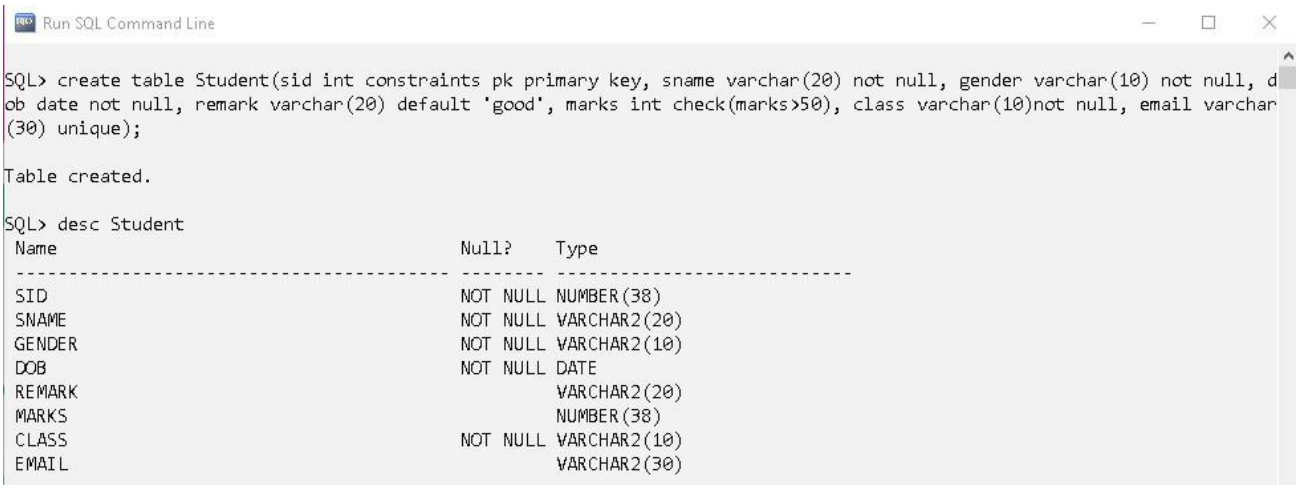
PRACTICAL 1: STUDY OF DATA DEFINITION LANGUAGE STATEMENT

A) Write the query for the following

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

a) Student(sid, sname, gender, dob, remark, marks, class, email)



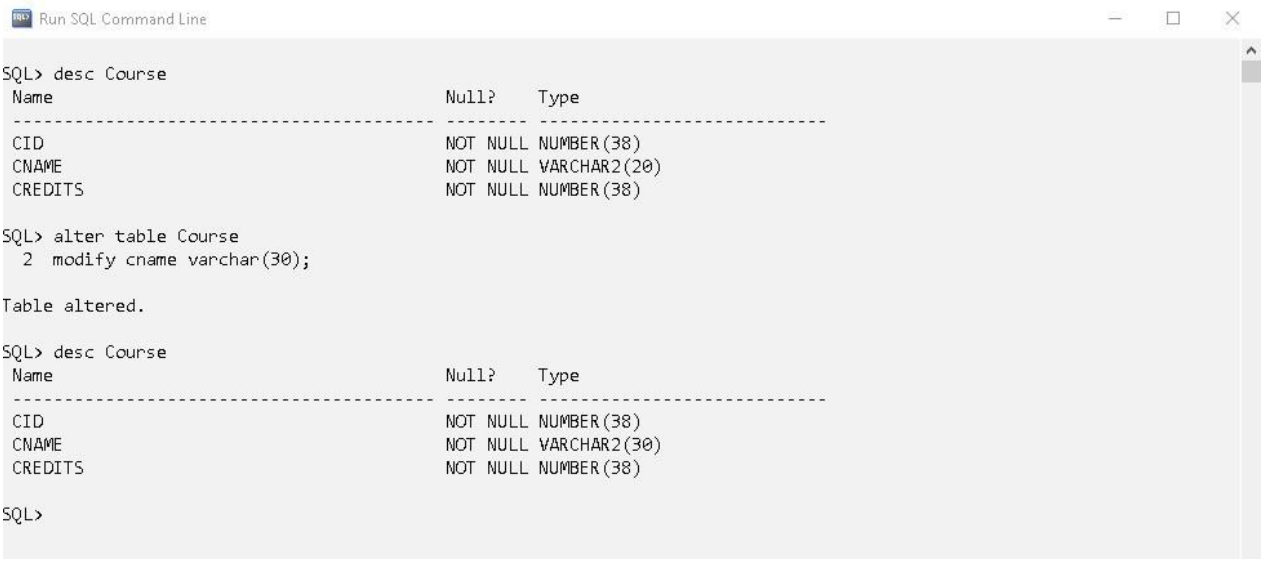
```
Run SQL Command Line

SQL> create table Student(sid int constraints pk primary key, sname varchar(20) not null, gender varchar(10) not null, d
ob date not null, remark varchar(20) default 'good', marks int check(marks>50), class varchar(10)not null, email varchar
(30) unique);

Table created.

SQL> desc Student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
```

