Vanier College

Deliverable 6

Client: Opeq, Simon

System Development Section 01
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Previous Work Statement

Our team will focus on creating the application from scratch using C# language. Some requirements for the application are that it must be downloadable on PC, and it must be able to connect to a web database. We will use the ideas that we learned from Application Development 1 in the previous semester. We will not use any previous code, but we will use the knowledge that we learned from before.

Executive Overview

The problem that the company OPEQ has is storing caller information on an excel sheet. They want us to make an application that will make it more efficient to store caller information.

In the previous deliverable, we made prototypes to show how our application will roughly look and the flow of it. We showed it to our client to get feedback if it is good and if our client wants something changed.

In this deliverable, we did our database design by making a data dictionary to then make an ERD, containing all the basic information like the IDs of the people involved whether they are part of the company or clients, names, contact information and descriptions of the item's problems as well as the measures applied to fix the problems etc. We looked at the class diagram, that was done in a previous deliverable, to see if we needed to update it. After doing the database, we have the database queries which will help us see if there is anything to optimize as optimizing database queries helps with the efficiency of the application.

Business Problem

The problem that our client told us is that they are having a tough time recording the information of the customers that call them. They use an excel sheet to record the information but it takes a while to do it so some information might get mixed up with the others or get forgotten completely. The solution that our client proposed is to make a desktop application that will make recording customer information fast and easy and it will also make the viewing of the records more organized. We made a data dictionary to aid on helping make the ERD. This will help us a lot with the coding and how the database will look like, since the whole application is based on saving records in a database.

Narrative Description of the Database Design

The user can login as an employee by entering their name on the login page. Their name will be stored into the database with a unique employee id. They will be able to choose from add data, modify data, or view data. If they choose to add data, they need to input the client's name, client description, date, client email. They can add the client phone number and client address if it is available (nullable). They can select how they contacted the client using radio buttons. If it is by email, telephone or in person. A MAT (item barcode) is required when adding a product. Moreover, they can select the problem from dropdown. Whether it is computer problem, laptop problem, screen problem or phone tablet problem, it will provide different category under type of problems. Once the user login as an admin using name and password, they have the power to add or delete a record of the problem tables. The dropdown field for problem type on the add data page will change following the modifications made by the admin.

When the employee chooses to modify data, they need to enter a valid MAT to access the matching record. It will show the data they have entered on add data page. They need provide some other information in addition to that. Describe in words that the order type and the action they took to solve to problem. The specific date that the problem got solved. Choose between solved, unresolved, and ongoing radio buttons to indicate the status of the present problem (nullable). If the client's phone number is currently available, they can add it (nullable). If it is a new order, it needs the send date and return voucher.

The employee can filter the data by problem status when they decide to view it (solved, unsolved, ongoing). It will show the MAT, client name, and order number for the records that match. By providing the client's name, MAT, or order number, it can locate a particular record.

Appendix 1

Data dictionary

Employee table

Field Name	Data Type	Data Format	Field Size	Description	Example
emp_id	int	nnnnnn	6	Primary key to differentiate each employee	000001
name	Varchar		50	Employee name	'Simon'

Admin table

Field Name	Data Type	Data Format	Field Size	Description	Example
admin_id	int	nnnnnn	6	Primary key to differentiate each admin	000001
name	Varchar		50	Admin name	'Simon Provencher'
password	Varchar		10	To store a password	54321

Address table

Field Name	Data Type	Data Format	Field Size	Description	Example
address_id	int	nnnnnn	6	Primary key to differentiate each address	000001
street	Varchar		50	Street name	Cote vertu
apt_num	int		10 (Nullable)	To store a password	1189
city	Varchar		50	City name	Montreal
province	Varchar		50	Province name	Quebec
postal code	Varchar		5	Postal code	H6N2P8

