

Assignment 3

In an educational institute, various numbers of courses are offered. In each course, 7 numbers of subjects are taught. One student can select minimum 5 and maximum 6 numbers of subjects for that course. Each course has maximum intake capacity. The same subject may be taught in various courses. The system must be able to handle course, subject, student, marks grade and enrollment information. Assumptions also can be made. Design an ER diagram and database schema for the system. Specify the primary key, foreign key and other constraints for all required tables. Draw the ER diagram in MS Word.

1. Insert at least five tuples in each table.

```
-- COURSE Table

CREATE TABLE COURSE(

    COURSE_ID NUMBER(2),

    COURSE_NAME VARCHAR2(10)

);

INSERT INTO COURSE VALUES (10, 'CS');

INSERT INTO COURSE VALUES (11, 'IT');

INSERT INTO COURSE VALUES (12, 'ETC');

INSERT INTO COURSE VALUES (13, 'AI');

INSERT INTO COURSE VALUES (14, 'ML');

INSERT INTO COURSE VALUES (15, 'WEB DEV');

-- SUBJECT Table

CREATE TABLE SUBJECT(

    SUBJECT_ID NUMBER(4),

    SUBJECT_NAME VARCHAR2(15)

);

INSERT INTO SUBJECT VALUES (2301, 'DSA');
```

```
INSERT INTO SUBJECT VALUES (2302, 'OOP');
INSERT INTO SUBJECT VALUES (2303, 'DBMS');
INSERT INTO SUBJECT VALUES (2304, 'CNN');
INSERT INTO SUBJECT VALUES (2305, 'ASM');
INSERT INTO SUBJECT VALUES (2306, 'JS');
INSERT INTO SUBJECT VALUES (2307, 'HTML');
INSERT INTO SUBJECT VALUES (2308, 'CSS');
```

-- STUDENT Table

```
CREATE TABLE STUDENT(
    STUDENT_ID NUMBER(5),
    STUDENT_NAME VARCHAR2(25),
    COURSE_ID NUMBER(2),
    AGE NUMBER(2)
);
```

```
INSERT INTO STUDENT VALUES (20231, 'KAUSTAV', 10, 18);
INSERT INTO STUDENT VALUES (20232, 'ANSH', 12, 18);
INSERT INTO STUDENT VALUES (20233, 'ARITRA', 12, 19);
INSERT INTO STUDENT VALUES (20234, 'ANISH', 12, 18);
INSERT INTO STUDENT VALUES (20235, 'KRISHANU', 12, 20);
INSERT INTO STUDENT VALUES (20236, 'MAYUKH', 14, 21);
INSERT INTO STUDENT VALUES (20237, 'SANTU', 15, 19);
```

-- ENROLLED Table

```
CREATE TABLE ENROLLED(
    STUDENT_ID NUMBER(5),
    COURSE_ID NUMBER(2)
);
```

```
INSERT INTO ENROLLED VALUES (20231, 10);
INSERT INTO ENROLLED VALUES (20232, 12);
INSERT INTO ENROLLED VALUES (20233, 12);
```

```
INSERT INTO ENROLLED VALUES (20234, 12);
```

```
INSERT INTO ENROLLED VALUES (20235, 12);
```

```
-- HAVE Table
```

```
CREATE TABLE HAVE(
```

```
    COURSE_ID NUMBER(2),
```

```
    SUBJECT_ID NUMBER(4),
```

```
    SUBJECT_NAME VARCHAR(15)
```

```
);
```

```
INSERT INTO HAVE VALUES (14, 2301, 'DSA');
```

```
INSERT INTO HAVE VALUES (14, 2302, 'OOP');
```

```
INSERT INTO HAVE VALUES (14, 2303, 'DBMS');
```

```
INSERT INTO HAVE VALUES (14, 2304, 'CNN');
```

```
INSERT INTO HAVE VALUES (14, 2305, 'ASM');
```

```
INSERT INTO HAVE VALUES (14, 2306, 'JS');
```

```
-- SELECTED Table
```

```
CREATE TABLE SELECTED(
```

```
    STUDENT_ID NUMBER(5),
```

```
    SUBJECT_ID NUMBER(4),
```

```
    GRADE VARCHAR2(1)
```

```
);
```

```
INSERT INTO SELECTED VALUES (20231, 2301, 'A');
```

```
INSERT INTO SELECTED VALUES (20231, 2302, 'A');
```

```
INSERT INTO SELECTED VALUES (20231, 2303, 'A');
```

```
INSERT INTO SELECTED VALUES (20231, 2304, 'A');
```

```
INSERT INTO SELECTED VALUES (20231, 2305, 'A');
```

```
INSERT INTO SELECTED VALUES (20231, 2306, 'A');
```

