

## a) Database Outline

- **Cars: Represents a physical vehicle available for sale.**

- Car\_id: int, auto\_increment, unique, not NULL, PK
- Car\_make: varchar, not NULL
- Car\_model: varchar, not NULL
- Car\_year: int, not NULL
- Car\_color: varchar, not NULL
- Car\_mileage: int, not NULL
- Car\_vin: varchar, unique, not NULL
- Car\_price: decimal, not NULL
- Car\_forsale: boolean, not NULL
- Customer\_id: int, FK, NULLABLE

- Relationships:

- M-to-1 relationship with Customers
- 1-to-M relationship with Transactions
- 1-to-M relationship with Car\_Features
- M-to-M relationship with Features

- **Transactions: Represents a single purchase event.**

- Sale\_id: int, auto\_increment, unique, not NULL, PK
- Sale\_price: decimal, not NULL
- Customer\_id: int, FK
- Car\_id: int, FK
- Salesperson\_id: int, FK
- Sale\_date: date, not NULL
- Finance\_company\_id: int, FK, NULLABLE
- Loan\_amount: int, NULLABLE
- Loan\_duration: int, NULLABLE (in months)
- Interest\_rate: decimal(4 2), NULLABLE
- Sale\_status: int, not NULL (1 symbolizes pending, 2 symbolizes completed, 3 symbolizes canceled)

- Relationships:

- M-to-1 relationship with Cars
- M-to-1 relationship with Customers
- M-to-1 relationship with Salespeople
- M-to-1 relationship with Finance\_companies (An optional relationship)

- **Customers: Represents individuals who are purchasing cars.**

- Customer\_id: int, auto\_increment, unique, not NULL, PK
- Customer\_fname: varchar, not NULL
- Customer\_lname: varchar, not NULL
- Customer\_phone: varchar, not NULL
- Customer\_email: varchar, not NULL
- Customer\_street: varchar, not NULL
- Customer\_second\_street: varchar, NULLABLE
- Customer\_city: varchar, not NULL
- Customer\_state: varchar, not NULL
- Customer\_zip: varchar, not NULL

- Relationships:
  - 1-to-M relationship with Cars
  - 1-to-M relationship with Transactions

- **Salespeople: Represents the employees selling the cars.**

- Salesperson\_id: int, auto\_increment, unique, not NULL, PK
- Salesperson\_fname: varchar, not NULL
- Salesperson\_lname: varchar, not NULL
- Salesperson\_phone: varchar, not NULL
- Salesperson\_email: varchar, not NULL

- Relationships:
  - 1-to-M relationship with Transactions

- **Finance\_Companies: Represents the financial institutions that provide loans for car purchases.**

- Finance\_company\_id: int, auto\_increment, unique, not NULL, PK
- Finance\_company\_name: varchar, not NULL
- Finance\_company\_email: varchar, not NULL
- Finance\_company\_street: varchar, not NULL
- Finance\_company\_second\_street: varchar, NULLABLE
- Finance\_company\_city: varchar, not NULL
- Finance\_company\_state: varchar, not NULL
- Finance\_company\_zip: varchar, not NULL

- Relationships:
  - 1-to-M relationship with Transactions

- **Features: Represents individual characteristics or options that a car might have**

- Feature\_id: int, auto\_increment, unique, not NULL, PK
- Feature\_name: varchar, not NULL

- Relationships:

