

CPSC 471 Database Management Systems

CARSTAR Database System
Project Final Report

Group 19

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Introduction

CARSTAR Okotoks is an auto body shop that currently uses several Excel spreadsheets to keep track of information (i.e. vehicles, customers, parts etc.). This is an inefficient way to access, insert, delete, and modify data, so a better system is needed to replace it. We recognized that this system could be easily improved with a database and that the company would greatly benefit from a new one. The goal of this project was to apply the knowledge we have acquired throughout the semester in CPSC 471 to design and create a database system with a corresponding web application to solve this problem for CARSTAR Okotoks. Through the utilization of Enhanced Entity Relationship Diagrams we were able to begin the design process for a system that corresponded to the needs of the company. We later translated this into a Relational Model, and then also created the Object Oriented Model for the system with sample SQL queries to base our system off of.

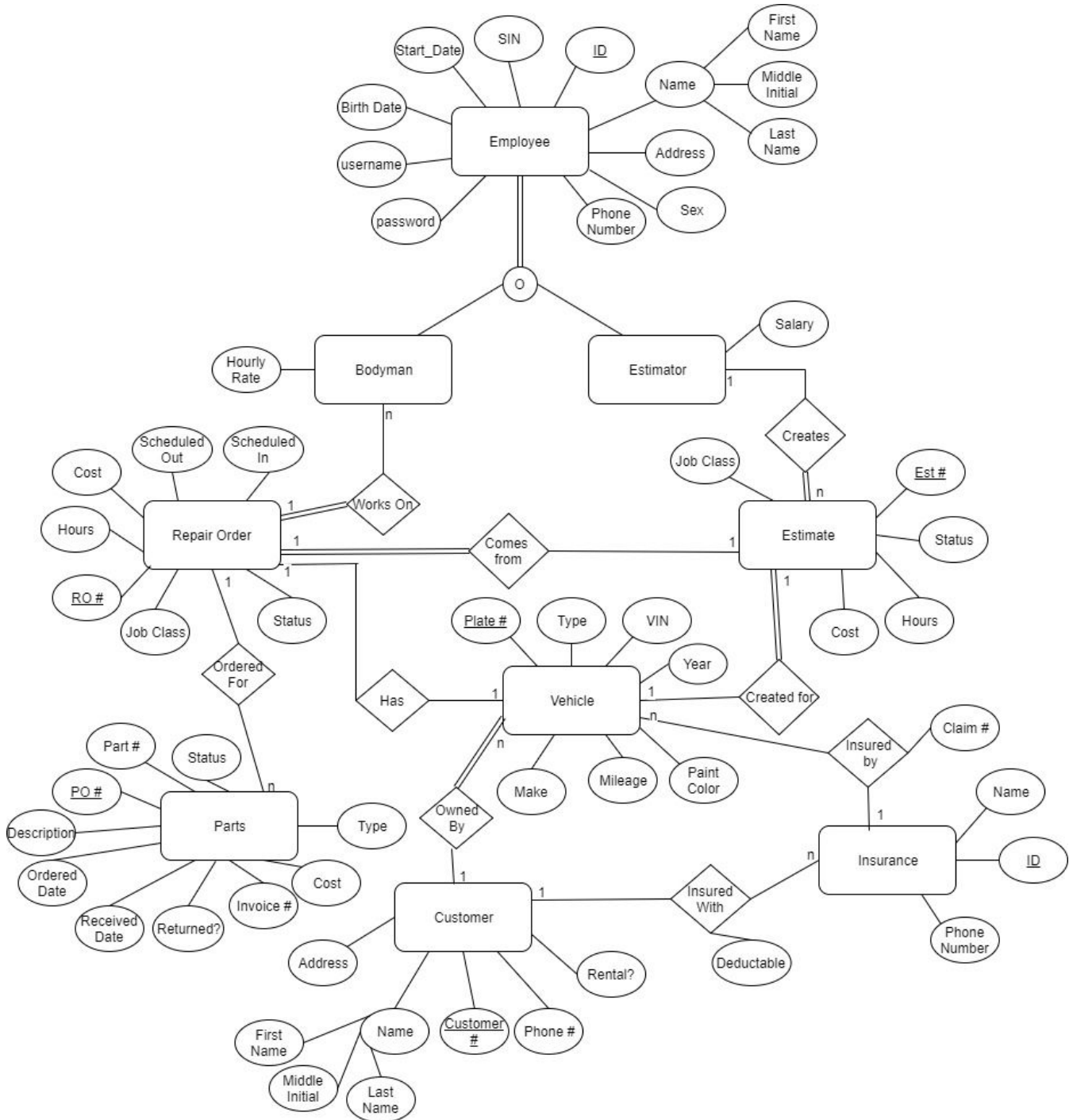
System Requirements

To use our website on your system, you must have XAMPP installed as well have the the Apache Server, and the mySQL Server activated. Once the two have been activated, you are then able to reach the website using your web browser. The data that is stored in your database will be saved on your local storage.

System Features

- Login screen to prevent unauthorized users for using the system
- User interface for easy searching, insertion, deletion, and modification of data
- Ability to view projects assigned to each employee
- Ability to view clients' personal information (name, phone number, etc.) and insurance information (company name, contact, deductible, etc.)
- Ability to view vehicle information, including car make, type (car, truck, etc.), VIN, plate number, damage information, damage cost
- Ability to view vehicle status within the body shop (prewash, teardown, paint, repair, detail)
- Ability to create, edit, view, and delete employee profiles
- Ability to view customer-insurance as well as vehicle-insurance relationship directly
- Ability add, edit, view and delete parts ordered for each repair order

Extended Entity Relationship Diagram

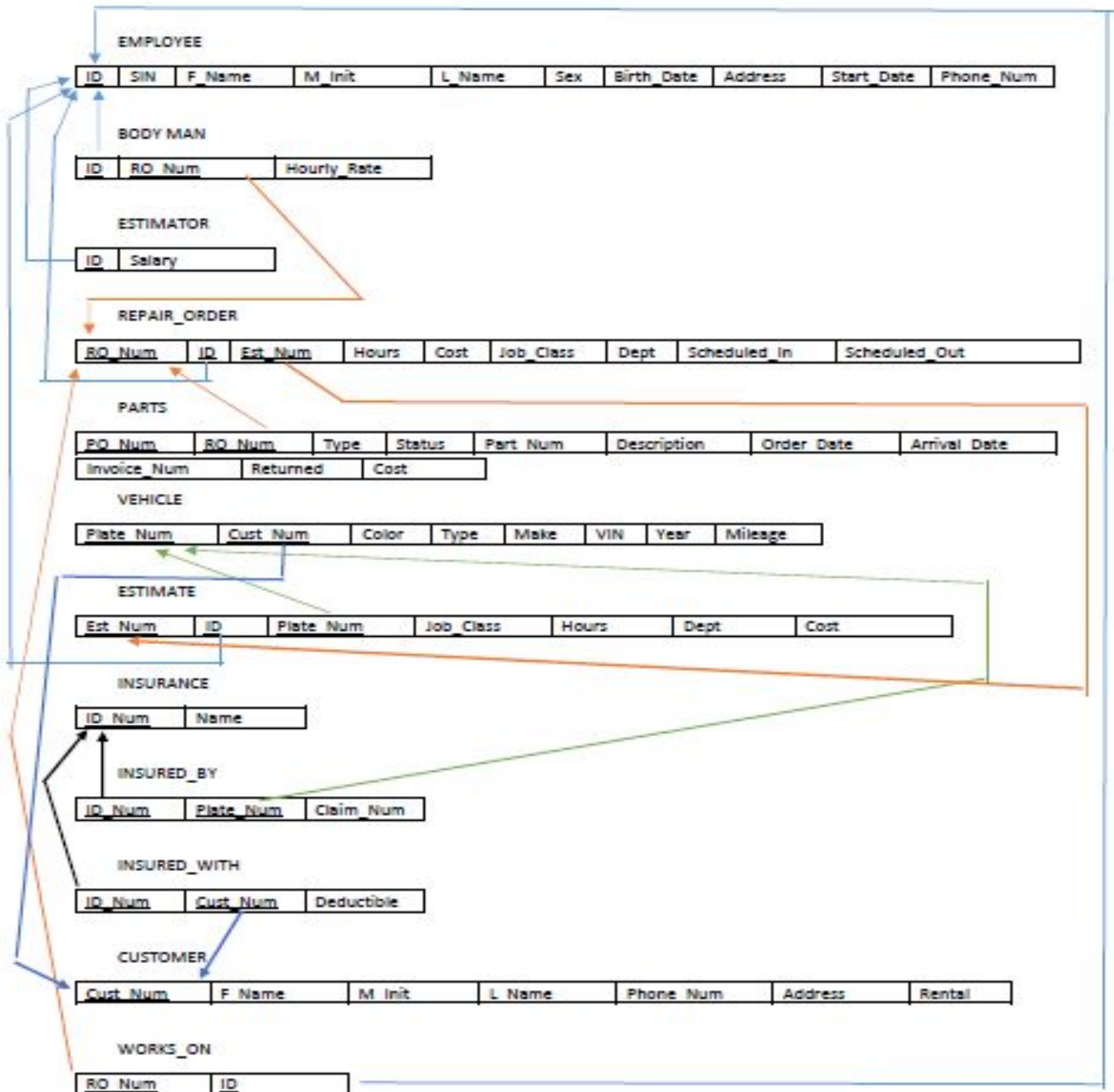


About EER Diagram:

