Q.1.   A university DB contains information about professors (identified by SIN) and courses (identified by course ID). Professors teach courses; each of the following situations concerns the Teaches relationship set.

List all candidate keys of the Teaches relationship set. a. Professors can teach the same course in several semesters, and each offering must be recorded. b. Professors can teach the same course in several semesters, but only the most recent such offering needs to be records. Assume the above Situation (b) applies in all subsequent situations.

List all the keys possible in each of the following situations.

a. Every professor teaches a course, and every course is taught by some professor. b. Every professor teaches exactly one course, and every course is taught by exactly one professor.

Ans:

1] create table course(CourseID varchar(5),CourseName varchar(10),CourceDuration varchar(3));

```
mysql> desc course;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| CourseID      | varchar(5)  | YES  |     | NULL    |       |
| CourseName    | varchar(10) | YES  |     | NULL    |       |
| CourceDuration | varchar(3) | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
3 rows in set (0.01 sec)
```

2] create table teacher(TeacherId int(2) primary key,TeacherName varchar(15),Teacher_Address varchar(20),CourseId int(3));

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```
mysql> desc teacher;
+-----------------+-------------+------+-----+---------+-------+
| Field           | Type        | Null | Key | Default | Extra |
+-----------------+-------------+------+-----+---------+-------+
| TeacherId       | int         | NO   | PRI | NULL    |       |
| TeacherName     | varchar(15) | YES  |     | NULL    |       |
| Teacher_Address | varchar(20) | YES  |     | NULL    |       |
| CourseId        | int         | YES  |     | NULL    |       |
+-----------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

3] create table semester(Sem_No int(1),Course_id varchar(3),Teacher_Id varchar(4));

```
mysql> desc semester;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| Sem_No     | int         | YES  |     | NULL    |       |
| Course_id  | varchar(3)  | YES  |     | NULL    |       |
| Teacher_Id | varchar(4)  | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```