

CS2 2002 DATABASE SECTION [60 marks]

Q1. [1,1=2] (a) Give one example of how an RDBMS supports the ERDM's extensions.

(b) State one reason why C.J. Date objects to the ERDM.

Q2. [4] Draw two tables to represent each of the entities in the diagram below, and populate the tables with entries to illustrate the 1:M connectivity present. Identify the rows which illustrate the 1:M relationship.



Q3 [18] Discuss locks and all the issues arising out of their use. Include in your discussion issues such as why locks are necessary.

Q4 [3,3,3,9=18] Examine the following data, then answer the questions that follow below :

KEN'S CARS

MODEL	STYLE	ENGINE	CAP	MAX SPEED	PRICE	MARKET	MAIN COMPETITOR
macho	convertible	2900s	2847	155	129000	sports	expresso
macho	coupe	2900s	2847	155	113400	executive	gyro
macho	coupe	2400s	2395	131	99500	executive	gyro
fiasco	saloon	2400s	2395	117	109500	executive	gyro
fiasco	estate	2400s	2395	117	114700	commuter	trio
fiasco	saloon	2400t	2395	101	99900	executive	gyro
fiasco	estate	2400t	2395	101	103700	commuter	trio
commando	saloon	2400t	2395	105	84000	commuter	trio
commando	estate	2400t	2395	105	87000	commuter	trio
commando	saloon	1900	1898	83	71000	commuter	trio
domino	saloon	1900	1898	91	49900	domestic	poncho

domino	estate	1900	1898	91	53500	domestic	poncho
domino	saloon	1400	1365	79	44500	domestic	poncho
domino	hatchback	1400	1365	79	41000	domestic	poncho

where CAP = capacity, MAX = maximum.

With respect to KEN'S CARS,

(a) using MODEL as the key, which (if any) data-items (attributes) repeat ? Explain your reasoning using an example taken from the data given.

(b) using MODEL and STYLE together as a compound key, which (if any) data-items repeat ? Explain your reasoning using an example taken from the data given.

(c) using MODEL, STYLE and ENGINE all together as a compound key, which (if any) data-items repeat ? Explain your reasoning using an example taken from the data given.

(d) using only MODEL, STYLE and ENGINE (individually or in any combination) as the key fields for the various tables, normalize the above data, fully explaining your reasoning for each step.

Q5. [2,2,2,4,4,4=18] The following two tables form part of a database.

NATION

NATCODE	NATNAME	EXCHRATE
UK	United Kingdom	1.00
USA	United States	0.67
AUS	Australia	0.46
IND	India	0.0228

STOCK

STKCODE	STKFIRM	STKPRICE	STKQTY	STKDIV	STKPE	NATCODE
FC	Freedonia Copper	27.50	10 529	1.84	16	UK
PT	Patagonian Tea	55.25	12 635	2.50	10	UK
CS	Canadian Sugar	52.78	4 716	2.50	15	UK
MG	Minnesota Gold	53.87	816 122	1.00	25	USA
GP	Georgia Peach	2.35	387 333	0.20	5	USA
NE	Narembeen Emu	12.34	45 619	1.00	8	AUS
QD	Queensland Diamond	6.73	89 251	0.50	7	AUS
BD	Bombay Duck	25.55	167 382	1.00	12	IND

where NAT = nation, EXCH = exchange, STK = stock, QTY = quantity, DIV = dividend, PE = PE ratio or Price Earnings ratio.

Write the correct SQL code to perform the following tasks :

- (a) Give everybody the privilege to select rows from the table STOCK
- (b) Increase the total number of stocks (STKQTY) for Minnesota Gold by 10%
- (c) List all firms with a PE ratio greater than the average PE ratio
- (d) Find stockfirms not containing an 'S' or an 's' in their name.
- (e) Report by nation the number of stocks and also the total value of stocks (total value = the sum of $STKPRICE * STKQTY * EXCHRATE$)
- (f) Report by nation the total value of stocks for nations with two or more stocks.