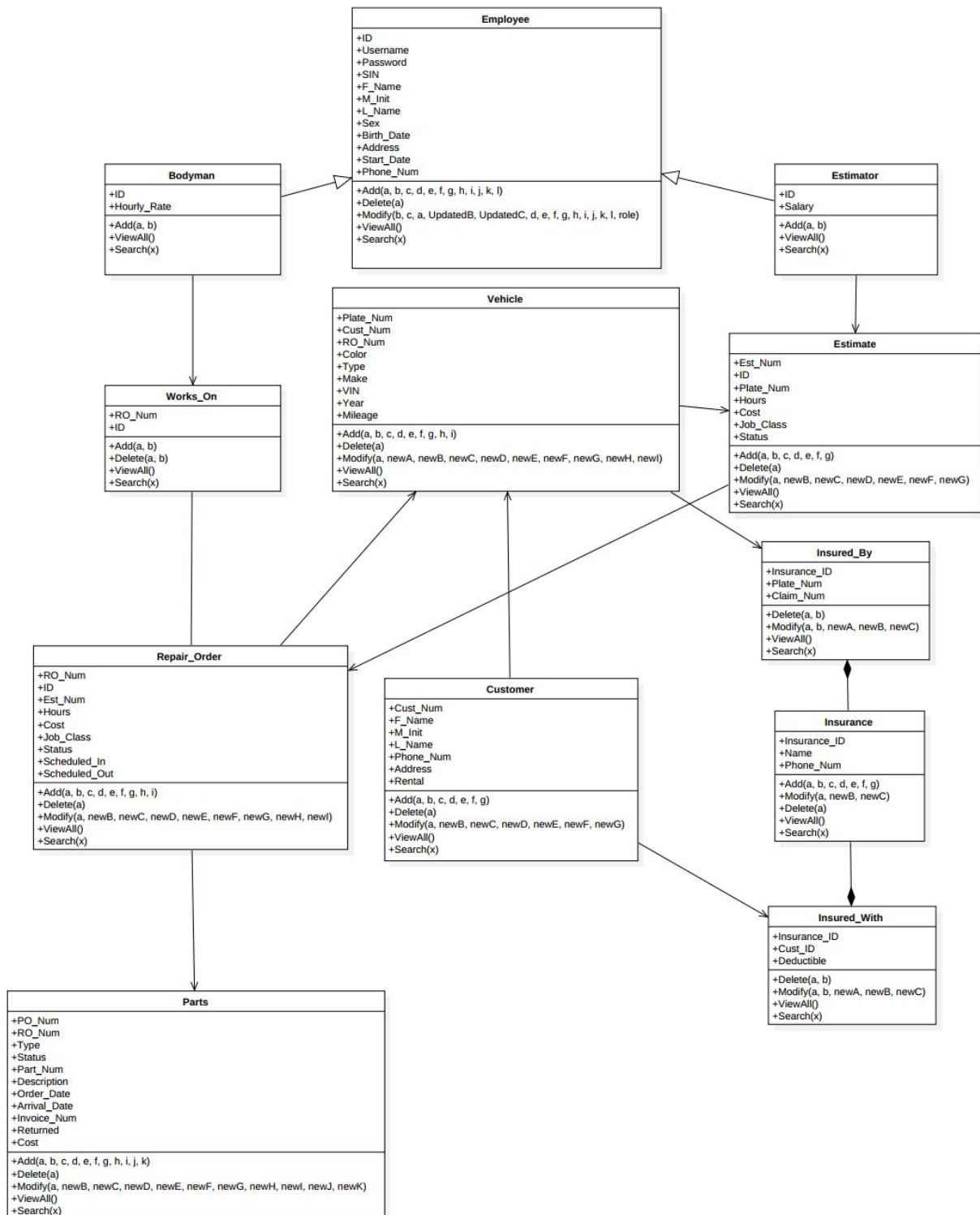
Our EER diagram for designing a database for CARSTAR Okotoks was created based on the needs of the company and what data the company keeps track of. After interviewing employees at the company, we came to understand that the main things they track include customer, vehicle, and insurance information for each customer, estimate and repair order information for every vehicle that comes to the body shop, and information about parts ordered for every vehicle they repair. We also came to understand they have different specializations of employees, including bodymen and estimators. Once we had an understanding of what entities are kept track of, we gathered the attributes for each of them, and their relationships between each other, and constructed the EER diagram to design the database.

Our EER diagram has a total overlap for Employees because they can have multiple roles, but they must be either a Bodyman or an Estimator or both. Bodymen and Estimators differ in how they are paid (Hourly Rate versus Salary). Many Bodymen work on a Repair Order while one Estimator creates many Estimates. Each Repair Order comes from an Estimate and so they may share the same information (Hours, Cost, etc.). Many Parts are ordered for one Repair Order and a Repair Order has a Vehicle associated with it. An Estimate is also created for a Vehicle. Many Vehicles are insured by an Insurance company and many Vehicles must be owned by a Customer. One Customer can insure with many Insurance companies.

Relational Model



Object Oriented Model



Sample Queries

View All:

```
SELECT *  
FROM *Table_name*;
```

View One:

```
SELECT *  
FROM *Table_name*  
WHERE *selection_conditon*;
```

Delete:

```
DELETE FROM *Table_name*  
WHERE *Selection_condition*;
```

```
UPDATE *Table_name*  
SET *attribute = value*  
WHERE *selection_condition*;
```

Inserting into Tables:

```
INSERT INTO *table_name*  
VALUES *values_to_insert*;
```

Each of the above functions are available to every table in the Carstar Relational Model. We must alter the statements on a table to table, and case by case basis as follows:

- For each table, to alter the Insert statement, we could change *table_name* into the tables name, and *values_to_insert* into the values we wish to insert into the table in the form (attr1, attr2, ... , attrn).
- To alter the Update statement, we change *table_name* into the table's name, *attribute=value* changes to attribute name and its value, respectively, and we may repeat this statement, separated by commas, if we wish to update more than one value. *selection_condition* will be 1 or more conditions that tell us which tuples will be updated in the specified table.
- To alter the delete statement, we change *table_name* to the table's name, and the *selection condition* will be 1 or more conditions that tell us which tuples will be deleted (we may leave out the WHERE if we want to delete all tuples).

- To alter the View One statement for different tables, *table_name* becomes the table's name, *selection_condition* becomes the condition(s) that will tell us which tuples to display (ex. ID=1234). We may change * if we wish to only see specific attributes for all tuples.
- To alter the View All statement for different tables, *table_name* becomes the table's name, and we may change * if we wish to only see specific attributes for all tuples.

Additional Queries for the Carstar Database include:

- Searching for Vehicles, Customers, Insurance Companies, Employees, Repair Orders, and Estimates, individually and in different combinations.
- Searching for Employees and all Repair Orders they are working on
- Viewing Customers, their vehicle information, their insurance company information, and repair order information all on the same screen.

Examples Queries

Insert New Employee:

```
INSERT INTO Employee
```

```
VALUES id, sin, fname, minit, lname, sex, bdate, addr, startdate, phone;
```

Update Employee:

```
UPDATE Employee
```

```
SET *attribute = value*
```

```
WHERE Employee.ID= searchedID;
```

View Single Employee:

```
SELECT *
```

```
FROM Employee
```

```
WHERE ID=searchedID; (or F_name=searchedFname, L_name=searched Lname, etc)
```

View set of all Employees with all data:

```
SELECT *
```

```
FROM Employee;
```

View RO's an Employee is working on:

```
SELECT *  
FROM Repair_Order as r, Employee as e  
WHERE e.ID=r.ID AND SearchedID = e.ID;
```

View all RO's and Employees:

```
SELECT *  
FROM Employee as e JOIN RO as r ON e.ID=r.ID;
```

Search for a Customer:

```
SELECT *  
FROM Customer  
WHERE LIKE %search_var%;
```

Search for Customer and Vehicle Info:

```
SELECT *  
FROM Customer as c JOIN Vehicle as v ON c.Cust_Num=v.Cust_Num;
```

Search for Vehicle Parts:

```
SELECT *  
FROM Parts as p, RO as r, Vehicle as v  
WHERE p.RO_num = r.RO_num AND r.RO_num = v.RO_num;
```

Make RO from Estimate:

```
INSERT INTO RO (RO_num, ID, Est_num, Hours, Cost, Job_class, Dept)  
VALUES ro, Estimate.ID, Estimate.Est_num, Estimate.Hours, Estimate.Cost,  
Estimate.Job_class, Estimate.Dept;
```

Check Status of RO:

```
SELECT r.Status  
FROM RO as r, Vehicle as v, Estimate as e  
WHERE r.Est_Num=e.Est_num AND e.Plate_num=v.Plate_Num;
```

Insert Customer, Vehicle, and Estimate Information:

```
INSERT INTO Customer (Cust_Num, F_name, M_init, L_name, Phone_Num, Address, Rental)
VALUES custid, fname, minit, lname, phone, addr, rental
INSERT INTO Vehicle (Plate_Num, Color, Type, Make, VIN, Year, Milage)
VALUES plate, color, type, make, vin, mileage
INSERT INTO Estimate (Est_Num, Job_Class, Hours, Dept, Cost)
VALUES enum, jclass, hours, dep, cost;
```

Schedule a Repair (Create RO):

```
INSERT INTO Repair_Order(RO_num, Scheduled_In, Scheduled_out, Status)
VALUES (ro, schIN, schOUT, stat)
```

Delete an Estimate:

```
DELETE FROM Estimate
WHERE Est_Num = est;
```

View Insurance Company Info:

```
SELECT *
FROM Insurance;
```

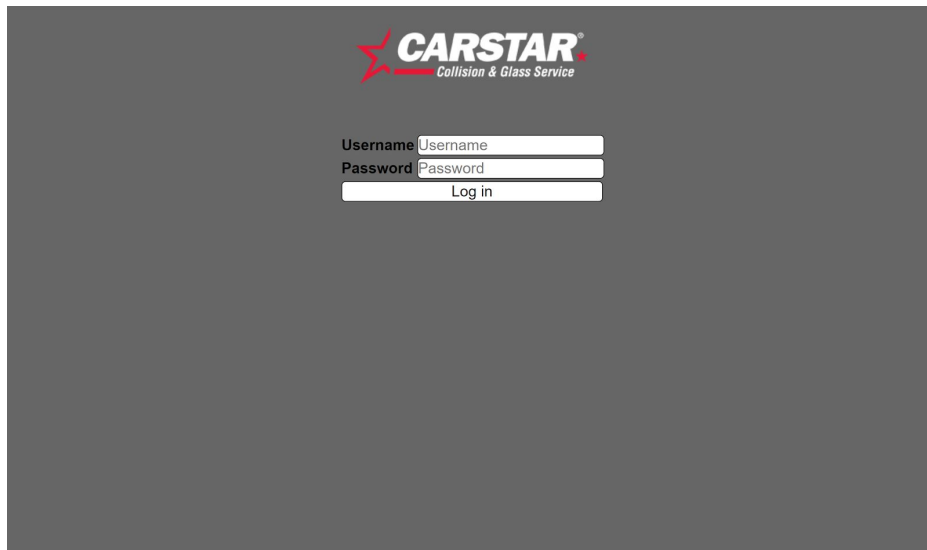
Complex Query

Retrieve employees who work on every repair order:

```
SELECT *
FROM employee as e
WHERE (SELECT w.RO_Num
FROM employee as e2, works_on as w
WHERE e.ID = e2.ID AND e2.ID = w.ID)
CONTAINS (SELECT r.RO_Num
FROM repair_order as r);
```

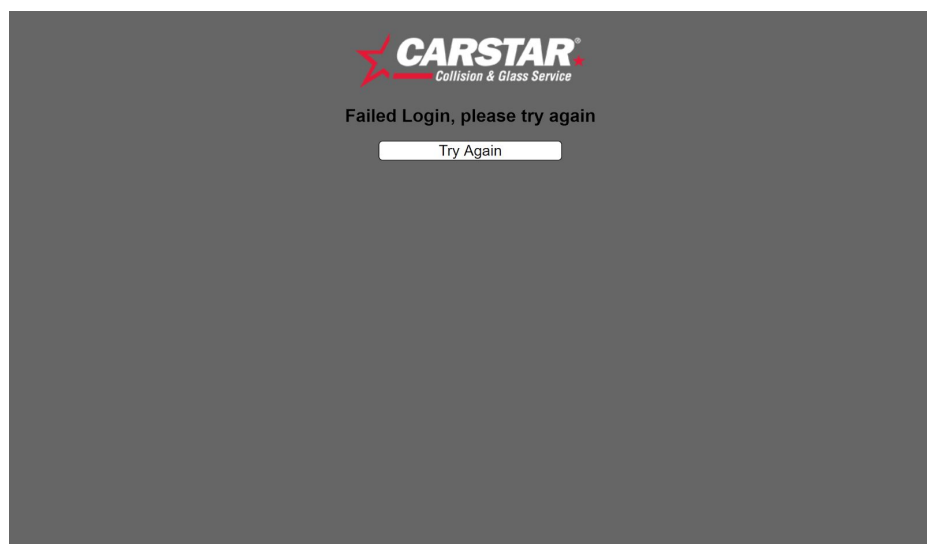
User Manual

Login Page

A screenshot of the CARSTAR login page. At the top center is the CARSTAR logo, which consists of a red star icon followed by the word "CARSTAR" in bold black text and "Collision & Glass Service" in smaller black text below it. Below the logo are two input fields: the first is labeled "Username" and the second is labeled "Password". Below these fields is a "Log in" button.

