PRACTICAL 1

A) Write the query for the following.

1)Create the following table and include the necessary constraints NOT NULL, DEFAULT, CHECK, PRIMARY KEY,UNIQUE.

A)Student (sId,sname,gender,dob,marks,class,email)

```
SQL> create table student(sid int primary key,sname varchar(10) not
 null,gender varchar(10) not null,dob date not null,marks int check
(marks>50),class varchar(10) default 'FYCS',emailid varchar(10));

Table created.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
```

B) Course(CID,CNAME,CREDITS)

```
SQL> create table course(cid int primary key,cname varchar(10) not
null,credits int not null);

Table created.

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(10)
 CREDITS                                   NOT NULL NUMBER(38)
```

2) Iter the structure of the course table

C)Modify data type of cname

```
SQL> alter table course
  2  modify cname varchar(20);

Table altered.

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(20)
 CREDITS                                   NOT NULL NUMBER(38)
```

D) Add a column coursehours with minimum course hours greater than 45.

```
SQL> alter table course
  2  add coursehours int check(coursehours>45);

Table altered.

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(20)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)
```

E) ADD A COLUMN CDESC

```
SQL> alter table course
  2  add cdesc varchar(10);

Table altered.

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(20)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)
 CDESC                                              VARCHAR2(10)
```

3) Alter the structure of the student table

F) Add column age with minimum age as 17

```
SQL> alter table student
  2  add age int check(age>17);

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
```

G) Delete column dob

```
SQL> alter table student
  2  drop column dob;

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
```

H) Add a column phoneno

```
SQL> alter table student
  2  add phoneno int;

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
 PHONENO                                            NUMBER(38)
```

I)Rename phoneno to contactno

```
SQL> alter table student
  2  rename column phoneno to contactno;

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
-------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(38)
```

4) Rename student table as Student_details

```
SQL> alter table student
  2  rename to student_details;

Table altered.

SQL> desc student_details
 Name                                      Null?    Type
 ----------------------------------------- -------- ---------------
-------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(38)
```

6) Drop the table student_details and course.

```
SQL> drop table course;

Table dropped.

SQL> drop table student_details;

Table dropped.

SQL> desc course
ERROR:
ORA-04043: object course does not exist


SQL> desc student_details
ERROR:
ORA-04043: object student_details does not exist
```

B)1. Create a table EMPLOYEE with following attributes and specific data types and constraints required (Emp_no, E_name, E_address, E_ph_no, Dept_no, Dept_name,Job_id , Salary)

```
SQL> create table employee(Emp_no int primary key,E_name varchar(10) not null,E_
address varchar(20),E_ph_no int,Dept_no int not null,Dept_name varchar(10),Job_i
d int,salary int);

Table created.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             NUMBER(38)
 SALARY                                             NUMBER(38)
```

2. Add a new column HIREDATE to the existing relation.

```
SQL> alter table employee
  2  add hiredate date;

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             NUMBER(38)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

3. Change the datatype of JOB_ID from char to varchar2.

```
SQL> alter table employee
  2  modify Job_id varchar(20);

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             VARCHAR2(20)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

4. Change the name of column/field Emp_no to E_no.

```
SQL> alter table employee
  2  rename column Emp_no to E_no;

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 E_NO                                      NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             VARCHAR2(20)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

5. Modify the column width of the job field of emp table.

```
SQL> alter table employee
  2  modify Job_id varchar(10);

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 E_NO                                      NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             VARCHAR2(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

C) Create the following tables with specified attributes and constraints

1) Department Table: Department_Id varchar2(20) primary key, Department_Name varchar2(25) with required data.

```
SQL> create table Department(Department_Id varchar(20) primary key, Department_Name varchar(25));

Table created.

SQL> alter table Department
  2  modify Department_Name varchar(25) not null;

Table altered.

SQL> desc Department
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPARTMENT_ID                             NOT NULL VARCHAR2(20)
 DEPARTMENT_NAME                           NOT NULL VARCHAR2(25)
```

2) Instructor Table: Instructor_id varchar2(20) primary key, Department_Id varchar2(20) Foreign key, Last_Name varchar2(25), First_Name varchar2(200) must have value, Telephone varchar2(20) must be unique, gender char(1) must be either ‘F’ or ‘M’,city varchar(10) default value must be ‘MUMBAI’.

```
SQL> create table Instructor(Instructor_id varchar(20) primary key, Department_Id varchar(20) references
 Department(Department_Id),Last_name varchar(20),First_name varchar(200) not null,Telephone varchar(20)
unique,gender char(1) check(gender='F' or gender='M'),city varchar(10) default 'MUMBAI');

Table created.

SQL> desc Instructor
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 INSTRUCTOR_ID                             NOT NULL VARCHAR2(20)
 DEPARTMENT_ID                                      VARCHAR2(20)
 LAST_NAME                                          VARCHAR2(20)
 FIRST_NAME                                NOT NULL VARCHAR2(200)
 TELEPHONE                                          VARCHAR2(20)
 GENDER                                             CHAR(1)
 CITY                                               VARCHAR2(10)
```

