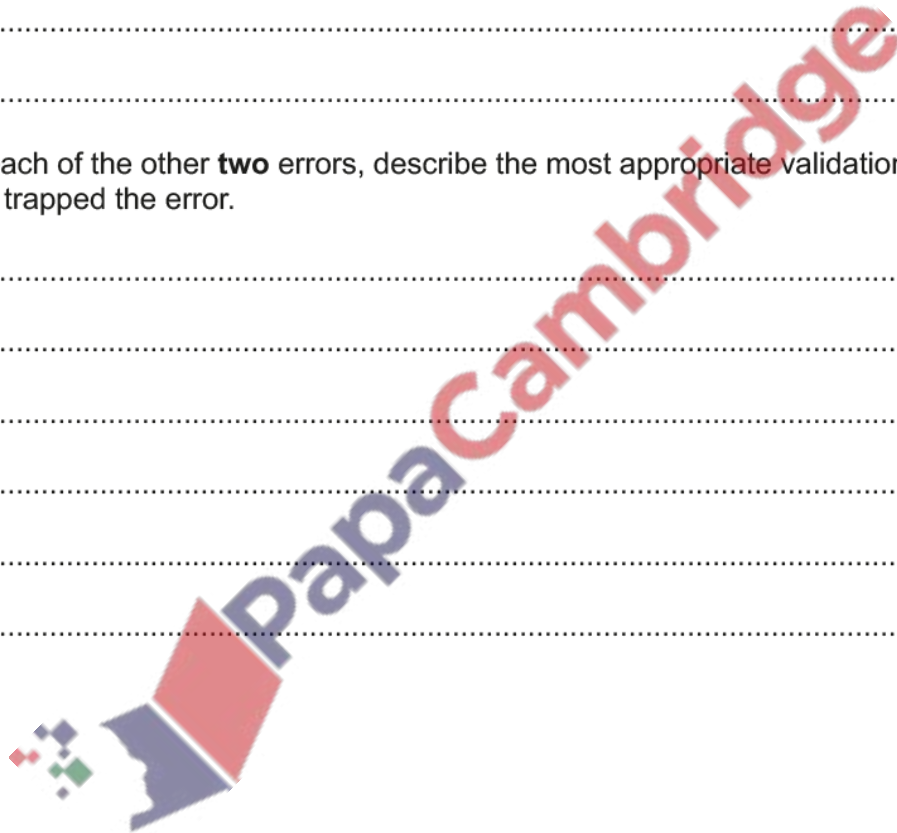
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(ii) Describe the most appropriate method of verification that could be used to trap this error.

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(b) For each of the other **two** errors, describe the most appropriate validation check which would have trapped the error.

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7. Mar/2021/Paper_12/No.11

When creating queries in a database, a function If() is often used. If is equivalent to the IF function found in spreadsheet software.

Examine the following database query.

`If([Examdate]>Date(),"not yet",If([Examdate]=Date(),"today's the day","you've missed it"))`

Date() returns the current date. [Examdate] is written as "Examdate" in some software.

Describe, in detail, what the database query does.

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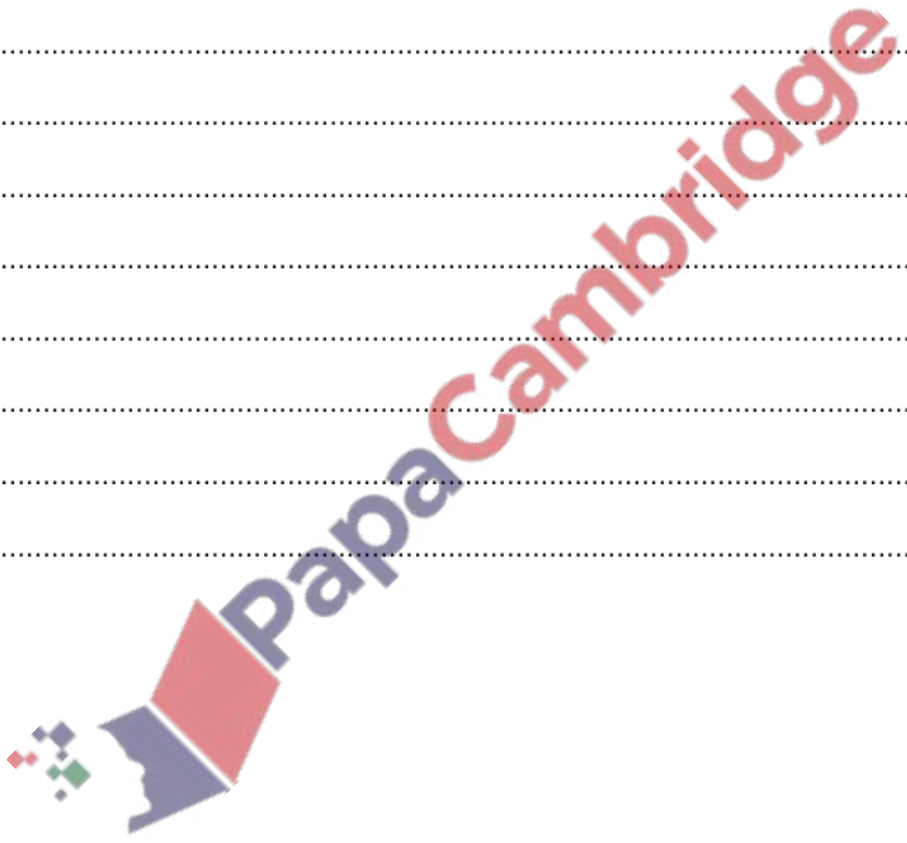
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8. Mar/2021/Paper_12/No.13

A company stores records of its employees in alphabetical order of name.