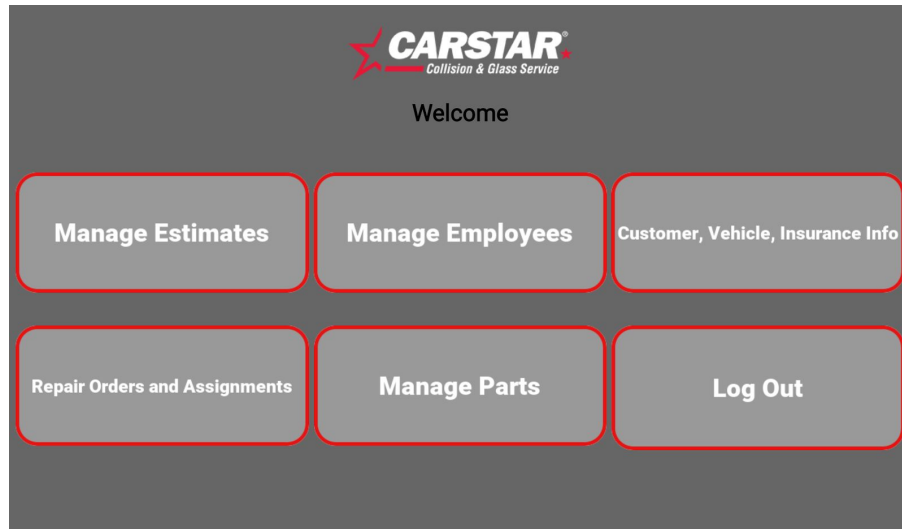
This platform is available to Employees of CARSTAR Okotoks, including Estimators, Bodymen, Customer Service Representatives, and Inventory Managers. The first page users are directed to when using the CARSTAR web application is the Login page. For users to gain access, they must use their login credentials created when entered into the Employee Database upon being **hired**. If a user does not have login credentials, they must request to be entered into the Employee Database. If credentials are forgotten, a user must ask someone with access to update their information in the Employee Database by changing their password and/or username.

Failed Login Page

A screenshot of the CARSTAR failed login page. At the top center is the CARSTAR logo, which consists of a red star icon followed by the word "CARSTAR" in bold black text and "Collision & Glass Service" in smaller black text below it. Below the logo is the text "Failed Login, please try again". Below this text is a "Try Again" button.

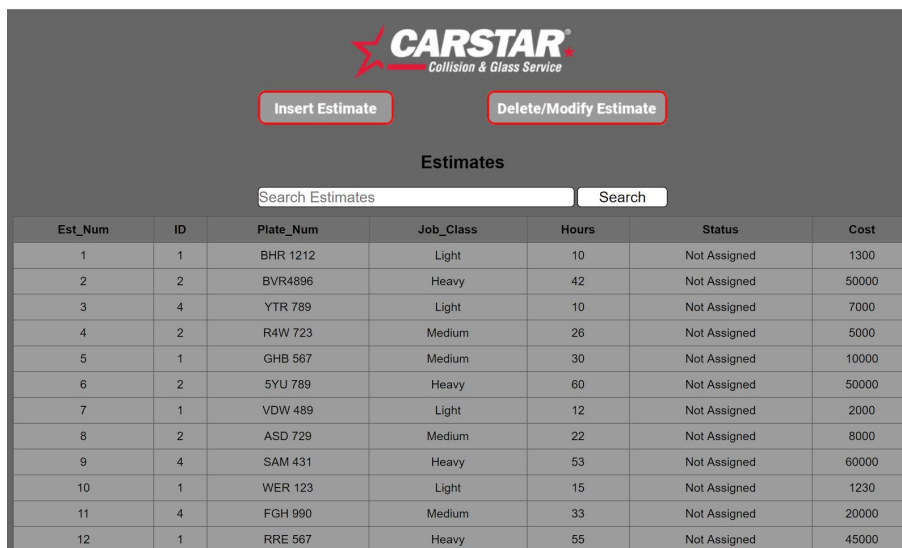
If a user enters a username-password combination that does not exist in the employee table, they will be directed to the Failed Login page, notifying them that the login has failed, and prompting them to try again by clicking “Try Again” to return to the Login Page.

Home Page



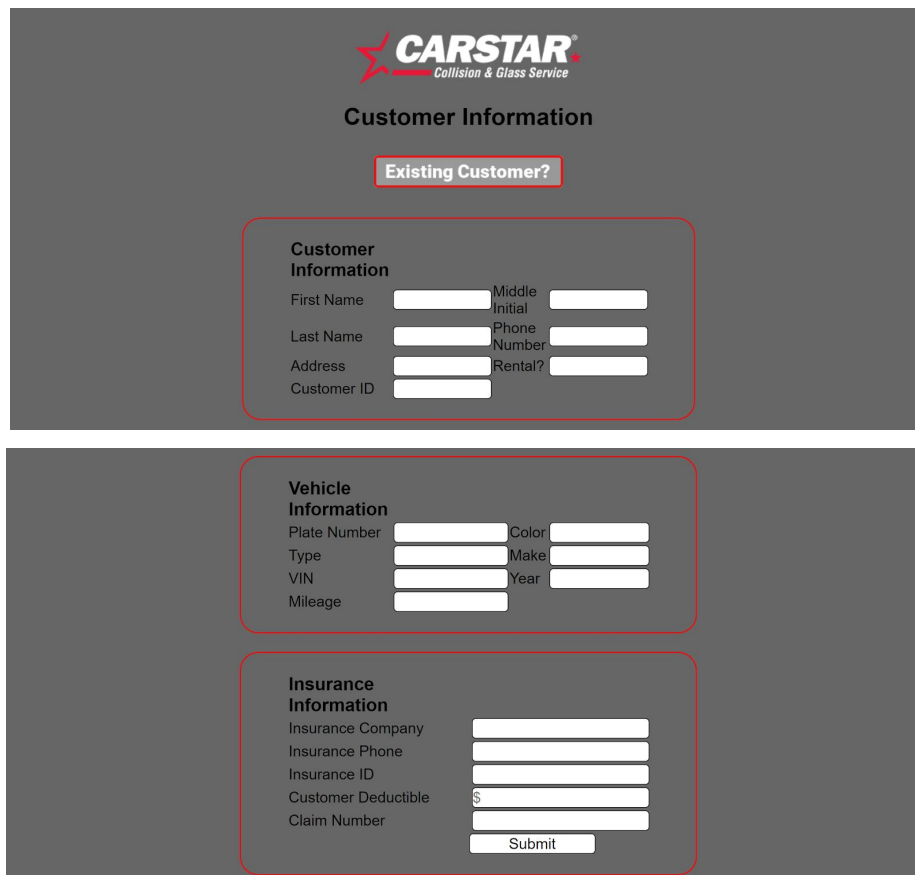
Upon successful login, the user will be redirected to the Home Page. This page allows users to choose among a variety of actions, which redirects the user to their desired pages to perform further actions if they choose. Log Out takes the user back to the Login page.

View Estimates Page



The user is redirected here after choosing “Manage Estimates” on the home page. This page allows the user to view all estimates, search estimates based on any attribute, and can redirect the user to the “Insert Estimate” or “Delete/Modify Estimate” Pages. The user may click the CARSTAR logo in the header at any time to return to the Home Page.

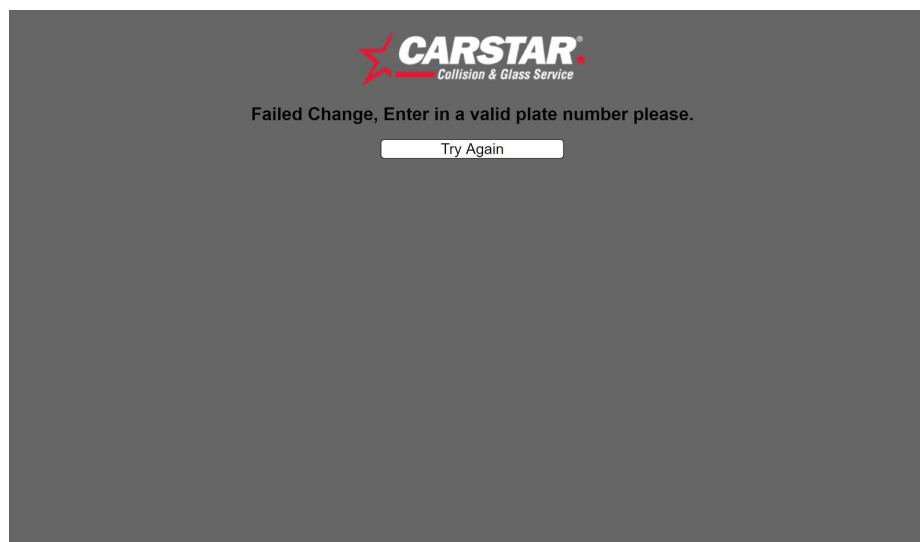
Insert Estimate Page 1- Inserting Information for Customer, Vehicle, and Insurance



The screenshot shows the CARSTAR Collision & Glass Service interface. At the top is the CARSTAR logo. Below it is the heading "Customer Information". A red-bordered button labeled "Existing Customer?" is centered. Below this is a red-bordered box containing the "Customer Information" section with fields for First Name, Middle Initial, Last Name, Phone Number, Address, Rental?, and Customer ID. Below this box is another red-bordered box containing the "Vehicle Information" section with fields for Plate Number, Color, Type, Make, VIN, Year, and Mileage. Below that is a third red-bordered box containing the "Insurance Information" section with fields for Insurance Company, Insurance Phone, Insurance ID, Customer Deductible (with a dollar sign icon), Claim Number, and a "Submit" button.