- At the time of creation if we forget to create a field enrollment date (ENROLL_DATE) in ENROLL table so add the field.

The screenshot shows the 'Live SQL' web interface. On the left is a navigation menu with options: Home, SQL Worksheet (selected), My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library. The main area is titled 'SQL Worksheet' and contains a script with the following lines:

```
1 ALTER TABLE ENROLL
2 ADD (ENROLL_DATE DATE);
3 UPDATE ENROLL SET ENROLL_DATE='19-FEB-24' WHERE STUDENT_ID=20231;
4 UPDATE ENROLL SET ENROLL_DATE='17-FEB-24' WHERE STUDENT_ID=20232;
5 UPDATE ENROLL SET ENROLL_DATE='14-MAR-24' WHERE STUDENT_ID=20233;
6 UPDATE ENROLL SET ENROLL_DATE='21-MAY-24' WHERE STUDENT_ID=20234;
7 UPDATE ENROLL SET ENROLL_DATE='04-NOV-24' WHERE STUDENT_ID=20235;
```

Below the script, the execution results are displayed:

```
Table altered.
1 row(s) updated.
1 row(s) updated.
1 row(s) updated.
1 row(s) updated.
1 row(s) updated.
1 row(s) updated.
```

At the bottom, a footer note states: '2024 Oracle - Live SQL 24.1.3, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 - Database Documentation - Ask Tom - Dev Gym. Built with using Oracle APEX - Privacy - Terms of Use'.

- Course name cannot be blank, therefore add the criteria in the specific table.

The screenshot shows the 'Live SQL' web interface with the same navigation menu. The 'SQL Worksheet' section contains a script:

```
1 ALTER TABLE COURSE
2 MODIFY COURSE_NAME VARCHAR(10) NOT NULL;
```

The execution results below the script show:

```
Table altered.
```

The same footer note as the previous screenshot is present at the bottom: '2024 Oracle - Live SQL 24.1.3, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 - Database Documentation - Ask Tom - Dev Gym. Built with using Oracle APEX - Privacy - Terms of Use'.

- Find the Course which has more than 3 students.

Live SQL

SQL Worksheet

```

1 SELECT *
2 FROM( SELECT COUNT(COURSE_ID) AS NO_OF_STUDENT, COURSE_ID, COURSE_NAME
3       FROM ENROLLED,COURSE
4       WHERE ENROLLED.COURSE_ID=COURSE.COURSE_ID)
5 GROUP BY COURSE_ID,COURSE_NAME
6 WHERE NO_OF_STUDENT>3;

```

NO_OF_STUDENT	COURSE_ID	COURSE_NAME
4	12	ETC

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5. Give the details of a STUDENT with all Subjects and Grade where he/she enroll (Enter the sid value as input).

