

Written Assignment #1

CS 6530 Fall 2016

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1. **Problem 1.** Relational Algebra [28pts] Consider the dvdrental schema from the dvdrental database on our database server: <http://www.postgresqltutorial.com/postgresql-sample-database/>. Answer the following queries in relational algebra:
 - a) Find the customer ids who have rented all films.
 - b) Print the store id and the phone number for each store that has only one staff member.
 - c) Find every pair of customer and staff who are from the same city, by listing their customer id and staff id.
 - d) Find the customer ids who *have rented all and only those* films acted by Emily Dee.
2. **Problem 2.** [28pts] Answer following queries using Tuple Relational Calculus.
 - a) Find the customer ids who have rented all films.
 - b) Print the store id and the phone number for each store that has only one staff member.
 - c) Find every pair of customer and staff who are from the same city, by listing their customer id and staff id.
 - d) Find the customer ids who *have rented all* films acted by Emily Dee (slightly modified from Problem 1).