- 1-to-M relationship with Car\_Features
- M-to-M relationship with Cars

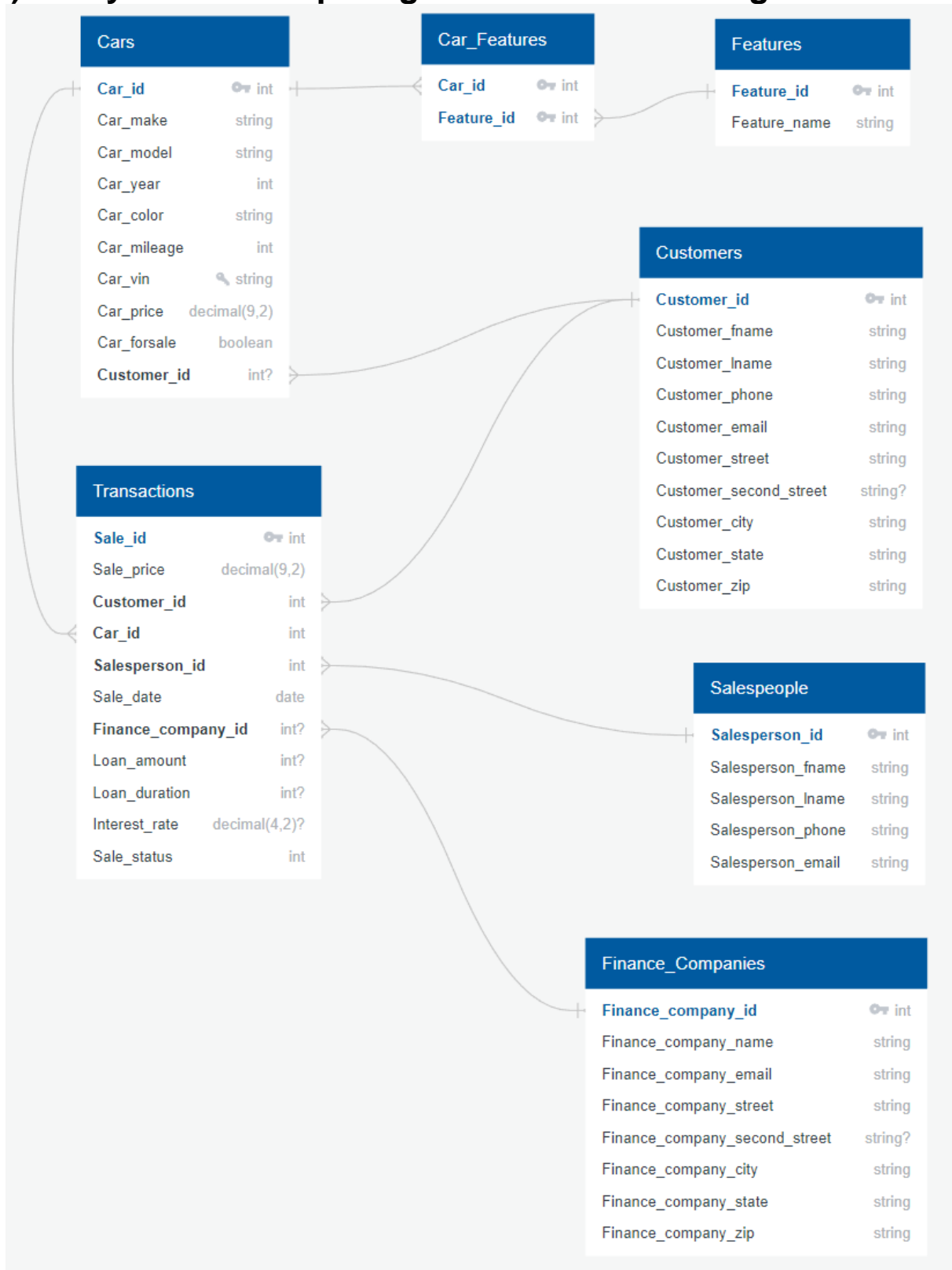
- **Car\_Features: Represents the many-to-many relationship between Cars and Features.**

- Feature\_id: int, FK
- Car\_id: int, FK
- Primary Key (Car\_id, Feature\_id)

- Relationships:

