

Assignment No.-01
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QUE-01-

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.

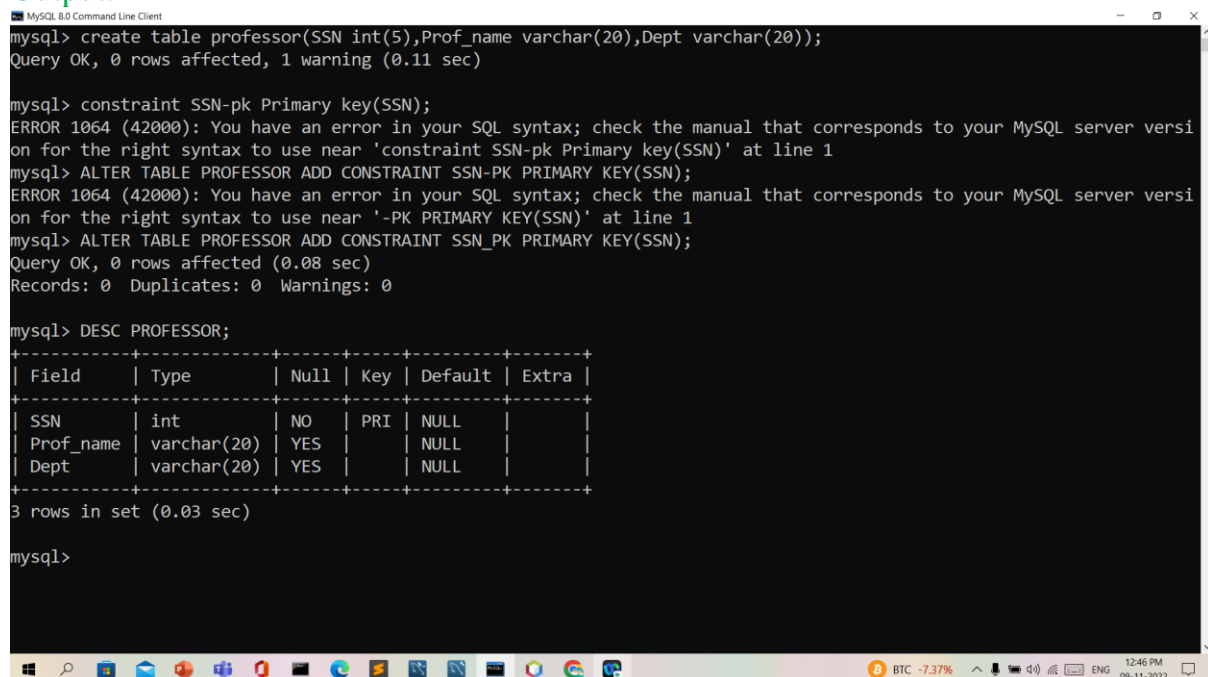
List all the keys possible in each of the following situations.

1 Professors table

Query:

```
create table professor(SSN int(5),Prof_name varchar(20),Dept varchar(20));  
ALTER TABLE PROFESSOR ADD CONSTRAINT SSN_PK PRIMARY KEY(SSN);
```

Output:



```
mysql> create table professor(SSN int(5),Prof_name varchar(20),Dept varchar(20));  
Query OK, 0 rows affected, 1 warning (0.11 sec)  
  
mysql> constraint SSN-pk Primary key(SSN);  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'constraint SSN-pk Primary key(SSN)' at line 1  
mysql> ALTER TABLE PROFESSOR ADD CONSTRAINT SSN-PK PRIMARY KEY(SSN);  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '-PK PRIMARY KEY(SSN)' at line 1  
mysql> ALTER TABLE PROFESSOR ADD CONSTRAINT SSN_PK PRIMARY KEY(SSN);  
Query OK, 0 rows affected (0.08 sec)  
Records: 0 Duplicates: 0 Warnings: 0  
  
mysql> DESC PROFESSOR;  
+-----+-----+-----+-----+-----+-----+  
| Field | Type | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| SSN   | int  | NO   | PRI | NULL    |       |  
| Prof_name | varchar(20) | YES |     | NULL    |       |  
| Dept  | varchar(20) | YES |     | NULL    |       |  
+-----+-----+-----+-----+-----+-----+  
3 rows in set (0.03 sec)  
  
mysql>
```

2 Course table.

Query:

```
create table course(course_id int(10), course_name varchar(20), course_duration varchar(20));  
ALTER TABLE course ADD CONSTRAINT course_id_PK PRIMARY KEY(course_id);
```

Code:

```
mysql> create table course(course_id int(10), course_name varchar(20), course_duration varchar(20));
Query OK, 0 rows affected, 1 warning (0.03 sec)

mysql> ALTER TABLE PROFESSOR ADD CONSTRAINT course_id_PK PRIMARY KEY(course_id);
ERROR 1068 (42000): Multiple primary key defined
mysql> desc course;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| course_id  | int       | YES  |     | NULL    |       |
| course_name| varchar(20)| YES  |     | NULL    |       |
| course_duration| varchar(20)| YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> ALTER TABLE course ADD CONSTRAINT course_id_PK PRIMARY KEY(course_id);
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc course;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| course_id  | int       | NO   | PRI | NULL    |       |
| course_name| varchar(20)| YES  |     | NULL    |       |
| course_duration| varchar(20)| YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
```

3-Teach table

Query:

create table teach(

- > SSN INT,
- > COURSE_ID INT,
- > FOREIGN KEY(SSN) REFERENCES PROFESSOR(SSN),
- > FOREIGN KEY(COURSE_ID) REFERENCES COURSE(COURSE_ID));

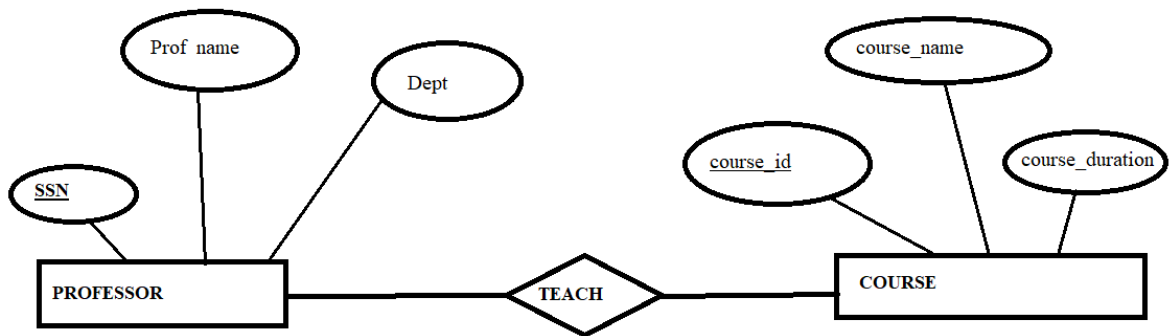
Output:

```
mysql> create table teach(
-> SSN INT,
-> COURSE_ID INT,
-> FOREIGN KEY(SSN) REFERENCES PROFESSOR(SSN),
-> FOREIGN KEY(COURSE_ID) REFERENCES COURSE(COURSE_ID));
Query OK, 0 rows affected (0.09 sec)

mysql> DESC TEACH;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| SSN        | int       | YES  | MUL | NULL    |       |
| COURSE_ID  | int       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)

mysql>
```

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.