D) Create the following described below:

Table Name: EMP

Column	Data Type	Length	Precision	Scale	Primary Key	Nullable
EMPNO	Int	-	-	-	Yes	-
ENAME	Varchar2	10	-	-	-	No
JOB	Varchar2	9	-	-	-	✓
MGR	Int	-	-	-	-	✓
HIREDATE	Date	-	-	-	-	✓
SAL	Number	-	7	2	-	✓
COMM	Int	-	-	-	-	✓
DEPTNO	Int	-	-	-	-	✓

Table Name: DEPT

Column	Data Type	Length	Precision	Scale	Primary Key	Nullable
DEPTNO	Int	-	-	-	Yes	-
DNAME	Varchar2	14	-	-	-	No
LOC	Varchar2	13	-	-	-	✓

```
SQL> create table tahir_DEPT(Dept_no int primary key,Dname varchar(14) not null,Loc varchar(13));


Table created.

SQL> desc tahir_DEPT
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPT_NO                                   NOT NULL NUMBER(38)
 DNAME                                     NOT NULL VARCHAR2(14)
 LOC                                                VARCHAR2(13)
```

```
SQL> create table tahirr_EMP(EMP_no int primary key,Ename varchar(10) not null,Job varchar(9),
MGR int,Hiredate date,SAL decimal(7,2),Comm int,Dept_no int references tahir_DEPT(Dept_no));

Table created.

SQL> desc tahirr_EMP
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 ENAME                                     NOT NULL VARCHAR2(10)
 JOB                                                VARCHAR2(9)
 MGR                                                NUMBER(38)
 HIREDATE                                           DATE
 SAL                                                NUMBER(7,2)
 COMM                                               NUMBER(38)
 DEPT_NO                                            NUMBER(38)
```

Practical 2: Study of Data Manipulation Language Statement

A) Insert the following records in above created table

EMP TABLE

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	KING	PRESIDENT		17-Nov-81	5000		10
7698	BLAKE	MANAGER	7839	01-May-81	2850		30
7782	CLARK	MANAGER	7839	09-Jun-81	2450		10
7566	JONES	MANAGER	7839	02-Apr-81	2975		20
7788	SCOTT	ANALYST	7566	19-Apr-87	3000		20
7902	FORD	ANALYST	7566	03-Dec-81	3000		20
7369	SMITH	CLERK	7902	17-Dec-80	800		20
7499	ALLEN	SALESMAN	7698	20-Feb-81	1600	300	30
7521	WARD	SALESMAN	7698	22-Feb-81	1250	500	30
7654	MARTIN	SALESMAN	7698	28-Sep-81	1250	1400	30
7844	TURNER	SALESMAN	7698	08-Sep-81	1500	0	30
7876	ADAMS	CLERK	7788	23-May-87	1100		20
7900	JAMES	CLERK	7698	03-Dec-81	950		30
7934	MILLER	CLERK	7782	23-Jan-82	1300		10

DEPT TABLE

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

```
SQL> insert into tahir_DEPT values(10,'ACCOUNTING','NEW YORK');

1 row created.

SQL> insert into tahir_DEPT values(20,'RESEARCH','DALLAS');

1 row created.

SQL> insert into tahir_DEPT values(30,'SALES','CHICAGO');

1 row created.

SQL> insert into tahir_DEPT values(40,'OPERATIONS','BOSTON');

1 row created.

SQL> select * from tahir_DEPT;

   DEPT_NO DNAME          LOC
---------- -------------- -------------
        10 ACCOUNTING     NEW YORK
        20 RESEARCH       DALLAS
        30 SALES          CHICAGO
        40 OPERATIONS     BOSTON
```

```
SQL> select * from tahirr_EMP;

    EMP_NO ENAME      JOB              MGR HIREDATE          SAL       COMM    DEPT_NO
---------- ---------- --------- ---------- --------- ---------- ---------- ----------
      7839 KING       PRESIDENT            17-NOV-81       5000                    10
      7698 BLAKE      MANAGER         7839 01-MAY-81       2850                    30
      7782 CLARK      MANAGER         7839 09-JUN-81       2450                    10
      7566 JONES      MANAGER         7839 02-APR-81       2975                    20
      7788 SCOTT      ANALYST         7566 19-APR-87       3000                    20
      7902 FORD       ANALYST         7566 03-DEC-81       3000                    20
      7369 SMITH      CLERK           7902 17-DEC-80        800                    20
      7499 ALLEN      SALESMAN        7698 20-FEB-81       1600        300         30
      7521 WARD       SALESMAN        7698 22-FEB-81       1250        500         30
      7654 MARTIN     SALESMAN        7698 28-SEP-81       1250       1400         30
      7844 TURNER     SALESMAN        7698 08-SEP-81       1500          0         30
      7876 ADAMS      CLERK           7788 23-MAY-87       1100                    20
      7900 JAMES      CLERK           7698 03-DEC-81        950                    30
      7934 MILLER     CLERK           7782 23-JAN-82       1300                    10

14 rows selected.
```

