Exercises (voluntary, non-graded)

Exercise 1 Express in the relational algebra: “find the titles and directors of all currently playing movies”; cf. s.2 and s.7 (slides #2 and #7).

Exercise 2 Consider three relations $R$, $S$, and $T$ each over a single attribute $A$, i.e., we have unary relations $R(A)$, $S(A)$, $T(A)$. Assume we want to compute $Q := R \cap S \cup R \cap T$.

1. Give an equivalent SQL query for $Q$.
2. Why is the following SQL query not equivalent to $Q$?

   SELECT R.A
   FROM R, S, T
   WHERE R.A=S.A OR R.A=T.A

   Hint: cf. s.7 for the algebra equivalent of SELECT ... FROM ... WHERE ...
   ... and consider that $S$ (or $T$) is empty.

Exercise 3 For the SQL equivalent of “find all actors playing in every movie directed by ‘Berto’” (s.9), paraphrase in English what is being computed by each SELECT (sub)clause.

Exercise 4 Express in SQL:

- “the number of movies for each theater in Schedule” (cf. s.2 and use grouping and aggregation)

- “find the employees with the highest salary” (s.11) without ALL and ANY (hint: use a nested query)

- “increase the salary of the all but the highest paid employees by 5%”.