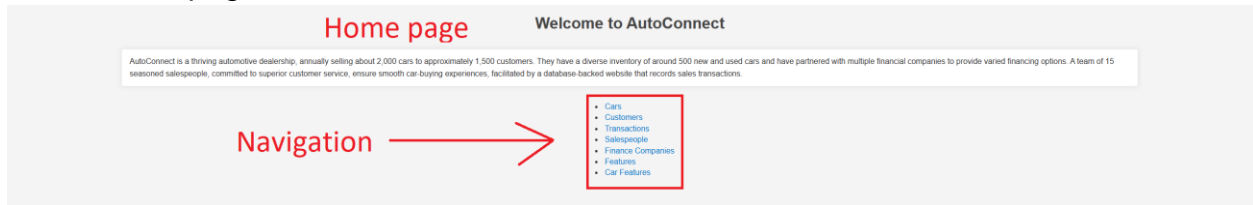
- M-to-1 relationship with Cars
- M-to-1 relationship with Features

## b) Entity-Relationship Diagram and Schema Diagram

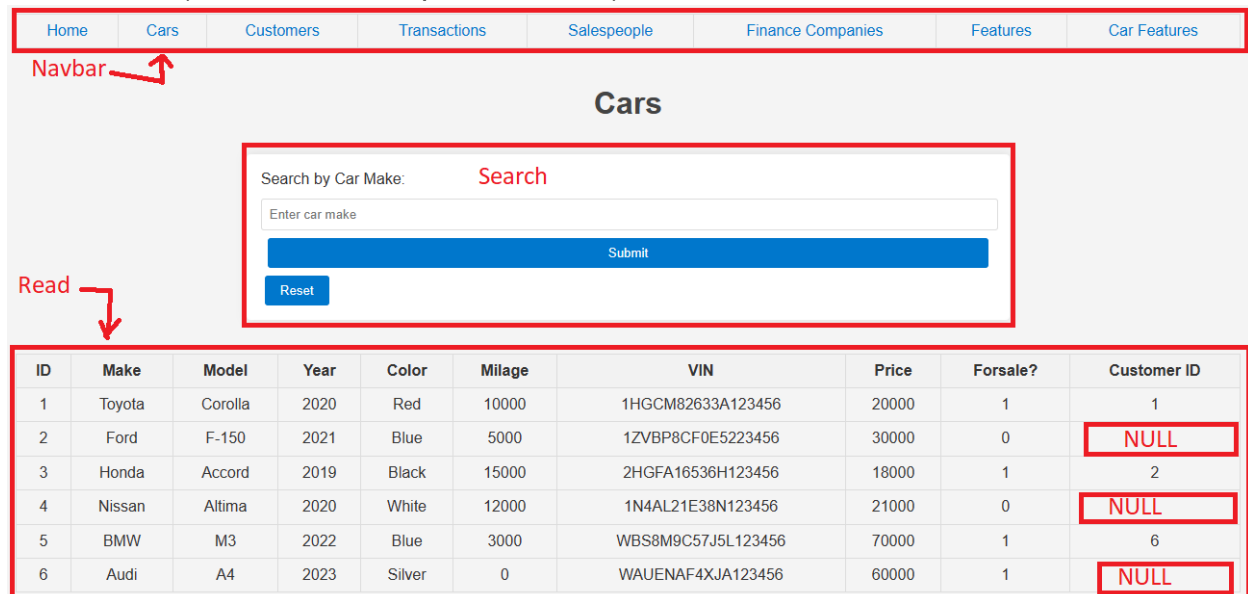


## c) Screen captures of UI pages:

- Homepage:



- Cars (Read, Create, Update, Delete):



## Add a Car

Make: **Create**

Model:

Year:

Color:

Mileage:

VIN:

Price:

For Sale:

Is the car for sale?



Select Customer:

Choose a customer

**Drop-down menu for a FK (NULL-able relationship)**



Create

## Update a Car

Select a Car: **Update**

Choose a car



Make:

Model:

Year:

Color:

Mileage:

VIN:

Price:

For Sale:

Is the car for sale?



