

25 points

Write the SQL statements to solve the following queries and email those queries to the instructor. OR write a brief explanation describing why the database cannot answer a particular query. Use the College database from class (PUNETID_test) as your database. Be as efficient as possible. You may use any fields in the query output if those fields help you solve the query. You may build a view to help you solve a query, just include the creation of that view in your answer.

Make sure you rebuild the database using /tmp/CreateDatabase.sql so any data we altered in class is returned to its original state.

Email me your SQL statements in a text file script.

Use -- to provide the question number your query solves.

1. List all Students who took a course with a max size of more than 20 students (FName, LName) Display each student only once.
2. How many professors with an 'a' in their Login are teaching a course that has a student with an 'a' in their Login enrolled (this question ignores section numbers)? (produce a single integer)
3. Run Explain on the query from 2 and, for each table involved, give an explanation of how well the keys and indexes are being used.
4. List the last two students, sorted ascending alphabetically (LName, FName, show exactly two rows).
5. List all students who are taking more than one course (FName, LName). Display each student only once.
6. List all students who are taking more than one course that is Section 2 (FName, LName) Display each student only once.
7. List all the courses that have more than 3 students currently enrolled (Title, number of students).
8. List all courses that have an current enrollment less than 1/4 the course's max enrollment. (Title)

Normalization

1. Given: R: ABCDE

A->B

B->CD

D->A

- a) List all Candidate Keys for R.
- b) List all Super Keys for R.
- c) What FDs can we infer?
- d) Is R in 3NF? If not, why not?

2. Given: R: ABCDEF

A->DEF

B->D

D->CF

D->F

BE->F

- a) List all Candidate Keys for R.
- b) List all Super Keys for R.
- c) Build the minimal cover for R.
- d) Is R in BCNF? If not, why not?