

--Queries

-- 1. Find all students enrolled in the Math course

```
SELECT student_id, student_name
FROM Students
WHERE student_id IN (
    SELECT student_id
    FROM Enrollments
    WHERE course_id IN (
        SELECT course_id
        FROM Courses
        WHERE course_name = 'Math'
    )
);
```

123 student_id ▼	ABC student_name ▼
1	Alice
4	David
6	Frank
3	Charlie

-- 2. List all courses taken by students named Bob

```
SELECT course_id, course_name
FROM Courses
WHERE course_id IN (
    SELECT course_id
    FROM Enrollments
    WHERE student_id IN (
        SELECT student_id
```

```

FROM Students
WHERE student_name = 'Bob'
)
);

```

123 course_id	ABC course_name
102	Science

-- 3. Find the names of students who are enrolled in more than one course

```

SELECT student_id, student_name
FROM Students
WHERE student_id IN (
    SELECT student_id
    FROM Enrollments
    GROUP BY student_id
    HAVING COUNT(*) > 1
);

```

123 student_id	ABC student_name
1	Alice
3	Charlie
4	David

-- 4. List all students who are in Grade A (grade_id = 1)

```
SELECT student_id, student_name
FROM Students
WHERE student_grade_id = 1;
```

123 student_id	ABC student_name
1	Alice
3	Charlie
5	Eve
8	Henry

-- 5. Find the number of students enrolled in each course

```
SELECT course_id, course_name,
       (SELECT COUNT(*)
        FROM Enrollments
        WHERE course_id = Courses.course_id) AS num_students
FROM Courses;
```

123 course_id	ABC course_name	123 num_students
101	Math	4
102	Science	4
103	History	2

-- 6. Retrieve the course with the highest number of enrollments

```
SELECT course_id, course_name,
       (SELECT COUNT(*)
        FROM Enrollments
        WHERE course_id = Courses.course_id) AS num_enrollments
FROM Courses
WHERE (
       SELECT COUNT(*)
       FROM Enrollments
```

```
WHERE course_id = Courses.course_id
) = (
SELECT MAX(enroll_count)
FROM (
    SELECT COUNT(*) AS enroll_count
    FROM Enrollments
    GROUP BY course_id
) AS max_counts
);
```

123 course_id	ABC course_name	123 num_enrollments
101	Math	4
102	Science	4

-- 7. List students who are enrolled in all available courses

```
SELECT student_id, student_name
```

```
FROM Students
```

```
WHERE NOT EXISTS (
```

```
    SELECT course_id
```

```
    FROM Courses
```

```
    WHERE NOT EXISTS (
```

```
        SELECT 1
```

```
        FROM Enrollments
```

```
        WHERE student_id = Students.student_id AND course_id = Courses.course_id
```

```
    )
```

```
);
```

123 student_id	ABC student_name

-- 8. Find students who are not enrolled in any courses

SELECT student_id, student_name

FROM Students

WHERE student_id NOT IN (

SELECT student_id

FROM Enrollments

);

123 student_id	ABC student_name
8	Henry
9	Ivy
10	Jack

-- 9. Retrieve the average age of students enrolled in the Science course

```
SELECT AVG(student_age) AS average_age
```

```
FROM Students
```

```
WHERE student_id IN (
```

```
    SELECT student_id
```

```
    FROM Enrollments
```

```
    WHERE course_id IN (
```

```
        SELECT course_id
```

```
        FROM Courses
```

```
        WHERE course_name = 'Science'
```

```
    )
```

```
);
```

123 average_age
16.5

-- 10. Find the grade of students enrolled in the History course

```
SELECT grade_name
```

```
FROM Grades
```

```
WHERE grade_id IN (
```

```
    SELECT student_grade_id
```

```
    FROM Students
```

```
    WHERE student_id IN (
```

```
        SELECT student_id
```

```
        FROM Enrollments
```

```
        WHERE course_id IN (
```

```
            SELECT course_id
```

```
FROM Courses
WHERE course_name = 'History'
)
)
);
```

ABC grade_name
A
B