

Homework Assignment 3
(due Tuesday, October 22, 2002)

- Read Chapter 4
- Exercises 3.16, 4.1 parts (a), (b), 4.2, 4.4, 4.5, 4.6.
- Recall the *beer drinkers* database consisting of information about drinkers, beers, and bars telling which drinkers like which beers, which drinkers frequent which bars, and which bars serve which beers.

Write SQL expressions for the following queries:

- “List all bars who serve at least one beer that Joe Mug likes.”
 - “List all drinkers who like CORONA and frequent at least one bar that serves AMSTEL”.
 - “List all drinkers who frequent every bar that serves AMSTEL”.
- In Homework Assignment #1, you had to describe a database schema for representing directed graphs and then you had to write a relational algebra expression for expressing the following query on directed graphs: “find all pairs of nodes that are connected via a path of length at most three”.
- Given an SQL expression for the same query.
- Suppose that you work with a version of SQL that directly supports both the *difference* operation $R - S$ and the *intersection* operation $R \cap S$. Suddenly, both these features are disabled in your system. Explain how you can use the remaining constructs of SQL to write expressions that express $R - S$ and $R \cap S$.