

COMMONWEALTH OF AUSTRALIA

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Family Name	
Given Names	
Student Number	
Teaching Period	Semester 1, 2016

FINAL EXAMINATION	DURATION				
BIS234 – Database Concepts	<table border="1"> <tr> <td>Reading Time:</td> <td>10 minutes</td> </tr> <tr> <td>Writing Time:</td> <td>180 minutes</td> </tr> </table>	Reading Time:	10 minutes	Writing Time:	180 minutes
Reading Time:	10 minutes				
Writing Time:	180 minutes				

INSTRUCTIONS TO CANDIDATES

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

- This is a RESTRICTED OPEN BOOK examination
- No calculators are permitted
- One A4 sheet of handwritten double-sided notes permitted
- No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 16 Page Book

THIS EXAMINATION PAPER AND SUPPLIED MATERIALS ARE NOT PERMITTED TO BE REMOVED FROM ANY EXAMINATION VENUE IN ANY CIRCUMSTANCE. THIS EXAMINATION IS PRINTED DOUBLE-SIDED.

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Section A

Problem Solving Questions

Total Number of Marks for this section:

This section should be answered in the Answer Booklet provided.
ALL Question MUST be answered.

Marks for each question are indicated

Question 1: Vehicle Database SQL statements - 10 marks

Using the vehicle database in Appendix A, write SQL statements for the following queries. The expected answer is given in each case.

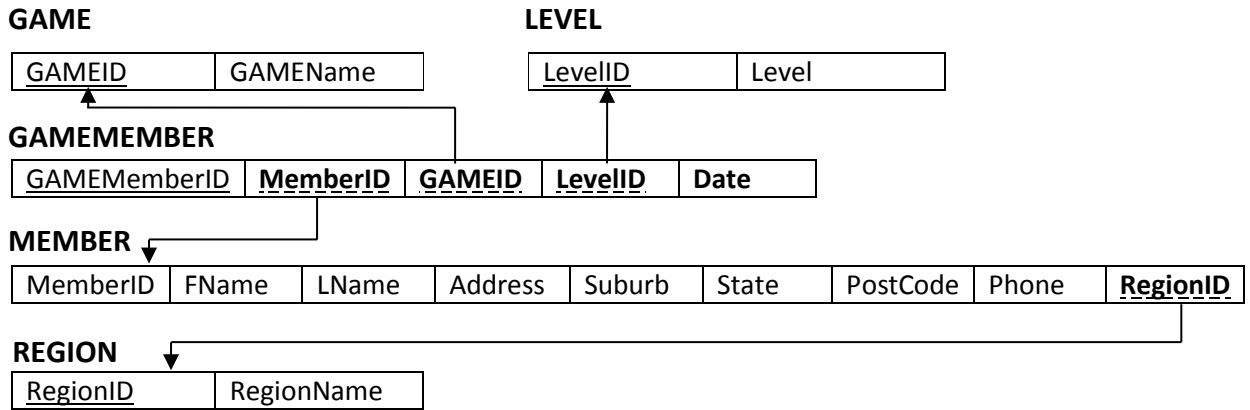
- a) Find the cars that were used by each Department, sort the results by Year.
- b) Find the number of cars used by those employees where their Employee-No is less than 120.
- c) Find the name and department of the employees who drove more than one car make.
- d) Find the employee numbers who used the least cars or the least cars.
- e) Find the employee/s who took the vehicle before 5/09/2012

(1+2+2+2+3 = 10 marks)

Question 2: SQL - 5 marks

Using the GAMEMEMBERS relational schema below:

- a) List the order in which the tables were created?
- b) Write the CREATE TABLE statement for MEMBER table. Use appropriate data types and size. HINT please look at the sample data in part c



- c) Write a SQL statement that will insert the following data into the GAMESMEMBER table.

GAMEMemberID	MemberID	GAMEID	LevelID	Date
0101	M898	S001	A	20 Aug 12
0102	M888	S001	C	21 Aug 12
0103	M898	S002	B	21 Aug 12
0104	M222	S003	C	22 Aug 12

(1 + 2 + 2 = 5 marks)

Question 3 ERD and Relational Schema - 5 marks

Figure 1 shows an ER diagram for a university dining services organization that provides dining services to a university.