Live SQL

SQL Worksheet

```

1 SELECT STUDENT.STUDENT_ID, STUDENT.STUDENT_NAME, SUBJECT.SUBJECT_ID, SUBJECT.SUBJECT_NAME, SELECTED.GRADE
2 FROM STUDENT
3 INNER JOIN SELECTED ON STUDENT.STUDENT_ID = SELECTED.STUDENT_ID
4 INNER JOIN SUBJECT ON SELECTED.SUBJECT_ID = SUBJECT.SUBJECT_ID
5 WHERE STUDENT.STUDENT_ID = 20231;
6 --SID AS INPUT 20231

```

STUDENT_ID	STUDENT_NAME	SUBJECT_ID	SUBJECT_NAME	GRADE
20231	KAUSTAV	2301	DSA	A
20231	KAUSTAV	2302	OOP	A
20231	KAUSTAV	2303	DBMS	A
20231	KAUSTAV	2304	CNN	A
20231	KAUSTAV	2305	ASH	A
20231	KAUSTAV	2306	JS	A

Download CSV

6 rows selected.

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6. Display the course where the maximum number of students enrolls.

Live SQL

SQL Worksheet

```
1 SELECT STUDENT_COUNT, COURSE_NAME
2 FROM ( SELECT COUNT(COURSE_ID) AS STUDENT_COUNT ,COURSE_ID, COURSE_NAME
3       FROM ( SELECT ENROLLED.COURSE_ID , COURSE.COURSE_NAME
4             FROM ENROLLED,COURSE
5             WHERE ENROLLED.COURSE_ID=COURSE.COURSE_ID)
6       GROUP BY COURSE_ID,COURSE_NAME)
7 WHERE STUDENT_COUNT = ( SELECT MAX(STUDENT_COUNT)
8                       FROM( SELECT COUNT(COURSE_ID) AS STUDENT_COUNT ,COURSE_ID, COURSE_NAME
9                             FROM ( SELECT ENROLLED.COURSE_ID , COURSE.COURSE_NAME
10                                   FROM ENROLLED,COURSE
11                                   WHERE ENROLLED.COURSE_ID=COURSE.COURSE_ID)
12                                   GROUP BY COURSE_ID,COURSE_NAME));
```

STUDENT_COUNT	COURSE_NAME
4	ETC

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7. Find out the course where no student is enrolled.

Live SQL

SQL Worksheet

```
1 SELECT COURSE.COURSE_ID, COURSE_NAME
2 FROM COURSE
3 LEFT JOIN STUDENT ON COURSE.COURSE_ID = STUDENT.COURSE_ID
4 WHERE STUDENT_ID IS NULL;
```

