Assignment 1

Introduction

The database that we will be defining will aid in the organization and management of a package delivery service in Brampton, Ontario. The database will focus on storing data surrounding shipping trucks, customers, payments, packages, post offices, staff, and regions. Each postal code division (Figure 1) will have its own postal office and each division will belong to a larger region. With different entities being tracked in the database, customers can send, order, track and make payments efficiently. Additionally, the database will help determine how to best allocate trucks for regions based on package traffic, as well as how to best prioritize deliveries of packages based on transaction dates and customer loyalties. The system will also help track locations of packages at different offices and on shipping trucks in order to maintain organization of the system and allow customers to view the current status of their packages. Finally, the postal service will offer loyalty pricing for returning customers which will deduct from their shipping costs through repeated use of the postal service.

Overall Descriptions (Functions)

This application will have 3 different member types that each have access to specific functionalities. These member types and their functions include:

- Customer
    - New customers will be able to sign up and create a new account
        - INSERT new customer
    - Existing customers can delete their account
        - DELETE customer
    - Customers can enter the details of the package(s) they want to send (size, weight), then enter the username of the customer they want it sent to. They then can enter their payment information. They can use an existing payment method or enter a new one
        - Will INSERT package
        - New payment method will UPDATE the customers relation
        - Will UPDATE customers' loyalty points
    - Customers will be able to track the status of their package using the package ID. The statuses include: paid, received, on route, or delivered
        - Corresponding package will be found using SELECT
    - Customers can see their purchase history and details about previous packages they have sent or received
        - Packages will be found using SELECT
- Driver
    - Drivers can see what addresses they are delivering to on their current route and can view the info of packages that they are delivering
        - Addresses and packages can be found using SELECT
    - Mark package as delivered

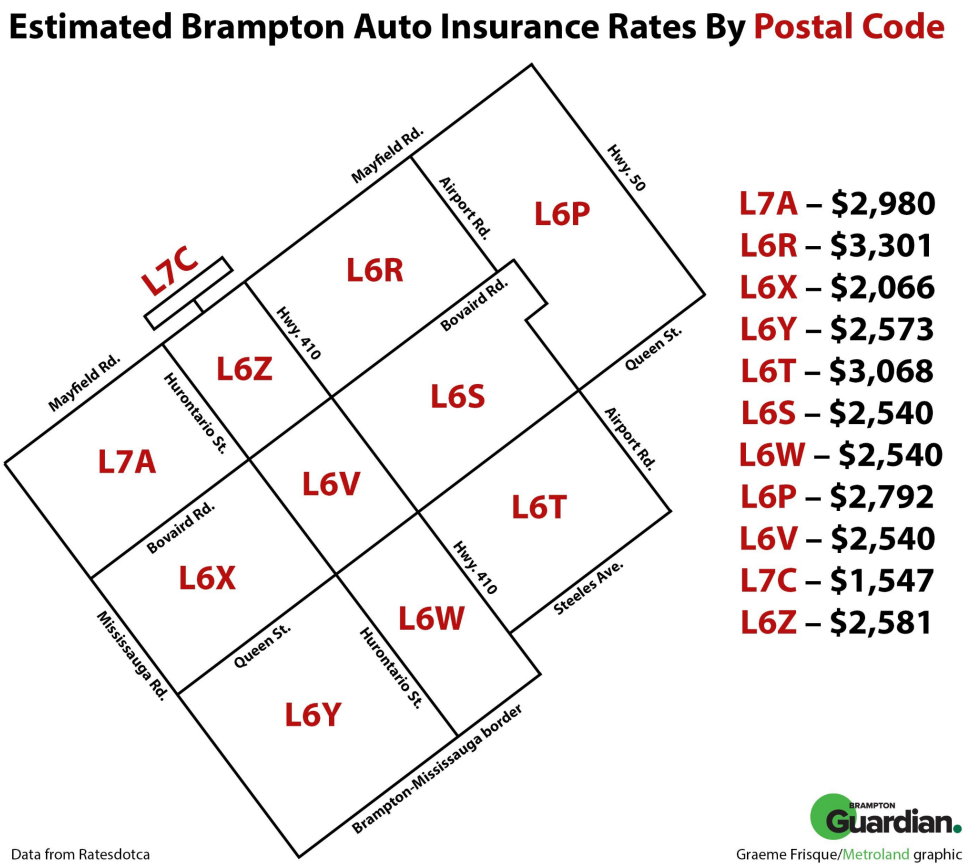
        - Will UPDATE package status and remove it from truck
        - Will UPDATE truck info (capacity, addresses)
- Other staff
    - Staff can register new trucks and hire new drivers
        - INSERT new truck or driver
    - View staff records
        - Can search for certain staff based on region, name and will be found using SELECT
    - View all customer and payment/package records
        - Can search for customers (by name, address, username) and packages (by weight, size, date, price, status, id) and will be found using SELECT
    - Mark package as received once customer has brought it to the post office
        - Will UPDATE package status
        - Truck route and capacity will be altered using UPDATE
        - Confirm and authorize payment using UPDATE
    - Load package onto truck
        - Will UPDATE package status
        - Package delivery priority will be sorted ORDER BY
    - View regional info
        - Can search for post offices, trucks within a region using SELECT

Data Requirements

Entities	**Attributes**	**Relationships**	**How we're getting the data**
Customer **Children**: Sender, Receiver	Address Name Phone Payment info Orders (history) Loyalty points Password Username	Customer sends/receives Package Sender makes Payment Customer lives near Post office	DataBase Set, we are currently looking at using this dataset to populate Customers.
Package	Weight Size Date (ordered / delivered) Destination Price Status PackageID	Package delivered by Truck	Random generated, current package we are looking at is DataGenerator

Post office	Location Trucks available Capacity Drivers Staff PostOfficeID	Post office holds Packages Post office employs Staff	Manually inputted
Truck	Capacity Drivers Routes (postal code) Departure / return time License Plate TruckID	Truck goes to Post Office Truck belongs to Region	Manually inputted
Employee **Children:** Office staff, Driver	Salary / rate Region Name / id Available hours StaffID	Staff manages Payment Staff loads Package onto Truck Driver drives truck	DataBase Set, we are currently looking at using this dataset to populate Staff.
Payment	Customer Date Price Card # Package Post office (truck / driver) PaymentID	Payment is authorized by Staff Payment is made for Package	DataBase Set, Currently, we are looking at using this dataset.
Region	Number of Offices Number of Drivers Postal Codes Truck Accessibility RegionID	Region has Post offices Region employs Driver	Manually Inputted, see figure 1

Figure 1: Brampton Postal Code map



Additional Links:

[Brampton Buz Dataset]