

Assignment SQL

A. The schema of a relational Database is the following:

Student (**Snum** int, Name varchar(30), Major varchar(10), Level char(2), Age int);

Class (**Name** varchar(10), Time Datetime, Room char(5), *Fid* int);

Enrolled (**Snum** int, **ClassName** varchar(10));

Faculty (**Fid** int, Name char(10), Dept char(10));

Write the following queries in SQL. No duplicates should be printed in any of the answers.

Write algebraic expressions

1. Find the names of all CS Majors (Major = "CS") who are enrolled in the course "Math92".
2. Find the names of all CS Majors (Major = "CS") who are enrolled in the course "Math92" and are older than some History freshman (Level="FR").
3. Find the names of all classes that either meet in room R128 or are taught by "H.Merlin".
4. Find the names of all pairs of students who are enrolled in some class together.
5. Find the names of all pairs of students who are enrolled in two classes that meet at the same time (including pairs of students who are enrolled in the same class).
6. Find the names of faculty members who teach in every room in which some class is taught in the time period "MW9-10".
7. Find the names of faculty members such that the combined enrollment of the courses that they teach is less than 5.
8. Print the Level and the average age of students for that Level, for each Level.
9. Find the name of the student who is enrolled in the most classes.
10. Find the names of all students who are not enrolled in any class taught by "H.Merlin".

B. A relational **movie** database. The database consists of the following five tables

ACTOR (**id**, fname, lname, gender)
MOVIE (**id**, name, year, rank)
DIRECTOR (**id**, fname, lname)
CAST (*pid*, *mid*, role)
MOVIE_DIRECTOR (*did*, *mid*)

id column in ACTOR, MOVIE & DIRECTOR tables is a key for the respective table.

CAST.*pid* refers to ACTOR.*id*, CAST.*mid* refers to MOVIE.*id*

MOVIE_DIRECTOR.*did* refers to DIRECTOR.*id* and MOVIE_DIRECTOR.*mid* refers to MOVIE.*id*

Write the following queries in SQL. No duplicates should be printed in any of the answers.
Write algebraic expressions

1. List all the actors who acted in at least one film in 2nd half of the 19th century and in at least one film in the 1st half of the 20th century
2. List all the directors who directed a film in a leap year
3. List all the movies that have the same year as the movie 'Shrek (2001)', but a better rank. (Note: bigger value of rank implies a better rank)
4. List first name and last name of all the actors who played in the movie 'Officer 444 (1926)'
5. List all directors in descending order of the number of films they directed
6. Find the film(s) with the largest cast (with the size of the cast)
7. Find the film(s) with the smallest cast (with the size of the cast)
8. Find all the actors who acted in films by at least 10 distinct directors (*i.e.* actors who worked with at least 10 distinct directors).
9. Find all actors who acted only in films before 1960.
10. Find the films with more women actors than men.
11. For every pair of male and female actors that appear together in some film, find the total number of films in which they appear together. Sort the answers in decreasing order of the total number of films.