DROP TABLE IF EXISTS Student;

CREATE TABLE Student(

    sID INTEGER,

    sName VARCHAR(255) NOT NULL,

    sAddress VARCHAR(255),

    sYear INTEGER,

    CONSTRAINT pk\_student

        PRIMARY KEY (sID)

);

DROP TABLE IF EXISTS Module;

CREATE TABLE Module(

    mCode VARCHAR(255) NOT NULL,

    mCredits INTEGER,

    mTitle VARCHAR(255) NOT NULL,

    CONSTRAINT pk\_mo

        PRIMARY KEY (mCode)

);

DROP TABLE IF EXISTS Enrollment;

CREATE TABLE Enrollment(

    sID INTEGER,

    mCode VARCHAR(255),

    CONSTRAINT fk\_en\_stu

        FOREIGN KEY (sID) REFERENCES Student (sID),

    CONSTRAINT fk\_en\_mo,

        FOREIGN KEY (mCode) REFERENCES Module (mCode)

);

INSERT INTO Student

VALUES(1,"Smith","5 Arnold Close",2),

      (2,"Brooks","7 Holly Avenue",2),

      (3,"Anderson","15 Main Street",3),

      (4,"Evans","Flat 1a, High Street",2),

      (5,"Harrison","Newark Hall",1),

      (6,"Jones","Southwell Hall",1);

INSERT INTO Module

VALUES("G51DBS",10,"Database Systems"),

      ("G51PRG",20,"Programming"),

      ("G51IAI",10,"Artificial Intelligence"),

      ("G52ADS",10,"Algorithms");

INSERT INTO Enrollment

VALUES(1,"G52ADS"),

      (2,"G52ADS"),

      (5,"G51DBS"),

      (5,"G51PRG"),

      (5,"G51IAI"),

      (4,"G52ADS"),

      (6,"G51PRG"),

      (6,"G51IAI");

--Exercise2

--Q1

SELECT \* FROM Student

    ORDER BY sYear DESC,sName ASC;

--Q2

SELECT mCode, COUNT (\*) AS Number

FROM Enrollment, Student

WHERE Student.sID=Enrollment.sID

GROUP BY mCode;

--Q3

SELECT sID,

       sName

FROM Student

WHERE NOT EXISTS(

    SELECT \*

    FROM Enrollment

    WHERE Student.sID=Enrollment.sID

);

--Q3.another way

SELECT sID,

       sName

FROM Student

WHERE Student.sID NOT IN(

    SELECT sID

    FROM Enrollment

);

/\*

SELECT sID,

       sName

FROM Student

WHERE Student.sID NOT IN Enrollment.sID;

                         (should be a column)

\*/

--Q4

SELECT sName, mTitle

FROM Enrollment NATURAL JOIN Module NATURAL Join Student

ORDER BY sID;

--Q5

SELECT Enrollment.mCode,mTitle,COUNT (\*) AS Number

FROM Enrollment, Module, Student

WHERE Student.sID=Enrollment.sID

      AND

      Enrollment.mCode=Module.mCode

GROUP BY Enrollment.mCode;

--HOWEVER, IT CAN NOT SHOW 0 S

--Q5.2

SELECT Enrollment.mCode,mTitle,COUNT(Student.sID) AS Number

FROM Enrollment

LEFT OUTER JOIN Module

ON Enrollment.mCode=Module.mCode

LEFT OUTER JOIN Student

ON Enrollment.sID= Student.sID

GROUP BY Enrollment.mCode;

--Q6

SELECT sName AS name,

       SUM(mCredits) AS total

       FROM Student, Module, Enrollment

       WHERE Student.sID=Enrollment.sID

             AND

             Module.mCode=Enrollment.mCode

GROUP BY sName

Order BY SUM(mCredits) DESC;