1. Create the following tables and specify constraints at the time of creation.

Department

Column Name	Data Type	Size	Constraint
Deptno	number	3	primary key
Dname	varchar2	20	Unique
Location	varchar2	20	not null, department are located in Delhi, Pune, Agra

```
1  CREATE TABLE Department (
2      Deptno NUMBER(3) PRIMARY KEY,
3      Dname VARCHAR2(20) UNIQUE,
4      Location VARCHAR2(20) NOT NULL,
5      CONSTRAINT location_check CHECK (Location IN ('Agra', 'Delhi', 'Pune'))
6  );
7
```

(ii)

Employee

Column Name	Data Type	Size	Constraint
Empno	varchar2	5	primary key, should start with 'E'
Ename	varchar2	20	Unique
Designation	varchar2	20	not null
Salary	number	10	default 25000, must lie between 15000 and 50000
DOB	date		not null
Dno	number	3	foreign key (references department)

```
2      Empno      VARCHAR2(5)
3                 CONSTRAINT pk_emp PRIMARY KEY
4                 CONSTRAINT chk_empno CHECK (Empno LIKE 'E%'),
5
6      Ename      VARCHAR2(20)
7                 CONSTRAINT uq_ename UNIQUE,
8
9      Designation VARCHAR2(20)
10                 CONSTRAINT nn_designation NOT NULL,
11
12     Salary     NUMBER(10) DEFAULT 25000
13                 CONSTRAINT chk_salary CHECK (Salary BETWEEN 15000 AND 50000),
14
15     DOB        DATE
16                 CONSTRAINT nn_dob NOT NULL,
17
18     Dno        NUMBER(3),
19     CONSTRAINT fk_dno FOREIGN KEY (Dno) REFERENCES Department(Dno)
20  );
```

(iii)

Candidate

Column Name	Data type	Size	Constraints
Candidate_ID	Number	6	Primary key of the table
Candidate_Name	Varchar2	20	Not Null
Candidate_Email	Varchar2	30	Unique, Must have '@' followed by '.' in between the email
Candidate_Dept	Number	2	Default 'HR'
Manager_ID	Varchar2	30	It can take only those values which are present in Candidate_ID column

```
1  CREATE TABLE candidate (
2      candidate_id    VARCHAR2(30) PRIMARY KEY,
3      candidate_name  VARCHAR2(20) NOT NULL,
4      candidate_email VARCHAR2(30) UNIQUE
5                      CHECK (candidate_email LIKE '%@%.%'),
6      candidate_dept  VARCHAR2(10) DEFAULT 'HR',
7      manager_id      VARCHAR2(30),
8      CONSTRAINT fk_manager FOREIGN KEY (manager_id)
9                      REFERENCES candidate(candidate_id)
10 )
```

Ques2-

1.College (cName: varchar2(10), state: varchar2(10), enrollment: int)

```
1  CREATE TABLE College (
2      cName        VARCHAR2(10),
3      state        VARCHAR2(10),
4      enrollment   NUMBER
5  )
```

2.Student (sID: int, sName: varchar2(10), GPA: number(2,1),sizeHS:int)

SQL Worksheet   Clear   Find   Actions   Save   Run

Try Live SQL V2!
https://livesql.oracle.com/next/

```
1
2
3  CREATE TABLE Student (
4       sID      NUMBER ,
5       sName    VARCHAR2(10),
6       GPA      NUMBER(2,1),     -- example: 3.5, 9.1 etc.
7       sizeHS   NUMBER
8  )
9
```

3.Apply (sID: int, cName: varchar2(10), major: varchar2(20))

SQL Worksheet   Clear   Find   Actions   Save   Run

Try Live SQL V2!
https://livesql.oracle.com/next/

```
1  CREATE TABLE Apply (
2      sID INT,
3      cName VARCHAR2(10),
4      major VARCHAR2(20)
5  );
6
```

(i). Add caName as PrimaryKey in College.

(ii). Add sID as Primarykey in Student.

(iii). Add sID, cName, major as Primarykey in Apply.

