

Advanced DBMS Lab - Faculty and Subject Questions and Answers (MySQL)

Question 1: Create table 'faculty' with constraints

```
CREATE TABLE faculty (  
    fno INT AUTO_INCREMENT PRIMARY KEY,  
    fname VARCHAR(15) NOT NULL,  
    doj DATE NOT NULL CHECK (doj > '2000-01-01'),  
    specialization VARCHAR(50)  
);
```

Question 2: Create table 'subject' with constraints

```
CREATE TABLE subject (  
    sname VARCHAR(50) NOT NULL,  
    sdate DATE NOT NULL,  
    edate DATE NOT NULL,  
    roomno CHAR(4) NOT NULL,  
    fno INT,  
    PRIMARY KEY (sname, sdate),  
    FOREIGN KEY (fno) REFERENCES faculty(fno)  
);
```

Question 3: Insert records into 'faculty'

```
INSERT INTO faculty (fno, fname, doj, specialization) VALUES  
(1, 'John Doe', '2020-01-15', 'Computer Science'),  
(2, 'Jane Smith', '2018-05-20', 'Mathematics'),  
(3, 'Alice Johnson', '2019-09-10', 'Physics'),  
(4, 'Bob William', '2021-03-25', 'Chemistry'),  
(5, 'Emily Brown', '2017-11-08', 'Biology'),  
(6, 'Michael Green', '2020-08-10', 'Economics');
```

Question 4: Insert records into 'subject'

```
INSERT INTO subject (sname, sdate, edate, roomno, fno) VALUES  
( 'Introduction to Programming', '2024-01-10', '2024-05-10', 'C101', 1),  
( 'Linear Algebra', '2024-02-15', '2024-06-15', 'T102', 2),  
( 'Mechanics', '2024-06-20', '2024-10-20', 'T102', 2),  
( 'Mechanics', '2024-03-20', '2024-07-20', 'M103', 3),  
( 'Organic Chemistry', '2024-04-25', '2024-08-25', 'T104', 4),  
( 'Cell Biology', '2024-01-15', '2024-05-15', 'T105', 5);
```

Question 5.1: Faculty whose specialization includes 'm'

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```
SELECT fno, fname
FROM faculty
WHERE specialization LIKE '%m%';
```

Question 5.2: Faculties joined after April 01, 2024

```
SELECT fno, fname
FROM faculty
WHERE doj > '2024-04-01';
```

Question 5.3: Faculty teaching subjects starting after March 01, 2024

```
SELECT DISTINCT f.fno, f.fname
FROM faculty f
JOIN subject s ON f.fno = s.fno
WHERE s.sdate > '2024-03-01';
```

Question 5.4: Subjects with faculty name and specialization, ordered by start date

```
SELECT s.sname, f.fname, f.specialization
FROM subject s
JOIN faculty f ON s.fno = f.fno
ORDER BY s.sdate ASC;
```

Question 5.5: Subjects by the most recently joined faculty

```
SELECT f.fname, f.doj, s.sname
FROM faculty f
JOIN subject s ON f.fno = s.fno
WHERE f.doj = (SELECT MAX(doj) FROM faculty);
```

Question 5.6: Faculty not teaching any subject

```
SELECT fname
FROM faculty
WHERE fno NOT IN (SELECT DISTINCT fno FROM subject);
```

Question 5.7: Subjects with number of faculty teaching each

```
SELECT sname, COUNT(DISTINCT fno) AS num_faculty
FROM subject
GROUP BY sname;
```

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Question 5.8: Faculty with count of subjects they are teaching (desc order)

```
SELECT f.fname, COUNT(s.sname) AS subject_count
FROM faculty f
LEFT JOIN subject s ON f.fno = s.fno
GROUP BY f.fname
ORDER BY subject_count DESC;
```