

BRAIN INTERNATIONAL SCHOOL

Computer Science Assignment

Class:-XII

July'18

Ch-11. Database Concepts

1. What is relation? What is the difference between a tuple and an attribute?
2. Define the following terminologies used in Relational Algebra:
 - (i) selection (ii) projection (iii) union (iv) Cartesian product
3. What are DDL and DML?
4. Differentiate between primary key and candidate key in a relation?
5. What do you understand by the terms **Cardinality** and **Degree** of a relation in relational database?
6. Differentiate between DDL and DML. Mention the 2 commands for each category.

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Ch-12. Structured Query Language

1. Write SQL Command for (a) to (d) and output of (e)

TABLE : GRADUATE

	NAME	STIPEND	SUBJECT	AVERAGE	DIV
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP Sc	68	I
3	DIVYA	300	CHEMISTRY	62	I
4	REKHA	350	PHYSICS	63	I
5	ARJUN	500	MATHS	70	I
6	SABINA	400	CHEMISTRY	55	II
7	JOHN	250	PHYSICS	64	I
8	ROBERT	450	MATHS	68	I
9	RUBINA	500	COMP Sc	62	I
10	VIKAS	400	MATHS	57	II

- List the names of those students who have obtained DIV I sorted by NAME.
- Display a report, listing NAME, STIPEND, SUBJECT and amount of stipend received in a year assuming that the STIPEND is paid every month.
- To count the number of students who are either PHYSICS or COMPUTER SC graduates.
- To insert a new row in the GRADUATE table: 11,"KAJOL", 300, "computer sc", 75, 1
- Give the output of following sql statement based on table GRADUATE:
 - Select MIN(AVERAGE) from GRADUATE where SUBJECT="PHYSICS";

- (ii) Select SUM(STIPEND) from GRADUATE WHERE div=2;
- (iii) Select AVG(STIPEND) from GRADUATE where AVERAGE>=65;
- (iv) Select COUNT(distinct SUBJECT) from GRADUATE;

2. Consider the following tables Sender and Recipient. Write SQL commands for the statements (i) to (iv) and give the outputs for SQL queries (v) to (viii).

Sender

SenderID	SenderName	SenderAddress	City
ND01	R Jain	2, ABC Appls	New Delhi
MU02	H Sinha	12 Newtown	Mumbai
MU15	S Jha	27/A, Park Street	Mumbai
ND50	T Prasad	122-K,SDA	New Delhi

Recipients

RecID	SenderID	RecName	RecAddress	recCity
KO05	ND01	R Bajpayee	5, Central Avenue	Kolkata
ND08	MU02	S Mahajan	116, A-Vihar	New Delhi
MU19	ND01	H Singh	2A, Andheri East	Mumbai
MU32	MU15	P K Swamy	B5, C S Terminals	Mumbai
ND48	ND50	S Tripathi	13, BI D Mayur Vihar	New delhi

- a. To display the names of all Senders from Mumbai
- b. To display the RecID, Sendername, SenderAddress, RecName, RecAddress for every Recipient.
- c. To display Recipient details in ascending order of RecName
- d. To display number of Recipients from each city
- e. SELECT DISTINCT SenderCity from Sender;

- f. SELECT A.SenderName, B.RecName From Sender A, Recipient B Where A.SenderID = B.SenderID AND B.RecCity = 'Mumbai';
- g. SELECT RecName, RecAddress From Recipient Where RecCity NOT IN ('Mumbai', 'Kolkata');
- h. SELECT RecID, RecName FROM Recipient Where SenderID='MU02' or SenderID='ND50';

3. Write SQL command for (a) to (f) on the basis of the table SPORTS:-

Table: SPORTS

Student NO	Class	Name	Game1	Grade	Game2	Grade2
10	7	Sammer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamal	Swimming	B	Football	B
13	7	Venna	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Atheletics	C

- a. Display the names of the students who have grade 'C' in either Game1 or Game2 or both.
- b. Display the number of students getting grade 'A' in Cricket.
- c. Display the names of the students who have same game for both Game1 and Game2.
- d. Display the games taken up by the students, whose name starts with 'A'.
- e. Add a new column named 'Marks'.
- f. Assign a value 200 for Marks for all those who are getting grade 'B' or grade 'A' in both Game1 and Game2.