When the user clicks “Insert Estimate” on the “Manage Estimates” page they are redirected here. Users can enter a new Customer’s Information along with their vehicle and insurance information. If the customer already exists, the user may click “Existing Customer?” to skip over this portion of the Estimate insertion. Click “Submit” to go to the next page.

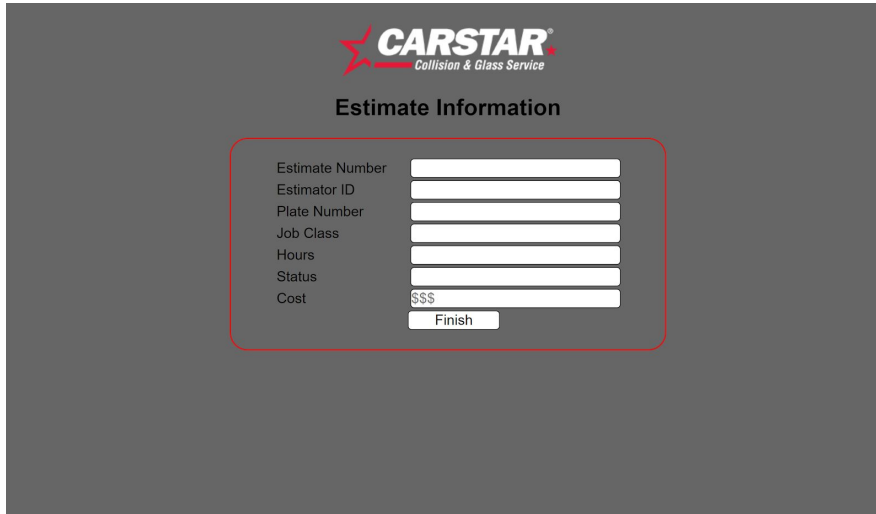
Failed Insert



The screenshot shows the CARSTAR Collision & Glass Service interface with an error message. At the top is the CARSTAR logo. Below it is the text "Failed Change, Enter in a valid plate number please." and a "Try Again" button.

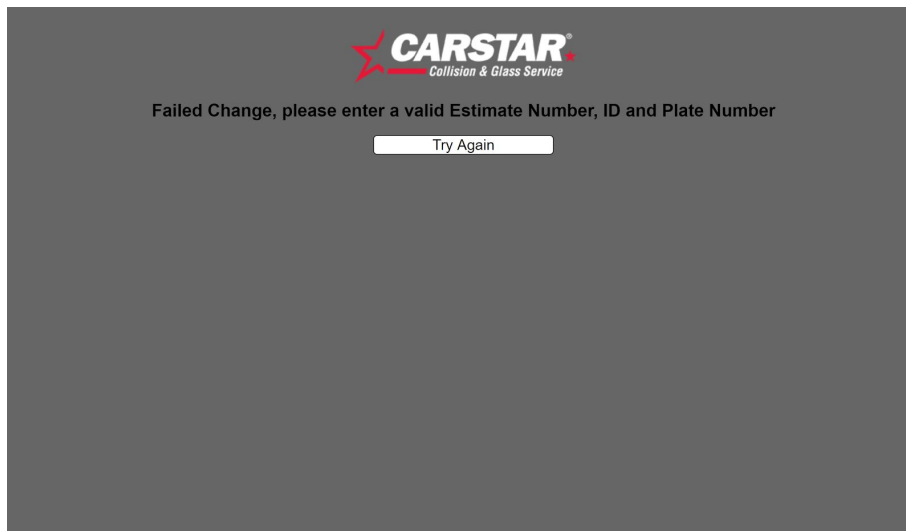
If the user inserted information that was incorrect they are redirected to this page after they click “Submit” on the previous page. They may click “Try Again” to return to the first page of inserting an estimate to correct the information.

Insert Estimate Page 2- Estimate Information

The screenshot shows a web form titled "Estimate Information" under the CARSTAR Collision & Glass Service logo. The form is enclosed in a red border and contains several input fields: Estimate Number, Estimator ID, Plate Number, Job Class, Hours, Status, and Cost. The Cost field has a "\$\$\$" prefix. A "Finish" button is located at the bottom right of the form.

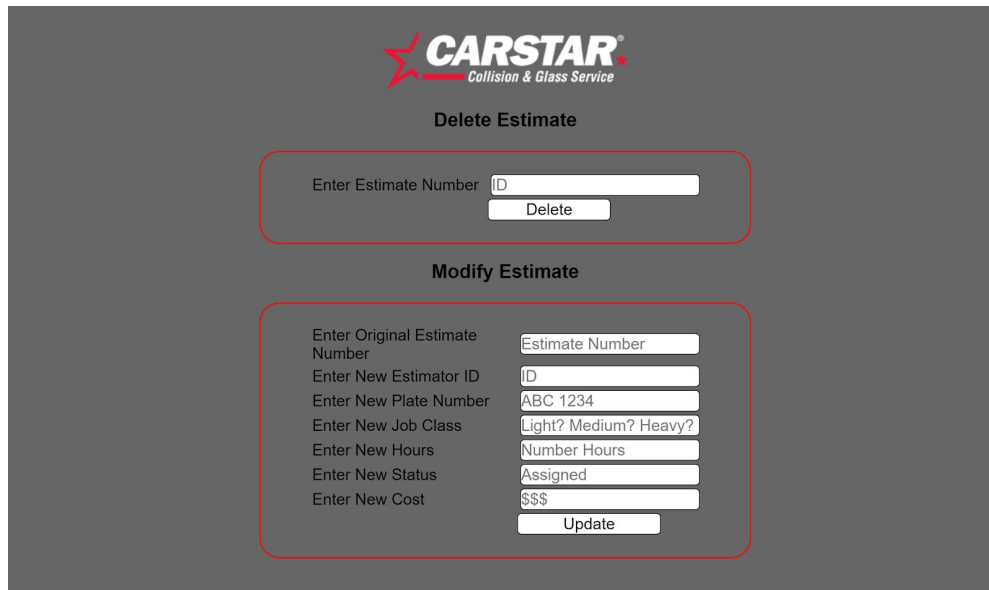
After a Customer, Vehicle and Insurance company exist, the estimate information may be inserted. The estimator must include their ID, information about the repair, and information about the vehicle. Once information is filled in, the user may click “Finish” to put the estimate into the table and be redirected to the “View Estimates” page.

Failed Est Information

The screenshot shows a web page with the CARSTAR Collision & Glass Service logo at the top. Below the logo, a message reads: "Failed Change, please enter a valid Estimate Number, ID and Plate Number". At the bottom of the message, there is a "Try Again" button.

If the user inserted information that was incorrect they are redirected to this page after they click “Finish” on the previous page. They may click “Try Again” to return to the Estimate Information page to correct the information.

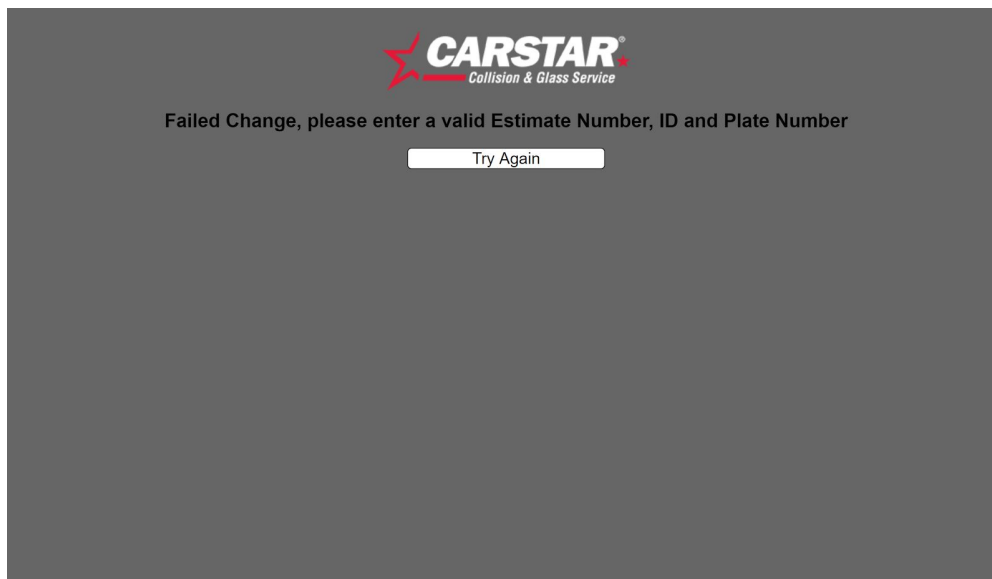
Delete or Modify Estimate



The screenshot shows a web interface for CARSTAR Collision & Glass Service. It features two main sections: 'Delete Estimate' and 'Modify Estimate'. The 'Delete Estimate' section has a text input field labeled 'Enter Estimate Number' with 'ID' entered, and a 'Delete' button. The 'Modify Estimate' section has several text input fields: 'Enter Original Estimate Number' with 'Estimate Number' entered, 'Enter New Estimator ID' with 'ID' entered, 'Enter New Plate Number' with 'ABC 1234' entered, 'Enter New Job Class' with 'Light? Medium? Heavy?' entered, 'Enter New Hours' with 'Number Hours' entered, 'Enter New Status' with 'Assigned' entered, and 'Enter New Cost' with '\$\$\$' entered. There is an 'Update' button at the bottom of the 'Modify Estimate' section.

The “Modify/Delete” button on the “Manage Estimates” page redirects the users here. To delete an estimate they must enter its ID, and then click “Delete.” To modify an estimate the user must enter its Estimate Number, and then they may change any/all attributes they wish. Click “Update” to submit the changes. After clicking “Delete” or “Update” the user remains on this page. The header may be clicked to return to the Home page.


Failed Delete or Modify



The screenshot shows a web interface for CARSTAR Collision & Glass Service. It features a message box with the text: "Failed Change, please enter a valid Estimate Number, ID and Plate Number". Below the message is a "Try Again" button.

If the user inserted information that was incorrect/invalid they are redirected to this page after they click “Delete” or “Update” on the previous page. They may click “Try Again” to return to the Delete/Modify Estimate page.

View Employees Page




[View Bodymen](#)[Insert/Modify/Delete Employee](#)[View Estimators](#)

Employee Information

ID	SIN	F_Name	M_Init	L_Name	Sex	Birth_Date	Address	Start_Date	Phone_Num
1	123456789	Rob	B	Stone	Male	1980-07-30	123 Canyon Meadows Dr SE	2006-08-06	4038889900
2	456789123	Linda	H	Colemen	Female	1977-04-22	19732 Temple Wood Dr SE	2017-08-08	5873446767
3	345789234	Paul	K	Smith	Male	1990-08-03	77 Bridlewood Dr	2017-02-16	4031234567
4	2147483647	Mike	Y	Ross	Male	1973-02-22	923 Hope Drive SW	2015-09-21	3045672738
5	84386297	Ron	H	Westen	Male	1988-06-08	4 2 St SE	2011-07-10	235787467
6	129173826	Chris	D	Dry	Male	1990-11-22	999 9 St SE	1977-12-09	289738271
7	218748763	Amanda	R	Bynes	Female	1994-09-19	12 Canyonfield Rd	2014-04-15	382746734
8	343435523	George	N	Norman	Male	1970-06-05	9293 Okotoks Ave SE	2017-11-01	397387248

The user is redirected here after choosing “Manage Employees” on the home page. This page allows the user to view information about all employees, search them based on any attribute, and can redirect the user to the Insert/Modify/Delete Employee page. By clicking “View Estimators” or “View Bodymen” we are redirected to a page where we can view more information about either type of Employee. The user may click the CARSTAR logo in the header at any time to return to the Home Page.