- Transform the diagram to a set of relations and develop a relational schema
- What is the normal form of each relation

(3+2=5 marks)

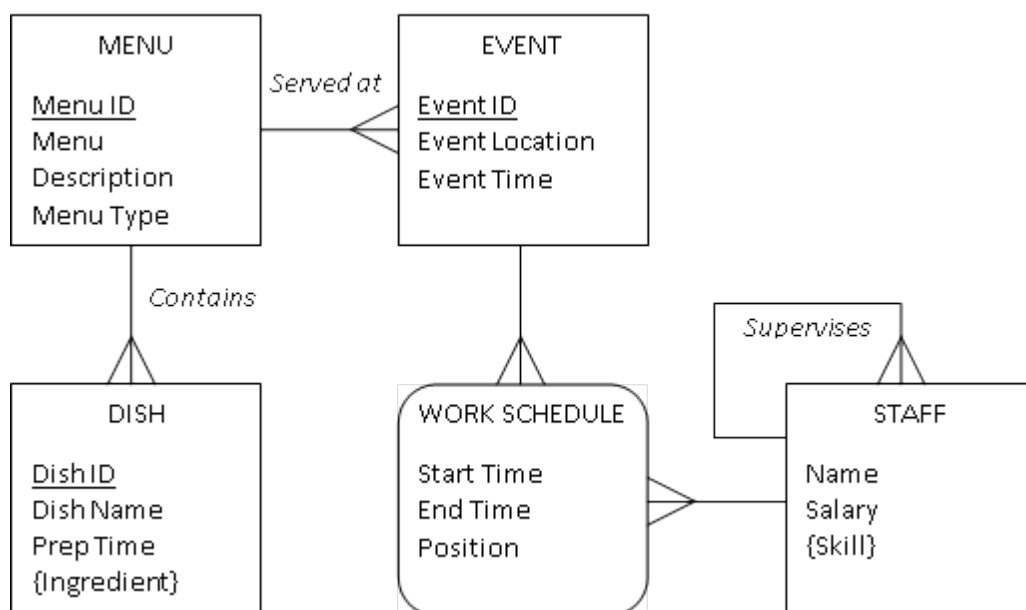


Figure 1 ER Diagram for a university dining services

Question 4 ERD - 5 marks

Draw an E-R Diagram for the following situation:

Employees (identified by EMP-ID, SURNAME, FIRST-NAME, and Date-of Birth) make many orders (identified by ORDER-NO, ORDER-DATE, DES, WUOTED-PRICE) for Customers (Identified by CUST-ID). The orders are for one customer at a time but a customer might have many orders. The orders create many requests (Identified by REQUEST-NO, START-DATE, END-DATE). Those requests might result in few jobs (identified by JOB-NO, COST) and consequently will use different materials (identified by MATERIAL-ID, MATERIAL-DES). The requests are made to one section but a section has many requests.

(5 marks)

Question 5 Mapping - 5 marks

SHIPPING MANIFEST

Shipment ID 00-0001

Shipment Date: 01 /10/2010

Origin: Boston

Expected Arrival: 0111412010

Destination: Brazil

Captain: 002-15

Henry Moore

Item Number	Type	Description	Weight	Quantity	Total WEIGHT
3223	BM	Concrete Form	500	100	50,000
3297	BM	Steel Beam	87	2,000	174,000
Shipment Total:					224,000

Figure 2

Based on figure 2 above:

- a) Draw a relational schema showing the dependencies.
- b) In what normal form is this relation?
- c) Decompose SHIPPING MANIFEST into a set of 2NF relations.

(2 + 1 + 2 = 5 marks)

Question 6 Normalization- 4 marks

The set of relations in Figure 3 represents a court example.

- Examine the set and state what is the Normal Form of each? Why?
- Transform those relations which are NOT in 3NF to 3NF.

