

## 2.3 Databases

Wednesday, 2 December 2020 6:30 PM



2.3

Databases

**Computer Science 2210**  
Topical Past Papers

 **Zak**  
ZAFAR ALI KHAN

Topic: 2.3 Databases

May/June 2015.P21

- 7 A database, PROPERTY, was set up to show the prices of properties for sale and the features of each property. Part of the database is shown below.

Property Type	Brochure No	Number of Bedrooms	Number of Bathrooms	Garden	Garage	Price in \$
Bungalow	B17	7	4	Yes	Yes	750,000
Apartment	A09	2	1	No	No	100,000
House	H10	4	2	Yes	No	450,000 ✓
House	H13	3	2	Yes	No	399,000 ✓
Apartment	A01	2	2	No	Yes	95,000
Apartment	A16	1	1	No	No	150,000
House	H23	3	1	No	Yes	250,000
House	H46	2	1	Yes	Yes	175,000

STRNG STRNG INT INT Bool Bool CURR.

- (a) Give the number of fields that are in each record. *7 fields*

[1]

- (b) State which field you would choose for the primary key. *Brochure No*

Give a reason for choosing this field.

[2]

*Because data items  
in every record are unique.*

- (c) State the data type you would choose for each of the following fields.

Garage *Boolean*

Number of Bedrooms *Int*

Price in \$ *Curr.*

[3]

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(d) The query-by-example grid below selects all houses with more than 1 bathroom and more than 2 bedrooms. QBE

Field:	Property Type	Number of Bedrooms	Number of Bathrooms	Price in \$	Brochure No
Table:	PROPERTY	PROPERTY	PROPERTY	PROPERTY	PROPERTY
Sort:				Ascending	
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	= 'House'	>2	>1		
or:					

Show what would be output.

399000, H13  
450000, H10

[2]

(e) Complete the query-by-example grid below to select and show the brochure number, property type and price of all properties with a garage below \$200,000. QBE

Field:	BrochureNo	Property Type	Price in \$	Garage
Table:				
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:			<200000	=Yes
or:				

[4]

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May/June 2015 P22

- 6 A database MARKS was set up to record the test results for a class of students. Part of the database is shown below.

Student Name	Class ID	Maths	English	Science	History	Geography
Paul Smith	0017	70	55	65	62	59
Ravi Gupta	0009	29	34	38	41	44
Chin Hwee	0010	43	47	50	45	52
John Jones	0013	37	67	21	28	35
Diana Abur	0001	92	88	95	89	78
Rosanna King	0016	21	13	11	27	15

- (a) Give the number of fields that are in each record.

7 fields.

[1]

- (b) State which field you would choose for the primary key.

Class ID

Give a reason for choosing this field.

- Uniquely identifies every student

[2]

→ Data items are unique for every record.

- (c) The query-by-example grid below selects all students with more than 60 marks in History or more than 60 marks in Geography.

Field:	Student Name	History	Geography
Table:	MARKS	MARKS	MARKS
Sort:	Ascending		
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		>60	
or:			>60

Show what would be output.

Diana Abdu  
Paul Smith

[2]



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- (d) Complete the query-by-example grid below to select and show the student names only of all students with less than 40 marks in both Maths and English.

Field:	Student Name	MATH	ENGLISH
Table:	MARKS	MARKS	MARKS
Sort:			
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		<40	<40
or:			

[3]

Oct/Nov 2015.P22

- 6 A picture gallery owner has decided to set up a database to keep information about the pictures he has for sale. The database table, PICTURE, will contain the following fields:

Title; Artist; Description; Catalogue Number; Size (area in square centimetres); Price; Arrived (date picture arrived at gallery); Sold (whether picture is already sold)

- (a) (i) State what data type you would choose for each field.

Title ..... STRING

Artist ..... STRING

Description ..... STRING

Catalogue Number ..... STRING PK

Size ..... INT

Price ..... CURR

Arrived ..... DATE

Sold ..... BOOLEAN

[4]

- (ii) State which field you would choose for the primary key.

[1]

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- (b) Give a validation check that you can perform on each of these fields. Each validation check must be different.