SQL Worksheet   Clear   Find   Actions ∨   Save   Run ▶

⚠ **Try Live SQL V2!**
https://livesql.oracle.com/next/   ✕

```
1  alter table apply
2  add constraints p_k  primary key(sid,cname,major) ;
3
```

Table altered.

(iv). Make sID in Applyforeignkey referring table student and cName referring table college.

SQL Worksheet   Clear   Find   Actions ∨   Save   Run ▶

⚠ **Try Live SQL V2!**
https://livesql.oracle.com/next/   ✕

```
1  ALTER TABLE Apply
2  ADD CONSTRAINT f_k FOREIGN KEY (sID)
3  REFERENCES Student(sID);
4  ALTER TABLE Apply
5  ADD CONSTRAINT f_k FOREIGN KEY (cname)
6  REFERENCES college(cname);
```

Table altered.

(V) Increase data type size of majorfrom 20 to 25.

SQL Worksheet   ◇ Clear   ✎ Find   Actions ⌄   💾 Save   **Run** ▶

⚠ **Try Live SQL V2!**
https://livesql.oracle.com/next/   ✕

```
1 ∨  alter table apply
2    modify major varchar(25);
3
4
```

Table altered.

(vi)Add a new column decision in the Apply table keeping a constraint of not null for this column with data type varchar2(3).

SQL Worksheet   Clear   Find   Actions ∨   Save   Run

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```
1  ALTER TABLE Apply
2  ADD decision VARCHAR2(3) NOT NULL;
3
4
5
```

Table altered.

(vii)Change data type of decision in Apply to char(1).

SQL Worksheet   Clear   Find   Actions ∨   Save   Run

Try Live SQL V2!
https://livesql.oracle.com/next/

```
1  ALTER TABLE Apply
2  modify decision char(1) ;
3
4
5
```

Table altered.

(viii) Drop foreign key on column name cName from Apply table.

(ix) Remove column sizeHS from Student table.

(x) Drop primary key from College .

SQL Worksheet ⟡ Clear ⚲ Find Actions ∨ ⊟ Save **Run** ▶

⚠ **Try Live SQL V2!**
https://livesql.oracle.com/next/ ✖

```
1  alter table College
2  drop primary key;
3
```

(xi) Make cName, majorunique pairwise such as Stanford CS, Stanford EE.

SQL Worksheet   ⟡ Clear ⚲ Find Actions ∨ ⊟ Save **Run** ▶

⚠ **Try Live SQL V2!**
https://livesql.oracle.com/next/ ✖

```
1  ALTER TABLE apply
2  ADD CONSTRAINT uniq_ UNIQUE (cName, major);
3
4
```

Table altered.

(xii) Add cName as Foreign Key in Apply table referring table College usingon delete cascade.

SQL Worksheet   Clear   Find   Actions ∨   Save   **Run ▶**

Try Live SQL V2!
https://livesql.oracle.com/next/

```
1   ALTER TABLE Apply
2   ADD CONSTRAINT f_k
3   FOREIGN KEY (cName)
4   REFERENCES College(cName)
5   ON DELETE CASCADE;
```

Table altered.

(xiii) Modify foreign key on sID in Apply table to foreign key on delete set null.

SQL Worksheet   Clear   Find   Actions ∨   Save   **Run ▶**

Try Live SQL V2!
https://livesql.oracle.com/next/

```
1   -- 1. Drop the old constraint (replace FK_APPLY_SID with your actual constraint r
2   ALTER TABLE Apply
3   DROP CONSTRAINT f_k;
4
5   -- 2. Add new constraint with ON DELETE SET NULL
6   ALTER TABLE Apply
7   ADD CONSTRAINT F_K
8   FOREIGN KEY (sID) REFERENCES Student(sID)
9   ON DELETE SET NULL;
```

(xiv) Rename column enrollment to enroll in College Table.

SQL Worksheet   ✏ Clear   ✎ Find   Actions ∨   🖫 Save   **Run** ▶

```
1  |
2
3
4 ˅ alter table college
5   rename enrollment to enroll;
6
7  -- desc student;
8
```

Table altered.