ITWS - 4250/6250 Database Applications and Systems

Homework 1

Relational Model and SQL DDL

This homework will focus on the concepts of the relational model, as well as the use of SQL to create a database schema from a relational schema.

It is due on **Friday September 11 at 11:59PM** and should be submitted electronically on the class Submitty site. You should upload two files: one for the first question (a scan, or electronic copy of your completed solution), and a `homework-1.sql` file for the second question.

1. You're building the database for a local package delivery start-up that needs to track information related to its trucks, drivers, and deliveries.

   You need to store information about the drivers: name, birthday, license number, the date they started with the company, their hourly pay rate. You need to store information about the delivery vehicle: its type (van, truck, bicycle, etc.), its license plate number, its fuel economy, its capacity (how many packages can it store). You will need to store information about packages: its tracking number, the delivery address, whether a signature is required on delivery, when it was shipped, its weight, the delivery fee. And you need to store information about the delivery of the package: which package, which driver delivered it, when it was loaded onto a vehicle, when it was delivered, what vehicle was used, delivery notes (e.g., where was the package left, or why a delivery could not be completed).

   (a) (12 points) Create the schemas for four relations to store data about the drivers (*driver*), vehicles (*vehicle*), packages (*package*), and deliveries (*delivery*). Make sure to define keys for each relation (if appropriate), but do *not* create any artificial keys.

   (b) (2 points) Give two example tuples for the *driver* relation:

   (c) (6 points) Give three example tuples for the *delivery* relation, representing one package that needed a second delivery attempt the day after the first and whose original vehicle broke down before delivery could be attempted the second day:

2. (16 points) For each of the relations you created in part (a) above, write a `CREATE TABLE` statement in SQL to create the table, including appropriate keys. Assume that no two drivers have the same name and birthday, and that each driver has exactly one license number. Upload your solutions in a separate `homework-1.sql` file.