```sql
create database ecole;

create table Classe (
    code_class varchar(8) primary key ,
    libelle_class varchar(40) not null
);

create table Etudiant(
    id int PRIMARY KEY AUTO_INCREMENT,
    matri_et varchar(16) unique ,
    nom_et varchar(40) not null,
    prenom_et varchar(40) DEFAULT 'data',
    datenais_et DATE,
    sexe_et varchar(40) ,
    nationalite_et varchar(40) ,
    contact_et varchar(40)

);


create table Matiere(
    code_mat varchar(8) primary key ,
    libelle_mat varchar(40) not null
    );




    create table Noter(
    id int ,
    code_class varchar(8) ,
    note_et numeric default 0,
    FOREIGN KEY (id) REFERENCES Etudiant(id)




    create table Dispenser(
    code_class varchar(8) ,
    code_mat varchar(8) ,
    coeff numeric default 0,
    FOREIGN KEY (code_class) REFERENCES Classe(code_class),
    FOREIGN KEY (code_mat) REFERENCES Matiere(code_mat)
);




alter table Etudiant add CONSTRAINT  fk_etud_class FOREIGN key(code_class) REFERENCES Classe(code_class) ON
DELETE CASCADE ON UPDATE CASCADE;
)


INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL001', 'MAT001', 1.5);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL001', 'MAT002', 1.2);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL002', 'MAT001', 1.8);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL002', 'MAT003', 1.0);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL003', 'MAT002', 1.3);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL003', 'MAT004', 1.6);
```

```
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL004', 'MAT001', 1.7);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL004', 'MAT003', 1.1);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL005', 'MAT002', 1.4);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL005', 'MAT004', 1.9);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL006', 'MAT001', 1.2);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL006', 'MAT003', 1.5);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL007', 'MAT002', 1.6);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL007', 'MAT004', 1.8);
INSERT INTO dispenser (code_class, code_mat, coeff) VALUES ('CL008', 'MAT001', 1.3);


INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT001', 'Mathématiques');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT002', 'Physique');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT003', 'Chimie');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT004', 'Biologie');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT005', 'Histoire');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT006', 'Géographie');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT007', 'Français');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT008', 'Anglais');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT009', 'Espagnol');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT010', 'Informatique');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT011', 'Arts plastiques');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT012', 'Musique');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT013', 'Éducation physique');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT014', 'Sciences économiques');
INSERT INTO matière (code_mat, libelle_mat) VALUES ('MAT015', 'Philosophie');


INSERT INTO classe_noter (id, code_class, note_et) VALUES (1, 'CL001', 14.5);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (2, 'CL002', 12.8);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (3, 'CL003', 15.2);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (4, 'CL004', 10.9);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (5, 'CL005', 16.3);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (6, 'CL006', 13.7);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (7, 'CL007', 11.4);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (8, 'CL008', 17.6);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (9, 'CL009', 14.2);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (10, 'CL010', 18.1);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (11, 'CL011', 9.8);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (12, 'CL012', 15.9);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (13, 'CL013', 12.5);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (14, 'CL014', 16.7);
INSERT INTO classe_noter (id, code_class, note_et) VALUES (15, 'CL015', 14.0);


INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (1, 'ET001', 'Dupont', 'Jean', '2005-03-12', 'M', 'Française', '0601020304', 'CL001');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (2, 'ET002', 'Dubois', 'Sophie', '2006-05-24', 'F', 'Française', '0602030405', 'CL002');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (3, 'ET003', 'Martin', 'Pierre', '2005-08-15', 'M', 'Française', '0603040506', 'CL003');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
```

```sql
code_class)
VALUES (4, 'ET004', 'Bernard', 'Julie', '2006-02-28', 'F', 'Française', '0604050607', 'CL004');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (5, 'ET005', 'Petit', 'Luc', '2005-10-10', 'M', 'Française', '0605060708', 'CL005');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (6, 'ET006', 'Robert', 'Marie', '2006-04-03', 'F', 'Française', '0606070809', 'CL006');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (7, 'ET007', 'Durand', 'Thomas', '2005-07-18', 'M', 'Française', '0607080910', 'CL007');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (8, 'ET008', 'Lefebvre', 'Emma', '2006-01-22', 'F', 'Française', '0608091011', 'CL008');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (9, 'ET009', 'Moreau', 'Nicolas', '2005-11-05', 'M', 'Française', '0609101112', 'CL009');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (10, 'ET010', 'Garcia', 'Manon', '2006-06-30', 'F', 'Française', '0610111213', 'CL010');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (11, 'ET011', 'Fournier', 'Lucas', '2005-09-14', 'M', 'Française', '0611121314', 'CL011');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (12, 'ET012', 'Dubois', 'Camille', '2006-03-07', 'F', 'Française', '0612131415', 'CL012');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (13, 'ET013', 'Leroy', 'Mathis', '2005-12-19', 'M', 'Française', '0613141516', 'CL013');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (14, 'ET014', 'Morel', 'Léa', '2006-07-02', 'F', 'Française', '0614151617', 'CL014');

INSERT INTO etudiant (id, matri_et, nom_et, prenom_et, datenais_et, sexe_et, nationalite_et, contact_et,
code_class)
VALUES (15, 'ET015', 'Girard', 'Arthur', '2005-10-26', 'M', 'Française', '0615161718', 'CL015');


INSERT INTO Classe (code_class, libelle_class) VALUES ('CL001', 'Première A');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL002', 'Première B');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL003', 'Première C');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL004', 'Première D');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL005', 'Seconde A');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL006', 'Seconde B');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL007', 'Seconde C');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL008', 'Seconde D');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL009', 'Terminale A');
```

```sql
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL010', 'Terminale B');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL011', 'Terminale C');
INSERT INTO Classe (code_class, libelle_class) VALUES ('CL012', 'Terminale D');
```

4 - a /
```sql
SELECT code_class, matri_et, prenom_et, sexe_et, nationalite_et
FROM etudiant
ORDER BY code_class, nom_et, prenom_et;
```

4- b /
```sql
SELECT code_class, COUNT(*) AS nombres_etudiants
FROM etudiant
GROUP BY code_class
HAVING COUNT(*) >= 10;
```

4 - c/
```sql
SELECT libelle_mat, MAX(coeff) AS plus_gros_coeff
FROM dispenser
GROUP BY libelle_mat;
```
 4 - d /

```sql
 WITH MaxCoeffPerClass AS (
     SELECT code_class, MAX(coeff) AS max_coeff
     FROM dispenser
     GROUP BY code_class
)
SELECT d.code_class, d.code_mat, d.coeff
FROM dispenser d
INNER JOIN MaxCoeffPerClass m
ON d.code_class = m.code_class AND d.coeff = m.max_coeff;
```

 4 - e/

```sql
SELECT nationalite_et, code_class, nom_et, prenom_et, sexe_et
FROM etudiant
ORDER BY nationalite_et, code_class DESC, nom_et DESC, prenom_et DESC;
```

4 - f/
```sql
SELECT libelle_mat
FROM matiere
WHERE libelle_mat NOT IN (
    SELECT DISTINCT libelle_mat
    FROM dispenser
);
```

4 - g/

```sql
SELECT m.code_mat, m.libelle_mat
FROM matiere m
LEFT JOIN dispenser d ON m.code_mat = d.code_mat AND d.code_class = '1AIGN'
WHERE d.code_class IS NULL;
```

4 - h/

```sql
SELECT code_class, COUNT(*) AS nombre_de_filles
FROM etudiant
WHERE sexe_et = 'Feminin'
```

```
GROUP BY code_class
ORDER BY COUNT(*) DESC
LIMIT 1;
```