Client table

Field Name	Data Type	Data Format	Field Size	Description	Example
client_id	int	nnnnnn	6	Primary key to differentiate each employee	000001
name	Varchar		50	To input Client name	Alex
description	Text		1000	To enter Description of the problem	HDMI cable missing

date	date	DD/MM/YYYY		Date contacted	18/10/2022
Phone_num	Varchar		20 (Nullable)	To enter the phone number so that the employee can contact them later	(514)123-4567
email	text	name@domain.com	80 (Nullable)	To enter the email so that the employee can contact them later	alex@email.com
By_email	boolean	0	1	1 means the client reached out by email, 0 means they did not	0
By_telephone	boolean	0	1	1 means they came in person, 0 means they did not come	0
In_person	boolean	0	1	1 means they came in person, 0 means they did not come	1
address_id	int		6 (Nullable)	To enter address in the case of a delivery	000001
Computer_prob_id	int	000003	6 (Nullable)	Foreign key for the computer_prob table to load the drop_down	000001
laptop_prob_id	int	000123	6 (Nullable)	Foreign key for the laptop_prob table to load the drop_down	000001
Screen_prob_id	int	000052	6 (Nullable)	Foreign key for the screen_prob table to load the drop_down	000001
Phone_tablet_prob_id	int	000036	6 (Nullable)	Foreign key for the phone_tablet_prob table to load the drop_down	000001

MAT	varchar	MAT-nnnn-nnnn	13	Foreign key for the modify_data table to load the data	MAT-1022-4568
Employee_id	int	nnnnnn	6	Foreign key to save which employee saved the record	000001

Computer_prob table

Field Name	Data Type	Data Format	Field Size	Description	Example
Computer_prob_id	int	nnnnnn	6	Primary key to differentiate each problem	000001
comp_desc	text		100	A summary of the problem	Missing cable

Laptop_prob table

Field Name	Data Type	Data Format	Field Size	Description	Example
laptop_prob_id	int	nnnnnn	6	Primary key to differentiate each problem	000001
Laptop_desc	text		100	A summary of the problem	Fan Noise

Screen_prob table

Field Name	Data Type	Data Format	Field Size	Description	Example
screen_prob_id	int	nnnnnn	6	Primary key to differentiate each problem	000001
Screen_desc	text		100	A summary of the problem	Defective screen

Phone_Tablet_prob table

Field Name	Data Type	Data Format	Field Size	Description	Example
phone_tablet_prob_id	int	nnnnnn	6	Primary key to differentiate each problem	000001

Phone_tab_desc	text		100	A summary of the problem	App Crashes/Freezes

Order_Type table

Field Name	Data Type	Data Format	Field Size	Description	Example
Order_type_id	int	nnnnnn	6	Primary key to differentiate each order type	000001
name	text		100	To specify the type of order that is associated with the product	CLIC

Action_Took table

Field Name	Data Type	Data Format	Field Size	Description	Example
Action_took_id	int	nnnnnn	6	Primary key to differentiate each action	000001
action	text		100	To specify the action took to fix the client's problem	We shipped a replacement HDMI cable to Mr.Alex.

Product table

Field Name	Data Type	Data Format	Field Size	Description	Example
MAT	varchar	MAT-nnnn-nnnn	13	Primary key to differentiate each product	MAT-1022-4568
Product_type	text		100	To specify product	Computer

Modify table

Field Name	Data Type	Data Format	Field Size	Description	Example
modify_id	int	nnnnnn	6	Primary key to differentiate each employee	000001
Order_type_id	int		6	Foreign key (primary key of order_type table)	MAT-1022-4568
Action_took_id	int		6	Foreign key (Primary key of action_took table)	000001

