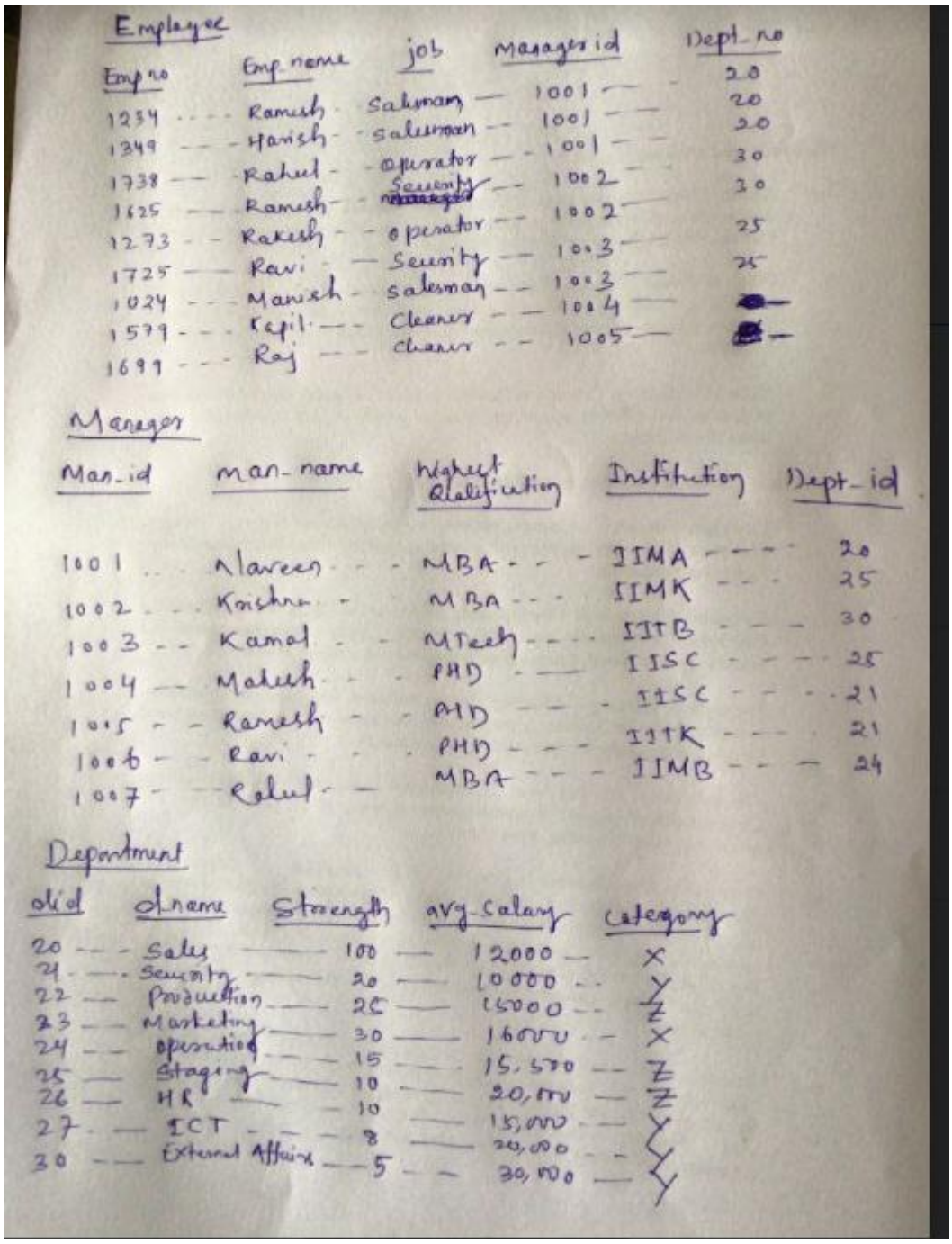
DBMS LAB REPORT

Lab Number : 05
Date : 24 February, 2022
Name of the student : Ashish Kumar Mishra
Roll Number : 20051685
Branch : Computer Science and Engineering
Section : CSE -10

Part A (Constraints):

Q.