b)Course(cid, cname, credits)

```
SQL> create table Course(cid int primary key, cname varchar(20) not null, credits int not null);

Table created.

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

SQL>
```

2. Alter the structure of the Course table:

a)Modify datatype of cname.



```
Run SQL Command Line

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

SQL> alter table Course
  2  modify cname varchar(30);

Table altered.

SQL> desc Course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(30)
 CREDITS                                   NOT NULL NUMBER(38)

SQL>
```

b) 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(30)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)

SQL>
```

c) Add a column cdesc.

Run SQL Command Line

```
SQL> desc Course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(30)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)

SQL> alter table Course
  2  add cdesc varchar(20) not null;

Table altered.

SQL> desc Course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(30)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)
 CDESC                                     NOT NULL VARCHAR2(20)

SQL>
```

3. Alter the structure of the Student table:

a) Add a column age with minimum age as 17.

Run SQL Command Line

```
SQL> desc Student;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)

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(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)

SQL>
```

b) Delete the column dob.

Run SQL Command Line

```
SQL> desc Student;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)

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(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)

SQL>
```

c)Add a column phoneno.

Run SQL Command Line

```
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(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)
 PHONENO                                            NUMBER(38)

SQL>
```

d) Rename phoneno to contactno.

Run SQL Command Line

```
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(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(38)

SQL>
```

4. Rename Student table as Student_details.

Run SQL Command Line

```
SQL> rename Student to Student_details;

Table renamed.

SQL> desc Student_details;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(38)

SQL>
```

5) Describe the structure of both tables.

Student_detail Table

```
SQL> desc Student_details;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 REMARK                                             VARCHAR2(20)
 MARKS                                              NUMBER(38)
 CLASS                                     NOT NULL VARCHAR2(10)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(38)

SQL>
```

Course Table

```
SQL> desc Course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(30)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)
 CDESC                                     NOT NULL VARCHAR2(20)

