

CSE 132A

Practice problems on relational calculus and core SQL

1. The beer drinkers' database consists of the following three relations

frequents	drinker	bar	serves	bar	beer	likes	drinker	beer

The first indicates the bars each drinker frequents, the second tells what beers each bar serves, and the last indicates which beers each drinker likes to drink. Assume that every drinker frequents at least one bar (so all drinkers appear in the *frequents* relation). Consider the following queries:

- (a) List the bars that serve a beer that Joe likes.
- (b) List the drinkers who frequent at least one bar that serves a beer they like.
- (c) List the drinkers who frequent only bars that serve some beer that they like.
(Assume each drinker likes at least one beer and frequents at least one bar.)
- (d) List the drinkers who frequent no bar that serves a beer that they like.
- (e) List the drinkers such that every bar they frequent serves every beer they like.

Write each of the above queries in tuple calculus, then translate the tuple calculus to SQL.

2. Consider the movie relation:

movie	title	director	actor

Express the following queries in tuple calculus, then translate the tuple calculus to SQL.

- (a) List the actors cast only in movies by Berto.

- (b) List all pairs of distinct actors who act together in at least one movie (avoid listing both (a, b) and (b, a)).
- (c) List the directors such that every actor is cast in one of his/her movies.