INDIAN SCHOOL DARSAIT
DEPARTMENT OF ICT

Subject: Informatics Practices (065)   **Topic:** SQL (Theory)   **Worksheet No.: 1**

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Name of the Student :_____   **Class: XI C**   **Roll Number : ____**

1.   What is RDBMS? Name any two RDBMS software.

2.   Define the following with suitable examples:
        i) Primary Key ii) Alternate Key   iii) Candidate Key iv) Foreign Key

3.   What is a relation? What is the difference between a tuple and an attribute?

4.   Explain relational database model.

5.   What are the advantages of DBMS?

6.   Define database.Give any two features of DBMS.

7.   Differentiate between the following:
        i) Primary Key and Candidate Key
        ii) CHAR and VARCHAR datatypes
        iii) Degree and Cardinality of a relation

8.   What do you meant by datatype? Name the various datatypes used in SQL.

9.   ''XYZ'' Company conducts workshops for employees of organizations. The company requires data of workshops that are organized. Write SQL query to create a table 'Workshop' with the following structure:

Field	Type	Constraint
WorkshopId	Integer	Primary key
Title	Varchar(50)	
DateWorkshop	Date	
NumSpeakers	Integer	

Insert two rows into the above table.

10.   Which keyword is used to eliminate redundant data?

11.   Write down SQL statement for creating table LIBRARY having following attributes:
        i) BOOK_ID – an integer, primary key of the table
        ii) BOOK_TITLE –a string
        iii) AUTHOR—a string
        iv)QTY – an integer
        v) PRICE – a real number

12.   Write the SQL query to create the following table:

Table: **STUDENT**

Column name	Data type	size	Constraint
ROLLNO	Integer	4	Primary Key
SNAME	Varchar	25	Not Null
GENDER	Char	1	Not Null
DOB	Date		Not Null
FEES	Integer	4	Not Null
HOBBEY	Varchar	15	Null

13. Write the SQL queries based on the following on the following tables:

PRODUCT:

P_ID	ProductName	Manufacturer	Price	Discount
TP01	Talcom Powder	LAK	40	
FW05	Face Wash	ABC	45	5
BS01	Bath Soap	ABC	55	
SH06	Shampoo	XYZ	120	10
FW12	Face Wash	XYZ	95	

CLIENT:

C_ID	ClientName	City	P_ID
01	Cosmetic Shop	Delhi	TP01
02	Total Health	Mumbai	FW05
03	Live Life	Delhi	BS01
04	Pretty Woman	Delhi	SH06
05	Dreams	Delhi	TP01

    i) Write SQL Query to display ProductName and Price for all products whose Price is in the range 50 to 150.

    ii) Write SQL Query to display details of product whose manufacturer is either XYZ or ABC.

    iii) Write SQL query to display ProductName, Manufacturer and Price for all products that are not given any discount.

    iv) Write SQL query to display ClientName, City, P_ID and ProductName for all clients whose city is Delhi.

    v) Which column is used as Foreign Key and name the table where it has been used as Foreign key.

14. Create table student with appropriate data types:

Roll_No	Name	Fee	Class
101	Amar	2000	XI-A
102	Ritik	3500	XI-B
103	Suraj	4500	XI-B
104	Samay	2000	XI-A

Based on above table student answer the following queries:

    i) Display names and Roll_No of students whose name starts with "S".

    ii) Display records of students having FEE are less than 3000.

    iii) Display records whose Fee is from 2500 to 4000.

15. Write command to view the structure of table.

16. Differentiate between DDL and DML statements with suitable examples.

17. Name two open source database software.

18. Find the output of the queries based on the following relation STUDENT:

Roll	Name	Marks	Grade
1	Namit Sadhu	85	A+
2	Ritesh Sen	46	B+
3	Bibha Roy	73	A
4	Sumit Arora	62	B+
5	Soumya Singh	92	A+

    i) SELECT NAME, GRADE FROM STUDENT WHERE MARKS BETWEEN 40 AND 75;

ii) SELECT * FROM STUDENT WHERE GRADE = 'A+';