SQL>
```

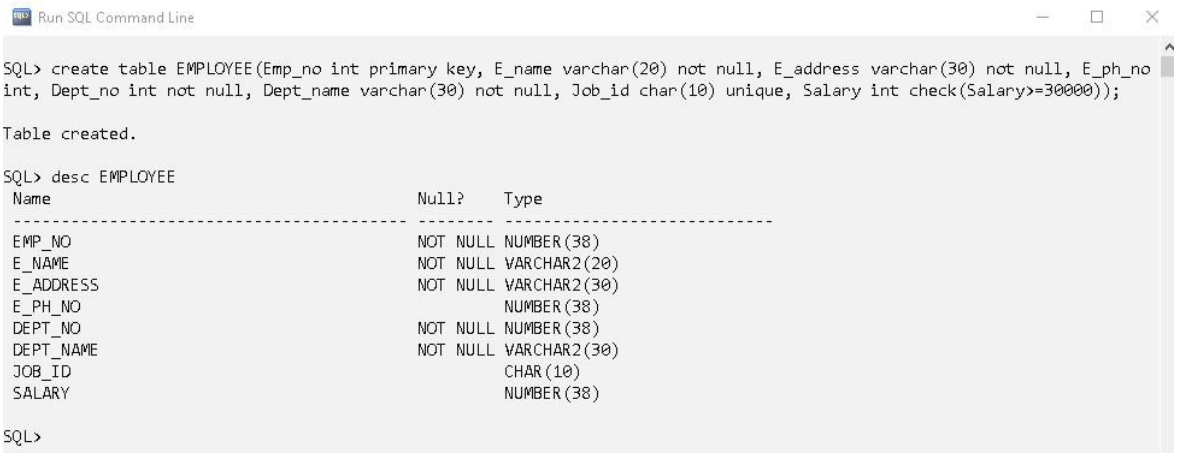
6) Drop the table Student_detail and Course.

Run SQL Command Line

```
SQL> drop table Student_details;

Table dropped.

SQL> drop table Course;

Table dropped.

SQL>
```

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)



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(20)
 E_ADDRESS                                 NOT NULL VARCHAR2(30)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                 NOT NULL VARCHAR2(30)
 JOB_ID                                             CHAR(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

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

Run SQL Command Line

```
SQL> desc EMPLOYEE
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(20)
 E_ADDRESS                                 NOT NULL VARCHAR2(30)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                 NOT NULL VARCHAR2(30)
 JOB_ID                                             CHAR(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE

SQL> alter table EMPLOYEE
  2  modify Job_id varchar2(10);

Table altered.

SQL> desc EMPLOYEE
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(20)
 E_ADDRESS                                 NOT NULL VARCHAR2(30)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                 NOT NULL VARCHAR2(30)
 JOB_ID                                             VARCHAR2(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE

SQL>
```

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

Run SQL Command Line

```
SQL> desc EMPLOYEE
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(20)
 E_ADDRESS                                 NOT NULL VARCHAR2(30)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                 NOT NULL VARCHAR2(30)
 JOB_ID                                             VARCHAR2(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE

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(20)
 E_ADDRESS                                 NOT NULL VARCHAR2(30)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                 NOT NULL VARCHAR2(30)
 JOB_ID                                             VARCHAR2(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

