

### Database Topical Past Papers Computer Science(2210) 2015 to 20204:

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1 A television subscription service has a new database table named Contract to store details of their subscribers' contracts. The table contains these fields:

- ContractNumber – the contract number, for example CT567
- Months – the length of the contract in months, for example 6
- EndDate – the date the contract finishes, for example 30 November 2024
- News – the news service, yes or no
- Movie – the movie service, yes or no
- Sport – the sports service, yes or no
- Junior – the children's service, yes or no.

(a) Identify the field that will be the most appropriate primary key for this table.

..... [1]

(b) Complete the table to identify the most appropriate data type for these fields in Contract

Field	Data type
ContractNumber	
Months	
EndDate	
Sport	

[2]

(c) Explain the purpose of these structured query language (SQL) statements.

Statement 1: SELECT SUM (Months) FROM Contract;

Statement 2: SELECT COUNT (News) FROM Contract WHERE News;

Statement 1 .....

.....

.....

Statement 2 .....

.....

.....[3]

(d) Complete this SQL statement to find the contract numbers of the subscribers that take both the news and sports services.

SELECT .....

FROM Contract

WHERE ..... AND..... ; [2]

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2. A database table called SoftDrinks stores details of the soft drinks sold by a small shop.

Field	Example data
Name	Cola
Supplier	Cambridge Beverages
Container	Can
SizeCl	330
NumberInStock	30
ReorderLevel	15
Reordered	Yes

(a) State whether any of the given fields would be suitable as a primary key and give a reason for your answer.

.....

..... [1]

(b) Complete the structured query language (SQL) statement to return the number of cans the shop has in stock.

SELECT ..... (.....)

FROM .....

WHERE ..... = ..... ; [5]

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**3** A music streaming service has a new database table named Songs to store details of songs available for streaming. The table contains the fields:

- ♣ SongNumber – the catalogue number, for example AG123
- ♣ Title – the title of the song
- ♣ Author – the name of the song writer(s)
- ♣ Singer – the name of the singer(s)
- ♣ Genre – the type of music, for example rock
- ♣ Minutes – the length of the song in minutes, for example 3.75
- ♣ Recorded – the date the song was recorded.

**(a)** Identify the field that will be the most appropriate primary key for this table.

..... [1]

**(b)** Complete the table to identify the most appropriate data type for the fields in Songs

Field	Data type
SongNumber	
Title	
Recorded	
Minutes	

[2]

**(c)** Explain the purpose of the structured query language (SQL) statements.

SUM (Minutes) FROM Songs WHERE Genre = "rock";  
COUNT (Title) FROM Songs WHERE Genre = "rock";

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

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4 A computer game shop records its stock levels in a database table called GAMES. The fields used in the stock table are shown.

Name	Description
GameID	primary key
GameName	the name of each game
AgeRestriction	the minimum age at which a person is allowed to play each game
GamePrice	the selling price for each game
NumberStock	the quantity of each game currently in stock
OnOrder	whether or <b>not</b> each game is on order from the suppliers
DateLastOrdered	the date the most recent order for each game was placed
GameDescription	a summary of the contents and purpose of each game

(a) State the number of fields that are in the table GAMES.

..... [1]

(b) State **one** important fact that must be true for a field to be a primary key.

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

(c) Complete the query-by-example grid to output all the games that have no stock and that are on order with the supplier. Display only the GameID, GameName and GamePrice fields in alphabetical order of the name of the game.

Field:					
Table:					
Sort:					
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:					
or:					

[3]

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5. A database table, JUICE, is used to keep a record of cartons of fresh fruit juice available for sale.