19. Differentiate between primary key and alternate key with the help of an example.

20. Consider the following relation MobileMaster& MobileStock:

MobileMaster

M_Id	M_Company	M_Name	M_Price	M_MF_Date
MB001	Samsung	Galaxy	4500	2013-02-12
MB003	Nokia	N1100	2250	2011-04-15
MB004	Micromax	Unite3	4500	2016-10-17
MB005	Sony	XperiaM	7500	2017-11-20
MB006	Oppo	SelfieX	8500	2010-08-21

MobileStock

S_ID	M_Id	M_Qty	M_Supplier
S001	MB004	450	New Vision
S002	MB003	250	Praveen Gallery
S003	MB001	300	Classic Mobile Store
S004	MB006	150	A-One Mobiles
S005	MB003	150	The Mobile
S006	MB006	50	Mobile Centre

Write the SQL query for questions from (i) to (iv) & write the output of SQL command for questions from (v) to (vii) given below:
   i)   Display the Mobile company, name & price in descending order of their Manufacturing date.
   ii) List the details of mobile whose name starts with "S" or ends with "a".
   iii) Display the Mobile supplier & quantity of all mobiles except "MB003".
   iv) Display a list showing the name of mobile company having price between 3000 & 5000.
   v)   SELECT M_Id, SUM(M_Qty) FROM MobileStock;
   vi) SELECT MAX(M_Date), MIN(M_Date) FROM MobileMaster;
   vii) SELECT AVG(M_Price) FROM MobileMaster;

21. Consider the following tables FACULTY and COURSES. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii):

TABLE: FACULTY

F_ID	FNAME	LNAME	HIRE_DATE	SALARY
102	Amit	Mishra	12-10-1998	12000
103	Nitin	Vyas	24-12-1994	8000
104	Rakshit	Sony	18-05-2001	14000
105	Rashmi	Malhotra	11-09-2004	11000
106	Sulekha	Srivastava	05-06-2006	10000
107	Niranjan	Kumar	20-08-1996	16000

TABLE: COURSES

C_ID	F_ID	CNAME	FEES
C21	102	Grid Computing	40000
C22	106	System Designs	16000
C23	104	Computer Security	8000
C24	106	Human Biology	15000
C25	102	Computer Networks	20000
C26	105	Visual Basic	6000
C27	107	Dream Weaver	4000

    i) To display details of those faculties whose date of joining is before 31-12-2001.
    ii) To display the details of courses whose fees is in the range of 15000 to 50000(both values included).
    iii) To increase the fees of Dream Weaver course by 500.
    iv) To display F_ID,FNAME,CNAME of those faculties who charged more than 15000 as fees.
    v) SELECT COUNT(DISTINCT F_ID) FROM COURSES ;
    vi) SELECT MIN(SALARY) FROM FACULTY;
    vii) SELECT SUM(FEES) FROM COURSES ;
    viii) SELECT FNAME, LNAME FROM FACULTY WHERE LNAME LIKE "M%" ;

22. From the below table identify the most suitable field for Primary key and candidate key. Also mention its cardinality and degree:

S.NO	NAME	STIPEND	SUBJECT	AVERAGE	DIV.
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP. Sc.	68	I
3	DIVYA	300	CHEMISTRY	62	I

23. Write SQL commands for (i) to (vi) and write the output for (vii) on the basis of teacher relation given below:

RELATION : TEACHER

No	Name	Age	Department	Dateofjoin	Salary	Sex
1	Jugal	24	Computer	10/01/97	12000	M
2	Sharmila	21	History	24/03/98	20000	F
3	Sandeep	22	Maths	12/12/96	30000	M
4	Sangeeta	25	History	01/07/99	40000	F
5	Rakesh	22	Maths	05/09/97	25000	M
6	Shyam	30	History	27/06/98	30000	M
7	Shiv Om	34	Computer	25/02/97	21000	M
8	Shalakha	23	Maths	31/07/97	20000	F

