KG COLLEGE OF ARTS AND SCIENCE
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KGiSL Campus, Saravanampatti, Coimbatore – 641 035

LAB MANUAL

DATABASE MANAGEMENT SYSTEM

B.Sc. CS / BCA / B.Sc. CT / B.Sc. IT / B.Sc. AI & DS

2024 BATCH

LIST OF EXPERIMENTS

COURSE TITLE: DATABASE MANAGEMENT SYSTEM LAB

S.No	Name of the Experiment
	Sample Program
1.	Create a table for Employee details following fields: Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least ten rows and perform various queries using any one Comparison, Logical, Set Operators
2.	Create a table EMP with following fields Empno,Ename, Job, Mgr,Hiredate,Sal , Comm , Deptno. Insert records and perform Transaction Control Statements.
3.	Write queries to get customized output using different SQL Single row functions.
4.	Grouping data and perform aggregation using Aggregate functions & Clauses.
5.	Create necessary tables for bus reservation system application with required constraints**.** View the constraints that were added for the tables.
6.	Create Sailors, Boats & Reserves table and implement Simple Join, Self Join, Outer Join, Inner Join, Left and Right Join.
7.	Create tables for library management system . Master table should have the following fields: ACCNO, TITLE, AUTHOR AND RATE. Transaction table should have the following fields: USER ID, ACCNO, DATE OF ISSUE AND DATE OF RETURN. Create a report with fields Accno, Title, DateofIssue for the given Date of Return with column formats.
8	Write a PL/SQL to update the rate field by 20% more than the current rate in inventory table which has the following fields: Prono, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block.
9	a) Write a PL/SQL program to find the factorial of a given number. b) Write a program to accept a number and find the sum of the digits
10	a) Write a PL/SQL program to find the Reverse String b) Write a PL/SQL program to find the Fibonacci Series
11	Write a PL/SQL to split the student table into two tables based on result (One table for ―Pass and another for ―Fail). Use cursor for handling records of student table. Assume necessary fields and create a student details table.
12	Write a PL/SQL to raise the following Exception in Bank Account Management table when deposit amount is zero.

13	Write a PL/SQL program to find the total and average of four subjects and display the grade.
14	Develop a Stored Procedure for Inserting, Updating & Deleting records in TBMARKS table.
15	Create a database trigger to implement on master and transaction tables which are based on inventory management system for checking data validity. Assume the necessary fields for both tables.

Sample Program

Create department table with the following structure.

Name	Type
Deptno	Number
Deptname	Varchar2(10)
Location	Varchar2(10)

a. Add column designation to the department table.
b. Insert values into the table.
c. To Save the record
d. To Read the record
e. Update the record
f. Delete the record
g. Drop the Column
h. Drop the table

Solution :

```
SQL> create table  department
(deptno number,deptname varchar2(10),location varchar2(10));

Table created.

SQL> desc department;
 Name                      Null?    Type
 ------------------------- -------- ------
 DEPTNO                             NUMBER
 DEPTNAME                           VARCHAR2(10)
 LOCATION                           VARCHAR2(10)
```

a. Add column designation to the department table.

```
SQL> alter table department add(designation varchar2(10));

Table altered.
```

```
SQL> DESC DEPARTMENT
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------------------------------
 DEPTNO                                             NUMBER
 DEPTNAME                                           VARCHAR2(10)
 LOCATION                                           VARCHAR2(10)
 DESIGNATION                                        VARCHAR2(10)
```

b. Insert values into the table.

```
SQL> insert into department values(&deptno,'&deptname','&location','&designation');
Enter value for deptno: 10
Enter value for deptname: ACCOUNTING
Enter value for location: HYDERABAD
Enter value for designation: MANAGER
old   1: insert into department values(&deptno,'&deptname','&location','&designation')
new   1: insert into department values(10,'ACCOUNTING','HYDERABAD','MANAGER')

1 row created.

SQL> /
Enter value for deptno: 11
Enter value for deptname: SALES
Enter value for location: CHENNAI
Enter value for designation: SALESMAN
old   1: insert into department values(&deptno,'&deptname','&location','&designation')
new   1: insert into department values(11,'SALES','CHENNAI','SALESMAN')

1 row created.

SQL> /
Enter value for deptno: 12
Enter value for deptname: OPERATIONS
Enter value for location: BANGALORE
Enter value for designation: OPERATOR
old   1: insert into department values(&deptno,'&deptname','&location','&designation')
new   1: insert into department values(12,'OPERATIONS','BANGALORE','OPERATOR')

1 row created.
```

c. To Save the Record

```
SQL> Commit;
```

d. To Read the Records

```
SQL> SELECT * FROM DEPARTMENT;

    DEPTNO    DEPTNAME              LOCATION              DESIGNATIO
```