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

Run SQL Command Line

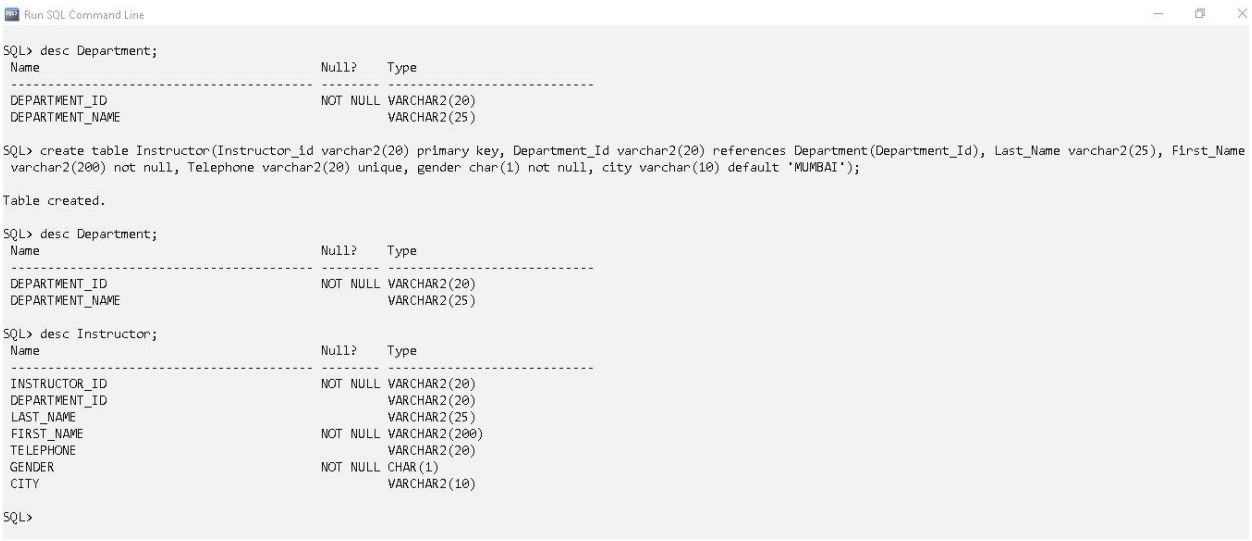
```
SQL> desc EMPLOYEE
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 E_NO                                      NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(20)
 E_ADDRESS                                 NOT NULL VARCHAR2(30)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                 NOT NULL VARCHAR2(30)
 JOB_ID                                             VARCHAR2(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE

SQL> alter table EMPLOYEE
  2  modify Job_id varchar2(20);

Table altered.

SQL> desc EMPLOYEE
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 E_NO                                      NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(20)
 E_ADDRESS                                 NOT NULL VARCHAR2(30)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                 NOT NULL VARCHAR2(30)
 JOB_ID                                             VARCHAR2(20)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

C) Create the following table with specified attributes and constraints.

Department Table: Department_Id varchar2(20) primarykey, Department_Name varchar2(25) with required data.

```
SQL> create table Department(Department_Id varchar2(20) primary key, Department_Name varchar2(25));

Table created.

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

SQL>
```

Instructor Table: Instructor_id varchar2(20) primarykey, 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'.



```
Run SQL Command Line

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

SQL> create table Instructor(Instructor_id varchar2(20) primary key, Department_Id varchar2(20) references Department(Department_Id), Last_Name varchar2(25), First_Name
 varchar2(200) not null, Telephone varchar2(20) unique, gender char(1) not null, city varchar(10) default 'MUMBAI');

Table created.

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

SQL> desc Instructor;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 INSTRUCTOR_ID                             NOT NULL VARCHAR2(20)
 DEPARTMENT_ID                                      VARCHAR2(20)
 LAST_NAME                                          VARCHAR2(25)
 FIRST_NAME                                NOT NULL VARCHAR2(200)
 TELEPHONE                                          VARCHAR2(20)
 GENDER                                    NOT NULL CHAR(1)
 CITY                                               VARCHAR2(10)

SQL>
```

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	-	-	-	-	✓

OUTPUT:

```
SQL> create table EMP(EMP int primary key ,ENAME varchar2(10) not null, JOB  varchar2(9), MGR int,HIREDATE date,SAL number(7,2),Comm int,DEPTNO int,foreign key(DEPTNO)
references DEPT(DEPTNO));

Table created.

SQL> desc EMP;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP                                       NOT NULL NUMBER(38)
 ENAME                                     NOT NULL VARCHAR2(10)
 JOB                                                VARCHAR2(9)
 MGR                                                NUMBER(38)
 HIREDATE                                           DATE
 SAL                                                NUMBER(7,2)
 COMM                                               NUMBER(38)
 DEPTNO                                             NUMBER(38)

SQL>
```

Second Table:

Table Name: DEPT

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

OUTPUT:

Run SQL Command Line

```
SQL> create table DEPT(DEPTNO int primary key,DNAME varchar2(14) not null,LOC varchar2(13));

Table created.

SQL> desc dept;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPTNO                                    NOT NULL NUMBER(38)
 DNAME                                     NOT NULL VARCHAR2(14)
 LOC                                                VARCHAR2(13)

SQL>
```