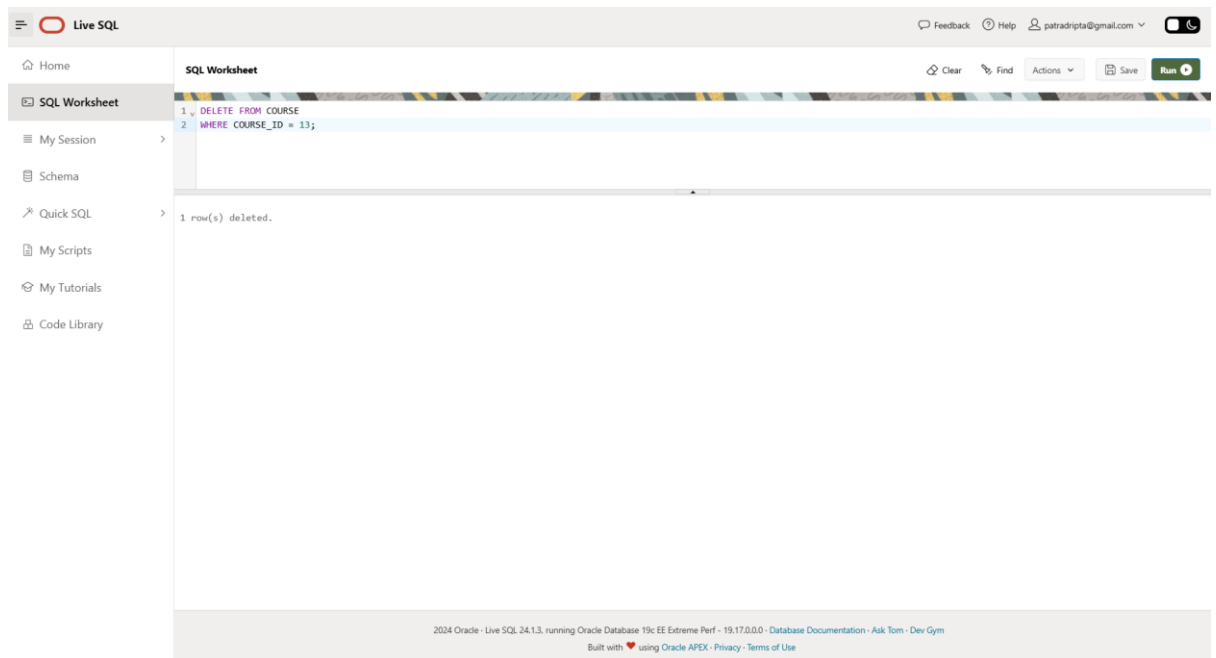
COURSE_ID	COURSE_NAME
11	IT
13	AI

Download CSV

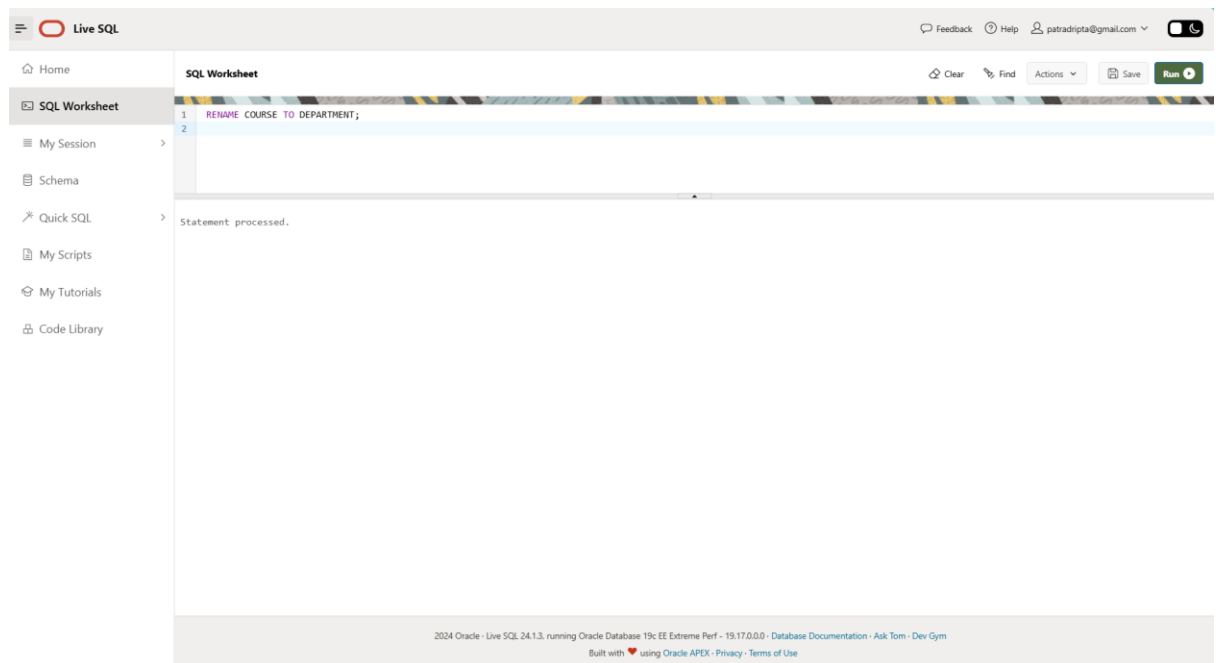
2 rows selected.

