

CS440
Homework 1
Due Wednesday January 21 Start of class.

For this assignment, you may write out the answers long hand and submit them in writing on the due date.

Consider a database with the following schema:

Student (name, age, gender)

Frequents (name, bar)

Drinks (name, beer)

Serves (bar, beer, price)

Write relational algebra expressions for the following queries:

1. Find all bars frequented by at least one student under the age of 21.
2. Find the names of all girls who drink either Bud or Millers (or both).
3. Find the names of all girls who drink both Bud and Millers.
4. Find all bars that serves at least one beer that Sally drinks for less than \$4.
5. Find all bars that serve only girls or only boys.
6. For each student, find all beers that the student drinks that are not served by any bar that the student frequents.
7. Find the names of all students who frequent only bars that serve at least one beer that the student drinks.
8. Find the names of all students who frequent every bar that serves at least one beer that the student drinks.
9. Find the bar(s) serving the cheapest Miller Lite.