    (i) To show all information about the teacher of History department.
    (ii) To list the name of female teachers who are in Hindi department.
    (iii) To list the names of all the teachers with their date of joining in ascendingorder.
    (iv) To display Teachers Name, Salary, Age for male teachers only.
    (v) To count the number of teachers with age > 23.
    (vi) To insert a new row in the Teacher table with the following data.
    9, "Raja", 26, "Computer", {13/05/95}, 2300, "M"
    (vii) Give the output of the following SQL statements :
        ➤ SELECT COUNT (DISTINCT department) FROM teacher;
        ➤ SELECT MAX(age) FROM teacher WHERE sex = "F";
        ➤ SELECT AVG(salary) FROM teacher WHERE sex = "M";
        ➤ SELECT SUM(salary) FROM teacher WHERE dateofjoin<{12,07/96};

24. Write SQL commands for (i) to (iv) and write the outputs for (v) on the basis of table CLUB.

TABLE : CLUB

Coach ID	CoachNAME	AGE	SPORTS	Dateofapp	PAY	SEX
1	KUKERJA	35	KARATE	27/03/1996	1000	M
2	RAVINA	34	KARATE	20/ 01/1998	1200	F
3	KARAN	34	SQUASH	19/02/1998	2000	M
4	TARUN	33	BASKETBALL	01/01/1998	1500	M
5	ZUBIN	36	SWIMMING	12/01/1998	750	M
6	KETAKI	36	SWIMMING	24/02/1998	800	F
7	ANKITA	39	SQUASH	20/02/1998	2200	F
8	ZAREEN	37	KARATE	22/02/1998	1100	F
9	KUSH	41	SWIMMING	13/01/1998	900	M
10	SHAILYA	37	BASKETBALL	19/02/1998	1700	M

(i) To show all information about the swimming coaches in the club.
(ii) To list name of all coaches with their date of appointment (DATEOFAPP) in descending order.
(iii)To display a report, showing coachname, pay, age and bonus (15% of pay) for all the coaches.
(iv) To insert a new row in the CLUB table with the following data :
11, "PRAKASH", 37, "SQUASH", {25/02/98}, 2500, "M"
(v) Give the output of following SQL statements :
➢ SELECT COUNT (DISTINCT sports) FROM club;
➢ SELECT MIN (age) FROM club WHERE sex = "F";
➢ SELECT AVG(pay) FROM club WHERE sports ="KARATE";
➢ SELECT SUM(pay) FROM club WHERE dateofapp> {31/01/98};

25. Write SQL commands for (i) to (vi) and write the output for (vii) for Lab relations :

RELATION : LAB

No.	ItemName	Cost	QuantityPerItem	DateofPurchase	Warranty	Operational
1	Computer	60000	9	21/5/96	2	7
2	Printer	15000	3	21/5/97	4	2
3	Scanner	13900	1	29/8/98	3	1
4	Camera	21901	2	13/6/96	1	2
5	Hub	8000	1	31 10/99	2	1
6	UPS	5000	5	21/5/96	1	4
7	Plotter	25000	2	11/1/2000	2	2

 (i) To select the Itemname purchased after 31/10/97.
(ii) To list the ItemName, which are within the Warranty period till present date.
(iii) To list the ItemName in ascending order of the date of purchase
(iv) To display ItemName, CostPerItem and Quantity whose Warranty is over.
(v) To count the number of items whose cost is more than 10000.
(vi) To insert a new record in the Lab table.
(vii) Give the output of the following SQL command :
➢ SELECT MIN (DISTINCT quantity) FROM lab;
➢ SELECT MIN(warranty) FROM lab WHERE quantity = 2;
➢ SELECT SUM(costperitem) FROM lab WHERE quantity >2;
➢ SELECT AVG(csostperitem) FROM lab WHERE dateofpurchase<{1/l/1999};

26. Given the following tables for a database LIBRARY, write SQL commands for (i) to (v) and write the output for (vi)

Table : **Books**

Book_Id	Book_Name	Author_Name	Publishers	Price	Type	Quantity
F0001	The Tears	William Hopkins	First Publ.	750	Fiction	10
F0002	Thunderbolts	Anna Roberts	First Publ.	700	Fiction	5
T0001	My First C++	Brian & Brooke	EPB	250	Text	10
T0002	C++ Brainworks	A.W. Rossaine	TDH	325	Text	5
C0001	Fast Cook	Lata Kapoor	EPB	350	Cookery	8