Select Customer:

Choose a customer **NULL-able**



Update

**Delete**

## Delete a Car

Select a Car:

Choose a car



Delete

- Customers (Read, Create, Update, Delete):

<a href="#">Home</a>	<a href="#">Cars</a>	<a href="#">Customers</a>	<a href="#">Transactions</a>	<a href="#">Salespeople</a>	<a href="#">Finance Companies</a>	<a href="#">Features</a>	<a href="#">Car Features</a>
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Read

Customers

ID	First Name	Last Name	Phone Number	Email	Street	Street 2	City	State	Zip Code
1	John	Doe	111-123-4567	john.doe@email.com	123 Main St	NULL	Los Angeles	California	11111
2	Jane	Doe	111-765-4321	jane.doe@email.com	456 Elm St	NULL	New York	New York	22222
3	Jim	Brown	111-321-6547	jim.brown@email.com	789 Second St	Apt 10	Miami	Florida	33333
4	Lisa	Green	111-987-1234	lisa.green@email.com	321 Third St	NULL	Portland	Maine	44444
5	Bob	Black	111-654-9871	bob.black@email.com	654 Fourth St	NULL	Detroit	Michigan	55555
6	Alice	White	111-789-3216	alice.white@email.com	987 Fifth St	Apt 2	Billings	Montana	66666

Add a Customer

First Name: Create

Last Name:

Phone Number:

Email:

Street:

Street 2:

NULL-able

City:

State:

Zip code:

Create



Update

## Update a Customer

Select a Customer:

Choose a customer



First Name:

Last Name:

Phone Number:

Email:

Street:

Street 2:

NULL-able

City:

State:

Zip code:

Update

## Delete a Customer

Select a Customer:

Delete

Choose a customer



Delete

- Transactions (Read, Create, Update, Delete):

Home

Cars

Customers

Transactions

Salespeople

Finance Companies

Features

Car Features

Read

Transactions

ID	Sale Price	Customer ID	Car ID	Salesperson ID	Sale Date	Finance Company ID	Loan Amount	Loan Duration	Interest Rate	Sale Status
1	20000	1	1	1	Sat Jul 01 2023 00:00:00 GMT-0700 (Pacific Daylight Time)	NULL <sup>1</sup> able	NULL	NULL	NULL	2
2	25000	2	3	1	Mon Jul 10 2023 00:00:00 GMT-0700 (Pacific Daylight Time)	1	15000	48	3.2	1
3	18000	2	3	2	Mon Jul 03 2023 00:00:00 GMT-0700 (Pacific Daylight Time)	1	NULL	NULL	NULL	2
4	21000	5	4	3	Fri Jul 07 2023 00:00:00 GMT-0700 (Pacific Daylight Time)	1	NULL	NULL	NULL	1
5	70000	6	5	3	Wed Jul 05 2023 00:00:00 GMT-0700 (Pacific Daylight Time)	2	50000	60	2.5	2
6	40000	4	6	2	Sun Jul 02 2023 00:00:00 GMT-0700 (Pacific Daylight Time)	1	30000	48	3	1

## Add a Transaction

Customer: [Create](#)

Choose a customer [Dropdown menu FK](#) ▼

Car:

Choose a car [Dropdown menu FK](#) ▼

Salesperson:

Choose a salesperson [Dropdown menu FK](#) ▼

Sale Date:

mm/dd/yyyy 

Finance Company:

Choose a finance company [Dropdown menu FK, NULL-able](#) ▼

Loan Amount:

[NULL-able](#)

Loan Duration:

[NULL-able](#)

Interest Rate:

[NULL-able](#)

Sale Status:

Choose sale status ▼

Create

## Update a Transaction

Select a Transaction: **Update**

Choose a transaction



Sale Price:

Customer ID:

Choose a customer



Car ID:

Choose a car



Salesperson ID:

Choose a salesperson



Sale Date:

mm / dd / yyyy



Finance Company:

Choose a finance company **NULL-able**



Loan Amount:

**NULL-able**

Loan Duration:

**NULL-able**

Interest Rate:

**NULL-able**

Sale Status:

Choose sale status



Update

## Delete a Transaction

Select a Transaction: **Delete**

Choose a transaction



Delete

- Salespeople (Read, Create, Update, Delete):

<a href="#">Home</a>	<a href="#">Cars</a>	<a href="#">Customers</a>	<a href="#">Transactions</a>	<a href="#">Salespeople</a>	<a href="#">Finance Companies</a>	<a href="#">Features</a>	<a href="#">Car Features</a>
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## Salespeople

Read

ID	First Name	Last Name	Phone Number	Email
1	Mark	Smith	555-555-5555	mark.smith@email.com
2	Sara	Davis	555-666-6666	sara.davis@email.com
3	Paul	Johnson	555-777-7777	paul.johnson@email.com
4	Laura	Lee	555-888-8888	laura.lee@email.com
5	Mike	Wilson	555-999-9999	mike.wilson@email.com
6	Emma	Taylor	555-111-1111	emma.taylor@email.com

### Add a Salesperson

First Name: Create

Last Name:

Phone:

Email:

Create

## Update a Salesperson

Select a Salesperson:

Update

Choose a salesperson



First Name:

Last Name:

Phone:

Email:

Update

## Delete a Salesperson

Select a Salesperson:

Delete

Choose a salesperson



Delete

- Finance\_Companies (Read, Create, Update, Delete):

Home	Cars	Customers	Transactions	Salespeople	Finance Companies	Features	Car Features
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Read

### Finance Companies

ID	Company Name	Email	Street	Street 2	City	State	Zip Code
1	Fast Bank	contact@fastbank.com	789 First St	NULL	Los Angeles	California	11111
2	Secure Finance	info@securefinance.com	312 Second St	NULL	New York	New York	22222
3	Prime Credit	support@primecredit.com	654 Third St	Suite 5	Miami	Florida	33333
4	Easy Money	hello@easymoney.com	987 Fourth St	NULL	Portland	Maine	44444
5	Trust Capital	service@trustcapital.com	123 Fifth St	NULL	Detroit	Michigan	55555
6	Solid Loan	care@solidloan.com	456 Sixth St	Unit 1A	Billings	Montana	66666

### Add a Finance Company

Name: Create

Email:

Street:

Second Street:

NULL-able

City:

State:

ZIP:

Create

## Update a Finance Company

Select a Company: **Update**

Choose a company



Name:

Email:

Street:

Second Street:

**NULL-able**

City:

State:

ZIP:

Update

## Delete a Finance Company

Select a Company: **Delete**

Choose a company



Delete



- Features (Read, Create, Update, Delete):

Home	Cars	Customers	Transactions	Salespeople	Finance Companies	Features	Car Features
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Read

Features

ID	Feature Name
1	Leather seats
2	Sunroof
3	Bluetooth
4	GPS Navigation
5	Heated seats
6	Rearview camera

Add a Feature

Feature Name: Create

Create

Update a Feature

Select a Feature: Update

Choose a feature

Feature Name:

Update

Delete a Feature

Select a Feature: Delete

Choose a feature

Delete

- Car\_Features (M:N) (Read, Create, Update, Delete):

Home	Cars	Customers	Transactions	Salespeople	Finance Companies	Features	Car Features
------	------	-----------	--------------	-------------	-------------------	----------	--------------

Read

Car Features

M:N Junction Table

Car ID	Feature ID
1	1
1	2
2	2
3	3
4	4
5	5
6	6

Add a new Feature to a Car

Car FK: Create

Choose a car Dropdown menu for a FK

Feature FK:

Choose a feature Dropdown menu for a FK

Create

Update a Car Feature

Select a Car Feature: Update

Choose a Car Feature Dropdown menu for a FK

New Feature FK:

Choose a feature Dropdown menu for a FK

Update

Delete a Feature from a Car

Select a Car Feature: Delete

Choose a car's feature

Delete