Explain what is meant by the indexed sequential access method, describing how it could be used to retrieve the records of employees named Patel.

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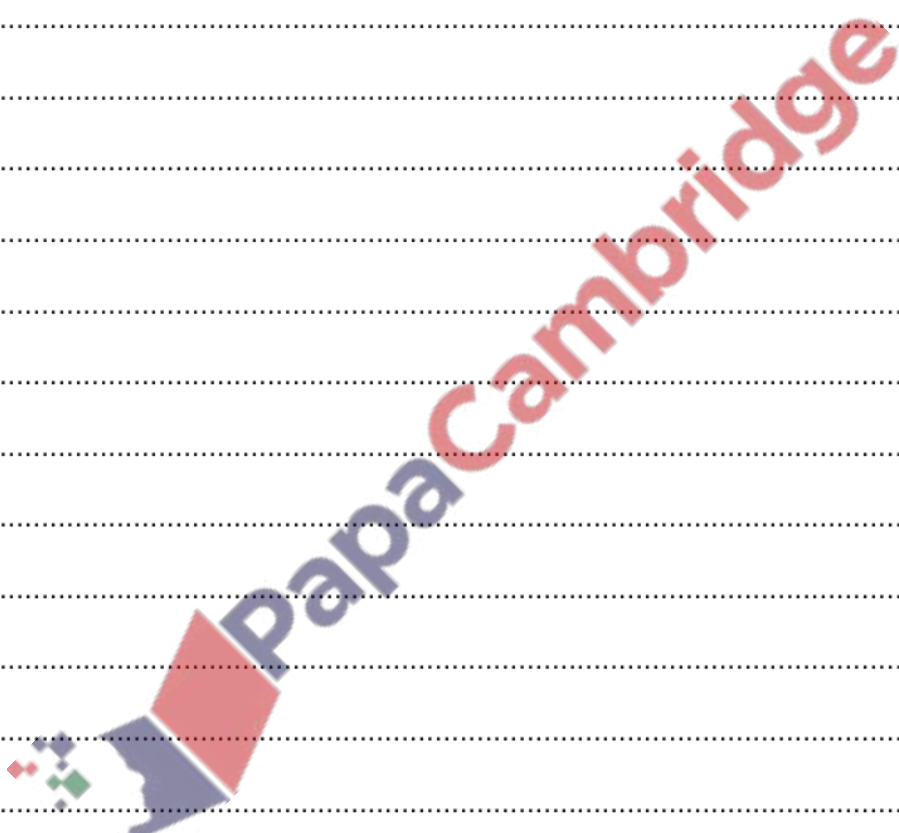
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[8]

Metropolis City Library stores details of its books and borrowers in a database. Part of the Borrowers table is shown in Fig. 9.1.

BorrowerID	FamilyName	FirstName	Phone	Town_lived_in
1	Gale	Clemantine	01164960567	Mintair
2	Brown	Christine	01134960965	Redleigh
3	Leadbetter	Karla	07700900863	Lowtown
4	Brierley	Fred	01134960675	Redleigh
5	Greenhalgh	Ben	01164960001	Mintair
6	Pooley	Christopher	03069990694	Armley
7	Chalmers	Rio	07700900900	Fromman
8	Lewis	Ruksana	08081570945	Lowtown
9	Patel	Angela	09098790142	Fromman
10	Bopal	Udoka	01614960836	Lowtown
11	Akula	Billy	01914980487	Armley
12	Benson	Wesley	01845632545	Lowtown
13	Breen	Wally	01915647379	Armley

Fig. 9.1

The librarian has created the following query:

Field:	BorrowerID	FamilyName	FirstName	Phone	Town_lived_in
Table:	Borrowers	Borrowers	Borrowers	Borrowers	Borrowers
Sort:					
Show:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:		Like "B*"			<> "Lowtown"
or:					