Table : **Issued**

Book_Id	Quantity_Issued
F0001	3
T0001	1
C0001	5

(i) To show Book name, Author name and Price of books of EPB publishers

(ii) To list the names of books of Fiction Type

(iii) To display the names and price of the books in descending order of their price

(iv) To increase the price of all books of First Publ. by 50

(v) To insert a new row in the table Issued having the following data :"F0002", 4

(vi) Give the output of the following queries based on the above tables :
  ➢ SELECT COUNT(DISTINCT Publishers) FROM Books;
  ➢ SELECT SUM(Price) FROM Books WHERE Quantity >5;
  ➢ SELECT Book_Name, Author_Name FROM Books WHERE Price<500;
  ➢ SELECT COUNT (*) FROM Books;

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

Table: STORE

Item No	Item	Scode	Qty	Rate	LastBuy
2005	Sharpener Chlassic	23	60	8	31-jun-09
2003	Ball	22	50	25	01-Feb-10
2002	Gel Pen Premium	21	150	12	24-Feb-10
2006	Gel Pen Classic	21	250	20	11-Mar-09
2001	Eraser Small	22	220	6	19-Jan-09
2004	Eraser Big	22	110	8	02-Dec-09
2009	Ball Pen 0.5	21	180	18	03-Nov-09

Table :SUPPLIERS

scode	Sname
21	Premium Stationers
23	Soft Plastics
22	Tera Supply

Write SQL commands for the following statements :

(i) To display details of all the items in the Store table in ascending order of LastBuy.
(ii) To display ItemNo and Item name of those items from Store table Whose Rate is more than 15 Rupees.
(iii)To display the details of those items whose Suppliers code (Scode) is 22 or Quantity in Store (Qty) is more than 110 from the table Store.
(iv) To display Minimum Rate of items for each Supplier individually as per Scode from the table Store.
(v) Give the output of the following SQL queries:

- SELECT COUNT (DISTINCT Scode) FROM Store;
- SELECT Rate*Qty FROM Store WHERE ItemNO = 2004;
- SELECT Item, Sname FROM Store Item No = 2006 ;
- SELECT MAX (LastBuy) FROM Store ;

28.   Consider the following tables SCHOOL and ADMIN. Write SQL commands for the statements (i) to(iv) and give outputs for SQL queries (v) to (vii).

SCHOOL

CODE	TEACHERNAME	SUBJECT	DOJ	PERIODS	EXPERIENCE
1001	RAVI SHANKAR	ENGLISH	12/03/2000	24	10
1009	PRIYA RAI	PHYSICS	03/09/1998	26	12
1203	LISA ANAND	ENGLISH	09/04/2000	27	5
1045	YASHRAJ	MATHS	24/08/2000	24	15
1123	GANAN	PHYSICS	16/07/1999	28	3
1167	HARISH B	CHEMISTRY	19/10/1999	27	5
1215	UMESH	PHYSICS	11/05/1998	22	16

ADMIN

CODE	GENDER	DESIGNATION
1001	MALE	VICE PRINCIPAL
1009	FEMALE	COORDINATOR
1203	FEMALE	COORDINATOR
1045	MALE	HOD
1123	MALE	SENIOR TEACHER
1167	MALE	SENIOR TEACHER
1215	MALE	HOD

(i) To display TEACHERNAME, PERIODS of all teachers whose periods less than 25.
(ii) To display TEACHERNAME, CODE and DESIGNATION from tables SCHOOL and ADMIN whose gender is male.
(iii) To display number of teachers in each subject wise.
(iv) To display CODE, TEACHERNAME and SUBJECT of all teachers who have joined the school after 01/01/1999.
(v) SELECT MAX (EXPERIENCE) FROM SCHOOL;
(vi) SELECT TEACHERNAME, SUBJECT FROM SCHOOL WHERE DESIGNATION= 'COORDINATOR';
 (vii) SELECT COUNT (DISTINCT SUBJECT) FROM SCHOOL;