10	ACCOUNTING	HYDERABAD	MANAGER
11	SALES	CHENNAI	SALESMAN
12	OPERATIONS	BANGALORE	OPERATOR

e. Update the record

SQL> Update DEPARTMENT set LOCATION='COIMBATORE' where Deptno=10;

1 row updated.

SQL> commit;

Commit complete.

SQL> SELECT * FROM DEPARTMENT;

DEPTNO	DEPTNAME	LOCATION	DESIGNATIO
10	**ACCOUNTING**	**COIMBATORE**	**MANAGER**
11	SALES	CHENNAI	SALESMAN
12	OPERATIONS	BANGALORE	OPERATOR

f. To Delete the record

SQL> Delete from department where deptno=10;

1 row deleted.

SQL> commit;

Commit complete.

SQL> SELECT * FROM DEPARTMENT;

DEPTNO	DEPTNAME	LOCATION	DESIGNATIO
10	ACCOUNTING	COIMBATORE	MANAGER
12	OPERATIONS	BANGALORE	OPERATOR

g. To Remove all records & undo the deleted records

SQL> Delete from department;

2 rows deleted.

```
SQL> SELECT * FROM DEPARTMENT;

no rows selected

SQL> ROLLBACK;

Rollback complete.

SQL> SELECT * FROM DEPARTMENT;
```

```
SQL> SELECT * FROM DEPARTMENT;

DEPTNO     DEPTNAME          LOCATION              DESIGNATIO
----------  ---------- -     ---------             ----------
        10     ACCOUNTING    COIMBATORE    MANAGER
        12     OPERATIONS    BANGALORE     OPERATOR
```

h. To remove the column

```
SQL> ALTER TABLE DEPARTMENT DROP (DESIGNATION);

Table altered.

SQL>  SELECT * FROM DEPARTMENT;

   DEPTNO DEPTNAME   LOCATION
---------- ---------- ----------
        11 SALES      CHENNAI
        12 OPERATIONS BANGALORE
```

i. To Remove the table

```
SQL> DROP TABLE DEPARTMENT;

Table dropped.

SQL> SELECT * FROM DEPARTMENT;
SELECT * FROM DEPARTMENT
         *
ERROR at line 1:
     ORA-00942: table or view does not exist
```

PROGRAM 1 - EMPLOYEE DATABASE

AIM:

Create a table for Employee details with Employee Number as primary key and following fields: Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least ten rows and perform various queries using any one Comparison, Logical, Set, Sorting operators.

Program :

1.CREATE A TABLE FOR EMPLOYEE DETAILS:

```
create table employee(empno number primary key,empname varchar2(20),designation varchar2(30),gender
varchar2(6),age number,dojdate,salary number);
```

Table created.

2. DESCRIBE A TABLE:

```
SQL>desc employee;
Name                                      Null?    Type
----------------------------------------- -------- ----------------------------
EMPNO                                     NOT NULL NUMBER
EMPNAME                                            VARCHAR2(20)
DESIGNATION                                        VARCHAR2(30)
GENDER                                             VARCHAR2(6)
AGE                                                NUMBER
DOJ                                                DATE
SALARY                                             NUMBER
```

3.INSERT A VALUES FOR A EMPLOYEE TABLE:

```
SQL> insert into employee values(&empno,'&empname','&designation','&gender',&age,'&doj',&salary);
```

4.SELECT ALL THE ROWS FROM THE EMPLOYEE TABLE:

```
SQL>select * from employee;
```

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000

103	manoj	clerk	male	26	28-MAR-15	28000
102	john	hr	male	32	17-APR-15	30000
105	peter	marketing manager	male	35	01-FEB-15	35000
104	pooja	project developer	female	27	14-APR-15	25000
107	aishu	tester	female	25	20-JUL-15	24000
108	yamuna	clerk	female	30	11-JAN-15	31000

7 rows selected.

