

Given the following relational database schema:

Student = (SSN, Name, Major)

Course = (CourseNumber , CourseTitle, NumberOfUnits, RoomNumber, DayTime), where DayTime is of the form MW 1:0-2:00.

Enrollment = (SSN , CourseNumber, Grade)

Express the following queries using AQL statements with minimum number of tables and operations.

1. List the SSN and name of every student who is enrolled in the course 'Database System'.

Answer:

```
SELECT S.SSN, S.Name
FROM Student S, Course C, Enrollment E
WHERE S.SSN = E.SSN
AND C.CourseTitle = 'Database System'
```

2. List every course number in which both 'John Smith' and 'Kevin Miller' are enrolled.

Answer:

```
SELECT E.CourseNumber
FROM Student S, Enrollment E
WHERE S.SSN = E.SSN
AND S.Name = 'John Smith'
AND S.Name = 'Kevin Miller'
```

3. List the name of every student whose name starts with the letter S and ends with the letter M, and has earned the grade B in at least one course.

Answer:

```
SELECT S.Name
FROM Student S, Enrollment E
WHERE S.SSN = E.SSN
AND S.Name LIKE 'S%M'
AND E.GRADE = 'B'
```

4. List the name of every student who earned an A in at least one course.

Answer:

```
SELECT S.NAME
FROM Student S, Enrollment E
WHERE S.SSN = E.SSN
AND E.GRADE = 'A'
```

5. List the SSN, Name, Course Number, and Grade for every student and course.

Answer:

```
SELECT S.SSN, S.Name, E.CourseNumber, E.Grade
FROM Student S, Enrollment E
```

6. List the SSN and Name of every student who has no grade in at least one course.

Answer:

```
SELECT S.SSN, S.Name
FROM Student S, Enrollment E
WHERE S.SSN = E.SSN
```

AND E.GRADE = NULL

7. List the name of every student who enrolled in at least two courses.

Answer:

```
SELECT S.SSN
FROM Student S, Enrollment E
WHERE S.SSN = E.SSN
GROUP BY S.SSN HAVING COUNT(E.CourseNumber) > 1
```

8. List the name of every student who hasn't taken any course.

Answer:

```
SELECT S.Name
FROM Student S, Enrollment E
WHERE S.SSN NOT IN
(SELECT S.SSN
FROM Enrollment E
WHERE S.SSN = E.SSN)
```

9. List the SSN and the name of every student who does not have a grade in any course, i.e all her or his grades are null.

Answer:

```
SELECT S.SSN, S.Name
FROM Student S, Enrollment E
WHERE S.SSN NOT IN
(SELECT S.SSN
FROM Enrollment E
WHERE S.SSN = E.SSN
AND E.Grade IS NOT NULL)
```

10. List the SSN and Name of all students who do not have the grade A in any course.

Answer:

```
SELECT S.SSN, S.Name
FROM Student S, Enrollment E
WHERE S.SSN = E.SSN
AND S.SSN NOT IN
(SELECT S.SSN
FROM Student S, Enrollment E
WHERE S.SSN = E.SSN
AND E.Grade = 'A')
```