Bilkent University

Department of Computer Engineering

CS 353 Database Management Systems

Project

Project Proposal report

Maintenance Data Management System

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October 16, 2019

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1. INTRODUCTION

This report is about our project proposal for a maintenance database management system which explains the basic entities, functionalities and extent of our project. The report encapsulates how the project will be designed by illustrating the ER diagram, elaborating on the functionalities and system requirements.

The report starts with the project description in which the scope and functionalities of our maintenance database management system is explained. It continues by elaborating on why we need database and how the database will be integrated into the system. The report continues with requirements part of which is, functional, non-functional and pseudo requirements. These aspects of the requirements is explained in this part of the report. In limitations part, we provided boundaries and constraints of our proposed system.

The last part of the project includes the E/R diagram that will be used the basis of our database design. The E/R diagram defines entities within our proposed system and the type of relationship that exist between them.

2. PROJECT DESCRIPTION

Our system will basically be a web application for managing and maintaining the database system of an electronics company. The system includes information about the employees, customers, products, customer services, technical staff, transportation unit, warehouse, categories, complaints, repairments,and so on. When a customer login to our system, he/she will be able to will be able to file a request for repairments of their products. Whole process will be kept track of to monitor progress in each step. Customers can also file a complaint about products. Such complaints will be handled by customer services.

By implementing the application we aim to establish an online platform where the customers can interact with the company regarding issues about their products. This application will also provide the company with an online system to manage their data. /considering the ever-changing structure of companies that deal with electronics due fast-paced development in technologies, the information in our system will be updated and stored precisely to eliminate potential inconsistencies.

As implied above, our database management system will be an online web application for electronic companies to effectively manage and maintain their data which is essential to any modern-day company that aims to keep the interaction between its customers active.

2.1 Problem Definition

We are building a repair system for an electronics manufacturing company. The electronics manufacturing company has five different types of products: (i) mobile phones (ii) computers (iii) home electronics (iv) office electronics and (v) wearables. For each of these types there is a different class of technical experts. In our system, at first the customer files a complaint about a broken product. Then a customer service representative (CSR) reviews the complaint and responds to the complaint. Then the customer and the CSR have a conversation if they want to. CSR tries to learn about the details of the complaint from this conversation. After this, the customer service representative can file for a repair request specifying product details and address of the customer. Only the CSR can file for a repair, the customer can not directly file for a repair. The system is designed this way so that the CSR can learn about the details of the broken product before filing a repair request. Then, an appropriate technical support

representative (TSR) gets notifies about the repair request. He then gets the parts for the repair from a warehouse. He takes a transportation and drives up to the customer's house. After repair is done, the TSR inputs information about the repair such as was it successful or not, what is the price for the repair, which parts needed to be replaced etc. The customer pays the TSP and gives a rating expressing his level of satisfaction. We also have specifications of each of the products in our company. The TSP can use these specifications to get the parts he needs from the warehouse.

2.2 The importance of database in our project

An electronics company contains a vast array of information about employees, customers, products and so on. These have to be stored on a reliable system to enable the company to function properly. There is a myriad of interactions between the many different entities of the company which also has to be kept in the records for future business projections and potential restructure to keep up with the ever-changing landscape of the technological world. Such a huge pile of data would be exceptionally hard to manage without a database system. As such by using a database system, not do we easily store information but also provide means to keep track of interactions between the various departments of the company.

3. REQUIREMENTS

3.1 Functional Requirements

3.1.1 Customers

- Customers will be able to login and access the application
- Customers can file a complaint about a product

- Customers can return products for repair
- Customers can be able to rate complaint response
- Customers can be able to rate the repair service of their products
- Customers can track the progress of their products
- Customers will be able to see their previous conversations with customer services when they log in.
- Customers can choose to be notified regarding discounts.

3.1.2 Employees

- Employees can login to the system
- Employees can supervise the work of other employees

3.1.3 Customer Service

- Customer service can be able to respond to complaint of customers
- Customer service can inform customers about available discounts
- Customer service direct communication on repair of products to Technical service

3.1.4 Technical Support

- Technical support will be able to repair update the status of products under repair
- Technical support can send repaired products to transportation unit to be sent back to their owners
- Technical support can identify the needed parts for repair from the warehouse
- Technical support determine if a product should be repaired or replaced with a new one.

3.2 Non-Functional Requirements

3.2.1 Usability

- The application will have a user-friendly interface that will allow users to navigate through it easily without wasting much time trying to file a complaint or respond to one.
- The application will have a seamless login system for its to be sent directly to their respective pages

3.2.2 Extensibility

- The application will be made such that new features can be added easily.
- As there is always room for improvement, the application will be updatable.

3.2.3 Reliability

- The application will not modify any information provided by its users such as names, emails and addresses.
- The application will not track user's activities in the browser.