View Bodymen Page

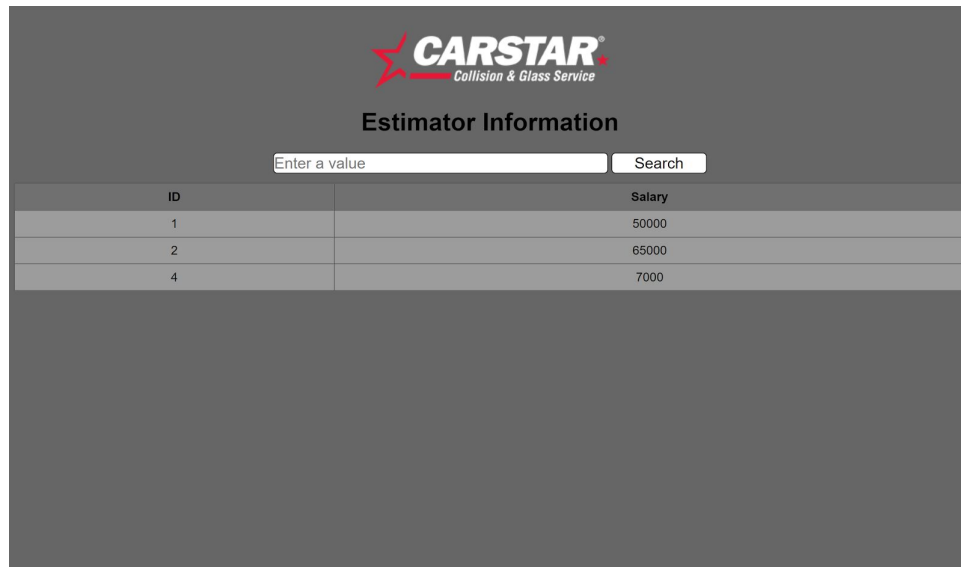


Bodymen Information

ID	Hourly_Rate
3	30
5	50
6	0
7	70

The user is redirected here after selecting “View Bodymen” on the previous page. Here we can view a Bodyman’s hourly rate based on his/her Employee ID number, and also may search them based on any attribute.

View Estimators



CARSTAR
Collision & Glass Service


Estimator Information

Enter a value

ID	Salary
1	50000
2	65000
4	7000

The user is redirected here after selecting “View Estimators” on the previous page. Here we can view a Bodyman’s yearly salary based on his/her Employee ID number, and we also may search them based on any attribute.

Insert/Delete/Modify Employees Page



Insert Employee

Enter ID

ID

Enter SIN

123456789

Enter Username

Username

Enter Password

Password

Enter First Name

First Name

Enter Middle Initial

Middle Initial

Enter Last Name

Last Name

Enter Sex

Sex

Enter Birth Date

yyyy-mm-dd

Enter Address

Address

Enter Start Date

yyyy-mm-dd

Enter Phone Number

4031234567

Select One

☐ Bodyman

hourly wage in \$ (ex. 15)

☐ Estimator

Salary in \$ (ex. 40000)

☐ Neither

Insert

Modify Employee

Enter Old Username

Username

Enter Old Password

Password

Enter New SIN

123456789

Enter New Username

Username

Enter New Password

Password

Enter New First Name

First Name

Enter New Middle Initial

Middle Initial

Enter New Last Name

Last Name

Enter New Sex

Sex

Enter New Birth Date

yyyy-mm-dd

Enter New Address

Address

Enter New Start Date

yyyy-mm-dd

Enter New Phone Number

4031234567

Select Updated position

☐ Bodyman

new hourly wage in \$ (ex

☐ Estimator

New Salary in \$ (ex. 4000

☐ Neither

Modify

Delete Employee

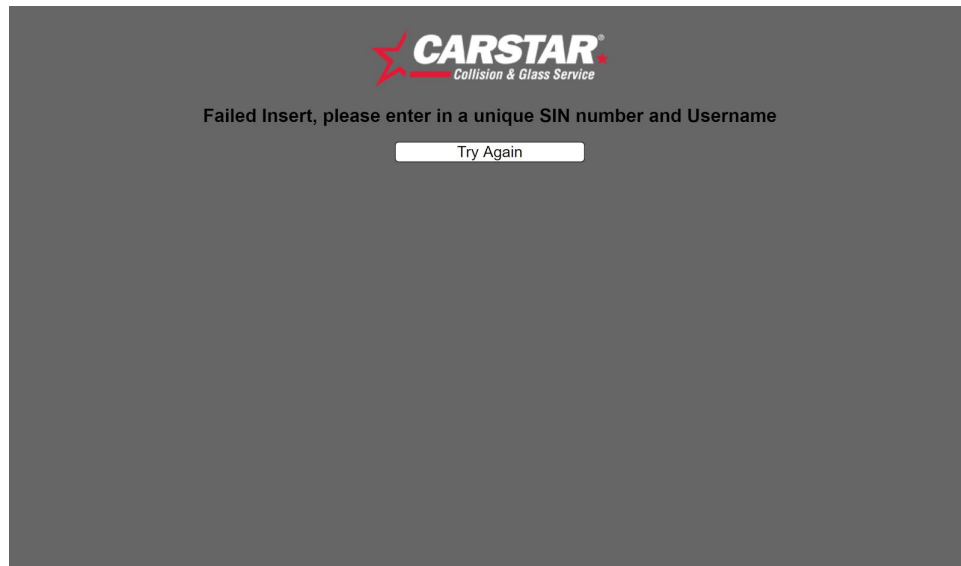
Enter ID

ID

Delete

Clicking “Insert/Modify/Delete Employee” on the “View Employees” page redirects the user here. To insert a new employee, enter a unique ID, and all of their personal information, then select their position, and fill in their hourly rate/salary if applicable. Click “Insert” to add the new employee to the system. To modify an employee's information, enter their username, change the desired attributes, and click “Modify.” To delete an employee, enter the employee’s unique employee ID, then click “Delete.” The user remains on this page after submitting any changes, and may go back to the home page by clicking the logo in the header.

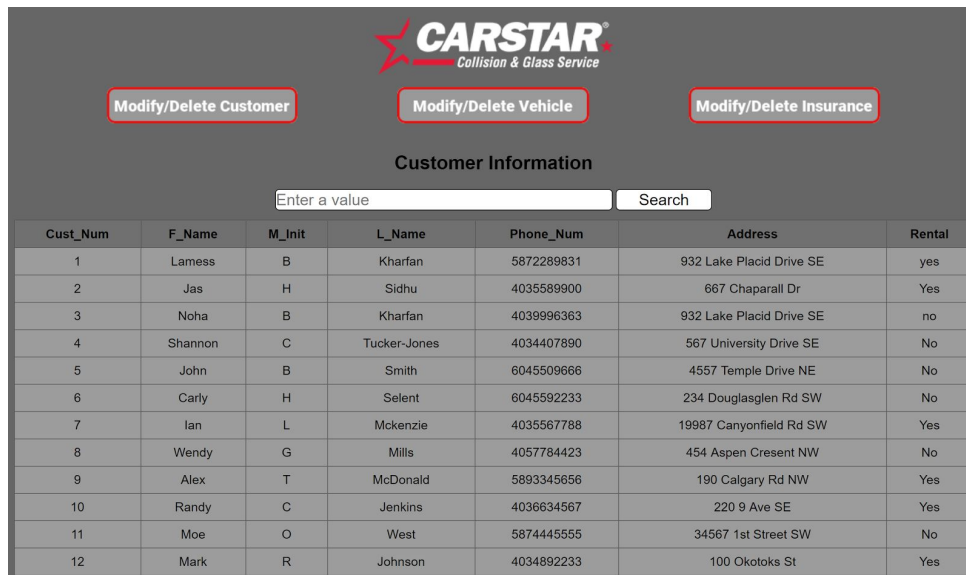
Failed Employee Insert Page



The screenshot shows a dark gray background with the CARSTAR logo at the top center. Below the logo, the text "Failed Insert, please enter in a unique SIN number and Username" is displayed. At the bottom center, there is a white button labeled "Try Again".

If the user inserted information that was incorrect/invalid they are redirected to this page after they click “Insert” on the previous page. They may click “Try Again” to return to the “Insert/Modify/Delete Employee” page.

Customer, Vehicle, Insurance Information Page



The screenshot shows a dark gray background with the CARSTAR logo at the top center. Below the logo, there are three buttons: "Modify/Delete Customer", "Modify/Delete Vehicle", and "Modify/Delete Insurance". Below these buttons is the section "Customer Information". Under "Customer Information", there is a search bar with the placeholder text "Enter a value" and a "Search" button. Below the search bar is a table with 7 columns: Cust_Num, F_Name, M_Init, L_Name, Phone_Num, Address, and Rental. The table contains 12 rows of customer data.