Employee

Emp no	Emp name	job	Manager id	Dept no
1254	Ramesh	Salesman	1001	20
1349	Harish	salesman	1001	20
1738	Rahul	operator	1001	30
1625	Ramesh	Security	1002	30
1273	Rakesh	operator	1002	25
1725	Ravi	Security	1003	25
1024	Manish	salesman	1003	
1579	Rajil	Cleaner	1004	
1699	Raj	Cleaner	1005	

Manager

Man_id	man_name	Highest Qualification	Institution	Dept_id
1001	Nareen	MBA	IIMA	20
1002	Krishna	MBA	IIMK	25
1003	Kamal	MTech	IITB	30
1004	Mahesh	PHD	IISC	25
1005	Ramesh	PHD	IISC	21
1006	Ravi	PHD	IITK	21
1007	Rahul	MBA	IIMB	24

Department

dtid	dtname	Strength	avg_salary	category
20	Sales	100	12000	X
21	Security	20	10000	Y
22	Production	25	15000	Z
23	Marketing	30	16000	X
24	operation	15	15,500	Z
25	Staging	10	20,000	Z
26	HR	10	15,000	Y
27	ICT	8	20,000	Y
30	External Affairs	5	30,000	Y

```
SQL*Plus: Release 11.2.0.2.0 Production on Fri Feb 25 11:15:43 2022

Copyright (c) 1982, 2014, Oracle.  All rights reserved.

SQL> spool C:\Users\KIIT\Desktop\lab5table.txt;
SQL> connect C_20051685;
Enter password:
Connected.
SQL> CREATE TABLE DEPARTMENT(DID NUMBER(2) CONSTRAINT dept_did_pk PRIMARY KEY,DNAME VARCHAR2(20),STRENGTH NUMBER(3) DEFAULT 1, AVG_SALARY NUMBER(5), CATEGORY VARCHAR2(1)CON
STRAINT chk_ctg CHECK (CATEGORY IN ('x', 'y', 'z')));

Table created.

SQL> DESC DEPARTMENT
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DID                                       NOT NULL NUMBER(2)
 DNAME                                              VARCHAR2(20)
 STRENGTH                                           NUMBER(3)
 AVG_SALARY                                         NUMBER(5)
 CATEGORY                                           VARCHAR2(1)

SQL> CREATE TABLE MANAGER(MAN_ID NUMBER(4) CONSTRAINT MANAGER_MANID_PK PRIMARY KEY, MAN_NAME VARCHAR2(10), HIGHEST_QUALIFICATION VARCHAR2(6), INSTITUTION VARCHAR(5),DEPT_ID
 NUMBER(2));

Table created.

SQL> ALTER TABLE MANAGER ADD CONSTRAINT  MANAGER_DEPTID_FK FOREIGN KEY(DEPT_ID) REFERENCES DEPARTMENT(DID);

Table altered.

SQL> DESC MANAGER
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 MAN_ID                                    NOT NULL NUMBER(4)
 MAN_NAME                                           VARCHAR2(10)
 HIGHEST_QUALIFICATION                              VARCHAR2(6)
 INSTITUTION                                        VARCHAR2(5)
 DEPT_ID                                            NUMBER(2)
```

```
SQL> CREATE TABLE EMPLOYEE(EMP_NO NUMBER(4) CONSTRAINT EMP_EMPNO_PK PRIMARY KEY, EMP_NAME VARCHAR2(15) CONSTRAINT EMP_ENAME_NN NOT NULL , JOB VARCHAR2(15), MANAGER_ID NUMBE
R(4) ,DEPT_NO NUMBER(2));

Table created.

SQL> ALTER TABLE EMPLOYEE ADD CONSTRAINT EMPLOYEE_DEPTNO_FK FOREIGN KEY(DEPT_NO) REFERENCES DEPARTMENT(DID);

Table altered.

SQL> ALTER TABLE EMPLOYEE ADD CONSTRAINT EMPLOYEE_MANID_FK FOREIGN KEY(MANAGER_ID) REFERENCES MANAGER(MAN_ID);

Table altered.

SQL> DESC EMPLOYEE
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(4)
 EMP_NAME                                  NOT NULL VARCHAR2(15)
 JOB                                                VARCHAR2(15)
 MANAGER_ID                                         NUMBER(4)
 DEPT_NO                                            NUMBER(2)

SQL> DESC MANAGER
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 MAN_ID                                    NOT NULL NUMBER(4)
 MAN_NAME                                           VARCHAR2(10)
 HIGHEST_QUALIFICATION                              VARCHAR2(6)
 INSTITUTION                                        VARCHAR2(5)
 DEPT_ID                                            NUMBER(2)

SQL>  DESC DEPARTMENT
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DID                                       NOT NULL NUMBER(2)
 DNAME                                              VARCHAR2(20)
 STRENGTH                                           NUMBER(3)
 AVG_SALARY                                         NUMBER(5)
 CATEGORY                                           VARCHAR2(1)
```

```