4. Consider the following tables Stationary and Consumer. Write SQL commands for the statement (i) to (iv) and output for SQL queries (v) to (viii):

Table: Stationary

S_ID	StationaryName	Company	Price
DP01	Dot Pen	ABC	10
PL02	Pencil	XYZ	6
ER05	Eraser	XYZ	7
PL01	Pencil	CAM	5
GP02	Gel Pen	ABC	15

Table: Consumer

C_ID	ConsumerName	Address	S_ID
01	Good Learner	Delhi	PL01
06	Write Well	Mumbai	GP02
12	Topper	Delhi	DP01
15	Write & Draw	Delhi	PL02
16	Motivation	Banglore	PL01

- a) To display the details of those consumers whose Address is Delhi.
- b) To display the details of Stationary whose Price is in the range of 8 to 15. (Both Value included)
- c) To display the ConsumerName, Address from Table Consumer, and Company and Price from table Stationary, with their corresponding matching S_ID.
- d) To increase the Price of all stationary by 2.
- e) SELECT DISTINCT Address FROM Consumer;
- f) SELECT Company, MAX(Price), MIN(Price), COUNT(*) from Stationary GROUP BY Company;
- g) SELECT Consumer.ConsumerName, Stationary.StationaryName, Stationary.Price FROM Strionary, Consumer WHERE Consumer.S_ID=Stationary.S_ID;
- h) Select StationaryName, Price*3 From Stationary;

5. Consider the following tables GARMENT and FABRIC. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

Table : GARMENT

GCODE	DESCRIPTION	PRICE	FCODE	READYDATE
10023	PENCIL SKIRT	1150	F03	19-DEC-08
10001	FORMAL SHIRT	1250	F01	12-JAN-08
10012	INFORMAL SHIRT	1550	F02	06-JUN-08
10024	BABY TOP	750	F03	07-APR-07
10090	TULIP SKIRT	850	F02	31-MAR-07
10019	EVENING GOWN	850	F03	06-JUN-08
10009	INFORMAL PANT	1500	F02	20-OCT-08
10007	FORMAL PANT	1350	F01	09-MAR-08
10020	FROCK	850	F04	09-SEP-07
10089	SLACKS	750	F03	20-OCT-08

Table : FABRIC

FCODE	TYPE
F04	POLYSTER
F02	COTTON
F03	SILK
F01	TERELENE

- (i) To display GCODE and DESCRIPTION of a each dress in descending order of GCODE.
- (ii) To display the details of all the GARMENTS, which have READYDATE in between 08-DEC-07 and 16-JUN-08 (inclusive of both the dates).
- (iii) To display the average PRICE of all the GARMENTS, which are made up of FABRIC with FCODE as F03.
- (iv) To display FABRIC wise highest and lowest price of GARMENTS from DRESS table.
(Display FCODE of each GARMENT along with highest and lowest price)
- (v) SELECT SUM (PRICE) FROM GARMENT WHERE FCODE= 'F01';
- (vi) SELECT DESCRIPTION, TYPE FROM GARMENT, FABRIC WHERE
GARMENT.FCODE = FABRIC. FCODE AND GARMENT. PRICE >= 1260;
- (vii) SELECT MAX (FCODE) FROM FABRIC;
- (viii) SELECT COUNT (DISTINCT PRICE) FROM FABRIC;

