

Customer Database Management System in Retail Business

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Abstract

Among many computing knowledge we learned in class, we found database development especially useful for managing data in our daily life, small business, and even for research. Particularly, we are interested in managing customer information in retail business, how the data help understand customer better, and how a company gets benefit from it. Thus, our team decided to build a database system for a imaginary retailer, Bow-Wow, using *Open Office Database Development*. We focused on efficiently structuring relationship between tables based on third normal form, making user friendly forms for data coding, generating queries and reports for building up marketing strategy.

1 Introduction

2 Tables and Relationship

2.1 Tables

Based on third normal form, we made six different tables - Customer, Dog, Species, Sales, Sales:Item(link table), Item - as follows. Customer Table

- Customer Table

Names of customers are randomly made. Some of their names are taken after famous statisticians. Their addresses are centered at Iowa city since we assume our shop Bow-Wow is located at downtown area. For the street names and other address information, our team referred apartment rental website, bakersapartment.com.

- Dog Table

This table includes owner ID, name, age, and species of dogs. Species are written in abbreviated terms. Since one customer could own more than one dogs, customer and dog table has one to many relationship.

- Species Table

For the sake of convenience, we use abbreviation of species names. Species table also shows how big the species is. The size of species is necessary for many reasons. We need to know the ratio large, middle, and small sized dogs to make an order for the dog apparels.

- Item Table

To figure out what kind of goods we are selling, this item table is what one needs to look at. This table shows the name, price, manufacturer(brand), and the category of the items. For the category, we have apparel, foods, toys, and sports goods. All the information in this table is useful since it helps us categorize customers into several groups which in turn, allows us differentiated marketing strategy for different groups. We will cover issues on marketing in detail when in query section.

- Sales Table

Sales table shows the date when each sale has occurred and the customer id, the id of customer who made this purchase. The primary key of this table is receipt number which is generated every time a customer receive a receipt. The customer id is a foreign key. The relationship between customer and this table is one to many.

- Sales:Item Table

This is a linking table. In this table, we combined receipt number with item ID and item quantity. If we link this table with Sales:Item table, we can figure out who has purchased which item, when, and how much. This table actually has all the information about each purchased based on its relationship with other tables.

2.2 Relationship between tables

Basically, we used one-to-many and many-to-many relationship in our database. More specifically, Most of them are one-to-many relationship except for one, which is Sales table and Item table. To define a relationship between Sales and Items which definitely is many-to-many relationship we used link table named Sales:Items. Overall relationship between tables are as follows :

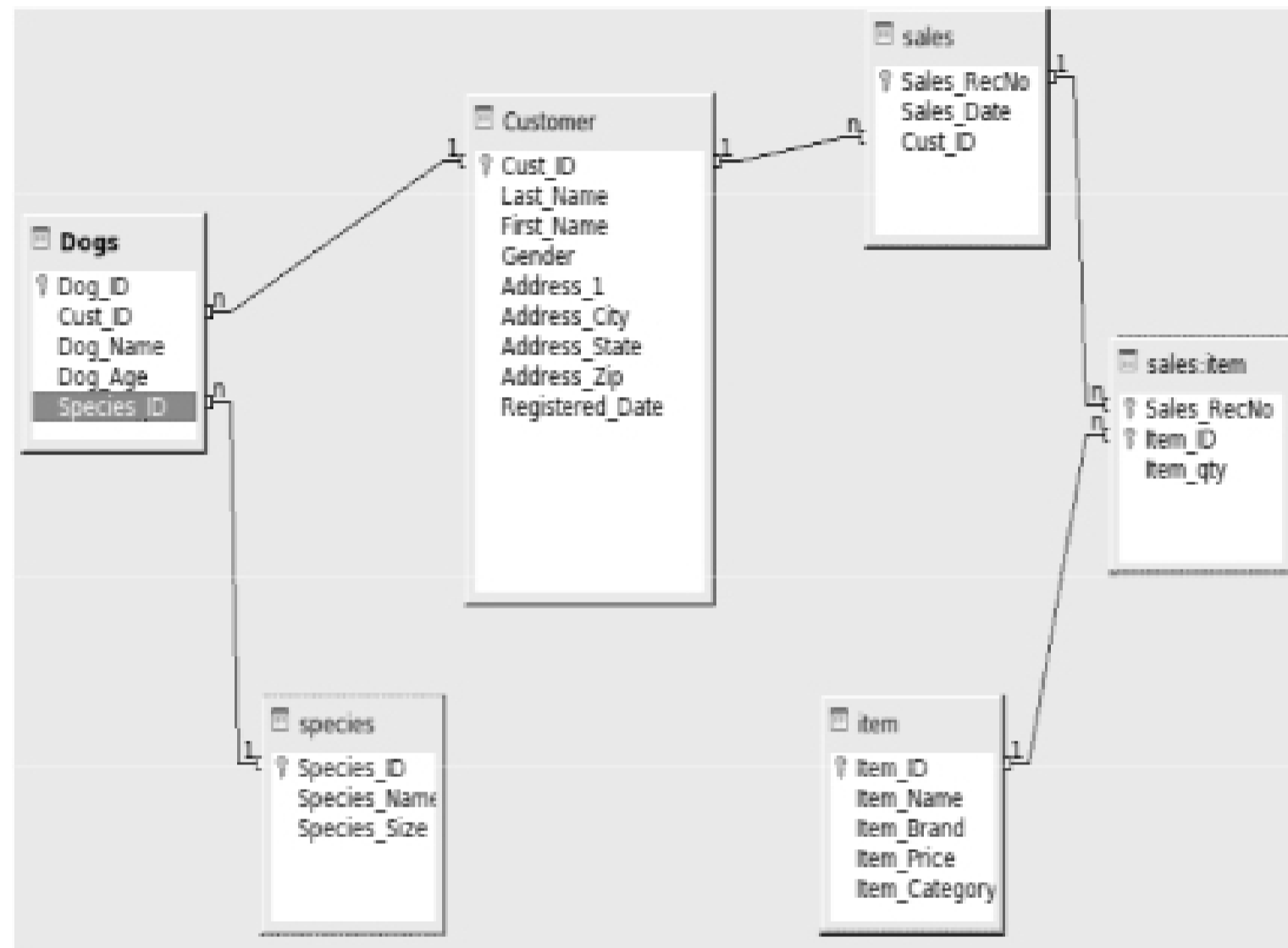


Figure 1: Relationship of tables of Bow-Wow