Catalogue Number .....

Size .....

Price .....

Arrived ..... [4]

- (c) Complete the query-by-example grid below to select and show the Catalogue Number, Title and Price of all unsold pictures by the artist 'Twister'.

Field:	Catalogue Number	Title	Price	Sold	Artist
Table:	PICTURE	PIC	PIC	PIC	PICTURE
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:				=False	=“Twister”
or:					

Oct/Nov 2015 P23

# False #  
# True # "Zafar"

[5]

- 5 A motor boat hire company decides to set up a database to keep information about boats that are available for hire. The database table, BOAT, will contain the following fields:

Boat Name; Model; Engine Power (in hp); Number of Seats; Life Raft (whether there is a life raft kept on the boat); Day Price (price for a day's hire).

- (a) Give the data type you would choose for each field.

Boat Name String

Model String

Engine Power INT

Number of Seats INT

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Life Raft BOOLEAN

Day Price EURY

[3]

- (c) Complete the query-by-example grid below to select and show the Boat Name, Model and Day Price of a day's hire for all boats with 4 seats and an Engine Power of more than 100 hp.

Field:	Boat Name	Model	Day Price	Number of Seats	Engine Power

Table:	BOAT	BOAT	BOAT	BOAT	BOAT
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:				=4	7/100
or:					

[5]

May/June 2016 P21

- 6 A database, STAFFPHONE, was set up to show the telephone extension numbers for members of staff working in a department store.

Name	Department	Extension number
Jane Smith	Toys	129
Sue Wong	Books	124
David Chow	Toys	129
Amy Tang	Household	123
Joe Higgs	Books	124
Jane Smith	Shoes	125
Adel Abur	Shoes	125
Peter Patel	Toys	129

- (a) Explain why none of the fields in the database can be used as a primary key.

[2]

- all fields have duplicate values -

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- (b) State a field that could be added as a primary key.

Staff ID

Give a reason for choosing this field.

Ascending  
A-Z

- (c) Use the query-by-example grid below to provide a list of all members of staff, in alphabetical order, grouped by department.

Field:	Name	Department		
Table:	STAFFPHONE	STAFFPHONE		
Sort:	Ascending	Ascending		
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:				
or:				

May/June 2016 P22

- 7 A database, SOFASELECT, was set up to show the prices of suites, sofas and chairs for sale from an online furniture warehouse. Part of the database is shown below.

Description	Brochure Number	Number of Seats	Number of Pieces	Material	Colour	Price in \$
Sofa	SF17	2	1	Leather	Red	950
Sofa	SF19	3	1	Vinyl	Black	1,000
Suite	SU10	4	3	Velvet	Green	1,500
Suite	SU23	5	3	Leather	Brown	950
Recliner chair	RC01	1	1	Leather	Cream	600

Chair	CH16	1	1	Vinyl	Red	250
Recliner sofa	RS23	4	1	Leather	Cream	1,200
Chair	CH10	1	1	Velvet	Red	175

(a) How many fields are in each record?

[1]

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#### Topic: 2.3 Databases

(b) State which field you would choose for the primary key.

Give a reason for choosing this field.

[2]

(c) State the data type you would choose for each of the following fields.

Number of Seats

Price in \$

[2]

(d) The query-by-example grid below selects all the furniture in cream leather.

Field:	Description	Material	Colour	Price in \$	Brochure Number
Table:	SOFASELECT	SOFASELECT	SOFASELECT	SOFASELECT	SOFASELECT
Sort:				Descending	
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:		= 'Leather'	= 'Cream'		
or:					

Show the output from the query-by-example.

[3]

(e) Complete the query-by-example grid below to select and show the brochure number, material, colour and price of all the furniture with 3 or more seats.

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

[5]

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Oct/Nov 2016 P22

- 5 A database, PLAYPRODUCTION, was set up to show the performance dates, prices and number of seats available at a theatre specialising in Shakespeare productions.