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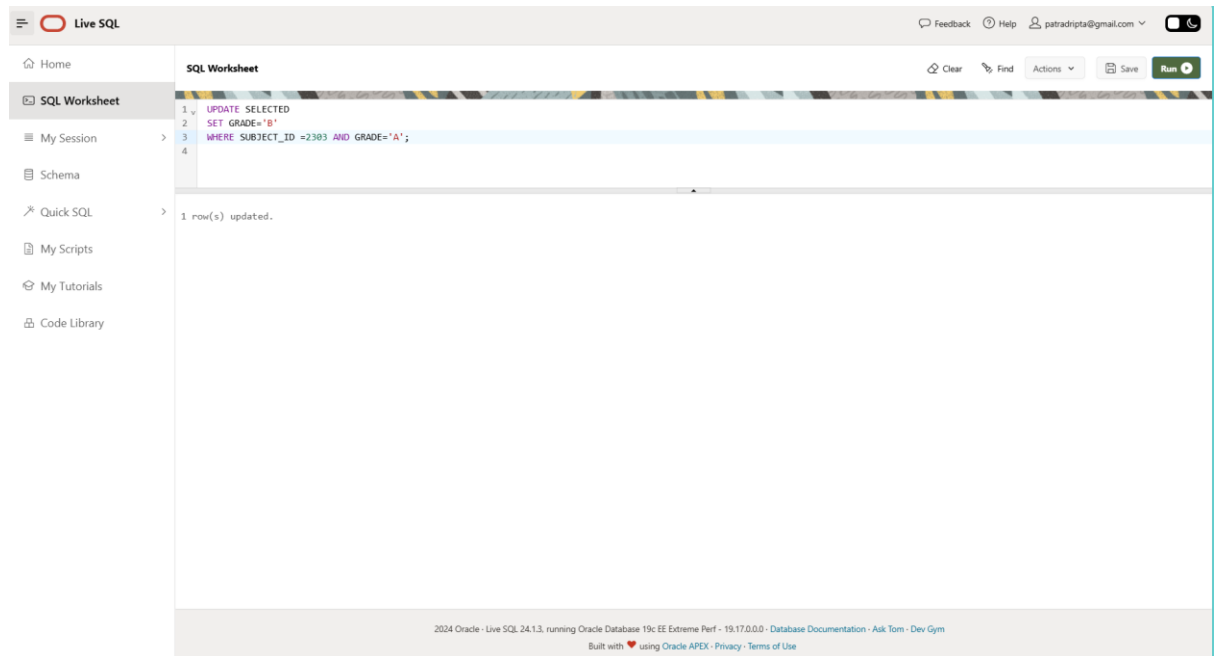
8. Delete Course no 13 from COURSE table.