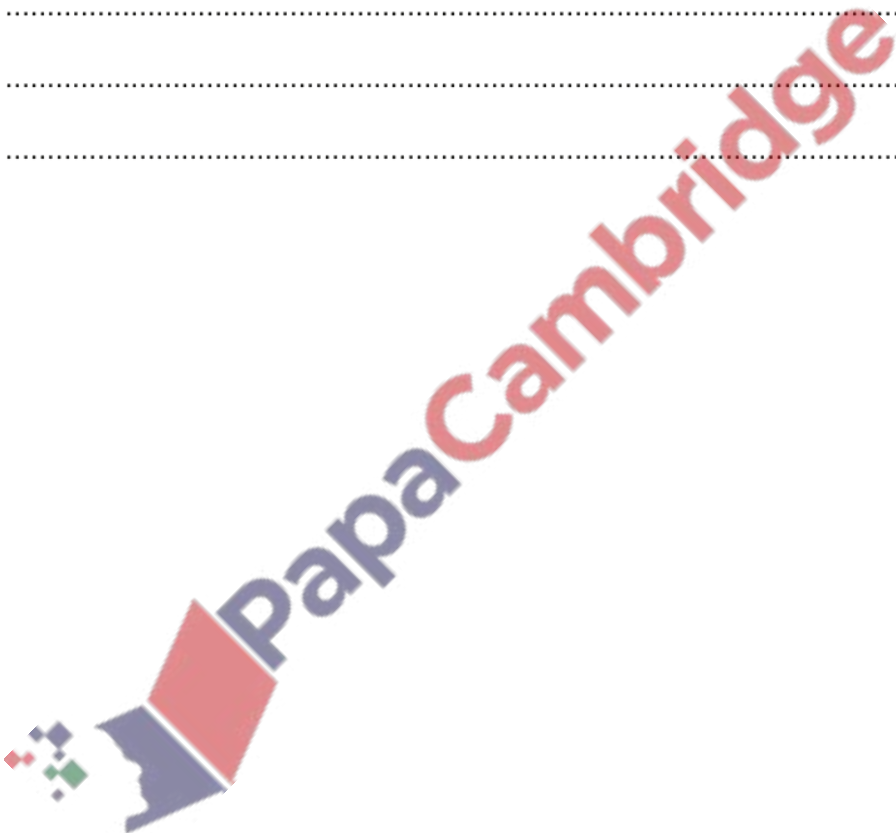
Fig. 9.2



(a) (i) Explain what information the librarian is looking for when using the query in Fig. 9.2.

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(ii) Identify the information that the query would output using the data in Fig. 9.1.

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Part of the Books table is shown in Fig. 9.3.

ISBN	Title	Author	Publisher	NumberofCopies	Replacement Cost
9780577185273	Ruinous Orange	Jonathon Roberts	Ellipsoid	3	\$16.99
9780593039427	That Was Then	Jaswant Sandhu	Round Moon Publishers	4	\$10.00
9780593065907	The Cheap Strangers	Reeta Khan	Round Moon Publishers	1	\$18.99
9780752856006	Too Open Too Short	Paul Stevenson	Douglas Books	2	\$16.99
9781356892467	The Divide of Decay	Donal Haroldson	Traveller Books	2	\$19.99
9781409187276	Light and Day	Gabrial Aston	Betelgeuse	2	\$18.99
9781544196873	Never the Poor	Jaswant Sandhu	Round Moon Publishers	3	\$18.99
9781772460886	Gloom Brother	Rowena Littleton	Douglas Books	1	\$20.99
9781772469285	Tempest Brother	Rowena Littleton	Douglas Books	1	\$13.99
9781780835991	Ambuscade	Hortense de Vandre	Possum Books	2	\$12.99
9781781254293	Significant Numbers	Jan Tudor	Frowpile Books	4	\$17.99
9781846962345	Respeto por la Castilla	Celia Rodriguez	Possum Books	4	\$9.99

Fig. 9.3

The librarian has created the following query:

Field:	ISBN	Title	Author	Publisher	NumberofCopies	ReplacementCost
Table:	Books	Books	Books	Books	Books	Books
Sort:						
Show:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:			Like "**son"			
or:						< 10

Fig. 9.4

(b) (i) Explain what information the librarian is looking for when using the query in Fig. 9.4.

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(ii) Identify the information that the query would output using the data in Fig. 9.3.

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10. June/2021/Paper_11/No.10

A company is creating a database to record information about each employee. The IT manager is creating an on-screen data entry form that will be used by the Human Resources department. This is her first design:

Name____


Address_____

Date of birth_____

Gender_____

Date joined company_____

Salary_____



Describe, in detail, appropriate improvements that could be made to the form to make data entry more accurate and easier to complete.

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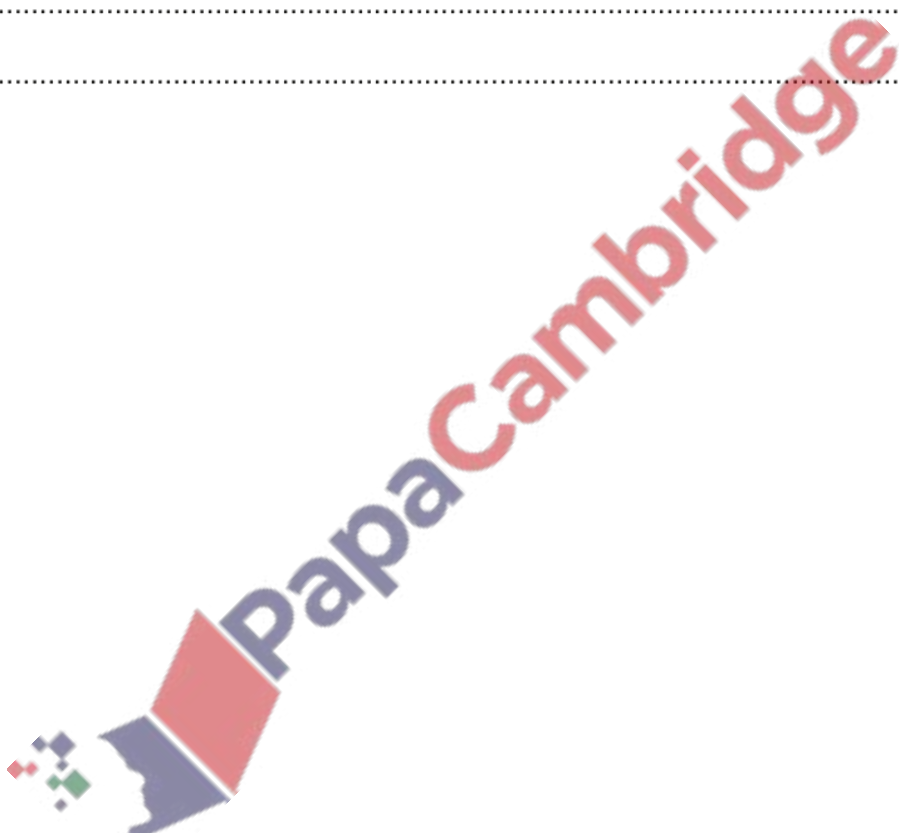
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11. June/2021/Paper_11/No.11

Explain, using examples, what is meant by the term generic file format.