Play	Performance Date	Number Seats Stalls	Number Seats Circle	Price Stalls Seats \$	Price Circle Seats \$
1 As You Like It	01/07/2016	120	90	20.00	30.00
	02/07/2016	85	45	30.00	40.00
	09/07/2016	31	4	30.00	40.00
3 Macbeth	14/07/2016	101	56	25.00	35.00
	15/07/2016	50	34	25.00	35.00
	16/07/2016	12	5	35.00	50.00
2 Julius Caesar	22/07/2016	67	111	20.00	20.00
	23/07/2016	21	24	15.00	15.00
	A Comedy of Errors	45	36	35.00	45.00

(a) Give the number of fields that are in each record. [1]

(b) State the data type you would choose for each of the following fields.

Play

Number Seats Stalls

Price Stalls Seats \$

[3]



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(c) The query-by-example grid below selects all the productions with more than 100 seats left in either the stalls or the circle.

Field:	Play	Performance Date	Number Seats Stalls	Number Seats Circle
Table:	PLAYPRODUCTION	PLAYPRODUCTION	PLAYPRODUCTION	PLAYPRODUCTION
Sort:	Ascending			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			> 100	
or:				> 100

Show what would be output from the query-by-example. [3]

(d) Complete the query-by-example grid below to select all the productions with at least six seats left in the circle and show the Play, Performance Date and Price Circle Seats \$ in Performance Date order.

Field:	Play ✓	Performance Date	Number Seats Circle	Price
Table:	PP -	PP -	PP -	PP -
Sort:				

Sort:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <i>Ascending</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			<i>7=6</i>	
or:				

[5]



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Oct/Nov 2016 P23

- 6 A database, THEATRETOURS, was set up to show the tour dates, towns, number of seats and prices in local currency for a Shakespeare play.

Town	Tour Date	Number of Seats	Price Local Currency
Wigan	18/08/2016	120	15.00
Dumfries	20/08/2016	160	12.50
Turin	25/08/2016	200	17.00
Macon	27/08/2016	75	18.00
Bordeaux	29/08/2016	170	20.00
Algiers	01/09/2016	125	1350.00
Windhoek	05/09/2016	65	90.00
Windhoek	06/09/2016	65	90.00
Port Elizabeth	10/09/2016	200	110.00

(a) Explain why none of the fields in the database can be used as a primary key. [2]

(b) State a field that could be added as a primary key.

Give a reason for choosing this field.

[2]

(c) Use the query-by-example grid below to provide a list of tour dates and seat prices in alphabetical order of town.

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

[4]



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May/June 2017.P21

- 7 A television (TV) store has a database table, TVSTOCK, for its new range of televisions. The table stores the screen size of each TV, whether it will show 3D, whether the screen is curved or flat, if the internet is available on the TV, if it has a built-in hard disk drive and the price. Part of the database table is shown below.

TVID	ScreenSize	3D	CurvedFlat	Internet	HDD	Price
TV80CVINT	80	YES	CV	YES	YES	\$7,000.00
TV65CVINT	65	YES	CV	YES	YES	\$5,000.00
TV60CVINT	60	YES	CV	YES	YES	\$4,500.00
TV60FTINT	60	YES	FT	YES	YES	\$4,000.00
TV55CVINT	55	YES	CV	YES	NO	\$3,000.00
TV55FTINT	55	YES	FT	YES	NO	\$3,500.00
TV55FTNIN	55	YES	FT	NO	NO	\$3,000.00
TV50CVINT	50	YES	CV	YES	NO	\$2,500.00
TV50FTINT	50	YES	FT	YES	NO	\$2,000.00
TV50FTNIN	50	YES	FT	NO	NO	\$1,750.00
TV42FTINT	42	YES	FT	YES	NO	\$1,500.00
TV37FTINT	37	NO	FT	YES	NO	\$1,200.00
TV20FTNIN	20	NO	FT	NO	NO	\$800.00
TV15FTNIN	15	NO	FT	NO	NO	\$400.00

STRINGS INT BOOL STR BOOL BOOL CURR

- (a) State the type of the field **TVID** and give a reason for your choice.

[1]

- (b) Complete the table with the most appropriate data type for each field.