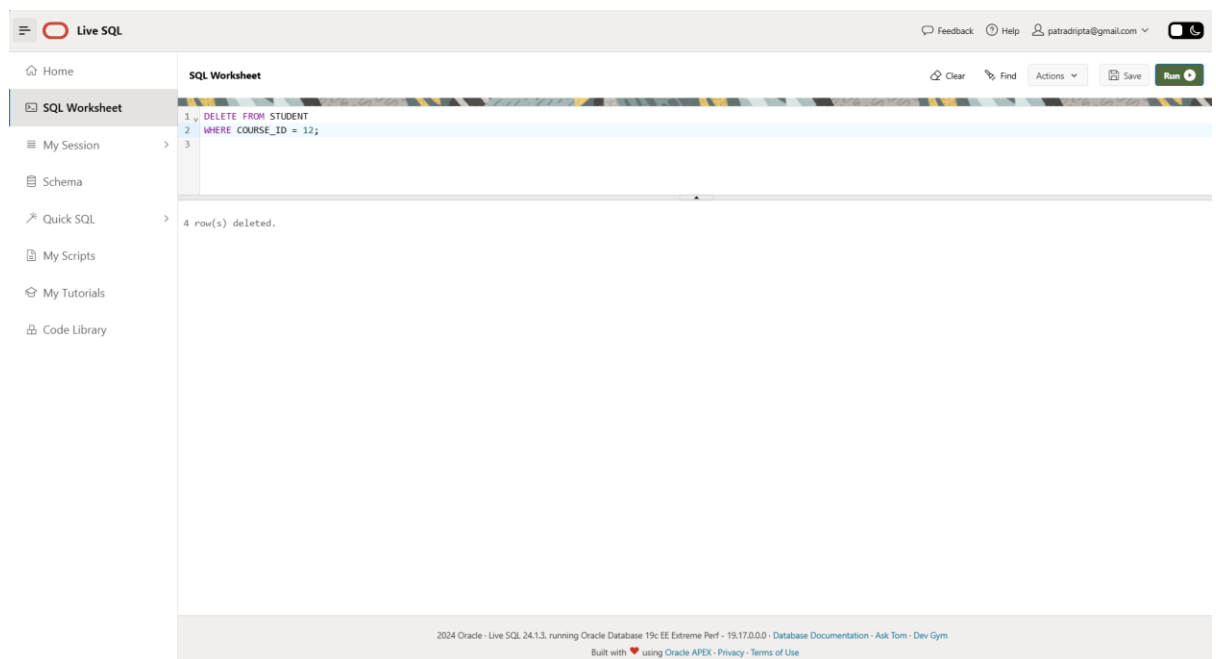
9. Rename the COURSE table as DEPARTMENT.



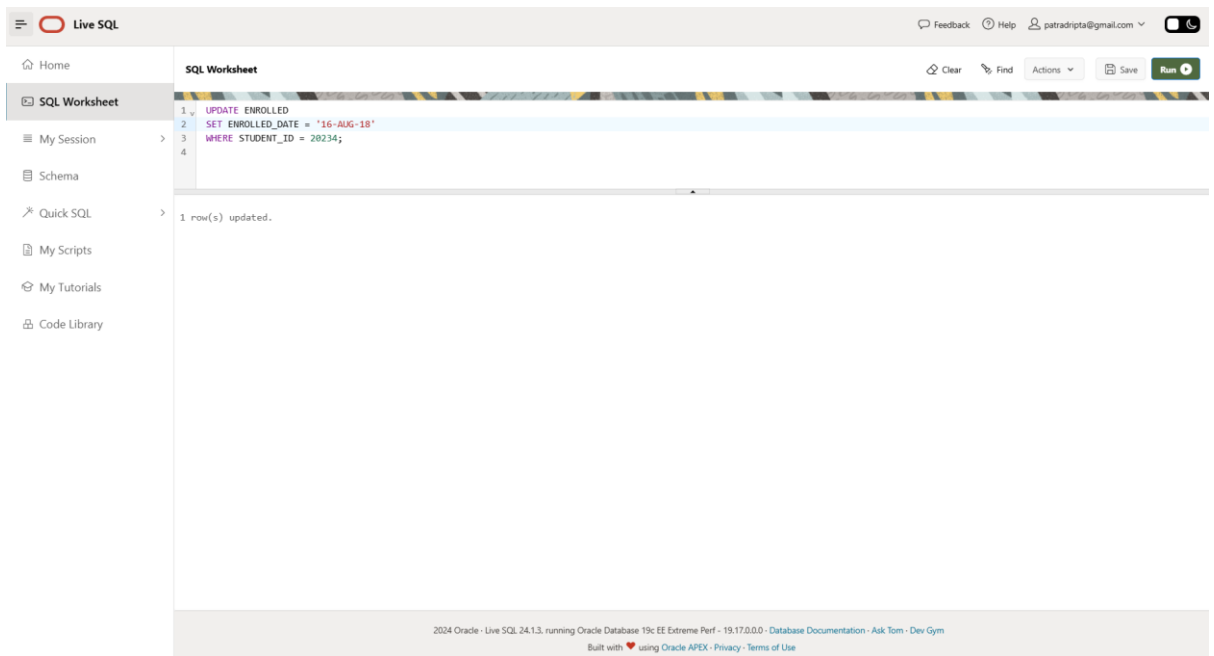
10. Change the Marks Grade of Student “A” to “B” who is Enroll in the subject DBMS.