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12. June/2021/Paper_11/No.12

Describe, in detail, what is meant by a hierarchical database management system.

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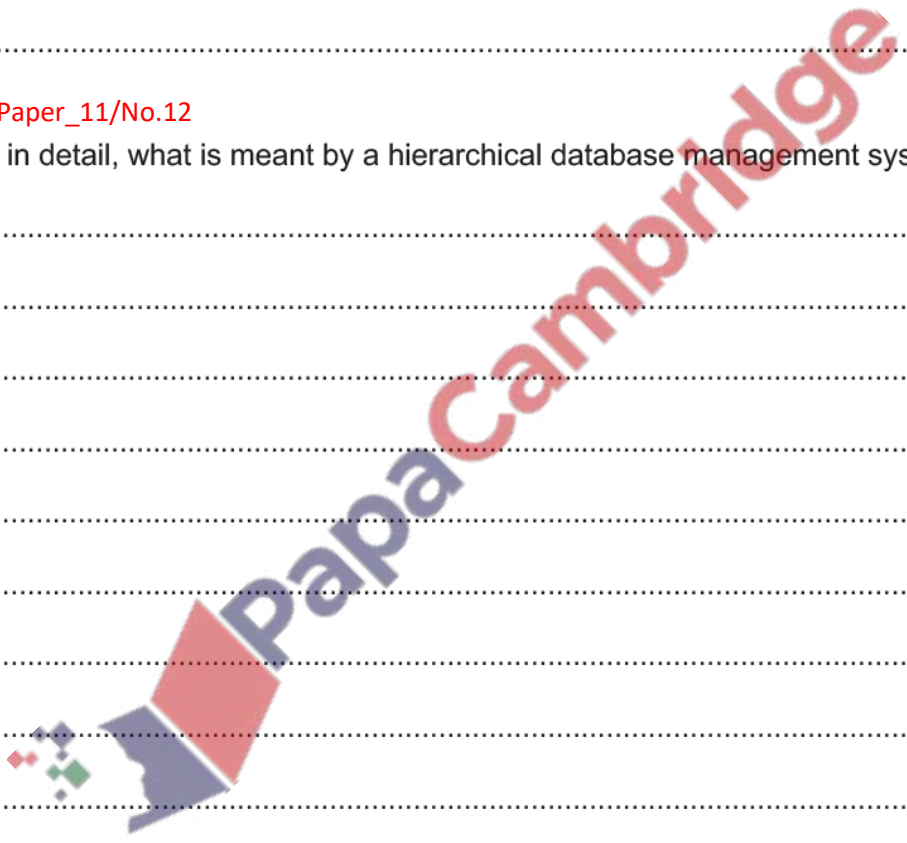
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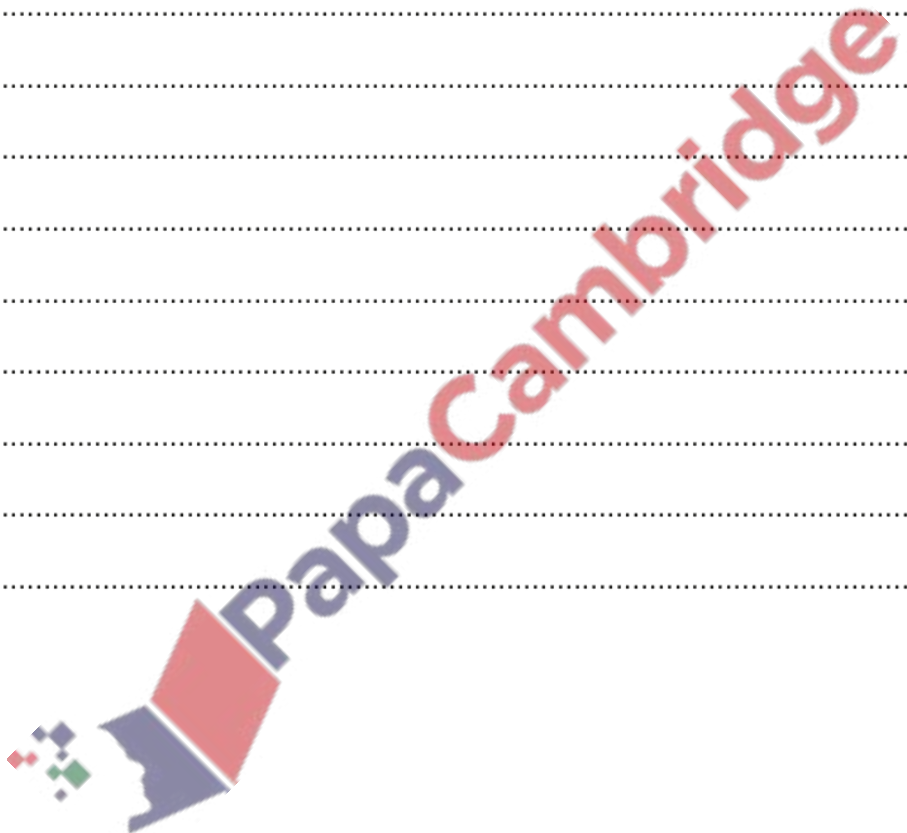
13. June/2021/Paper_12/No.8

A common feature of many database systems is the use of switchboards.

Evaluate, by weighing up the advantages and disadvantages, the use of switchboards in such systems.

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14. June/2021/Paper_12/No.9

GoodHope Ltd uses computers to process its payroll. The company pays its workers weekly, which involves the updating of a master file.