SQL> INSERT INTO DEPARTMENT VALUES(20, 'SALES', 100, 12000, 'x');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(21, 'SECURITY', 20, 10000, 'y');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(22, 'PRODUCTION', 25, 15000, 'z');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(23, 'MARKETING', 30, 16000, 'x');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(24, 'OPERATION', 15, 15500, 'z');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(25, 'STAGING', 10, 20000, 'z');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(26, 'HR', 10, 15000, 'y');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(27, 'ICT', 8, 20000, 'y');

1 row created.

SQL> INSERT INTO DEPARTMENT VALUES(30, 'EXTERNAL AFFAIRS', 5, 30000, 'y');

1 row created.
```

```
SQL> SELECT * FROM DEPARTMENT;

       DID DNAME                  STRENGTH AVG_SALARY C
---------- -------------------- ---------- ---------- -
        20 SALES                       100      12000 x
        21 SECURITY                     20      10000 y
        22 PRODUCTION                   25      15000 z
        23 MARKETING                    30      16000 x
        24 OPERATION                    15      15500 z
        25 STAGING                      10      20000 z
        26 HR                           10      15000 y
        27 ICT                           8      20000 y
        30 EXTERNAL AFFAIRS              5      30000 y

9 rows selected.

SQL> INSERT INTO MANAGER VALUES(1001, 'NAVEEN', 'MBA', 'IITMA', 20);

1 row created.

SQL> INSERT INTO MANAGER VALUES(1002, 'KRISHNA', 'MBA', 'IITMK', 25);

1 row created.

SQL> INSERT INTO MANAGER VALUES(1003, 'KAMAL', 'MTECH', 'IITB', 30);

1 row created.

SQL> INSERT INTO MANAGER VALUES(1004, 'MAHESH', 'PHD', 'IISC', 25);

1 row created.

SQL> INSERT INTO MANAGER VALUES(1005, 'RAMESH', 'PHD', 'IISC', 21);

1 row created.

SQL> INSERT INTO MANAGER VALUES(1006, 'RAVI', 'PHD', 'IITK', 21);

1 row created.
```

```
SQL> INSERT INTO MANAGER VALUES(1007, 'RAHUL', 'MBA', 'IIMB', 24);

1 row created.

SQL> SELECT * FROM MANAGER;

    MAN_ID MAN_NAME   HIGHES INSTI    DEPT_ID
---------- ---------- ------ ----- ----------
      1001 NAVEEN     MBA    IITMA         20
      1002 KRISHNA    MBA    IITMK         25
      1003 KAMAL      MTECH  IITB          30
      1004 MAHESH     PHD    IISC          25
      1005 RAMESH     PHD    IISC          21
      1006 RAVI       PHD    IITK          21
      1007 RAHUL      MBA    IIMB          24

7 rows selected.

SQL> INSERT INTO EMPLOYEE VALUES(1234, 'RAMESH', 'SALESMAN', 1001, 20);

1 row created.

SQL> INSERT INTO EMPLOYEE VALUES(1349, 'HARISH', 'SALESMAN', 1001, 20);

1 row created.

SQL> INSERT INTO EMPLOYEE VALUES(1738, 'RAHUL', 'OPERATOR', 1001, 20);

1 row created.

SQL> INSERT INTO EMPLOYEE VALUES(1625, 'RAMESH', 'SECURITY', 1002, 30);

1 row created.

SQL> INSERT INTO EMPLOYEE VALUES(1273, 'RAKESH', 'OPERATOR', 1002, 30);

1 row created.
```

```
SQL> INSERT INTO EMPLOYEE VALUES(1725, 'RAVI', 'SECURITY', 1003, 25);

1 row created.

SQL> INSERT INTO EMPLOYEE VALUES(1024, 'MANISH', 'SALESMAN', 1003, 25);

1 row created.

SQL> INSERT INTO EMPLOYEE (EMP_NO,EMP_NAME,JOB,MANAGER_ID) VALUES(1579, 'KAPIL', 'CLEANER', 1004);

1 row created.

SQL> INSERT INTO EMPLOYEE (EMP_NO,EMP_NAME,JOB,MANAGER_ID) VALUES(1699, 'RAJ', 'CLEANER', 1005);

1 row created.

SQL> SELECT * FROM EMPLOYEE;

    EMP_NO EMP_NAME       JOB             MANAGER_ID    DEPT_NO
---------- -------------- -------------- ---------- ----------
      1234 RAMESH         SALESMAN             1001         20
      1349 HARISH         SALESMAN             1001         20
      1738 RAHUL          OPERATOR             1001         20
      1625 RAMESH         SECURITY             1002         30
      1273 RAKESH         OPERATOR             1002         30
      1725 RAVI           SECURITY             1003         25
      1024 MANISH         SALESMAN             1003         25
      1579 KAPIL          CLEANER              1004
      1699 RAJ            CLEANER              1005

9 rows selected.
```