Juice code	Fruit 1	Fruit 2	Size	Volume (ml)	Stock level
LMO10	Mango	Orange	Large	1000	18
MOO05	Orange	Orange	Medium	500	8
SAM02	Apple	Mango	Small	200	25
SAA02	Apple	Apple	Small	200	50
SPP02	Pineapple	Pineapple	Small	200	10
MMM05	Mango	Mango	Medium	500	12
LMM10	Mango	Mango	Large	1000	5
MGG05	Guava	Guava	Medium	500	5
SMO02	Mango	Orange	Small	200	7
MOP05	Orange	Pineapple	Medium	500	12
LAA10	Apple	Apple	Large	1000	32
SGO02	Guava	Orange	Small	200	10
LPP10	Pineapple	Pineapple	Large	1000	3
LOO10	Orange	Orange	Large	1000	25
SOO02	Orange	Orange	Small	200	40

(a) Identify a suitable field to use as the primary key. State a reason for your choice.

Field .....

Reason .....

.....[2]

(b) Complete the query-by-example grid to display only the stock level and size of all cartons containing only apple juice.

Field:				
Table:				
Sort:				
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:				
or:				

[4]

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6. A database table called Horses stores details about the horses kept at a horse sanctuary.

Code	Breed	BreedOrigin	Gender	Age	Arrived
H002	Arabian	Saudi Arabia	M	5	28/09/2022
H004	Percheron	France	M	5	30/10/2022
H010	Friesian	Netherlands	M	6	15/11/2022
H011	Fjord	Norway	F	4	17/11/2022
H012	Clydesdale	Scotland	M	10	18/11/2022
H015	Arabian	Saudi Arabia	F	5	15/12/2022
H016	Arabian	Saudi Arabia	F	5	15/12/2022
H017	Clydesdale	Scotland	F	4	16/01/2023
H019	Percheron	France	M	3	16/01/2023
H025	Percheron	France	M	7	16/01/2023
H026	Clydesdale	Scotland	F	9	20/01/2023
H030	Clydesdale	Scotland	M	12	20/01/2023
H032	Fjord	Norway	M	3	24/03/2023
H033	Arabian	Saudi Arabia	F	15	27/04/2023
H034	Clydesdale	Scotland	F	4	14/06/2023
H035	Fjord	Norway	M	7	15/06/2023
H036	Friesian	Netherlands	F	15	20/07/2023
H037	Friesian	Netherlands	M	12	20/07/2023

(a) State the number of records in this database table.

..... [1]

(b) Give the name of the field that is most suitable to be the primary key. State the reason for this choice.

Field .....

Reason .....

.....[2]

(c) The database only allows the data types:

- Boolean
- Character
- date/time
- integer
- real
- text.

Complete the table to show the most appropriate data type for each field. Each data type must be different.

Field	Data type
Breed	
Gender	
Age	
Arrived	

[2]

(d) Complete the structured query language (SQL) to return the code and breed of all the horses whose breed originated in Scotland.

..... Code, Breed,

FROM .....

WHERE ..... = "Scotland"; [3]

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7. A pet supplier uses the database table, STOCK, to keep records of its products for pets. The fields are:

Field name	Description
ProductID	code to identify the product
ProductName	name of product
ProductDescription	information about the product
Animal	type of animal the product is for, e.g. cat, bird, horse
ProductType	type of product, e.g. food, toy, medicine
InStock	whether the product is in stock or not

(a) (i) Identify the field that could have a Boolean data type.

..... [1]



(ii) Identify the field that should be used as the primary key.

..... [1]

(b) Complete the query-by-example grid to output the products intended for a cat that are in stock. Display only the primary key and the name of the products. The output should be sorted by the primary key.