Field name	Data type
ScreenSize	
3D	
CurvedFlat	
Internet	
HDD	
Price	

[3]

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- (c) Use the query-by-example grid below to provide a list of all of the curved screen TVs that have a built-in hard disk drive. Make sure the list only displays the **TVID, the price and the screen size** in ascending order of price.

Show

Field:	TVID	Price	ScreenSize	CurvedFlat	HDD
Table:	TVSTOCK	TVSTOCK	TVSTOCK	TVSTOCK	TVSTOCK
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Criteria:		= "CY"	= YES
or:			

[5]

EARnnnn — STR  
DOB 0000 0  
EAR 9999

May/June 2017.P22

- 5 A database table, SHEEP, is used to keep a record of the sheep on a farm. Each sheep has a unique ear tag, EARnnnn; n is a single digit. The farmer keeps a record of the date of birth, the gender and the current weight of each sheep in kilograms.

DATE      STR/CHAR

- (a) Identify the **four** fields required for the database. Give each field a suitable name and data type. Provide a sample of data that you could expect to see in the field.

Field 1 name EarTag

Data type STR

Data sample "EAR1234"

Field 2 name DOB

Data type Date

Data sample #3-10-2019#

Field 3 name Gender

Data type STR / CHAR

Data sample 'M', 'M'

Field 4 name Weight



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Data type REAL ↗

Data sample 15.8

[8]

- (b) State the field that you would choose as the primary key. EarTag

- (c) Using the query-by-example grid below, write a query to identify the ear tags of all male sheep weighing over 10 kilograms. Only display the ear tags.

Field:	EarTag	Gender	Weight	
Table:	SHEEP	SHEEP	SHEEP	
Sort:				
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		= "M"	> 10	
or:				

[3]

Oct/Nov 2017.P22

(00000)  
00000)

0

- 6 A database table, TRAIN, is to be set up for a railway company to keep a record of the engines available for use. Each engine has a unique number made up of 5 digits, nnnnn. The engines are classified as freight (F) or passenger (P) together with a power classification that is a whole number between 0 and 9, for example F8. The railway company keeps a record of the date of the last service for each engine.

P1

- (a) Identify the **three** fields required for the database. Give each field a suitable name and data type. Provide

(a) Identify the three fields required for the database. Give each field a suitable name and data type. Provide a sample of data that you could expect to see in the field.

Field 1 Name *EngineNo*

"P?"

Data type *Text*

Data sample "12345"

Field 2 Name *Class*

*Text*

Data type



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Data sample "F8"

Field 3 Name *LastService*

Data type *Date*

Data sample "# 07-12-19#"

[6]

(b) State the field that you should choose as the primary key. *EngineNo*

[1]

(c) Using the query-by-example grid below, write a query to identify all passenger engines that have not been serviced in the past 12 months. Only display the engine numbers.

Field:	<i>EngineNo</i>	<i>Class</i>	<i>LastService</i>
Table:	<i>TRAIN</i>	<i>TRAIN</i>	<i>TRAIN</i>
Sort:			
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		<i>Like "P%"</i>	<i>&lt;# 7-12-19#</i>
or:			

[3]

AG Ahmed  
Zafar Ali Khan  
Zarmar Ali

Like "A%\*

= "E"  
Like "E%"  
Like "E\*"  
Like "E??"

Exact

Loose



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Oct/Nov 2017.P23

- 6 A wildlife park has a database table, called LIVESTOCK, to classify and record its animal species. Part of the database table is shown.

SpeciesID	Species	Classification	Diet	Legs
	Giraffe	Mammal	Herbivore	4
	Elephant	Mammal	Herbivore	4
	Crocodile	Reptile	Carnivore	4
	Ostrich	Bird	Omnivore	2
	Gorilla	Mammal	Herbivore	2
	Bear	Mammal	Omnivore	4
	Rhinoceros	Mammal	Herbivore	4
	Hippopotamus	Mammal	Herbivore	4
	Flamingo	Bird	Omnivore	2
	Lion	Mammal	Carnivore	4
	Turtle	Reptile	Omnivore	4
	Penguin	Bird	Carnivore	2

- (a) Suggest another appropriate field that could be added to this database by stating its name and data type. State its purpose and give an example of the data it could contain.