Cust_Num	F_Name	M_Init	L_Name	Phone_Num	Address	Rental
1	Lamess	B	Kharfan	5872289831	932 Lake Placid Drive SE	yes
2	Jas	H	Sidhu	4035589900	667 Chaparall Dr	Yes
3	Noha	B	Kharfan	4039996363	932 Lake Placid Drive SE	no
4	Shannon	C	Tucker-Jones	4034407890	567 University Drive SE	No
5	John	B	Smith	6045509666	4557 Temple Drive NE	No
6	Carly	H	Selent	6045592233	234 Douglasglan Rd SW	No
7	Ian	L	Mckenzie	4035567788	19987 Canyonfield Rd SW	Yes
8	Wendy	G	Mills	4057784423	454 Aspen Cresent NW	No
9	Alex	T	McDonald	5893345656	190 Calgary Rd NW	Yes
10	Randy	C	Jenkins	4036634567	220 9 Ave SE	Yes
11	Moe	O	West	5874445555	34567 1st Street SW	No
12	Mark	R	Johnson	4034892233	100 Okotoks St	Yes

Vehicle Information

Plate_Num	Cust_Num	Color	Type	Make	VIN	Year	Mileage
5YU 789	5	Red	Pilot	Honda	JHUUY4378HU72	2010	250000
ASD 729	7	Green	Altima	Nissan	IUYR3H376289	2012	230000
BHR 1212	3	Black	Civic	Honda	Y797TG6567H	2006	250000
BVR4896	1	Silver	Yaris	Toyota	Y76JLKIU897799	2007	89000
FGH 990	11	White	ModelX	Tesla	7EGHFE7387	2016	20000
GHB 567	5	Black	NX	Lexus	HUUY4Y378YE0	2017	10000
R4W 723	4	Yellow	Ford	Fiesta	YSG726320408H	2009	73500
RRE 567	12	Black	Land Rover	Range Rover	JYURUHHO88	2012	190900
SAM 431	8	Light Blue	Venza	Toyota	UY834HE9JE9	2014	340000
VDW 489	6	Blue	E300	Mercedes	U8738HJ7WE68	2012	130000
WER 123	9	Black	Civic	Honda	BSWURH9374JFKJ	2015	700000
YTR 789	2	White	Mazda 3	Mazda	Y6WU384HE729	2006	25000
YUE 221	10	Black	Malibu	Chevrolet	YEW83HFBW883	1999	300000

Insurance Information

ID_Num	Name	Phone_Num
1	Aviva	4038895213
2	Bow Valley Insurance	4035566862
3	Sonnet Insurance	4032203987
4	AMA	5876680284
5	Allstate	4036678989
6	PC Insurance	5879998888
7	Esurance	6403343434
8	Intact	5876667777

1	Aviva	4038895213
2	Bow Valley Insurance	4035566862
3	Sonnet Insurance	4032203987
4	AMA	5876680284
5	Allstate	4036678989
6	PC Insurance	5879998888
7	Esurance	6403343434
8	Intact	5876667777

Vehicle-Insurance Information

ID_Num	Plate_Num	Claim_Num
1	BHR 1212	3
1	VDW 489	13
2	BVR4896	5
2	WER 123	14
4	ASD 729	2
4	RRE 567	11
4	SAM 431	12
5	5YU 789	1
6	GHB 567	7

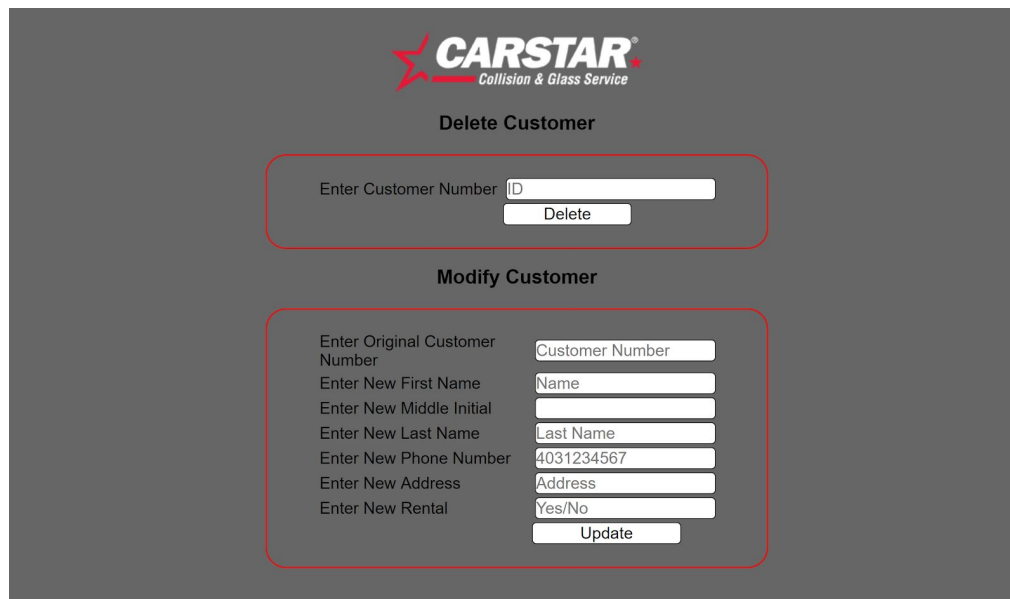
7	FGH 990	6
8	BHR 1212	25
8	R4W 723	9

Customer-Insurance Information

ID_Num	Cust_Num	Deductible
1	3	500
1	6	1000
2	1	1000
2	9	1000
4	7	1000
4	8	500
4	12	2000
5	5	0
6	5	2000
7	11	1000
8	4	0

The user is redirected here after choosing “Customer, Vehicle, Insurance Info” on the home page. This page allows the user to view information about all customers, vehicles, and insurance companies, as well as a customer’s insurance company, and the insurance company the vehicle is insured with. The user can search any of these tables based on any attribute by entering the search terms into the search bar for the corresponding table. The buttons in the taskbar can be clicked to Modify/Delete Customers, Vehicles, or Insurance Information. The user may click the CARSTAR logo in the header at any time to return to the Home Page.

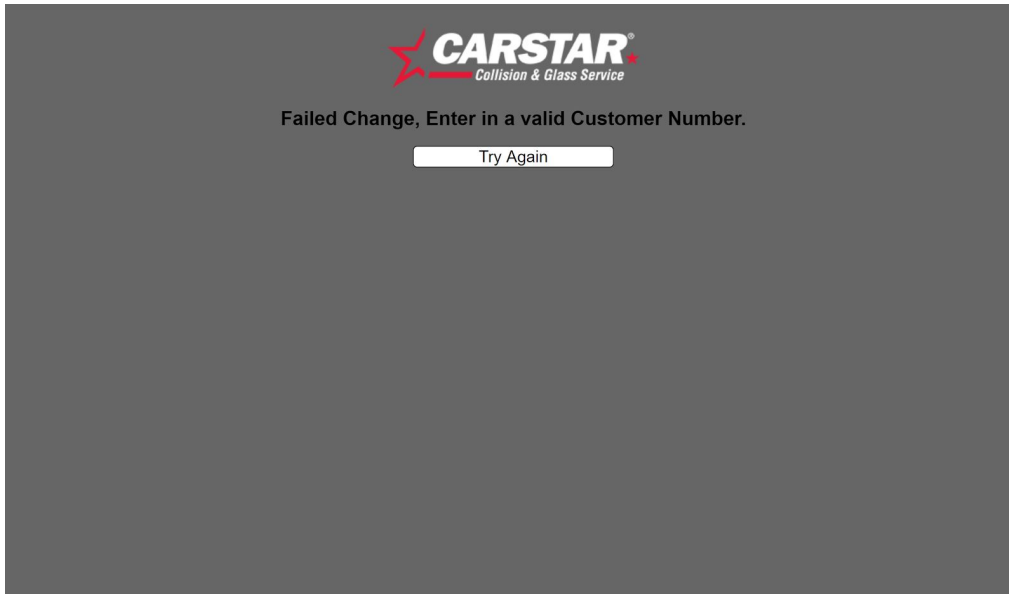
Delete/Modify Customer



The screenshot shows a web interface for CARSTAR Collision & Glass Service. At the top is the CARSTAR logo. Below it, the title "Delete Customer" is centered. Under this title is a form with a label "Enter Customer Number" followed by a text input field containing "ID" and a "Delete" button. Below this is the title "Modify Customer". Under this title is a form with several labels and input fields: "Enter Original Customer Number" (input field contains "Customer Number"), "Enter New First Name" (input field contains "Name"), "Enter New Middle Initial" (input field is empty), "Enter New Last Name" (input field contains "Last Name"), "Enter New Phone Number" (input field contains "4031234567"), "Enter New Address" (input field contains "Address"), and "Enter New Rental" (input field contains "Yes/No"). At the bottom of this form is an "Update" button.

The “Modify/Delete Customer” button on the “Customer, Vehicle and Insurance Information” page redirects the users here. To delete a customer, enter the customer number and then click “Delete.” To modify a customer, enter the customer number, and then change any/all attributes to desired values. Click “Update” to submit the changes. After clicking “Delete” or “Update” the user remains on this page. The header may be clicked to return to the Home page.

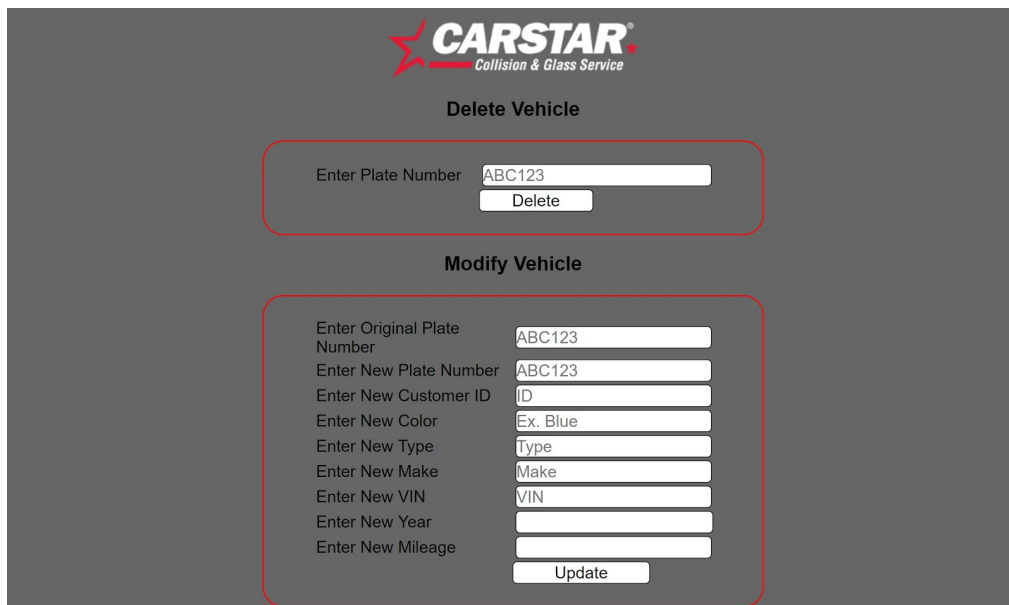
Failed Modify/Delete Customer



The screenshot shows a dark gray background with the CARSTAR logo at the top center. Below the logo, the text "Failed Change, Enter in a valid Customer Number." is displayed. At the bottom center, there is a white button labeled "Try Again".

If the user inserted information that was incorrect/invalid they are redirected to this page after they click “Delete” or “Update” on the previous page. They may click “Try Again” to return to the previous page and enter a valid Customer number to delete/modify.

Modify/Delete Vehicle



The screenshot shows a dark gray background with the CARSTAR logo at the top center. Below the logo, the text "Delete Vehicle" is displayed. Underneath, there is a form with a label "Enter Plate Number" and a text input field containing "ABC123". Below the input field is a white button labeled "Delete".

