SQL Quiz Assignment

Tables to Create

1. **Students**
   - `StudentID` (Primary Key, Integer)
   - `FirstName` (Varchar, 50)
   - `LastName` (Varchar, 50)
   - `DateOfBirth` (Date)
   - `EnrollmentDate` (Date)
   - `Email` (Varchar, 100)
   - `Age` (Integer)
2. **Courses**
   - `CourseID` (Primary Key, Integer)
   - `CourseName` (Varchar, 100)
   - `Credits` (Integer)
   - `Department` (Varchar, 50)
3. **Enrollments**
   - `EnrollmentID` (Primary Key, Integer)
   - `StudentID` (Foreign Key, Integer, references `Students` table)
   - `CourseID` (Foreign Key, Integer, references `Courses` table)
   - `Grade` (Char, 2)
   - `Semester` (Varchar, 10)
4. **Professors**
   - `ProfessorID` (Primary Key, Integer)
   - `FirstName` (Varchar, 50)
   - `LastName` (Varchar, 50)
   - `Department` (Varchar, 50)
   - `Email` (Varchar, 100)
5. **CourseAssignments**
   - `AssignmentID` (Primary Key, Integer)
   - `ProfessorID` (Foreign Key, Integer, references `Professors` table)
   - `CourseID` (Foreign Key, Integer, references `Courses` table)
   - `Semester` (Varchar, 10)

Insert Data

1. Insert data into the `Students` table:

```
(1, 'John', 'Doe', '2000-01-01', '2018-09-01', 'john.doe@example.com'),
(2, 'Jane', 'Smith', '1999-05-15', '2017-09-01',
'jane.smith@example.com',21),
(3, 'Robert', 'Brown', '2001-11-21', '2019-09-01',
'robert.brown@example.com',25),
(4, 'Emily', 'Jones', '2002-03-03', '2020-09-01',
'emily.jones@example.com',22),
```

```
(5, 'Michael', 'Davis', '1998-07-22', '2016-09-01',
'michael.davis@example.com',23),
(6, 'Linda', 'Wilson', '2000-12-12', '2018-09-01',
'linda.wilson@example.com',21),
(7, 'James', 'Taylor', '2001-03-14', '2019-09-01',
'james.taylor@example.com',22),
(8, 'Sarah', 'Lee', '2002-07-07', '2020-09-01',
'sarah.lee@example.com',23),
(9, 'David', 'Martin', '1999-11-11', '2017-09-01',
'david.martin@example.com',24),
(10, 'Susan', 'Clark', '2001-05-05', '2019-09-01',
'susan.clark@example.com',22);
```

2. Insert data into the `Courses` table:

```
(1, 'Introduction to SQL', 3, 'Computer Science'),
(2, 'Data Structures', 4, 'Computer Science'),
(3, 'Database Management Systems', 3, 'Information Technology'),
(4, 'Algorithms', 4, 'Computer Science'),
(5, 'Operating Systems', 3, 'Information Technology'),
(6, 'Web Development', 3, 'Computer Science'),
(7, 'Computer Networks', 3, 'Information Technology');
```

3. Insert data into the `Enrollments` table:

```
(1, 1, 2, 'A', 'Fall2020'),
(2, 2, 3, 'B+', 'Spring2021'),
(3, 3, 2, 'A-', 'Fall2021'),
(4, 4, 3, 'B', 'Spring2022'),
(5, 2, 2, 'A', 'Fall2020'),
(6, 5, 1, 'B+', 'Fall2020'),
(7, 6, 4, 'A', 'Spring2021'),
(8, 7, 5, 'B', 'Fall2021'),
(9, 8, 6, 'A-', 'Spring2022'),
(10, 9, 7, 'B+', 'Fall2020'),
(11, 10, 1, 'A', 'Spring2021'),
(12, 1, 3, 'B', 'Spring2021'),
(13, 2, 4, 'A-', 'Fall2021'),
(14, 3, 5, 'B+', 'Spring2022'),
(15, 4, 6, 'A', 'Fall2020');
```

4. Insert data into the `Professors` table:

```
(1, 'Dr. Alice', 'Johnson', 'Computer Science',
'alice.johnson@example.com'),
(2, 'Dr. Bob', 'Miller', 'Information Technology',
'bob.miller@example.com'),
(3, 'Dr. Carol', 'Williams', 'Computer Science',
'carol.williams@example.com'),
(4, 'Dr. David', 'Jones', 'Information Technology',
'david.jones@example.com'),
(5, 'Dr. Emma', 'Brown', 'Computer Science', 'emma.brown@example.com');
```