Field name *SpeciesID*

Data Type *String / Integer*

Purpose *To identify species records uniquely.*

Example of data *"SP2345" / 80*

[2]

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- (b) Use the query-by-example grid below to provide a list of all four legged mammals that are herbivores, sorted alphabetically by species, with only the species displayed.

Field:	Species	Classification	Diet	Legs	
Table:	Livestock	LS	LS	LS	
Sort:	Ascending				
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:	= "Mammal"	= "Herbivore"	= 4		
or:					

[4]

May/June 2018.P21

- 6 A database table, PERFORMANCE, is used to keep a record of the performances at a local theatre.

Show Number	Type	Title	Date	Sold Out
①	②	③	④	⑤

Show Number	Type	Title	Date	Sold Out
SN091	Comedy	An Evening at Home	01 Sept	Yes
SN102	Drama	Old Places	02 Oct	No
SN113	Jazz	Acoustic Evening	03 Nov	No
SN124	Classical	Mozart Evening	04 Dec	Yes
SN021	Classical	Bach Favourites	01 Feb	Yes
SN032	Jazz	30 Years of Jazz	02 Mar	Yes
SN043	Comedy	Street Night	03 Apr	No
SN054	Comedy	Hoot	04 May	No

(a) State the number of fields and records in the table.

Fields 5

Records 8

[2]



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(b) Give two validation checks that could be performed on the Show Number field.

Validation check 1

Validation check 2

[2]

(c) Using the query-by-example grid, write a query to identify jazz performances that are not sold out. Only display the date and the title.

Field:	TYPE	Soldout	Date	Title	
Table:	Performance	Pentnum	Pentnum	Pentnum	-
Sort:					
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:	= "Jazz"	= NOT			
or:					

[4]

TN000  
TN899

May/June 2018 P22

- 6 A database table, TREES, is used to keep a record of the trees in a park. Each tree is given a unique number and is examined to see if it is at risk of dying. There are over 900 trees; part of the database table is shown.

Tree Number	Type	Map Position	Age in Years	At Risk
TN091	Acacia	A7	250	Y
TN172	Olive	C5	110	N
TN913	Cedar	B9	8	N
TN824	Banyan	A3	50	Y
TN021	Pine	D5	560	Y
TN532	Teak	C8	76	Y
TN043	Yew	B1	340	N
TN354	Spruce	D4	65	N
TN731	Elm	B10	22	Y
TN869	Oak	C9	13	N
TN954	Pine	E11	3	N

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- (a) State the number of fields in the table.

5

[1]

TNnnn  
TNnnn  
000  
999

TMmm

- (b) The tree numbering system uses TN followed by
- three digits
- . The numbering system will not work if there are over 1000 trees.

Describe, with the aid of an example, how you could change the tree numbering system to allow for over 1000 trees. Existing tree numbers must not be changed.

Use TA instead TN for

[2]

trees over 1000. For example:  
TA123

TN000 {  
TN999 /1000  
TN999 }1000  
TA000 ?  
TA999 ?

- (c) Using the query-by-example grid, write a query to identify at risk trees over 100 years old. Display only the type and the position on the map.

Field:	At Risk	Age in Years	Type	Map Position
Table:	TREES	TREES	TREES	TREES
Sort:				
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	>Yes	7/100		
or:				

1      2      3      4

[4]

Oct/Nov 2018 P22

- 6 A database table, PORTRAIT, is used to keep a record of the portraits available from a photographic studio. Each portrait has a unique reference number PICnnn, where n is a single digit, for example PIC123. The studio keeps a record of the size (for example 20 x 15), the type (black and white or colour), and the price in dollars.

\$D2

Text

CURE.

- (a) Complete the table to show the most appropriate data type for each of the fields

Field	Data type
Reference Number	STRING.
Size	Text
Type	Text
Price in \$	Currency.