5.COMPARISON:

(i) SQL> select * from employee where salary>30000;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
105	peter	marketing manager	male	35	01-FEB-15	35000
108	yamuna	clerk	female	30	11-JAN-15	31000

(ii) SQL> select * from employee where age between 25 and 30;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
103	manoj	clerk	male	26	28-MAR-15	28000
104	pooja	project developer	female	27	14-APR-15	25000
107	aishu	tester	female	25	20-JUL-15	24000
108	yamuna	clerk	female	30	11-JAN-15	31000

(iii) SQL> select * from employee where empname like '%a';

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
104	pooja	project developer	female	27	14-APR-15	25000
108	yamuna	clerk	female	30	11-JAN-15	31000

(iv) SQL> select * from employee where salary in(35000,30000**,28000);**

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
103	manoj	clerk	male	26	28-MAR-15	28000
102	john	hr	male	32	17-APR-15	30000
105	peter	marketing manager	male	35	01-FEB-15	35000

(v) SQL>select * from employee where empno=103;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
103	manoj	clerk	male	26	28-MAR-15	28000

5.LOGICAL:

(i) SQL> select * from employee where salary<50000 and salary>30000;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
105	peter	marketing manager	male	35	01-FEB-15	35000
108	yamuna	clerk	female	30	11-JAN-15	31000

(ii) SQL> select * from employee where designation='manager' or designation='admin';

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000

(iii) SQL> select * from employee where not salary<30000;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
102	john	hr	male	32	17-APR-15	30000
105	peter	marketing manager	male	35	01-FEB-15	35000
108	yamuna	clerk	female	30	11-JAN-15	31000

4 rows selected.

6.SORTING:

(i) SQL> select * from employee order by empno;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
102	john	hr	male	32	17-APR-15	30000
103	manoj	clerk	male	26	28-MAR-15	28000
104	pooja	project developer	female	27	14-APR-15	25000
105	peter	marketing manager	male	35	01-FEB-15	35000
107	aishu	tester	female	25	20-JUL-15	24000
108	yamuna	clerk	female	30	11-JAN-15	31000

7 rows selected.

(ii) SQL> select * from employee order by empno desc;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
108	yamuna	clerk	female	30	11-JAN-15	31000
107	aishu	tester	female	25	20-JUL-15	24000
105	peter	marketing manager	male	35	01-FEB-15	35000
104	pooja	project developer	female	27	14-APR-15	25000
103	manoj	clerk	male	26	28-MAR-15	28000
102	john	hr	male	32	17-APR-15	30000
101	arjun	manager	male	30	12-JAN-14	35000

7 rows selected.

7.SET OPERATION:

(i) SQL> select * from employee where salary>30000 union select * from employee where age between 25 and 30;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
103	manoj	clerk	male	26	28-MAR-15	28000
104	pooja	project developer	female	27	14-APR-15	25000
105	peter	marketing manager	male	35	01-FEB-15	35000
107	aishu	tester	female	25	20-JUL-15	24000
108	yamuna	clerk	female	30	11-JAN-15	31000

6 rows selected.

(ii) SQL> select * from employee where salary>30000 union all select * from employee where age between 25 and 30;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
105	peter	marketing manager	male	35	01-FEB-15	35000
108	yamuna	clerk	female	30	11-JAN-15	31000
101	arjun	manager	male	30	12-JAN-14	35000
103	manoj	clerk	male	26	28-MAR-15	28000
104	pooja	project developer	female	27	14-APR-15	25000
107	aishu	tester	female	25	20-JUL-15	24000
108	yamuna	clerk	female	30	11-JAN-15	31000

8 rows selected.

(iii) SQL> select * from employee where salary>30000 intersect select * from employee where age between 25 and 30;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
101	arjun	manager	male	30	12-JAN-14	35000
108	yamuna	clerk	female	30	11-JAN-15	31000

(iv) SQL> select * from employee where salary>30000 minus select * from employee where age between 25 and 30;

EMPNO	EMPNAME	DESIGNATION	GENDER	AGE	DOJ	SALARY
105	peter	marketing manager	male	35	01-FEB-15	35000