3.2.4 Availability

- The application can be accessed on the web by anyone with an account in the system.
- New accounts can be added by a supervisor (for an employee) or an employee (for a customer)

3.2.5 Efficiency

- Customer service should be able to notice any complaint and respond to it within a short period of time

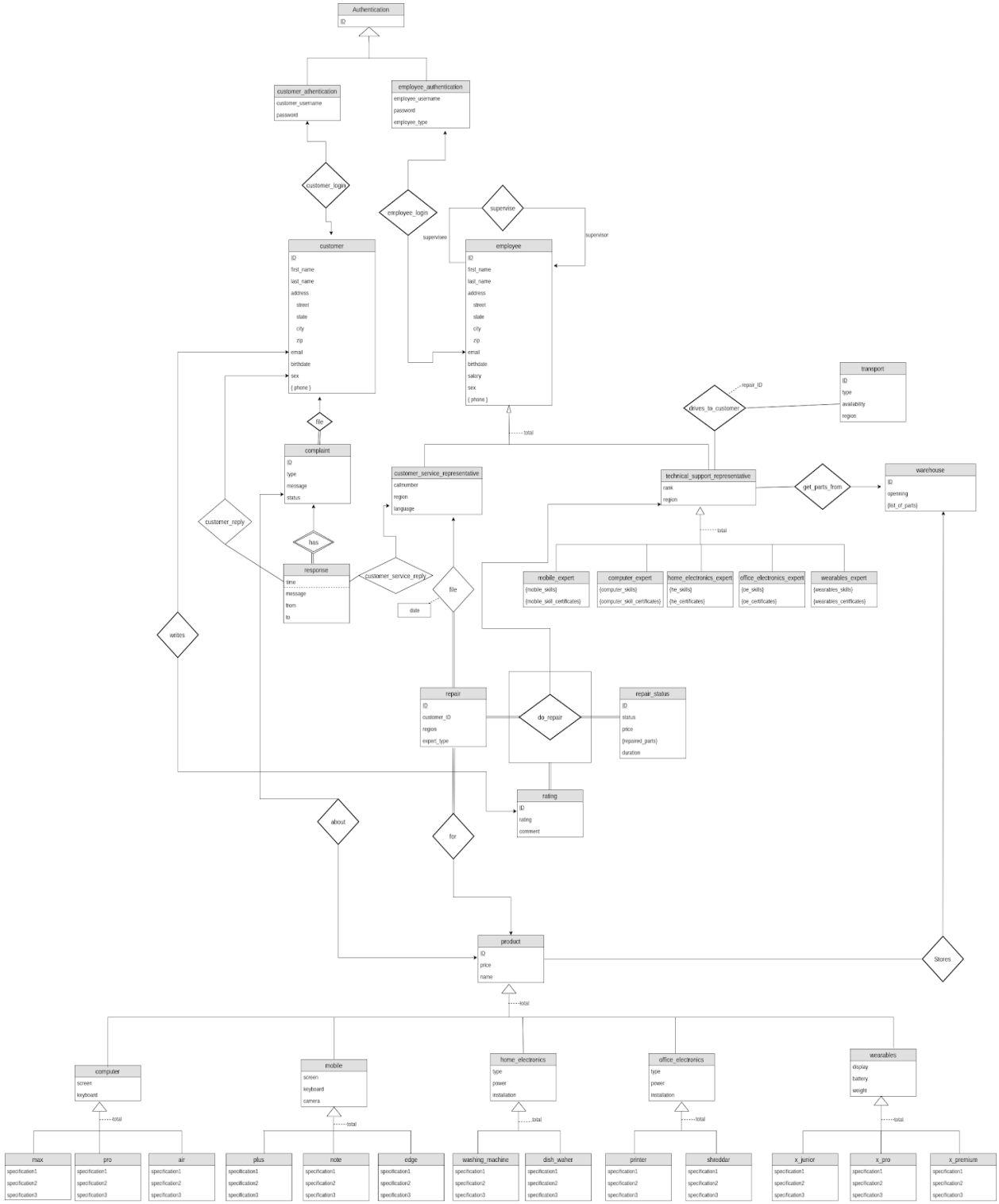
3.3 Pseudo Requirements

- SQL will be used for the database
- HTML, CSS, JavaScript, Bootstrap and React will be used for the frontend development of the website
- PHP will be used for the backend development of the website

4. LIMITATIONS

- Customers can only complain about the products they have bought from the company.
- Technical Service can provide services to products within their domain of expertise as such customer service will send specific products to its identified technical service personnelles for repair.
- Customer service cannot replace products whose warranty has expired.
- Repair price of a product cannot exceed the original price of the product.
- Parts of a product cannot be expensive than the original product.
- Transport department cannot operate outside their region.
- Cost of repair before warranty expires must be less than the cost after the warranty expires.

5. ENTITY RELATIONSHIP DIAGRAM



6. CONCLUSION

Our maintenance data management system is a web-based application for managing the database of the company (electronic company). In this report, we described the system, identified the system requirements (functional and non-functional) and explained the cardinal importance of using database management system as part of the project. We illustrated the E/R diagram which the project will be based on and shed light on the limitations of the project.

7. WEBSITE

Our project information can be found at the link below

https://saifvandana.github.io/cs353-Database-System/