[4]

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## Topical Past Papers



**Zak**  
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## Topic: 2.3 Databases

- (b) The results from the query-by-example grid should show the reference number, price, type and size of all portraits under \$50. Identify the
- three**
- errors in the query-by-example grid.

Field:	Reference Number	Price in \$	Type	Size
Table:	PORTRAIT	PORTRAIT	PORTRAIT	PORTRAIT
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:		\$50.00		

Error 1

Error 2

Error 3

[3]

Oct/Nov 2018 P23

- 6 An online fruit tree specialist sells fruit trees in various sizes. A database table, TREETAB, shows the tree type and, for each size, the price and whether they are in stock.

Tree Type	Size1	Size1 In	Size2	Size2 In	Size3	Size3 In
Apple	10.95	Yes	14.95	Yes	29.95	Yes
Apple	12.95	Yes	14.95	Yes	29.95	Yes
Cherry	24.95	No	34.95	No	59.95	Yes
Fig	19.95	Yes	29.95	No	49.95	Yes
Guava	19.95	No	29.95	No	59.95	No
③ Nectarine	8.50	Yes	11.95	Yes	19.95	Yes
Olive	19.95	No	39.95	Yes	59.95	Yes
① Peach	9.25	No	11.95	Yes	19.95	Yes
Pear	10.95	Yes	14.95	Yes	29.95	Yes
② Plum	8.95	Yes	11.95	Yes	19.95	Yes
Pomegranate	12.95	No	18.95	Yes	34.95	No
Quince	34.95	Yes	44.95	Yes	84.95	No



STL



REAL BOOL



REAL BOOL



REAL BOOL

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### Topic: 2.3 Databases

- (a) State whether any of the fields shown would be suitable as a primary key. **NO**

Explain your answer.

No unique data items in any of the given fields.

[2]

- (b) Complete the table to show the most appropriate data type for each of the fields based on the data shown in the table at the start of question 6.

Field	Data type
Tree Type	
Size3	
Size2 In	

[3]

- (c) Show the output that would be given by this query-by-example.

Field:	Tree Type	Size1	Size1 In		
Table:	TREETAB	TREETAB	TREETAB		
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		<10.00			
or:					

[4]

- (d) Using the following query-by-example grid, write a query to identify all types of the fruit trees that are out of stock for all three sizes. Make sure the type of the tree and the various 'in stock' fields are shown. The

trees should be listed in alphabetical order by type.

Field:	TreeType	Size1 In	Size2 In	Size3 In	
Table:	TT	TT	TT	TT	
Sort:	Ascending				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:		= NO	= NO	= NO	
or:					

[4]

## Computer Science 2210

### Topical Past Papers



### Topic: 2.3 Databases

May/June 2019.P21

- 5 The table, BEVERAGES, shows the number of calories in 100ml of a range of popular beverages. It also shows the availability of these drinks in a can, a small bottle and a large bottle.

BevNo	BevName	Calories	Can	Small Bottle	Large Bottle
② Bev01	Cola	40	Yes	Yes	Yes
Bev02	Lime	45	Yes	No	Yes
Bev03	Energy Drink 1	52	Yes	Yes	No
Bev04	Energy Drink 2	43	Yes	No	No
Bev05	Mango	47	Yes	No	Yes
Bev06	Lemon Iced Tea	38	Yes	No	Yes
① Bev07	Lemonade	58	Yes	Yes	Yes
Bev08	Orange Juice	46	Yes	Yes	No
Bev12	Apple Juice	50	Yes	Yes	No
Bev15	Chocolate Milk	83	Yes	Yes	No

1  
2  
3  
4  
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10

- (a) Give a reason for choosing BevNo as the primary key for this table.

[1]

- (b) State the number of records shown in the table BEVERAGES.

[1]

10

- (c) List the output that would be given by this query-by-example.

Field:	BevNo	BevName	Can	Small Bottle	Large Bottle	
Table:	BEVERAGES	BEVERAGES	BEVERAGES	BEVERAGES	BEVERAGES	
Sort:		Descending				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			= "Yes"	= "Yes"	= "Yes"	
or:						

[3]

## Computer Science 2210

### Topical Past Papers



## Topic: 2.3 Databases

(d) Complete the query-by-example grid to output a list showing just the names and primary keys of all the beverages with a calorie count greater than 45. The list should be in alphabetical order of names.