Employee Table :

```
SQL> SELECT * FROM EMPLOYEE;

    EMP_NO EMP_NAME       JOB             MANAGER_ID    DEPT_NO
---------- -------------- -------------- ---------- ----------
      1234 RAMESH         SALESMAN             1001         20
      1349 HARISH         SALESMAN             1001         20
      1738 RAHUL          OPERATOR             1001         20
      1625 RAMESH         SECURITY             1002         30
      1273 RAKESH         OPERATOR             1002         30
      1725 RAVI           SECURITY             1003         25
      1024 MANISH         SALESMAN             1003         25
      1579 KAPIL          CLEANER              1004
      1699 RAJ            CLEANER              1005

9 rows selected.
```

Manager Table :

```
SQL> SELECT * FROM MANAGER;

    MAN_ID MAN_NAME   HIGHES INSTI    DEPT_ID
---------- ---------- ------ ----- ----------
      1001 NAVEEN     MBA    IITMA         20
      1002 KRISHNA    MBA    IITMK         25
      1003 KAMAL      MTECH  IITB          30
      1004 MAHESH     PHD    IISC          25
      1005 RAMESH     PHD    IISC          21
      1006 RAVI       PHD    IITK          21
      1007 RAHUL      MBA    IIMB          24

7 rows selected.
```

Department Table :

```
SQL> SELECT * FROM DEPARTMENT;

       DID DNAME                STRENGTH AVG_SALARY C
---------- -------------------- ---------- ---------- -
        20 SALES                       100      12000 x
        21 SECURITY                     20      10000 y
        22 PRODUCTION                   25      15000 z
        23 MARKETING                    30      16000 x
        24 OPERATION                    15      15500 z
        25 STAGING                      10      20000 z
        26 HR                           10      15000 y
        27 ICT                           8      20000 y
        30 EXTERNAL AFFAIRS              5      30000 y

9 rows selected.
```

1. Find number of employees in each department.

```
SQL> SELECT COUNT(DISTINCT DEPT_NO ) AS UNIQUE_EMPLOYEES FROM EMPLOYEE;

UNIQUE_EMPLOYEES
----------------
               3
```

2. Find the department with more than 2 employees.

```
SQL> SELECT DNAME,STRENGTH FROM DEPARTMENT WHERE STRENGTH>2;

DNAME                    STRENGTH
-------------------- ----------
SALES                       100
SECURITY                     20
PRODUCTION                   25
MARKETING                    30
OPERATION                    15
STAGING                      10
HR                           10
ICT                           8
EXTERNAL AFFAIRS              5

9 rows selected.
```

3. How many employees are in sales.

```
SQL> SELECT COUNT(DNAME) AS FROM_SALES FROM DEPARTMENT WHERE DNAME='SALES';

FROM_SALES
----------
         1
```