B) Update and Delete Queries

1) Update the salary of employees working as CLERK by 500.

```
SQL> update tahirr_EMP
  2  set SAL=SAL+500
  3  where Job='CLERK';

4 rows updated.
```

```
SQL> select * from tahirr_EMP;

    EMP_NO ENAME      JOB              MGR HIREDATE          SAL       COMM    DEPT_NO
---------- ---------- --------- ---------- --------- ---------- ---------- ----------
      7839 KING       PRESIDENT            17-NOV-81       5000                    10
      7698 BLAKE      MANAGER         7839 01-MAY-81       2850                    30
      7782 CLARK      MANAGER         7839 09-JUN-81       2450                    10
      7566 JONES      MANAGER         7839 02-APR-81       2975                    20
      7788 SCOTT      ANALYST         7566 19-APR-87       3000                    20
      7902 FORD       ANALYST         7566 03-DEC-81       3000                    20
      7369 SMITH      CLERK           7902 17-DEC-80       1300                    20
      7499 ALLEN      SALESMAN        7698 20-FEB-81       1600        300         30
      7521 WARD       SALESMAN        7698 22-FEB-81       1250        500         30
      7654 MARTIN     SALESMAN        7698 28-SEP-81       1250       1400         30
      7844 TURNER     SALESMAN        7698 08-SEP-81       1500          0         30
      7876 ADAMS      CLERK           7788 23-MAY-87       1600                    20
      7900 JAMES      CLERK           7698 03-DEC-81       1450                    30
      7934 MILLER     CLERK           7782 23-JAN-82       1800                    10

14 rows selected.
```

2) Update the manager of James as CLARK.

```
SQL> update tahirr_EMP
  2  set Job='CLARK'
  3  where Ename='JAMES';

1 row updated.
```

```
SQL> select * from tahirr_EMP;

    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM    DEPT_NO
---------- ---------- --------- ---------- --------- ---------- ---------- ----------
      7839 KING       PRESIDENT            17-NOV-81       5000                    10
      7698 BLAKE      MANAGER         7839 01-MAY-81       2850                    30
      7782 CLARK      MANAGER         7839 09-JUN-81       2450                    10
      7566 JONES      MANAGER         7839 02-APR-81       2975                    20
      7788 SCOTT      ANALYST         7566 19-APR-87       3000                    20
      7902 FORD       ANALYST         7566 03-DEC-81       3000                    20
      7369 SMITH      CLERK           7902 17-DEC-80       1300                    20
      7499 ALLEN      SALESMAN        7698 20-FEB-81       1600        300         30
      7521 WARD       SALESMAN        7698 22-FEB-81       1250        500         30
      7654 MARTIN     SALESMAN        7698 28-SEP-81       1250       1400         30
      7844 TURNER     SALESMAN        7698 08-SEP-81       1500          0         30
      7876 ADAMS      CLERK           7788 23-MAY-87       1600                    20
      7900 JAMES      CLARK           7698 03-DEC-81       1450                    30
      7934 MILLER     CLERK           7782 23-JAN-82       1800                    10

14 rows selected.
```

3) Change the role of Miller as MANAGER.

```
SQL> update tahirr_EMP
  2  set Job='MANAGER'
  3  where Ename='MILLER';

1 row updated.
```

```
    7934 MILLER     MANAGER         7782 23-JAN-82       1800
      10
```

4) Delete the records of Manager

```
SQL> delete from tahirr_EMP
  2  where Job='MANAGER';

4 rows deleted.
```

```
    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM    DEPT_NO
---------- ---------- --------- ---------- --------- ---------- ---------- ----------
      7839 KING       PRESIDENT            17-NOV-81       5000                    10
      7788 SCOTT      ANALYST         7566 19-APR-87       3000                    20
      7902 FORD       ANALYST         7566 03-DEC-81       3000                    20
      7369 SMITH      CLERK           7902 17-DEC-80       1300                    20
      7499 ALLEN      SALESMAN        7698 20-FEB-81       1600        300         30
      7521 WARD       SALESMAN        7698 22-FEB-81       1250        500         30
      7654 MARTIN     SALESMAN        7698 28-SEP-81       1250       1400         30
      7844 TURNER     SALESMAN        7698 08-SEP-81       1500          0         30
      7876 ADAMS      CLERK           7788 23-MAY-87       1600                    20
      7900 JAMES      CLARK           7698 03-DEC-81       1450                    30

10 rows selected.
```

5) Delete the records when salary is greater than 1000.

```
SQL> delete from tahirr_EMP
  2  where SAL>1000;

10 rows deleted.
```

```
SQL> select * from tahirr_EMP;

no rows selected
```