Field:	BevNo	BevName	Calories			
Table:	Bev	Bev	Bev			
Sort:		Ascending				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			>45			
or:						

[4]

May/June 2019 P22

- 6 A database table, FLIGHT, is used to keep a record of flights from a small airfield. Planes can carry passengers, freight or both. Some flights are marked as private and only carry passengers.

Flight number	Plane	Notes	Departure time	Passengers
FN101	Caravan 1	Private passenger flight	08:00	Y
CN101	Caravan 2	Freight only	08:30	N
CN102	Piper 1	Freight only	09:00	N
FN104	Piper 2	Passengers only	09:20	Y
FN105	Piper 1	Freight and passengers	10:00	Y
FN106	Caravan 1	Passengers only	10:30	Y
CN108	Caravan 2	Freight only	08:00	N
CN110	Lear	Private passenger flight	08:00	Y

- (a) State the field that could have a Boolean data type.

Field ..... Passengers.....

[1]

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## Computer Science 2210 Topical Past Papers



## Topic: 2.3 Databases

- (b) A query-by-example has been written to display just the flight numbers of all planes leaving after 10:00 that only carry passengers.

Field:	Flight number	Passengers	Departure time	Notes
Table:	FLIGHT	FLIGHT	FLIGHT	Flight
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Criteria:	= Y		>10:00	
or:				

NOT like "Freight"  
= "Passenger only"  
= "Private passenger flight"

Explain why the query-by-example is incorrect, and write a correct query-by-example.

Explanation

Field:			
Table:			
Sort:			

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

[7]



## Computer Science 2210

### Topical Past Papers



### Topic: 2.3 Databases

Oct/Nov 2019.P22

- 7 A database table, SALES, is used to keep a record of items made and sold by a furniture maker.

Item number	Order number	Notes	Amount	Status
CH001	1921	Smith – six dining chairs	6	Delivered
TB003	1921	Smith – large table	1	In progress
CH001	1924	Hue – extra chairs	4	In progress
CH003	1925	For stock	2	Cancelled
BN001	1927	Patel – replacement bench	1	Not started
ST002	1931	Sola – small table	1	Delivered
CH003	1927	Patel – eight dining chairs with arms	8	Not started
TB003	1927	Patel – large table	1	Not started

STR

STR/INT

STR

INT

STRNL

- (a) Explain why the field **Item number** could not be used as a primary key.

[1]

- (b) A query-by-example has been written to display only the order number and item numbers of any items in progress or not started.

Field:	Item number	Order number	Amount	Status
Table:	SALES	SALES	SALES	SALES
Sort:				
Show:	<input checked="" type="checkbox"/> X	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/>
Criteria:				Not Like "Delivered"
or:				

= "Not started"  
= "In progress"

Explain why the query-by-example is incorrect, and write a correct query-by-example.

Explanation

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

[5]

**Computer Science 2210**

## Topical Past Papers


**Zak**  
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**Topic: 2.3 Databases**

Oct/Nov 2019 P23

- 7 A teacher has decided to use a database table as her mark book for her Computer Science class, which she has called MARKBOOK. For each student, the following data will be recorded: first name, last name, their year 10 test score and their year 11 test score. The class has 32 students.

32

- (a) State the number of fields and records required for this database.

Number of Fields ..... 4

Number of Records ..... 32 [2]

- (b) The data in MARKBOOK is stored under category headings: LastName, FirstName, Y10TestScore and Y11TestScore.

State, with a reason, whether any of these headings would be suitable as a primary key. [2]

- (c) Complete the query-by-example grid to only display the first name, last name and year 10 test score of each student who achieved 50 or more in their year 10 test. The output should be in test score order with the highest marks at the top of the list.

Field:	FirstName	LastName	Y10TestScore	
Table:	MB	MB	MB	
Sort:			Descending	
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:			$\geq 50$	
or:				

[4]