Part of a transaction file is shown. It contains workers' ID numbers and the hours worked by those workers in a particular week.

Part of the master file used by the company is shown. It contains the workers' ID numbers and the hourly rate at which they are paid in \$.

ID_number	Hours_worked
25306	35
25376	40
25891	37
27813	40
28197	35
32678	40
33429	37
36802	38
38439	38
39286	40

ID_number	Hourly_rate
13487	26
25306	25
25376	25
25891	24
26145	25
27813	22
28197	23
31026	22
32678	26
33429	22
36802	21
38439	25
39286	24
39875	25

(a) The transaction file has been sorted so that the updating can begin.

Describe what other process must happen before updating can begin.

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15. June/2021/Paper_12/No.12

Joanne has created a spreadsheet using proprietary software. Paula has suggested that she should save it in an open-source file format.

(a) Describe **three** distinct features of proprietary software.

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(b) Describe **two** distinct features of an open-source file format.

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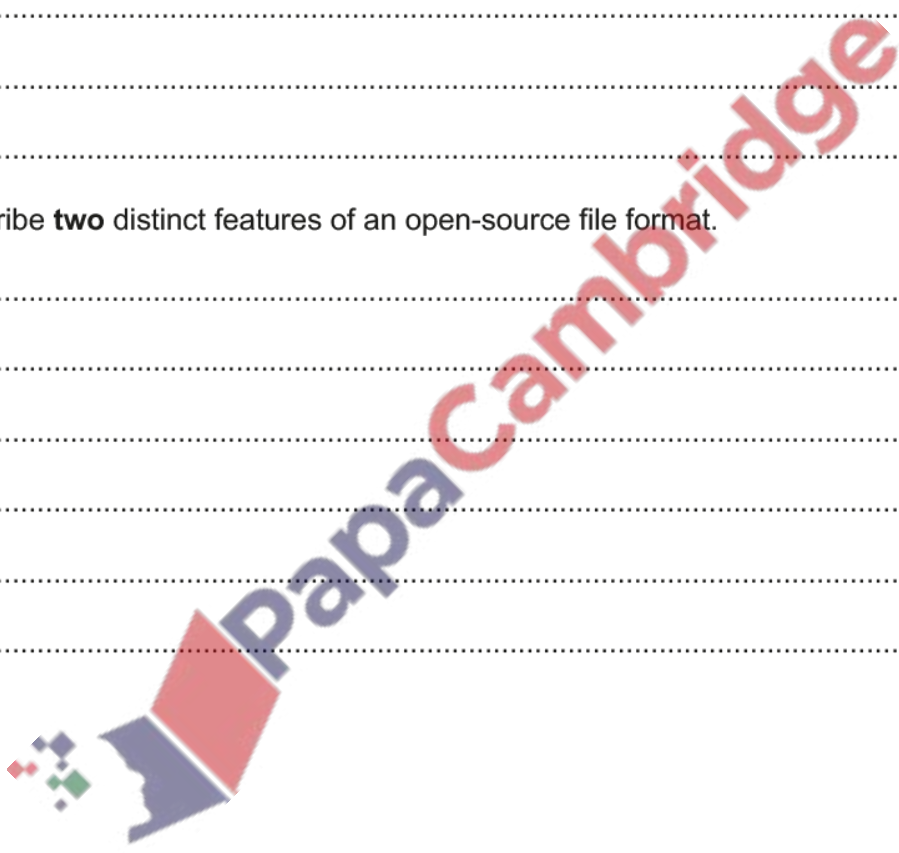
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Below are tables from a university database of Metallurgy students. Relationships link the tables.

Students

Studentid	Phone	Second_name
A5384	01217421600	Bhatti
A6528	01213689624	Schmidt
B7238	01214016620	Jones
A8946	01214006451	Gonzales
D9476	01214016620	Jones

Courses

Studentid	Subject	Teacher_code
A5384	Geology of metals	SMI
A6528	Electrochemical Metallurgy	LOU
B7238	Geology of metals	RIC
A6528	Metallography	SAN
D9476	Physical Metallurgy	SAN

Teachers

Teacher_code	Subject 1	Subject 2
LOU	Electrochemical Metallurgy	Metallography
RIC	Geology of metals	Crystallography
SAN	Metallography	Physical Metallurgy
SMI	Electrochemical Metallurgy	Geology of metals
TUR	Crystallography	Geology of metals

(a) Define, exactly, each of the following terms giving examples of the only suitable fields for each, using the tables provided.

