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Final Project Proposal and Design

For my Final Project, I intend to create a database containing information pertinent to operating a Snow Removal service. I decided on this topic because we have a snowplow and use it to help out some of the neighbors, cleaning their driveways and salting walkways.

The database will contain the following tables: Customer, Address, SnowfallEvent, and SnowRemoval. SnowRemoval can only exist when a Snowfall occurs at an Address, so it is dependent on both. This makes SnowRemoval a weak entity, with strong relationships to Address and SnowfallEvent. The others are strong entities.

A Customer has zero-to-many Address (zero during first contact and creation)

An Address will belong to one-and-only-one Customer – Customer is a contact, not a resident – so more than 1 resident is unnecessary for our purposes. Prices for snow removal and walkway salting can vary depending on size of driveways and walkways, which will be calculated and included within the Address table.

Significant SnowfallEvents may need multiple Removals at a single Address, if InchesOfSnow is beyond some not-yet-identified threshold. SnowRemoval does need a “SnowRemovalNumber” (1,2, 3, etc) in addition to the 2 foreign keys to make a completely unique primary key. A SnowfallEvent may have one-to-many SnowRemovals (we won’t track events without removals), while a SnowRemoval belongs to one-and-only-one Snowfall (ERD reflects this). Due to only tracking Events with Removals, a form to add an Event will also have to allow adding Removals. Otherwise it could allow SnowfallEvent to have zero-to-many SnowRemovals. While technically a SnowRemoval could clean up multiple different Snowfalls (such as a light morning and light afternoon Snowfall) that much precision about Snowfall data is not required here. This SnowfallEvents table is not meant to match an NWS or NOAA weather tracker. Those two light snowfalls would be represented by a single SnowfallEvent. Lastly, an Address can have zero-to-many Snow Removals (zero when a new Address is added), while a Snow Removal occurs at only one Address.

The main goal of the database is to track services rendered and payment. Below is the ERD for my database:

Diagram

Description automatically generated