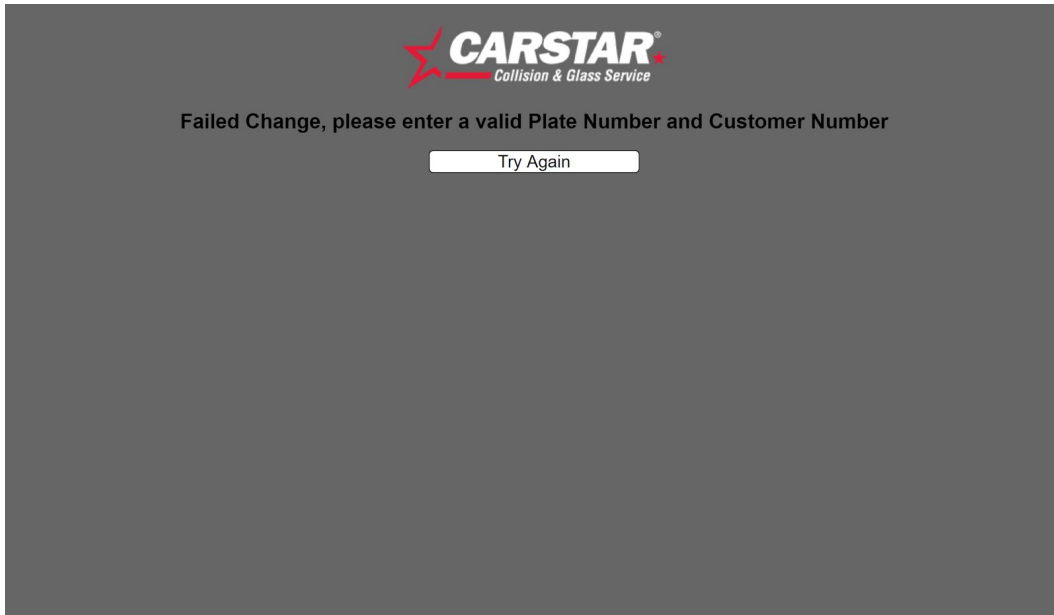
Below the "Delete Vehicle" section, the text "Modify Vehicle" is displayed. Underneath, there is a form with several labels and text input fields:

- Enter Original Plate Number: ABC123
- Enter New Plate Number: ABC123
- Enter New Customer ID: ID
- Enter New Color: Ex. Blue
- Enter New Type: Type
- Enter New Make: Make
- Enter New VIN: VIN
- Enter New Year:
- Enter New Mileage:

At the bottom of the form is a white button labeled "Update".

The “Modify/Delete Vehicle” button on the “Customer, Vehicle and Insurance Information” page redirects the users here. To delete a vehicle, enter the vehicle's Plate Number and then click “Delete.” To modify a vehicle, enter its plate number, and then change any/all attributes to desired values. Click “Update” to submit the changes. After clicking “Delete” or “Update” the user remains on this page. The header may be clicked to return to the Home page.

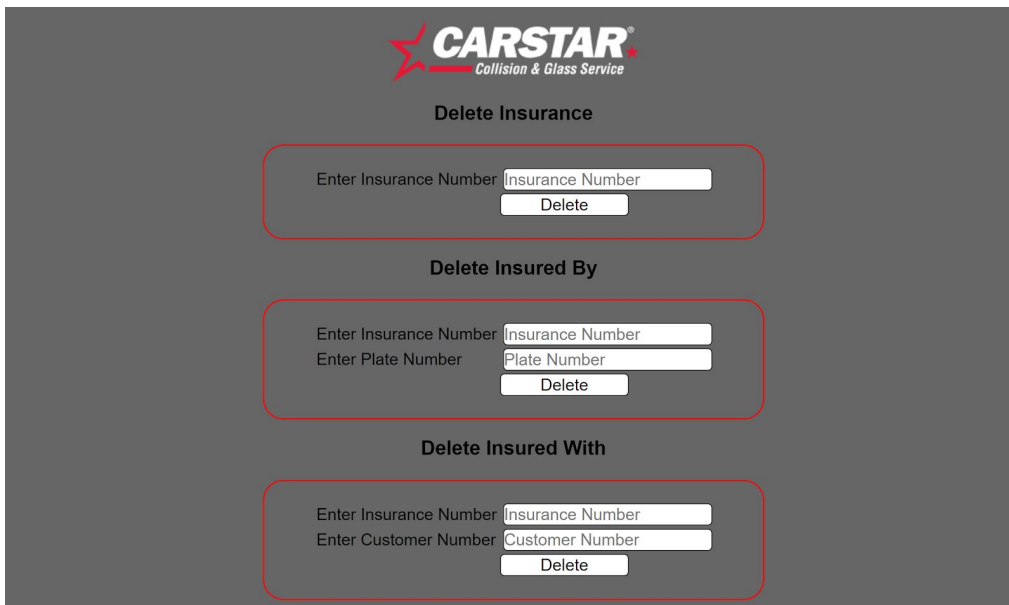
Failed Vehicle



The screenshot shows a dark gray background with the CARSTAR logo at the top center. Below the logo, the text "Failed Change, please enter a valid Plate Number and Customer Number" is displayed. At the bottom center, there is a white button labeled "Try Again".

If the user inserted information that was incorrect/invalid they are redirected to this page after they click “Update” or “Delete” on the previous page. They may click “Try Again” to return to the “Modify/Delete Vehicle” page to modify/delete an existing/valid plate number.

Delete Insurance (Company, Customer-Insurance, and Vehicle-Insurance)



The screenshot shows a dark gray background with the CARSTAR logo at the top center. Below the logo, the text "Delete Insurance" is displayed. There are three sections, each with a red border:

- Delete Insurance**: Contains a label "Enter Insurance Number", a text input field with "Insurance Number", and a "Delete" button.
- Delete Insured By**: Contains a label "Enter Insurance Number" with a text input field "Insurance Number", a label "Enter Plate Number" with a text input field "Plate Number", and a "Delete" button.
- Delete Insured With**: Contains a label "Enter Insurance Number" with a text input field "Insurance Number", a label "Enter Customer Number" with a text input field "Customer Number", and a "Delete" button.

Modify Insurance

Enter Original Insurance ID

Insurance Number

Enter New Name

Name

Enter New Phone Number

4031234567

Update

Modify Insured By

Enter Original Insurance ID

Insurance Number

Enter Original Plate Number

Plate Number

Enter New Insurance ID

Insurance Number

Enter New Plate Number

Plate_Num

Enter New Claim Number

Claim number

Update

Modify Insured With

Enter Original Insurance ID

Insurance Number

Enter Original Customer Number

Customer Number

Enter New Insurance ID

Insurance Number

Enter New Customer Number

Customer Number


Enter New Deductible

\$\$\$

Update

The “Modify/Delete” button on the “Customer, Vehicle and Insurance Information” page redirects the users here. To delete a customer, enter the customer number and then click “Delete.” To modify a customer, enter the customer number, and then change any/all attributes to desired values. Click “Update” to submit the changes. After clicking “Delete” or “Update” the user remains on this page. The header may be clicked to return to the Home page.

Failed Insurance




Failed Change, Enter in a valid ID, Customer, Plate number please.

Try Again

If the user inserted information that was incorrect/invalid they are redirected to this page after they click “Update” or “Delete” on the previous page. They may click “Try Again” to return to the “Modify/Delete Insurance” page.

Repair Orders and Repair Order Assignments Page



Insert/Modify/Delete RO

Repair Orders


RO_Num	ID	Est_Num	Hours	Cost	Job_Class	Status	Scheduled_In	Scheduled_Out
1	1	1	10	1300	Light	Scheduled	2017-12-03	2017-12-09
2	1	2	42	50000	Heavy	Paint	2017-11-19	2017-12-16
3	4	3	10	7000	Light	Detail	2017-12-04	2017-12-05
4	2	4	26	10000	Medium	Pre-wash	2017-12-04	2017-12-13
5	2	6	60	50000	Heavy	Teardown	2017-11-12	2017-12-22
6	1	7	12	3000	Light	Complete	2017-12-01	2017-12-05

Repair Order Assignments

RO_Num	ID
1	3
2	5
3	5
4	3
5	8
6	8

The user is redirected here after choosing “Repair Orders and Assignments” on the home page. This page allows the user to view information about repair orders and the bodymen they have been assigned to them. The user can search either of the tables based on any attribute by entering the search terms into the search bar for the corresponding table. The Insert/Modify/Delete RO button can be clicked to perform these actions. The user may click the CARSTAR logo in the header at any time to return to the Home Page.

Insert/Modify/Delete Repair Order



Insert Repair Order

Enter Repair Order Number	<input type="text" value="123456789"/>
Enter ID	<input type="text" value="ID"/>
Enter Estimate Number	<input type="text" value="Estimate Number"/>
Enter Hours	<input type="text" value="Hours"/>
Enter Cost of Repair	<input type="text" value="Cost of Repair. (\$1000)"/>
Enter Job Class	<input type="text" value="Job Class"/>
Enter Status of repair	<input type="text" value="Done/In shop"/>
Enter Scheduled In	<input type="text" value="yyyy-mm-dd"/>
Enter Scheduled Out	<input type="text" value="yyyy-mm-dd"/>
<input type="button" value="Insert"/>	

Update Repair Order

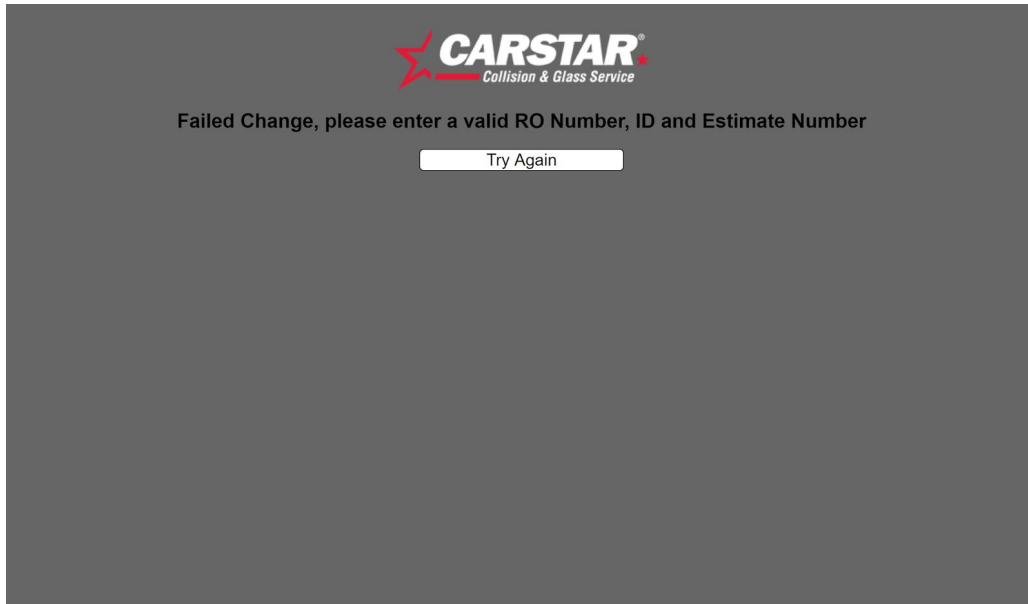
Enter Original Repair Order Number	<input type="text" value="123456789"/>
Enter Updated ID	<input type="text" value="ID"/>
Enter Updated Estimate Number	<input type="text" value="Estimate Number"/>
Enter Updated Hours	<input type="text" value="Hours"/>
Enter Updated Cost of Repair	<input type="text" value="Cost of Repair. (\$1000)"/>
Enter Updated Job Class	<input type="text" value="Job Class"/>
Enter Updated Status of repair	<input type="text" value="Done/In shop"/>
Enter Updated Scheduled In	<input type="text" value="yyyy-mm-dd"/>
Enter Updated Scheduled Out	<input type="text" value="yyyy-mm-dd"/>
<input type="button" value="Update"/>	