(i) Primary key

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(ii) Foreign key

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(iii) Compound key

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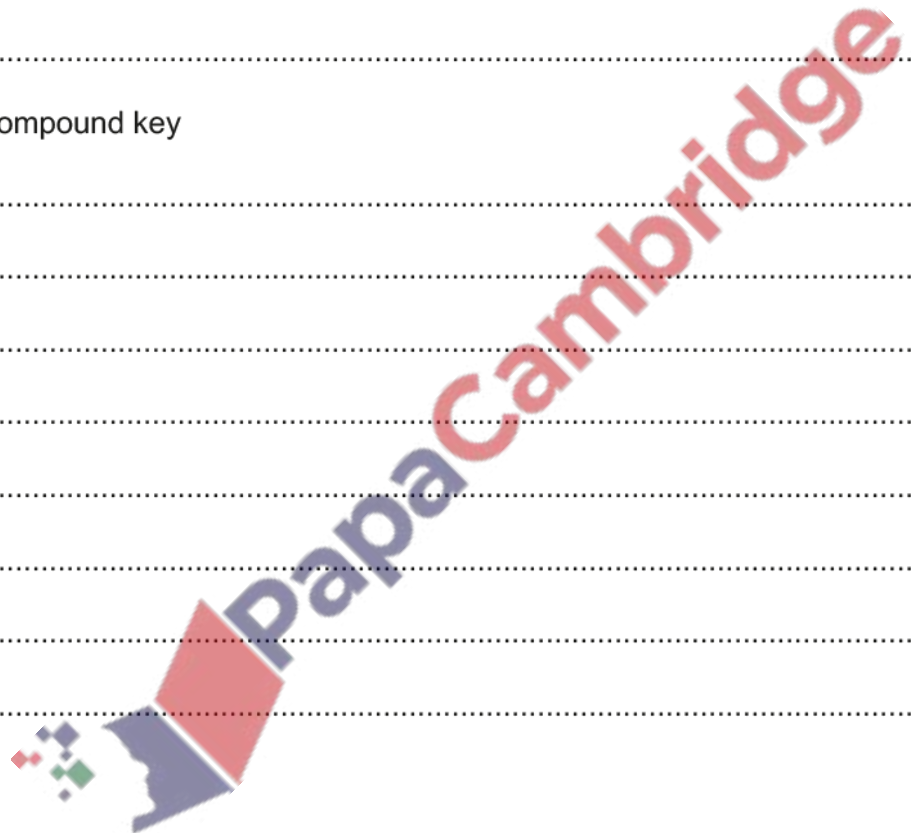
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(b) Explain, indicating the type of relationship formed, how the relationships were created connecting these tables. You can assume the tables were already populated with data.

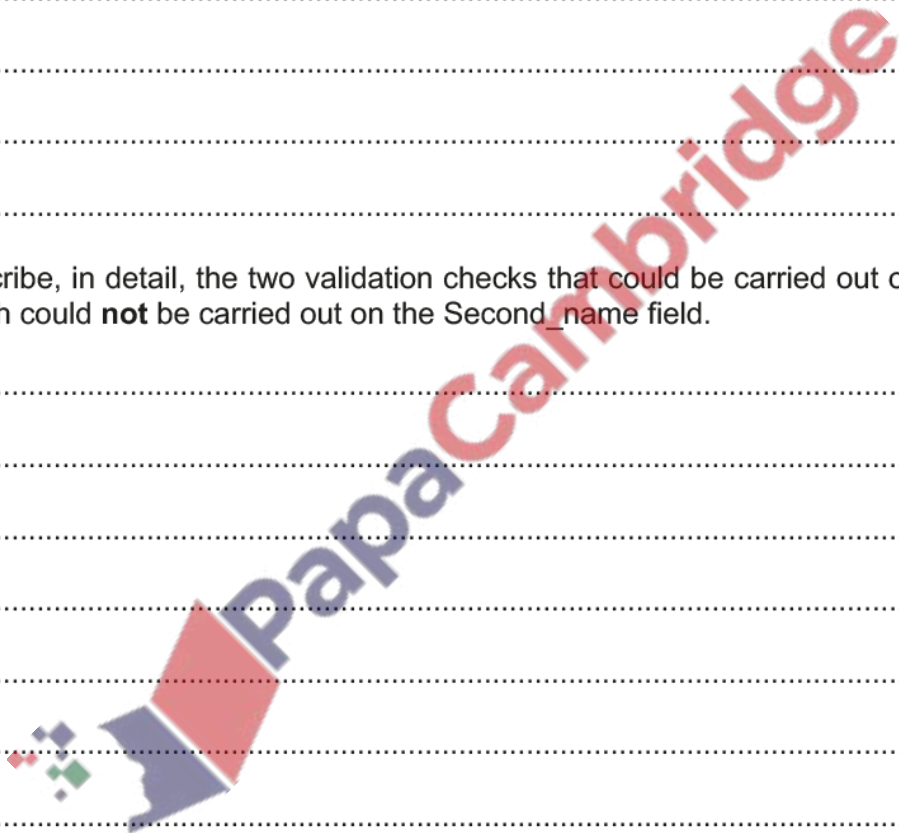
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(c) Describe, in detail, the two validation checks that could be carried out on the Studentid field which could **not** be carried out on the Second_name field.

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21. Nov/2020/Paper_12/No.5

A company selling desktop computers uses batch processing to process its customer orders. The company updates the stock master file every week.

Two sets of data are shown below.

The first set represents part of a transaction file containing the computer ID numbers and either the total number of items sold to customers or the amount of new stock delivered to the company in a particular week. The type of transaction is given a code of either S or D. S means that the number of computers in stock needs to be reduced. D means that new stock needs to be added.

The second set represents part of the master file used by the company. This shows the computer ID numbers, the make of computer, the hard disk size and number in stock.

Transaction file

ID_number	Quantity	Type
D20992	40	D
D43487	45	S
D87214	36	S
M47155	43	S
M75860	76	D
R03272	55	S
R62925	92	S
S32249	67	S
S47700	85	D
T49443	61	S

Master File

ID_number	Make	Hard_disk	Number_in_stock
D15609	Dingly	1	162
D20992	Dingly	1.5	145
D43487	Dingly	2	120
D87214	Dingly	3	150
M47155	MBI	1	135
M75860	MBI	2	158
M94382	MBI	4	182
R03272	Rickard	1	147
R55530	Rickard	1.5	126
R62925	Rickard	2	181
S32249	Sensen	2	130
S47700	Sensen	3	167
T49443	Trudel	1	122
T88350	Trudel	4	158

Select the most appropriate data type for each of the following examples, giving a reason why alternative data types would not be suitable. If the data type is numeric, specify the type of numeric data that would be most appropriate and give a reason. The reasons must be different for each example.

