CS353 - DATABASE SYSTEMS

PROJECT PROPOSAL

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GROUP NO: 5

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Introduction

The project that we will be working on this semester in CS353 is “Shipping Company Data Management System”. In this report, we will propose our project by explaining why and how we will use databases in the project, and its limitations and requirements. Also, we will demonstrate the E/R model for our database design.

The project will be divided into the following sections:

1) Project Description
    a) Reason for Using a Database
    b) The Usage of the Database
2) Requirements
    a) Functional Requirements
    b) Non-functional Requirements
    c) Limitations

Project Description

In our project, we are going to design a shipping company data management system. This system will store information about customers, shipments, employees (including couriers), branches, complaint reports, and cargo trailers. It will help the company to track the shipments. Also, by using this system the company will be able to get informed about customer complaints.

The system will allow for shipment management for companies. Further users who wish to make a shipment will be able to sign in to the system as a customer. Customers of our system will specify their credentials, location and contact information.

This system will assign unique IDs to each shipment made by a customer. These IDs will be unique and used for reaching the attributes of the shipment. The system will create unique tracking numbers for every shipment. The sender or the receiver can track their shipment via using this number.

Our system will be storing employees as branch workers or as couriers. The branch workers who are working on branches will be responsible for creating transfers in order to perform the shipments. For these transfers cargo trailers and couriers will be assigned by the branch workers. Couriers will be responsible for transferring cargo from one place to another. These places may be branches or sender/receiver addresses.

Receivers of the shipments will be able create and submit reports to the relevant branches when they are dissatisfied with their shipment. These reports will be assigned to a branch worker in the relevant branch to be reviewed. The reports can be either an online form or a physical form filled in the destination by the receiver. Senders of the shipment will also be able to create reports if they are dissatisfied with the shipment.

Reason for Using a Database

The system will need a database to perform the operations related to the shipments because of the following reasons:

- New employees might get hired and existing employees might leave the company. Also, there can be new customers registering to use the company services. Therefore, the company needs to keep track of its employees and customers with a database system.
- When a new shipment occurs, the system needs to keep track of this shipment with its attributes such as its sender, receiver, and destination information.
- When a customer files a report to complain about a shipment (such as in the case of a malformed package), the system needs to store these, as well.
- The couriers need to know the destination information during the distribution of the packages.
- The system needs to store the available cargo trailer information in order to choose the best vehicle for the current cargo transfer. Additionally, it needs to store the capacity of each cargo trailer so that it will not overflow a cargo trailer.
- Since the cargo transfers will occur between two places (branch or home / office etc.), the system needs to keep track of branch information.
- Each transfer needs to be assigned to a courier. The database system will be useful for that.

The Usage of the Database

By using a database, we were able to determine the relations between the entities. Theses relations include the following:

- Shipments may be created by users.
- Shipments will have receivers with names and addresses..
- Reports can be submitted to shipments using tracking numbers.
- Branch workers can create transfers by
    - assigning courier and cargo trailer to transfers.
    - deciding destination and departure places (either branch or customer/receiver address)
    - assigning them to specific shipments.
- Branches have cargo trailers.
- Employees work on branches.
- Employees can either be couriers or branch workers.

Requirements

Functional Requirements

- Customers can initialize shipments.
- Employees can assign couriers and cargo trailers for transfers.
- Customers can decline the shipping (for example in the case of a malformed package) and create a complaint report.
- Couriers can view the destination of the shipments they are currently delivering.

- Customers can track their shipments.