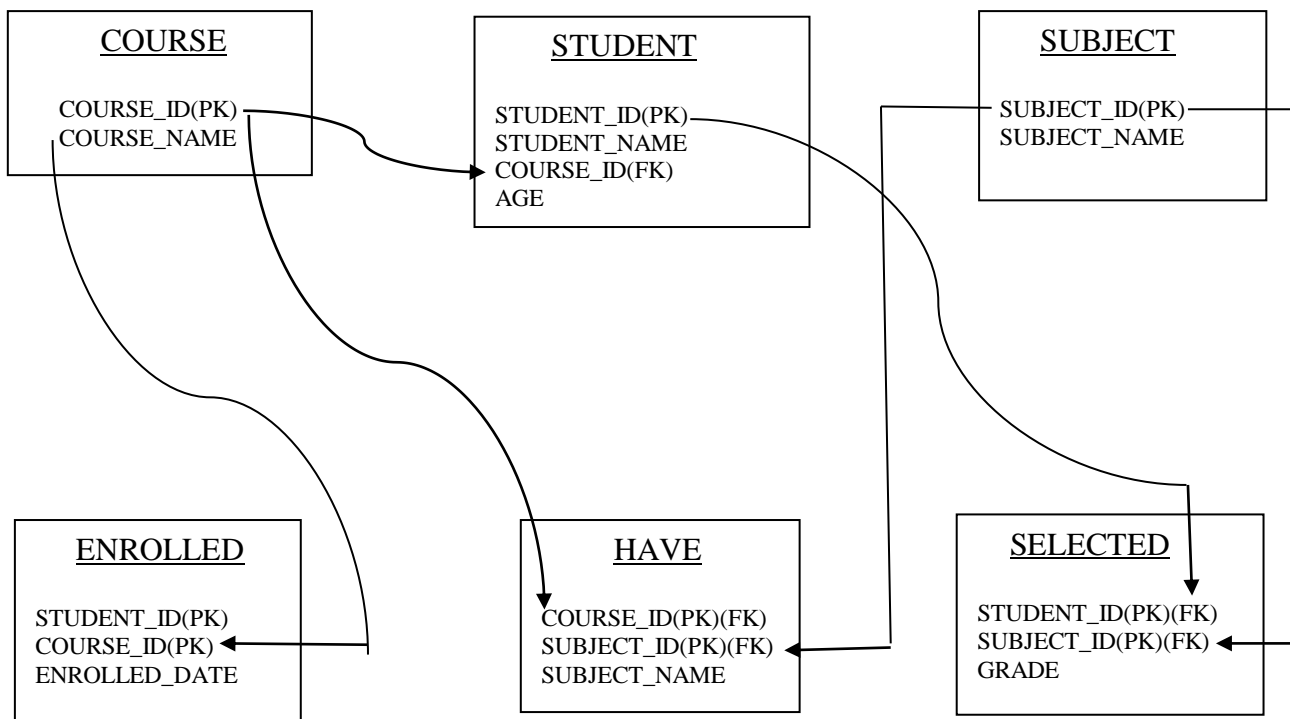
11. Delete the record of the student who is enrolled in the course 'IT'.