(a) A phone number, such as 028 9649 6437

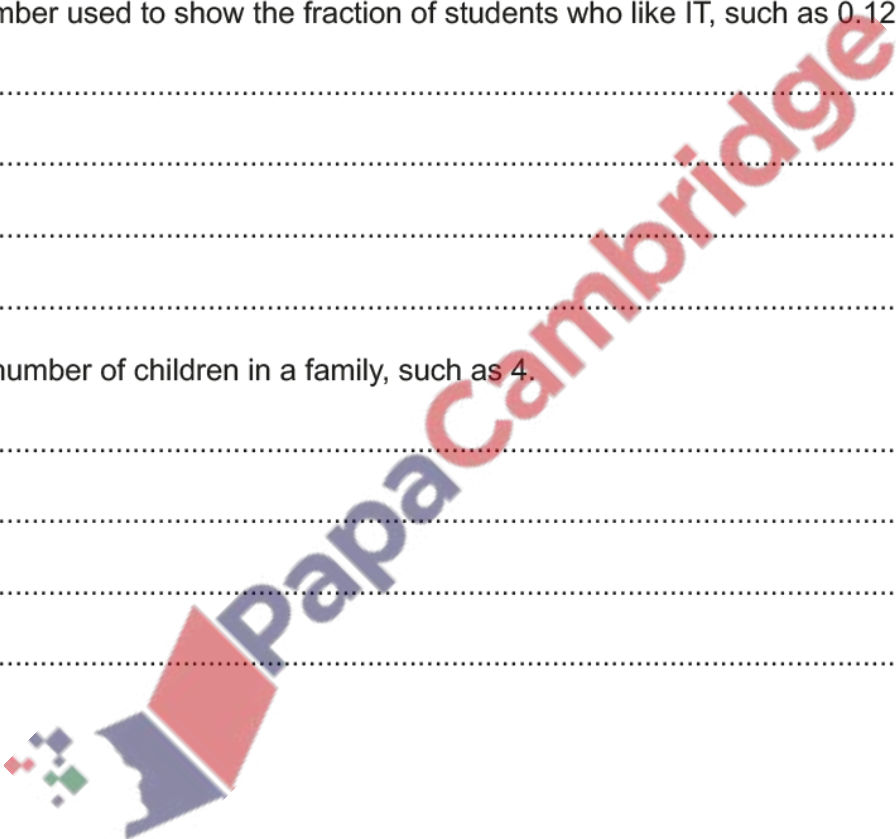
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(b) A number used to show the fraction of students who like IT, such as 0.125.

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(c) The number of children in a family, such as 4.

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(d) A person's state of employment, such as employed or not employed.

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(e) The amount of money a person earns, such as \$100.50.

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23. Nov/2020/Paper_12/No.10

There are several different generic file formats which can be used to save data.

Evaluate, by weighing up the advantages and disadvantages, the use of txt format to save data.

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(ii) Foreign key

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(iii) Compound key

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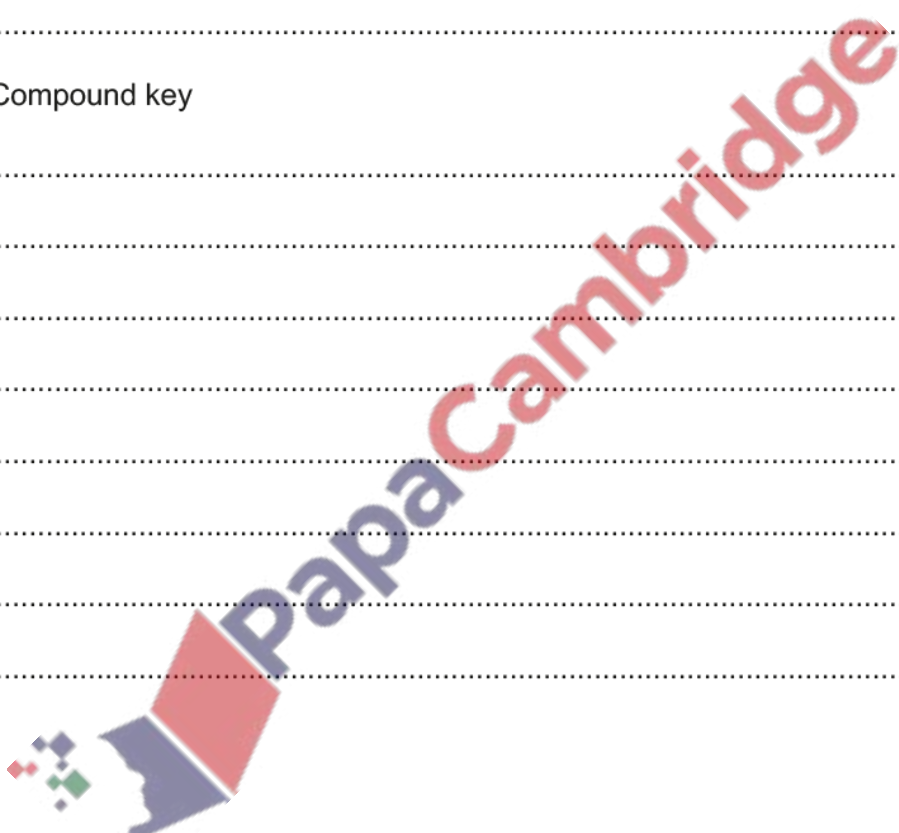
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26. Nov/2020/Paper_13/No.11