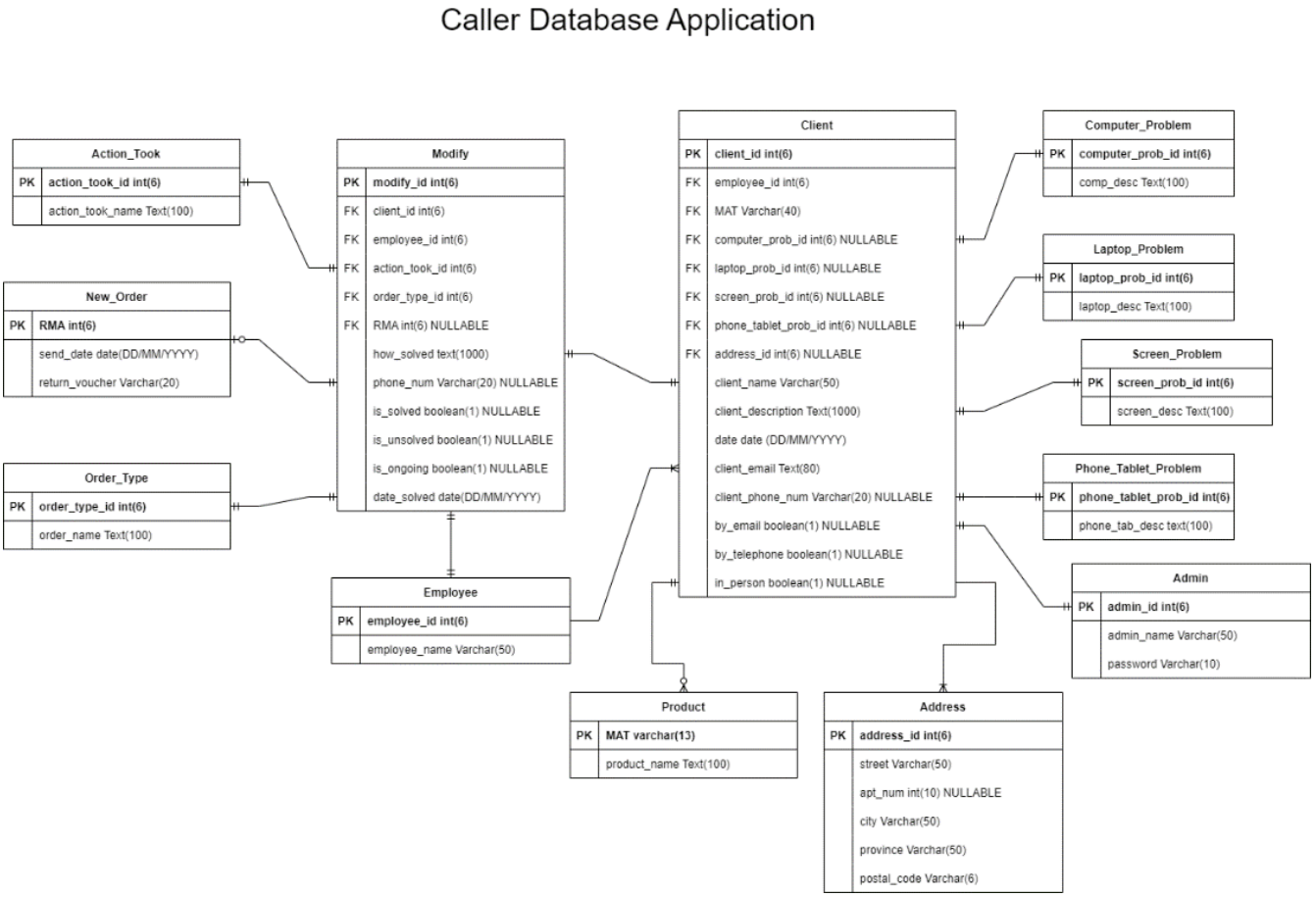
How_solved	text		1000	Describe how it was solved	It was solved by ...
Phone_num	Varchar		20 (Nullable)	Phone number of the client	(821)211-1232
Is_solved	boolean	1	1 (Nullable)	1 if the problem is solved. 0 if the problem is in other status	0
Is_unsolved	boolean	0	1 (Nullable)	1 if the problem is unsolved. 0 if the problem is in other status	0
Is_ongoing	boolean	0	1 (Nullable)	1 if the problem is ongoing. 0 if the problem is in other status	1
Date_solved	date	DD-MM-YYYY	(Nullable)	Problem solved date	22/11/2022
RMA	int		6 (Nullable)	Foreign key (Primary key of the new order table)	128723
Employee_id	int	nnnnnn	6	Foreign key to save which employee saved the record	000001

New_Order table

Field Name	Data Type	Data Format	Field Size	Description	Example
RMA	int	nnnnnn	6	Primary key to differentiate each new order	000001
Send_date	Date	DD-MM-YYYY		Date the order was sent	24/11/2022
Return_voucher	Varchar		20	Return voucher	H812VO