4. How many managers have got their highest qualification from an IIT.

```
SQL> SELECT COUNT(INSTITUTION) AS FROM_IIT FROM MANAGER WHERE INSTITUTION LIKE 'IIT%';

  FROM_IIT
----------
         4
```

Part B (Duality) :

1. Calculate 10*10.

```
SQL> connect C_20051685;
Enter password:
Connected.
SQL> SELECT 10*10 FROM DUAL;

     10*10
----------
       100
```

2. Display system date.

```
SQL> SELECT sysdate FROM DUAL ;

SYSDATE
---------
24-FEB-22
```

3. Calculate the absolute value of -20.

```
SQL> SELECT ABS(-20) FROM dual;

  ABS(-20)
----------
        20
```

4. Calculate 10^10.

```
SQL> SELECT POWER(10,10) FROM DUAL;

POWER(10,10)
------------
  1.0000E+10
```

5. Calculate square root of 25.

```
SQL> SELECT SQRT(25) FROM DUAL;

   SQRT(25)
----------
          5
```

6. Round the value 23.565 to one places of decimal.

```
SQL> SELECT ROUND(23.565,1) FROM DUAL;

ROUND(23.565,1)
---------------
           23.6
```

7. Display ‘TRIDENT’ in lowercase

```
SQL> SELECT LOWER('TRIDENT') FROM DUAL;

LOWER('
-------
trident
```

8. Display ‘trident’ in uppercase.

```
SQL> SELECT UPPER('trident') FROM DUAL;

UPPER('
-------
TRIDENT
```

9. Display the first letter of your name in uppercase.

```
SQL> select initcap('ashish') "Name" from dual;

Name
------
Ashish
```

10. Calculate the length of your name.

```
SQL> select length('Ashish') "Len of Name" from dual;

Len of Name
-----------
          6
```

11. Write a query that would return a string like “ORA” , if the string inputted is ‘ORACLE’.

```
SQL> select substr('ORACLE',1,3) from dual;

SUB
---
ORA
```

12. Find the character position of ‘C’ in the string ‘ORACLE’.

```
SQL> select instr('ORACLE','C') from dual;

INSTR('ORACLE','C')
-------------------
                  4
```

13. Delete the extra spaces from the strings
‘ ORACLE’ and ‘ORACLE ‘

```
SQL> select LTRIM(' ORACLE',' ') FROM DUAL;

LTRIM(
------
ORACLE

SQL> select RTRIM('ORACLE ',' ') FROM DUAL;

RTRIM(
------
ORACLE
```

14. Write a query that would display **ORACLE, if the string inputted is ORACLE.

```
SQL> SELECT LPAD('ORACLE',8,'*') FROM DUAL;

LPAD('OR
--------
**ORACLE
```

15. Same as question 14 but the output is ORACLE**.

```
SQL> SELECT RPAD('ORACLE',8,'*') FROM DUAL;

RPAD('OR
--------
ORACLE**
```

16. Retrieve the last month specified in system date.

```
SQL> select to_char(ADD_MONTHS(sysdate,-1),'MON') from dual;

TO_CHAR(ADD_
------------
JAN
```

17. Retrieve number of months between 01-01-07 to 01-05-07.

```
SQL> select MONTHS_BETWEEN (TO_DATE('01-01-2007','MM-DD-YYYY'),TO_DATE('05-01-2007','MM-DD-YYYY')) "MONTHS" FROM DUAL;

    MONTHS
----------
        -4
```

18. Round 56.23 using negative numbers(e.g.-1,-2, and-3).

```
SQL> select round(56.23,-1), round(56.23,-2), round(56.23,-3) from dual;

ROUND(56.23,-1) ROUND(56.23,-2) ROUND(56.23,-3)
--------------- --------------- ---------------
             60             100               0
```

19. Find out the remainder of the division 1600/300.

```
SQL> Select mod('1600','300') from dual;

MOD('1600','300')
------------------
               100
```

20. Find the maximum and minimum number from a list of numbers.

```
SQL> select greatest(2,4,5,6,9,1,3) from dual;

GREATEST(2,4,5,6,9,1,3)
-----------------------
                      9

SQL> select least(2,4,5,6,9,1,3) from dual;

LEAST(2,4,5,6,9,1,3)
--------------------
                   1
```