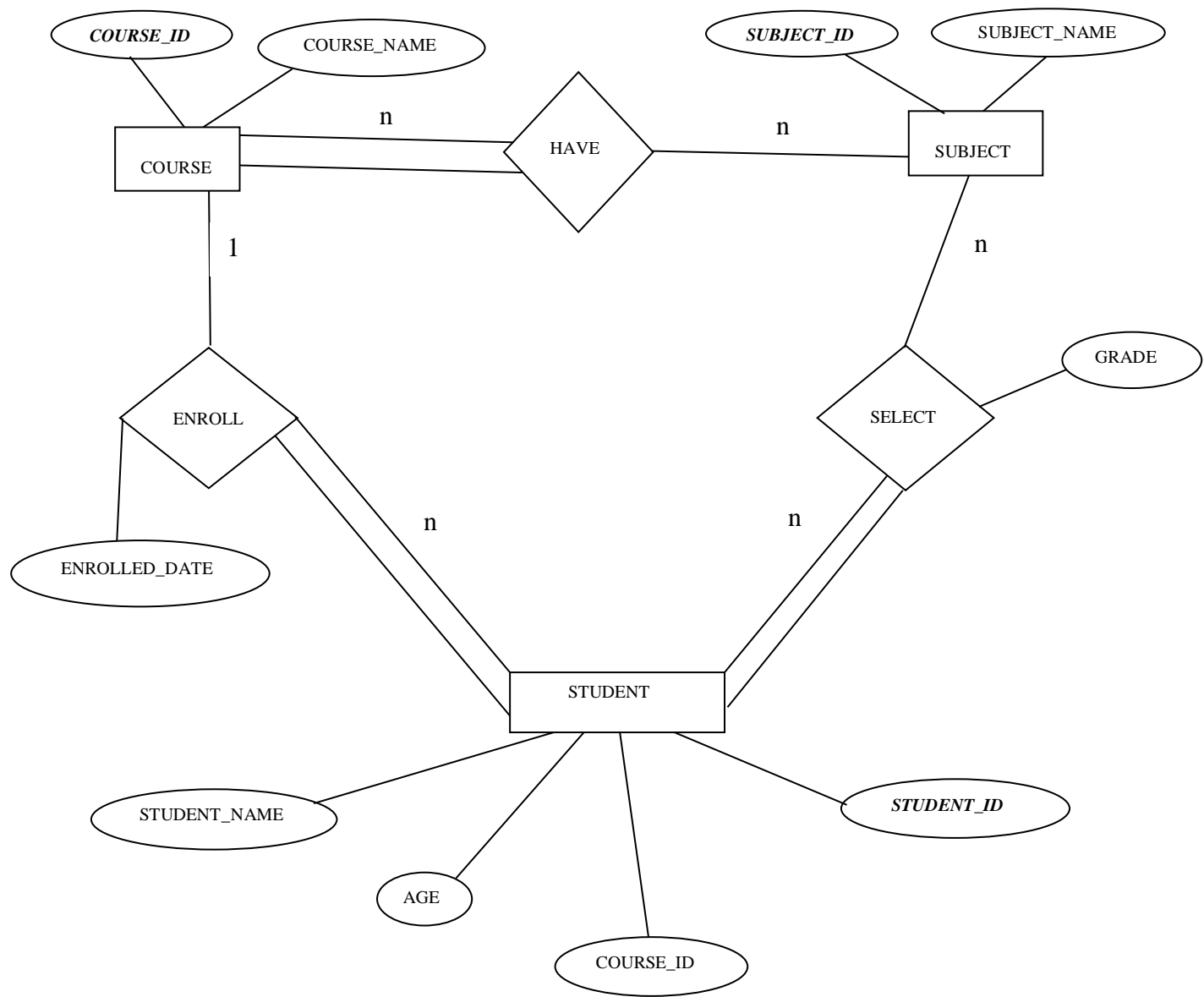
12. Change the enroll date to '16-08-2018' whose student id is 20234 (first convert the date into the default format).



DATABASE SCHEMA



ER DIAGRAM



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