CS4350 Database Systems HW#2

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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 SQL 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’.

SELECT Student.SSN, Student.Name

FROM Student

JOIN Enrollment ON Student.SSN = Enrollment.SSN

JOIN Course ON Enrollment.CourseNumber = Course.CourseNumber

WHERE Course. CourseTitle = ‘Database System’;

1. List every course number in which both ‘John Smith’ and ‘Kevin Miller’ are enrolled.

SELECT DISTINCT e1.CourseNumber

FROM Enrollment e1

JOIN Enrollment e2 ON e1.CourseNumber = e2.CourseNumber

JOIN Student s1 ON e1.SSN = s1.SSN

JOIN Student s2 ON e2.SSN = s2.SSN

WHERE s1.Name = ‘John Smith’ AND s2.Name = ‘Kevin Miller’;

1. 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.

SELECT s.Name

FROM Student s

JOIN Enrollment e ON s.SSN = e.SSN

WHERE s.Name LIKE ‘S%M’ AND e.Grade = ‘B’;

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

SELECT DISTINCT s.Name

FROM Student s

JOIN Enrollment e ON s.SSN = e.SSN

WHERE e.Grade = ‘A’;

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

SELECT e.SSN, s.Name, e.CourseNumber, e.Grade

FROM Enrollment e

JOIN Student s ON e.SSN = s.SSN;

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

SELECT s.SSN, s.Name

FROM Student s

JOIN Enrollment e ON s.SSN = e.SSN

WHERE e.Grade IS NULL

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

SELECT s.Name

FROM Student s

JOIN Enrollment e ON s.SSN = e.SSN

GROUP BY s.SSN, s.Name

HAVING COUNT(e.CourseNumber) >= 2;

1. List the name of every student who hasn’t taken any course.

SELECT s.Name

FROM Student s

JOIN Enrollment e ON s.SSN = e.SSN

GROUP BY s.SSN, s.Name

HAVING COUNT(e.CourseNumber) = 0;

1. 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.

SELECT s.SSN, s.Name

FROM Student s

JOIN Enrollment e ON s.SSN = e.SSN

WHERE e.Grade IS NULL

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

SELECT s.SSN, s.Name

FROM Student s

JOIN Enrollment e ON s.SSN = e.SSN

WHERE e.Grade != ‘A’