Field:					
Table:					
Sort:					
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:					
or:					

[4]

## Answers

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### Q1

(a)	ContractNumber	1										
(b)	<p>One mark for every two correct data types.</p> <table><tr><th>Field</th><th>Data type</th></tr><tr><td>ContractNumber</td><td>text/alphanumeric</td></tr><tr><td>Months</td><td>integer</td></tr><tr><td>EndDate</td><td>date/time</td></tr><tr><td>Sport</td><td>Boolean</td></tr></table>	Field	Data type	ContractNumber	text/alphanumeric	Months	integer	EndDate	date/time	Sport	Boolean	2
Field	Data type											
ContractNumber	text/alphanumeric											
Months	integer											
EndDate	date/time											
Sport	Boolean											
(c)	<p>One mark for each point</p> <p>MP1 to find the total number of months for <b>all</b> contracts</p> <p>MP2 to find the number of contracts</p> <p>MP3 ... that are subscribed to News</p>	3										
(d)	<p>ContractNumber</p> <p>News AND Sport // Sport AND News</p> <p>Example answer:</p> <pre>SELECT ContractNumber FROM Contract WHERE News // News = TRUE AND Sport // Sport = TRUE ;</pre>	2										

### Q2

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2



(a)	<b>One</b> mark for an appropriate reason if no has been stated, for example: None of the fields are likely to contain unique data.	1
(b)	<b>One</b> mark for each correct answer  SUM NumberInStock SoftDrinks Container 'Can'  Correct code:  <code>SELECT SUM (NumberInStock) FROM SoftDrinks WHERE Container = 'Can';</code>	5

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3

(a)	SongNumber	1										
(b)	<p>One mark for every two correct data types</p> <table><tr><th>Field</th><th>Data Type</th></tr><tr><td>SongNumber</td><td>Text/Alphanumeric</td></tr><tr><td>Title</td><td>Text/Alphanumeric</td></tr><tr><td>Recorded</td><td>Date/time</td></tr><tr><td>Minutes</td><td>Real</td></tr></table>	Field	Data Type	SongNumber	Text/Alphanumeric	Title	Text/Alphanumeric	Recorded	Date/time	Minutes	Real	2
Field	Data Type											
SongNumber	Text/Alphanumeric											
Title	Text/Alphanumeric											
Recorded	Date/time											
Minutes	Real											
(c)	<p>One mark for each point</p> <ul style="list-style-type: none"><li>to find the total number of minutes of music</li><li>to find the total number of songs</li><li>available for the genre rock</li></ul>	3										

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(a) 8 [1]

6(b) The primary key field must be unique/different for each record in the table [1]

6(c) **One** mark per mark point, max **three**

- correct fields and table named correctly
- correct sort and show box rows
- correct search criteria

Field:	GameID	GameName	GamePrice	NumberStock	OnOrder
Table:	GAMES	GAMES	GAMES	GAMES	GAMES
Sort:		Ascending			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:				=0	="Y"
or:					

[3]

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5(a) **One** mark for field and **one** mark for reason

Field: Juice code

Reason: only unique identifier

[2]

(b)

Field:	Fruit 1	Fruit 2	Size	Stock level
Table:	JUICE	JUICE	JUICE	JUICE
Sort:				
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	= "Apple"	= "Apple"		
or:				

[4]

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6(a)

Records: 14

[2]

Fields: 5

6(b)(i)

Species/Description

[1]

6(b)(ii)

Long names that could be easily misspelt // species or description could be duplicated

[1]

6(b)(iii)

Easy to validate // always unique

[1]

6(c)

**One** mark for each correct row **or** column

[2]

True silver white laced top half and black lower half

Brown eared brown with ear tufts

6(d)

**One** mark for each correct addition

[4]

SELECT Species

FROM PheasantList

WHERE Breeding = 0 OR WHERE Young = 0

AND Young = 0; AND Breeding;

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7(a)(i) InStock

[1]

7(a)(ii) ProductID

[1]

7(b)

**One** mark for correct fieldnames

**One** mark for correct table names and show fields

**One** mark for correct sort

**One** mark for correct search criteria in all columns

Field:	ProductID	ProductName	Animal	InStock	
Table:	STOCK	STOCK	STOCK	STOCK	
Sort:	Ascending				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			= "cat"	= Yes	
or:					

[4]