Attorney

<u>AttorneyID</u>	Name	Address	City	State	Zipcode
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Specialty

<u>Attorney ID</u>	<u>Speciality</u>
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Bar

<u>Attorney ID</u>	<u>Bar</u>
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Client

<u>ClientID</u>	Name	Address	City	State	Zipcode	Telephone	DOB
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Case

<u>CaseID</u>	Description	CaseType	Count
---------------	-------------	----------	-------

Retains

<u>AttorneyID</u>	<u>CaseID</u>	<u>ClientID</u>	<u>Date</u>
-------------------	---------------	-----------------	-------------

Court

<u>CourtID</u>	Courname	City	State	Zipcode
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Judge

<u>JudgeID</u>	Name	Years	CourtID
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Figure 3 Court Case Example Relations

(2 + 2 = 4 marks)

Question 7 Views and Granting- 4 marks

Using the tables in Appendix B

- a) Using SQL statement Create a VIEW showing the details of all Customers who did not return an Automobile yet.

FirstName	LastName	Suburb	Reg No	Make	Year	Date Taken	Date Returned
Mohamed	Griffin	Nightcliff	BRG446	Ford	2009	15/11/2011	
Anna	Thanh	Coconut Grove	NMT667	Madza	2010	16/11/2011	
Justin	Brownworth	Nakara	CCT899	Toyota	2009	17/11/2011	

- b) Create a query using the new view to find the customer in any suburb.

FirstName	LastName	Suburb	Reg No	Make	Year	Date Taken	Date Returned
Anna	Thanh	Coconut Grove	NMT667	Mazda	2010	2/09/2011	3/09/2011

- c) As an owner of this view GRANT permission to user s989232 to enable him/her limited access rights.

(2 +1+ 1 = 4 marks)

Appendix A

Vehicle

Reg No	Make	Model	Year	Colour
BRG446	Ford	Meteor	2009	White
VRG655	Bmw	Coupe	2008	Blue
NMT667	Madza	Delivery Van	2010	Green
CCT899	Toyota	HiLuxe	2009	Red
FGR122	Mitsubishi	Magna	2007	Purple

Employee Table

Employee_No	FirstName	LastName	Department
118	Riley	Griffin	Business
123	Bryn	Underwood	Information Tech
156	Anna	Thanh	Administration
166	Justin	Brownworth	Business
120	Sarah	McDonald	Services
134	Tammy	Hubber	Manager

Employee Vehicle Table

Employee_veh	Reg No	Employee_No	Date Taken	Date Returned
A12	BRG446	118	1/09/2011	3/09/2011
A13	NMT667	156	2/09/2011	3/09/2011
A14	CCT899	166	2/09/2011	4/09/2011
A15	FGR122	134	3/09/2011	5/09/2011
A16	BRG446	118	4/09/2011	10/09/2011
A17	NMT667	166	5/09/2011	10/09/2011
A18	NMT667	134	11/09/2011	15/09/2011
A19	FGR122	166	12/09/2011	15/11/2011
A20	NMT667	118	14/11/2011	15/11/2011

Appendix B Automobile

Reg No	Make	Model	Year	Colour
BRG446	Ford	Meteor	2009	White
VRG655	Bmw	Coupe	2008	Blue
NMT667	Madza	Delivery Van	2010	Green
CCT899	Toyota	HiLuxe	2009	Red
FGR122	Mitsubishi	Magna	2007	Purple

Customer Table

Employee_No	FirstName	LastName	Suburb
A118	Mohamed	Griffin	Nightcliff
A120	Ali	McDonald	Brinkin
A123	Albert	Underwood	Rapid Creek
A134	Sammy	Smith	Casuarina
A156	Anna	Thanh	Coconut Grove
A166	Justin	Brownworth	Nakara

Customer Automobile Table

Employee_veh	Reg No	Employee_No	Date Taken	Date Returned
B-12	BRG446	A118	1/09/2011	3/09/2011
B-13	NMT667	A156	2/09/2011	3/09/2011
B-14	CCT899	A166	2/09/2011	4/09/2011
B-15	FGR122	A134	3/09/2011	5/09/2011
B-16	BRG446	A118	4/09/2011	10/09/2011
B-17	NMT667	A166	5/09/2011	10/09/2011
B-18	NMT667	A134	11/09/2011	15/09/2011
B-19	FGR122	A166	12/09/2011	15/11/2011
B-20	NMT667	A118	14/11/2011	15/11/2011
B-12	BRG446	A118	15/11/2011	
B-13	NMT667	A156	16/11/2011	
B-14	CCT899	A166	17/11/2011	