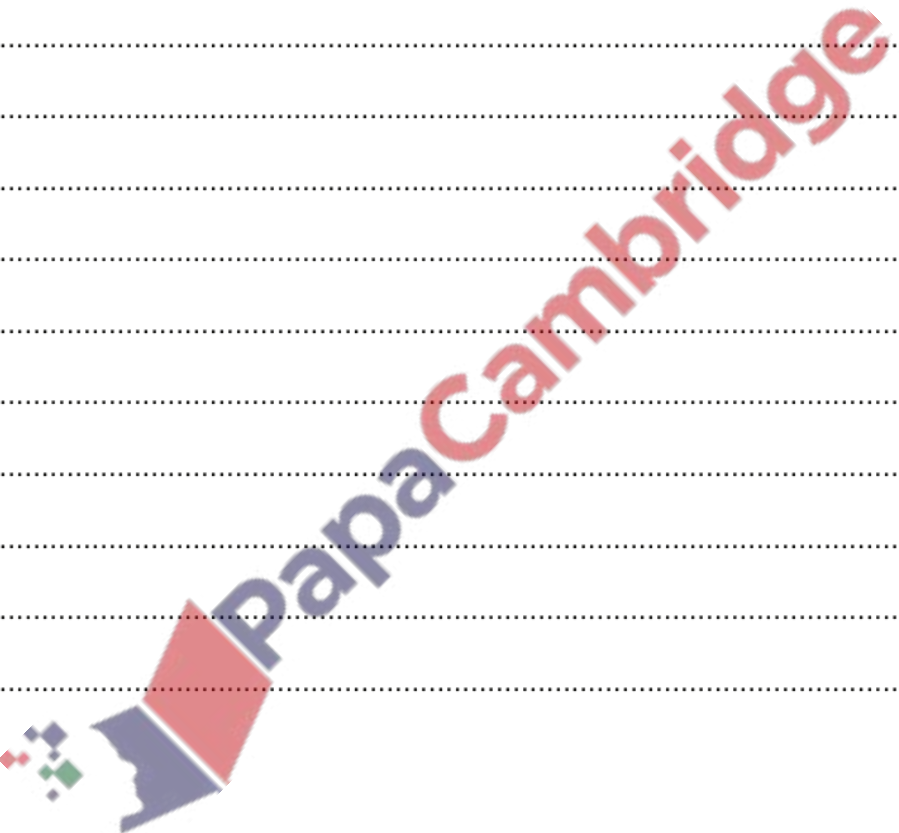
Amir has created a student database query which allows users to type in any name they choose and then the query finds everybody in the database with that name.

Annisa has told him that this is a dynamic parameter query.

Evaluate, by weighing up the advantages and disadvantages, dynamic parameter queries compared with static parameter queries.

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27. Mar/2020/Paper_12/No.11

Explain why generic file formats are needed when using word processing software and spreadsheet software.

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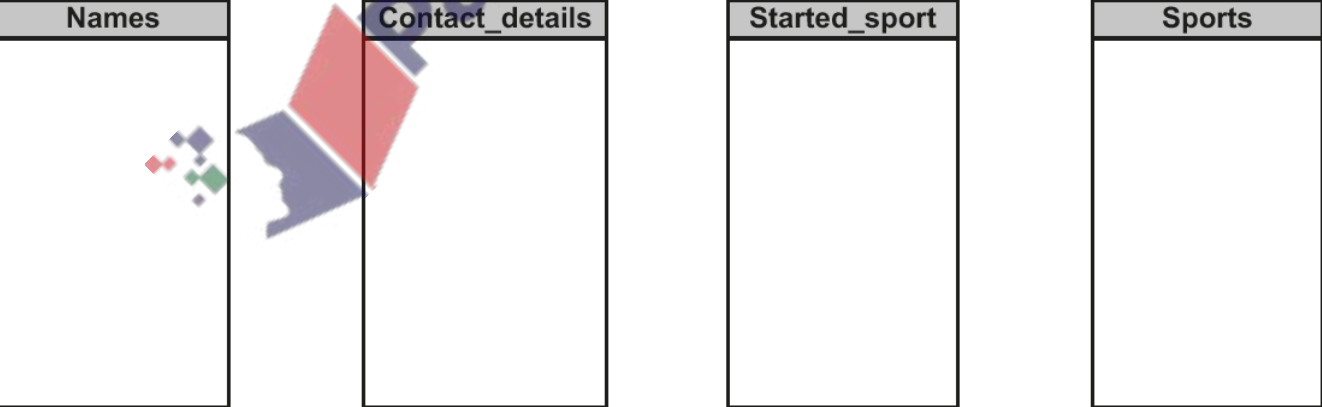
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28. June/2020/Paper_11/No.5

A sports club keeps records in a database of its members and the individual sports they play. It has the following tables of data:

- Members' names
- Members' contact details
- Details of when they started playing the sport
- All the possible sports which can be played by the members.



30. June/2020/Paper_12/No.7

Here is part of a database showing the earnings of a group of workers in a company.

WorkerID	Job_type	Hours_worked	Hourly_rate	Weekly_pay
56321	Tyre changer	42	€17.00	€714.00
58191	Foreman	40	€22.00	€880.00
58694	Mechanic	38	€20.00	€760.00
59676	Painter	37	€18.00	€666.00
61230	Sander	39	€15.00	€585.00
63214	Sander	36	€15.00	€540.00
63295	Polisher	38	€14.00	€532.00
64387	Polisher	40	€14.00	€560.00
67152	Mechanic	37	€20.00	€740.00
67328	Painter	36	€18.00	€648.00
68947	Painter	38	€18.00	€684.00

(a) Describe, using an example from the database, the features of a calculated field.

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