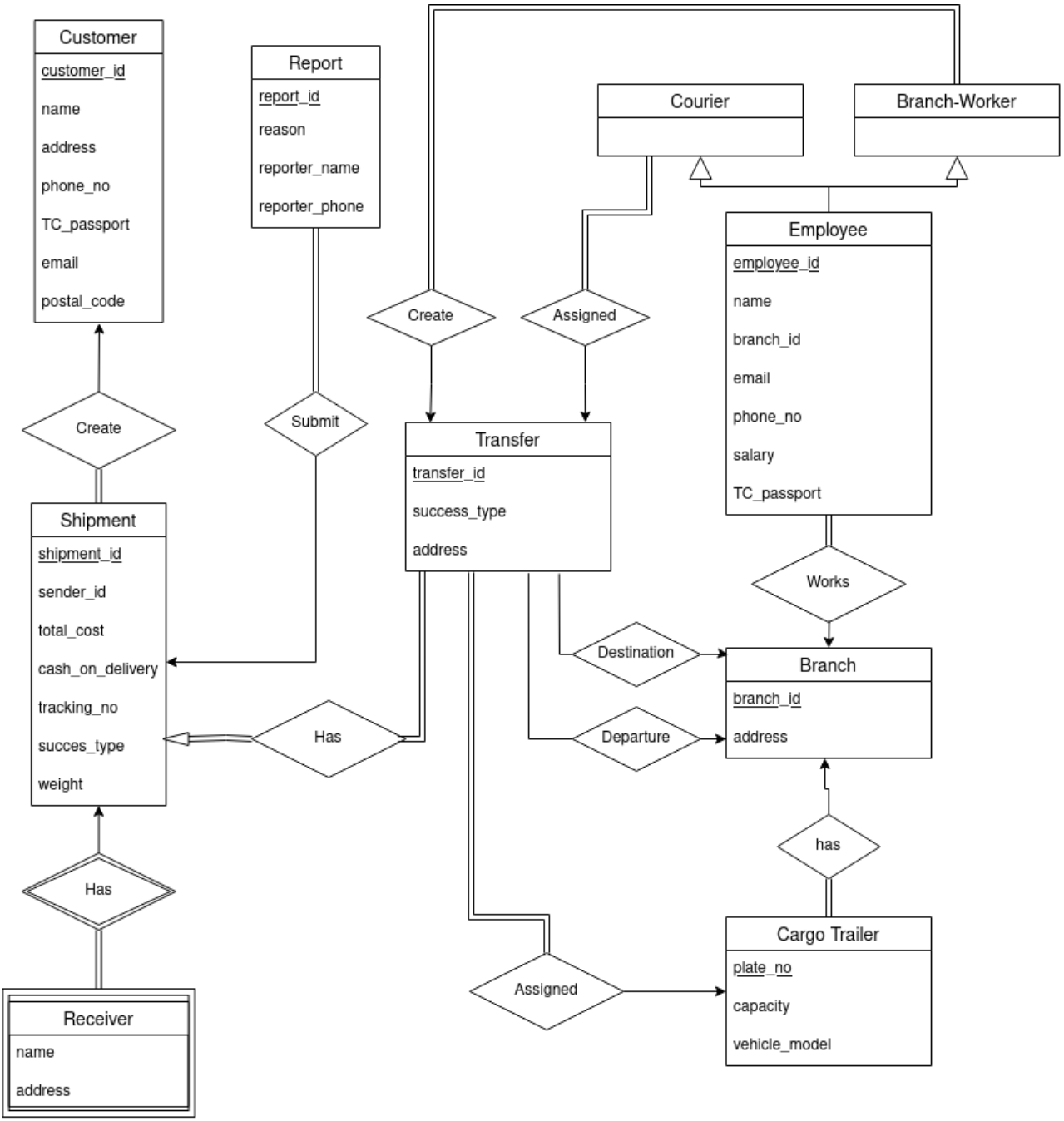
Non-functional Requirements

- The system will be simple as it will have a wide range of users from different backgrounds [Usability Requirement].
- System crush does not cause data loss [Reliability Requirement].
- Up to 10000 people can be online at the same time in the system [Performance Requirement].
- Servers must be online during working hours [Performance Requirement].
- When the company opens new branches, the system will be able to support them [Supportability Requirement].

Limitations

- There have to be available couriers and cargo trailers to create transfer. Transfers have to be done by couriers using cargo trailers.
- Only signed customers can create shipments.
- There has to be a shipment in order to send a report.
- Shipments must be divided into transfers to be completed.
- Total weight of all the shipments being carried in a cargo trailer at a given moment cannot exceed the capacity of the cargo trailer.
- The courier performing a transfer must be working at the departure branch unless the transfer starts from the home address of the customer. In that case, the courier must work at the destination branch.

E/R Diagram



Project Web Page

shippingdatasystem.github.io