Delete Repair Order

Enter Repair Order Number	<input type="text" value="123456789"/>
<input type="button" value="Delete"/>	

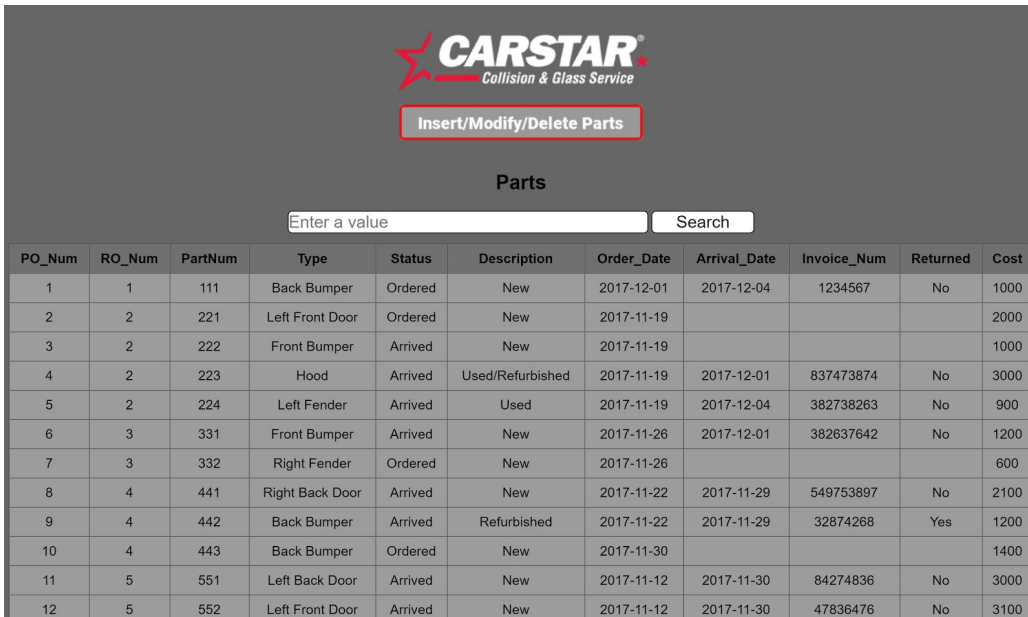
Clicking “Insert/Modify/Delete RO” on the “Repair Orders and Assignments” page redirects the user here. To insert a new repair order, enter a unique ID, estimate number, and the repair information. Click “Insert” to add the new repair order to the system. To modify a repair orders information, enter its unique RO number, change the desired attributes, and click “Update.” To delete an RO, enter its unique RO number, then click “Delete.” The user remains on this page after submitting any changes, and may go back to the home page by clicking the logo in the header.

Failed RO



If the user inserted information that was incorrect/invalid they are redirected to this page after they click “Insert,” “Update” or “Delete” on the previous page. They may click “Try Again” to return to the previous page and try again.

View Parts



PO_Num	RO_Num	PartNum	Type	Status	Description	Order_Date	Arrival_Date	Invoice_Num	Returned	Cost
1	1	111	Back Bumper	Ordered	New	2017-12-01	2017-12-04	1234567	No	1000
2	2	221	Left Front Door	Ordered	New	2017-11-19				2000
3	2	222	Front Bumper	Arrived	New	2017-11-19				1000
4	2	223	Hood	Arrived	Used/Refurbished	2017-11-19	2017-12-01	837473874	No	3000
5	2	224	Left Fender	Arrived	Used	2017-11-19	2017-12-04	382738263	No	900
6	3	331	Front Bumper	Arrived	New	2017-11-26	2017-12-01	382637642	No	1200
7	3	332	Right Fender	Ordered	New	2017-11-26				600
8	4	441	Right Back Door	Arrived	New	2017-11-22	2017-11-29	549753897	No	2100
9	4	442	Back Bumper	Arrived	Refurbished	2017-11-22	2017-11-29	32874268	Yes	1200
10	4	443	Back Bumper	Ordered	New	2017-11-30				1400
11	5	551	Left Back Door	Arrived	New	2017-11-12	2017-11-30	84274836	No	3000
12	5	552	Left Front Door	Arrived	New	2017-11-12	2017-11-30	47836476	No	3100

The user is redirected here after choosing “Manage Parts” on the home page. This page allows the user to view all parts, search for parts based on any attribute, and can redirect the user to the “Insert/Delete/Modify Parts” page. The user may click the CARSTAR logo in the header at any time to return to the Home Page.

Insert/Modify/Delete Parts

The screenshot shows a web interface for CARSTAR Collision & Glass Service. At the top is the CARSTAR logo with the tagline 'Collision & Glass Service'. Below the logo are three distinct sections, each enclosed in a rounded rectangle with a red border. The first section, titled 'Insert Parts', contains a list of input fields: 'Enter Part Order Number' (with a placeholder 'PO Number'), 'Enter Repair Order Number' (with the value '123456789'), 'Enter Part Number' (with the value '123456789'), 'Enter Type' (with the value 'Ex. (Tire)'), 'Enter Status of Part' (with the value 'Arrived/On it's way'), 'Enter Description' (with the value 'Description'), 'Enter Order Date' (with the placeholder 'yyyy-mm-dd'), 'Enter Arrival Date' (with the placeholder 'yyyy-mm-dd'), 'Enter Invoice Number' (with the placeholder 'Invoice Number for part'), 'Enter Returned?' (with the value 'Yes/No'), and 'Enter Cost of Part' (with the placeholder 'Ex. (\$20)'). An 'Insert' button is at the bottom of this section. The second section, titled 'Update Parts', contains a list of input fields: 'Enter Original Part Order Number' (with a placeholder 'PO Number'), 'Enter Updated Repair Order Number' (with the value '123456789'), 'Enter Updated Part Number' (with the value '123456789'), 'Enter Updated Type' (with the value 'Ex. (Tire)'), 'Enter Updated Status of Part' (with the value 'Arrived/On it's way'), 'Enter Updated Description' (with the value 'Description'), 'Enter Updated Order Date' (with the placeholder 'yyyy-mm-dd'), 'Enter Updated Arrival Date' (with the placeholder 'yyyy-mm-dd'), 'Enter Updated Invoice Number' (with the placeholder 'Invoice Number for part'), 'Enter if Returned' (with the value 'Yes/No'), and 'Enter Updated Cost' (with the placeholder 'Ex. (\$20)'). An 'Update' button is at the bottom of this section. The third section, titled 'Delete Part', contains a single input field: 'Enter Part Order Number ID' (with a placeholder 'ID'). A 'Delete' button is at the bottom of this section.

CARSTAR
Collision & Glass Service

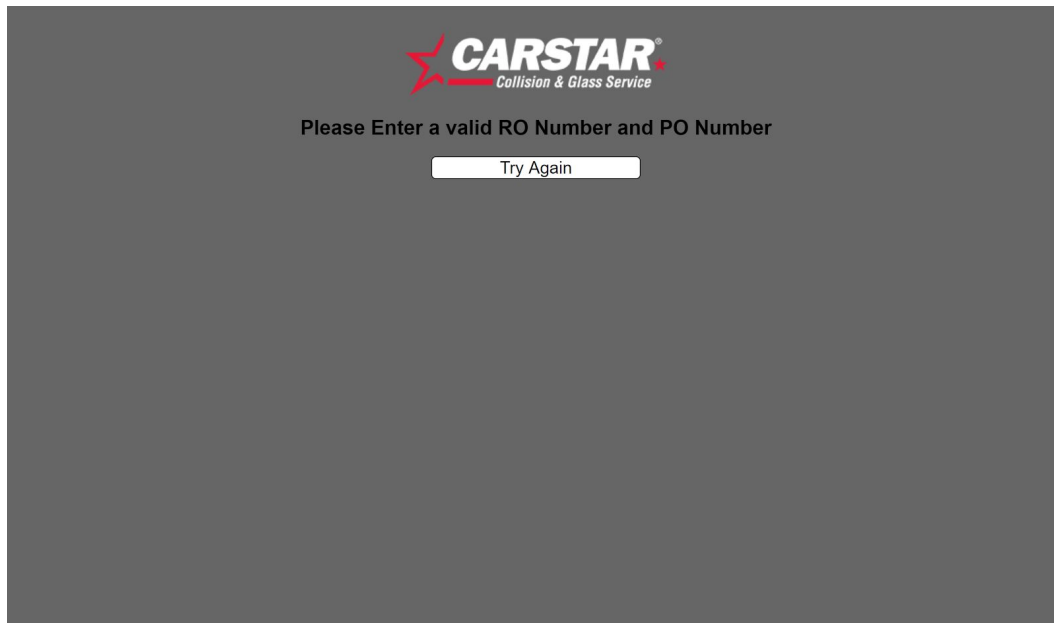
Insert Parts
Enter Part Order Number PO Number
Enter Repair Order Number 123456789
Enter Part Number 123456789
Enter Type Ex. (Tire)
Enter Status of Part Arrived/On it's way
Enter Description Description
Enter Order Date yyyy-mm-dd
Enter Arrival Date yyyy-mm-dd
Enter Invoice Number Invoice Number for part
Enter Returned? Yes/No
Enter Cost of Part Ex. (\$20)
Insert

Update Parts
Enter Original Part Order Number PO Number
Enter Updated Repair Order Number 123456789
Enter Updated Part Number 123456789
Enter Updated Type Ex. (Tire)
Enter Updated Status of Part Arrived/On it's way
Enter Updated Description Description
Enter Updated Order Date yyyy-mm-dd
Enter Updated Arrival Date yyyy-mm-dd
Enter Updated Invoice Number Invoice Number for part
Enter if Returned Yes/No
Enter Updated Cost Ex. (\$20)
Update

Delete Part
Enter Part Order Number ID
Delete

Clicking “Insert/Modify/Delete Parts” on the “Manage Parts” page redirects the user here. To insert a new part, enter a unique PO number, RO number, and the part’s information, then click “Insert” to add the part to the system. To modify a parts information, enter its unique PO number, change attributes to desired values, and click “Update.” To delete a part, enter its unique PO number, then click “Delete.” The user remains on this page after submitting any changes, and may go back to the home page by clicking the logo in the header.

Failed Part



If the user inserted information that was incorrect/invalid they are redirected to this page after they click “Insert,” “Update” or “Delete” on the previous page. They may click “Try Again” to return to the “Insert/Modify/Delete Part” page.

References

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