Cherry Lee H. Jimenez CS2A

Individual Activity 4

A. Write a database description for each of the relations shown, using SQL DDL (shorten, abbreviate, or change any data names, as needed for your SQL version)

```sql
CREATE TABLE Students (
    StudentID INT PRIMARY KEY,
    StudentName VARCHAR(25)
);

CREATE TABLE Faculty (
    FacultyID INT PRIMARY KEY,
    FacultyName VARCHAR(25)
);

CREATE TABLE Courses (
    CourseID CHAR(8) PRIMARY KEY,
    CourseName VARCHAR(15),
    DateQualified DATE
);

CREATE TABLE Sections (
    SectionNo INT PRIMARY KEY,
    Semester VARCHAR(7)
);
```

B. Write SQL data definition commands for each of the following queries:

1. How would you add an attribute, Class, to the STUDENT table?

```sql
ALTER TABLE Students
ADD COLUMN Class VARCHAR(10);
```

2. How would you remove the REGISTRATION table?

```sql
DROP TABLE REGISTRATION;
```

3. What would you need to take into account if you wanted to remove the COURSE table?

```sql
-- Drop foreign key constraint (replace FK_Name with the actual constraint name)
ALTER TABLE Registration
DROP CONSTRAINT FK_Name;

-- Drop the Courses table
DROP TABLE Courses;
```

4. How would you change the FacultyName column from 25 characters to 40 characters?

```sql
ALTER TABLE Faculty
MODIFY COLUMN FacultyName VARCHAR(40);
```

C. Write SQL queries to answer the following questions:

1. List the numbers of all sections of course ISM 3113 that are offered during the semester "1-2018."

```sql
SELECT SectionNo
FROM Sections
WHERE Semester = '1-2018'
      AND SectionNo IN (SELECT SectionNo FROM Courses WHERE CourseID = 'ISM 3113');
```

2. List the course IDs and names of all courses that start with the letters "Data."

```sql
SELECT CourseID, CourseName
FROM Courses
WHERE CourseName LIKE 'Data%';
```

3. List the IDs of all faculty members who are qualified to teach both ISM 3112 and ISM 3113.

```sql
SELECT FacultyID
FROM Faculty
WHERE FacultyID IN (
      SELECT FacultyID
      FROM Courses
      WHERE CourseID IN ('ISM 3112', 'ISM 3113')
      GROUP BY FacultyID
      HAVING COUNT(DISTINCT CourseID) = 2
);
```

4. Modify the query above in part c so that both qualifications must have been earned after the year 2011.

```sql
SELECT FacultyID
FROM Faculty
WHERE FacultyID IN (
      SELECT FacultyID
      FROM Courses
      WHERE CourseID IN ('ISM 3112', 'ISM 3113')
        AND DateQualified > '2011-01-01'
      GROUP BY FacultyID
      HAVING COUNT(DISTINCT CourseID) = 2
);
```

5. List the ID of die faculty member who has been assigned to teach ISM 4212 during the semester 11-2018.

```sql
SELECT FacultyID
FROM Courses
WHERE CourseID = 'ISM 4212'
      AND SectionNo IN (
          SELECT SectionNo
          FROM Sections
          WHERE Semester = '11-2018'
      );
```