5. Insert data into the `CourseAssignments` table:

```
(1, 1, 1, 'Fall2020'),
(2, 1, 2, 'Spring2021'),
(3, 2, 3, 'Fall2020'),
(4, 3, 2, 'Spring2022'),
(5, 4, 4, 'Fall2021'),
(6, 5, 5, 'Spring2022'),
(7, 1, 6, 'Fall2020'),
(8, 2, 7, 'Spring2021');
```

Questions

1. Create the `Students`, `Courses`, `Enrollments`, `Professors`, and `CourseAssignments` tables with appropriate columns and constraints.
2. Insert data into the `Students`, `Courses`, `Enrollments`, `Professors`, and `CourseAssignments` tables. Provide at least 3 records for each table.
3. Update the email of the student with `StudentID` 1 to 'john.doe@newmail.com'.
4. Delete the record of the student with `StudentID` 5 from the `Students` table.
5. Select all records from the `Students` table.
6. Select the `FirstName` and `LastName` of all students who enrolled after '2018-01-01'.
7. Count the number of students in the `Students` table.
8. Select all records from the `Courses` table.
9. Select the `CourseName` and `Credits` for courses in the 'Computer Science' department.
10. Find the total number of credits offered by the 'Information Technology' department.
11. List each student's `FirstName`, `LastName`, and the names of the courses they are enrolled in.
12. Find the names of courses that have more than one student enrolled. List the `CourseName` and the number of students.
13. Select all students and order them by their `EnrollmentDate` in descending order.
14. List the `FirstName` and `LastName` of students who are not enrolled in any courses.
15. Find the average number of credits for each department. List the `Department` and the average credits.
16. List the `FirstName`, `LastName`, `CourseName`, and `Grade` of students enrolled in courses for the 'Fall2020' semester.
17. List the `CourseName` and the number of students enrolled in each course.
18. Find the `FirstName`, `LastName`, `CourseName`, and `Grade` of students who received a grade lower than 'B'.
19. List each `StudentID`, `FirstName`, `LastName`, and the total number of enrollments.
20. List the `CourseName` of courses that have no enrollments.

21. List the top 3 students with the highest number of course enrollments. Include `StudentID`, `FirstName`, `LastName`, and `TotalEnrollments`.
22. List each professor's `FirstName`, `LastName`, and the names of the courses they are assigned to teach.
23. Find the number of professors in each department. List the `Department` and the number of professors.
24. Select all courses and order them by `Credits` in ascending order.
25. List the `FirstName` and `LastName` of professors who are teaching more than one course.

26. List the `FirstName`, `LastName`, and `CourseName` of students who are enrolled in courses taught by 'Dr. Alice Johnson'.
27. Find the total number of credits each student is enrolled in. List the `StudentID`, `FirstName`, `LastName`, and `TotalCredits`.
28. Find the number of students enrolled in each course for the 'Spring2021' semester. List the `CourseID`, `CourseName`, and `StudentCount`.
29. List the `CourseName` and `Department` of courses that had enrollments in 'Spring2021'.
30. For each student, list their `StudentID`, `FirstName`, `LastName`, and the date of their last enrollment.
31. Find the names of students who have enrolled in 'Data Structures' (CourseID 2).
32. List all students along with the total number of courses they are enrolled in.
33. List all students with their enrolled courses and grades. Include `StudentID`, `FirstName`, `LastName`, `CourseName`, and `Grade`.
34. Find the total number of enrollments for each student. List the `StudentID`, `FirstName`, `LastName`, and `TotalEnrollments`.

35. Create a view named `EnrollmentSummary` that displays `StudentID`, `FirstName`, `LastName`, `CourseID`, `CourseName`, and `Grade` from the `Enrollments` table.
36. Find the average age of students enrolled in each course. List the `CourseID`, `CourseName`, and `AverageAge`.
37. Find the highest and lowest grade received by students in each course. List the `CourseID`, `CourseName`, `HighestGrade`, and `LowestGrade`.
38. Calculate the average grade of students enrolled in each course. List the `CourseID`, `CourseName`, and `AvgGrade`.
39. Find the total grades for students in each department. List the `Department` and `TotalGrades`.
40. List the `FirstName`, `LastName`, `CourseName`, and `ProfessorName` for each enrollment.