Helping Hands Pickup and Delivery Service (H2S)

Given the problem description below, define a domain model using a class diagram for the concepts of the proposed H2S Pickup and Delivery Service and their relationships.

Problem Description

The Helping Hand Store (H2S) collects second hand articles and non-perishable foods from residents of the city and distributes them to those in need. H2S also operates in many cities, but each location is run independently. To increase the number of items available for distribution, H2S is seeking to offer a Pickup and Delivery Service to its customers, which would allow a resident to schedule a pickup of items from a street address online at the H2S website.

A resident enters a name, street address, phone number, optional email address, as well as a description of the items to be picked up. The resident places the items just outside the front door of the building at the stated street address in the morning of the weekday requested for pickup.

H2S has a fleet of pickup vehicles, which it uses to collect items from residents. At the beginning of every weekday, a pickup route for that day is determined for each vehicle for which a volunteer driver is available. Volunteer drivers indicate their available days on the H2S website. The route takes into account the available storage space of a vehicle and the dimensions and weights of scheduled items. A scheduled pickup may occur anytime between 8:00 and 14:00. After completing all scheduled pickups, the driver drops off all collected second hand articles at H2S’s distribution center. Non-perishable foods, on the other hand, are directly dropped off at the food bank, which then deals with these items without further involvement from H2S.

At H2S’s distribution center, an H2S employee examines the quality of the received second hand articles. Those articles that can still be used are tagged with an RFID device. The H2S employee double checks the description of the article given by the resident and makes any corrections as needed. In addition, the H2S employee assigns a category to the article from a standard list of 134 categories (e.g., baby clothing, women’s winter boots, fridge, microwave…).

In some cities in which H2S operates, the distribution center offers an additional service for clients who receive second hand articles from H2S but are not able to personally visit the H2S distribution center. Instead, H2S allows those clients to indicate which categories of articles they need. At the end of each day, an H2S employee calls them to let them know about the relevant articles that were dropped off that day. If the client still needs an article, the H2S employee arranges delivery of the article to the client’s home address. Delivery of such articles is made by a volunteer driver before picking up items according to the pickup route.