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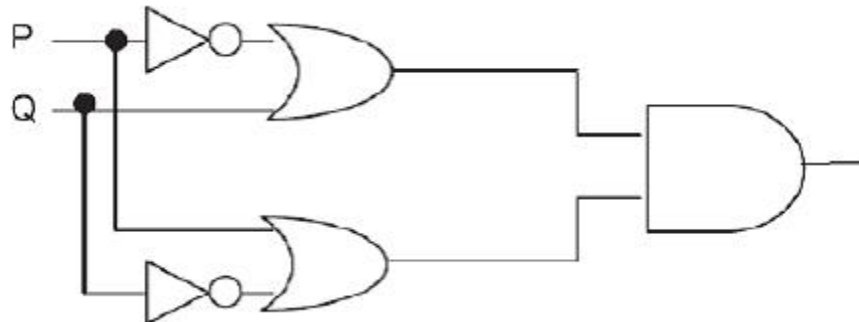
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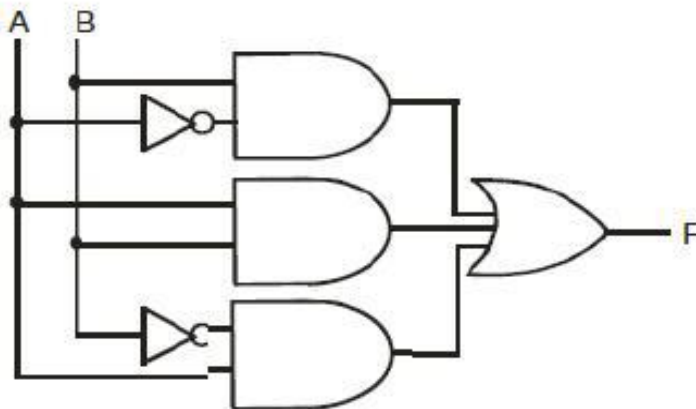
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Ch-14. Boolean Algebra

1. State and Prove DeMorgan Law using Truth Table
2. State and prove Absorption Law algebraically.
3. State and Prove Distributive Law algebraically.
4. Write the equivalent Boolean Expression for the following Logic Circuit



5. Write the equivalent Boolean Expression F for the following circuit diagram :



6. the equivalent Boolean Expression F for the following circuit diagram :



7. Convert the following Boolean expression into its equivalent Canonical Sum of Product Form((SOP)

Write

$$(X'+Y+Z).(X'+Y+Z).(X'+Y'+Z).(X'+Y'+Z')$$

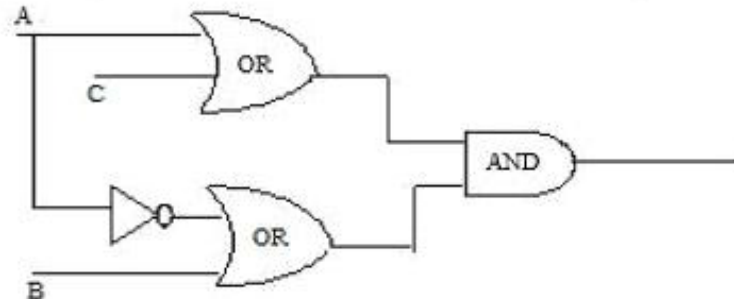
8. Convert the following Boolean expression into its equivalent Canonical Product of Sum form (POS):

$$A.B'.C + A'.B.C + A'.B.C'$$

9. Draw a Logical Circuit Diagram for the following Boolean expression:

$$A.(B+C')$$

10. Write the equivalent Boolean Expression F for the following circuit diagram:



11. Prove that $XY+YZ+YZ'=Y$ algebraically.

12. Design $(A+B).(C+D)$ using NOR Gate.

13. If $F(a,b,c,d)=\Sigma(0,2,4,5,7,8,10,12,13,15)$, obtain the simplified form using K-Map.

14. If $F(a,b,c,d)=\Sigma(0,3,4,5,7,8,9,11,12,13,15)$, obtain the simplified form using KMap

15. Obtain a simplified form for a boolean expression

$$F(U,V,W,Z)=\pi(0,1,3,5,6,7,10,14,15)$$

16. Reduce the following boolean expression using K-Map

$$F(A,B,C,D)=\Sigma(5,6,7,8,9,12,13,14,15)$$