Exercise 1 (SQL Queries). Consider again the schema about films introduced on the last exercise sheet.

- film: {[ID, title, year, genre]}
- person: {[ID, name, firstname]}
- cinema: {[ID, name, city]}
- participation: {[film, person, function]}
- show: {[film, date, cinema]}

Formulate SQL queries for answering the following questions:

a) Which thrillers were directed by Steven Spielberg?

b) Who acted in at least two different films?

c) List all shows of “Alice in Wonderland”.

d) Who acted in his/her film?

e) Which cinemas show films with Kate Winslet?

f) Which films have more than one director?

g) Which films have not been presented in a cinema yet?

h) Who hasn’t participated in a film yet?

i) Who directed at least to different films in the same year?

k) Are there persons having the same name (name and first name)?
Exercise 2 (SQL Queries). Consider the following SQL queries over the film schema. What is their meaning? Translate these queries into equivalent relational algebra expressions.

a) \[
\text{SELECT DISTINCT title} \\
\text{FROM (film JOIN show ON ID = film) JOIN cinema ON cinema.ID = cinema} \\
\text{WHERE name = 'Metropol'}
\]

b) \[
\text{SELECT DISTINCT person.name, person.firstname} \\
\text{FROM film, person, cinema, participation, show} \\
\text{WHERE film.ID = participation.film AND film.ID = show.film} \\
\text{AND person.ID = person AND cinema.ID = cinema} \\
\text{AND date = '2016-11-16'}
\]