

Normalization Lab

Due

At the start of your next scheduled lab.

Prerequisites

Review your lecture notes on normalization up to and including third normal form.

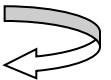
Objective

Apply rules of normalization.

Assignment

A local dog grooming service business has heard that you are taking a database course and has asked you to help them organize their service receipts. They have just two stores for now and have hired a few attendants to perform the grooming services. Currently they just record everything in a single Excel spreadsheet as shown below. Customers bring in their dogs for a grooming service and pay based on the size of the dog and the type of grooming (standard doggie wash or the deluxe 'ultra-wash' grooming treatment which includes a nail clip). The attendants groom each dog for about thirty minutes. You think you can show them a better approach to managing this information. Because the lines of each grooming service stretches over a number of columns, we have split the display into a left half (the top part below) and a right half (the bottom part).

Till Receipt Number	Customer ID	Customer First Name	Customer Last Name	Customer Address	Customer Postal Code	Service Date Time	Store ID	Store Address	Dog Name1	Dog Breed1	Attendant ID1	Attendant Name1
15933	563	John	Smith	101 Anywhere Street	V9J-2E5	Feb 17, 2015 10:00AM	100	55 North Avenue	Spot	German Shepherd		6 Mary West
16594	303	Julia	Jackson	#3 - 35 North Ave	V3E-8Q2	Feb 18, 2015 9:30AM	100	55 North Avenue	Apollo	Doberman Pinscher		5 Sue Rivers
18737	893	David	Ma	773 18th Street	V3N-7F6	Feb 19, 2015 11AM	100	55 North Avenue	Bella	Shih Tzu		6 Mary West
19938	563	John	Smith	101 Anywhere Street	V9J-2E5	Feb 20/2015 2:00	200	773 Main Street	Spot	German Shepherd		3 Mandy Wu



Treatment1	Treatment Cost1	Dog Name2	Dog Breed2	Attendant ID2	Attendant Name2	Treatment2	Treatment Cost2	Dog Name3	Dog Breed3	Attendant ID3	Attendant Name3	Treatment3	Treatment Cost3
Standard Wash - Big dog	\$30	Balto	Dachshund		5 Sue Rivers	Standard Wash - Medium dog	\$25	Peeto	Chihuahua		5 Sue Rivers	Standard Wash - Small Dog	\$20
Ultra Shampoo - Big dog	\$40												
Ultra Shampoo - Small Dog	\$30	Eddie	Mutt		6 Mary West	Ultra Shampoo - Small Dog	\$30						
Standard Wash - Big dog	\$30												

Mr. John Smith had brought in his three dogs: Spot, Balto, and Peeto for grooming on February 17th, but then he had to bring his pooch Spot for a wash just 3 days later at the other store by Mandy. Spot likes to jump into puddles.

The groom service ledger shows at most three dogs per customer service. If there are more than three dogs for a customer, they just create a new till receipt for those extra dogs.

Here are some **relevant** and not-so-relevant assumptions you may need:

- a. A customer's dogs will each have different names. (Yes, Spot, Spott, and Spaut are different names.)
- b. Customers may use either store.
- c. Customers keep the same address (they don't move to a new location).
- d. Each attendant has a unique ID number (e.g. Mary West's id number is 6).
- e. Attendants may work at either store.
- f. Attendants may work with dogs of any size (big, medium, or small).
- g. Attendants may provide any type of grooming service (standard wash or ultra wash).
- h. Grooming service costs are the same for both stores (e.g. standard wash for a big dog is \$30 at either store).
- i. Customers may bring in any number of their dogs for a grooming appointment but there are only at most two attendants who can provide grooming services at the same time. A customer's third dog will have to wait for a grooming attendant to be available if both attendants are busy. Regardless of possible wait time, all the customer's dogs will be processed under one date and time for the grooming service.
- j. Each grooming service requires only one attendant.
- k. Each grooming service requires the same amount of time (30 minutes) regardless of dog size.
- l. Customers cannot book a grooming service for the same dog twice at the same time.
- m. Dogs stay the same size.
- n. The service type name includes the size of the dog (e.g. "Standard wash – small" or "Ultra wash – big").
- o. Both stores can handle at most two grooming services at the same time.

Because the store owners are so nice and give you a free dog grooming service for your beloved Scooby (a wee white Terrier), you want to ensure that you normalize the database properly.

You can use a solution template to write in your answers electronically or write them down on the attached page. You can hand in the printed pages or submit to the D2L dropbox.

1. What is the definition of zero normal form?

2. Express the information in the grooming ledger above in zero normal form. e.g. provide an appropriate entity name in upper case then write out the attributes like this: ENTITY_NAME (attribute1, attribute2, ...)

3. What is the definition of first normal form?

4. Express the information into first normal form. Underline the primary key for each entity.

5. What is the definition of second normal form?

6. Express the information into second normal form. Underline the primary key for each entity.

7. What is the definition of third normal form?

8. Express the information into third normal form. Underline the primary key for each entity.