Appendix 2

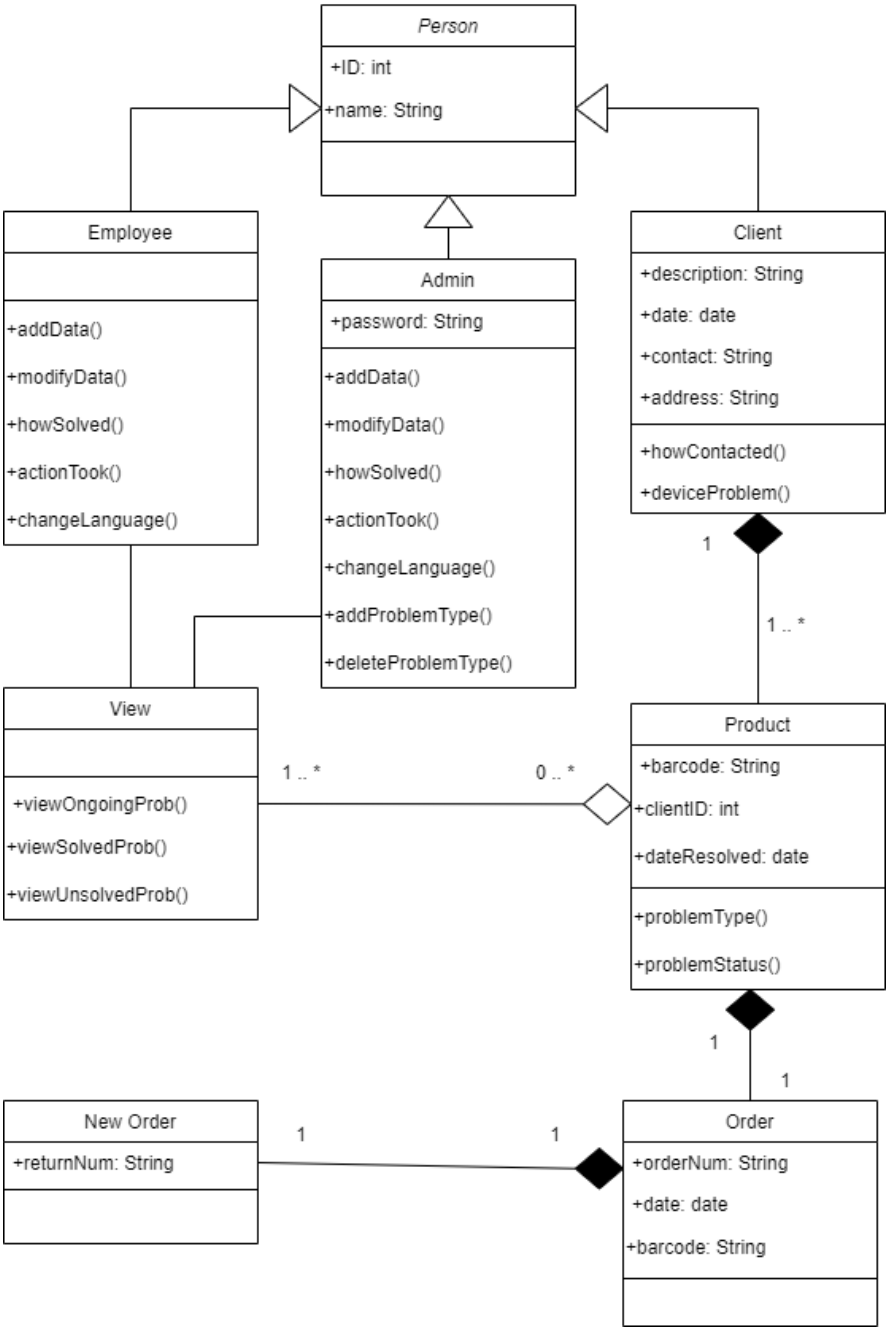
ER diagram



Class diagram

The class diagram is similar to the one from deliverable 3 because we kept the same classes, and the relations are still the same, but it is also different because we added a new class called Admin. The admin class is similar to the Employee class, but it has 2 new methods which are addProblemType() and deleteProblemType().

Caller Database Application



Appendix 3

We would need to optimize since all the queries will be used to search up information quite often. All the queries use "SELECT" statements, so we can use indexes to speed up the search. Also, "IN" predicate can be used instead of =, And/or operators. The classes are normalized.

Appendix 4

Based on our database size, the access speed will be fast. The database will be frequently accessed because the entire application uses the database. Employee information is stored from the very beginning of the login screen. After logging in, employees can choose to add, modify, or browse data. A response time of three to six seconds will be necessary.

Bibliography

Gaudenz, A., & Benson, D. (2000). *Diagrams.net - free flowchart maker and diagrams online*. Flowchart Maker & Online Diagram Software. Retrieved November 7, 2022, from https://app.diagrams.net/