

CISC 332

K-Town Car Share

Project Report



K-TOWN CAR SHARE

SIGN OUT

KTCS MANAGEMENT



ALL AVAILABLE ADMIN FUNCTIONS ARE LOCATED HERE

[Go to Member Management](#)

CAR MANAGEMENT



Andy Chu - 10099889
Jiefan Luo - 10205051
Wanyu Zhang - 10141510

Version 2.0.0

Introduction:

KTCS is a web-based application built using SQL, MySQL, PHP and CSS. It is intended to serve as a mock car-sharing platform, utilizing a frontend web-based application and a supporting backend database. Our application is designed to mimic the real-life customer functionalities of a car-sharing platform, like reserving and dropping off a car. It is also designed to mimic common administrative functionalities like searching for available cars in the fleet and generating monthly customer invoices. This report will discuss in detail about our implementation, project requirement assumptions, ER and State Machine Diagrams, and SQL interactions. A user guide for both customers and management is also included in this report.

PART I: Assumptions

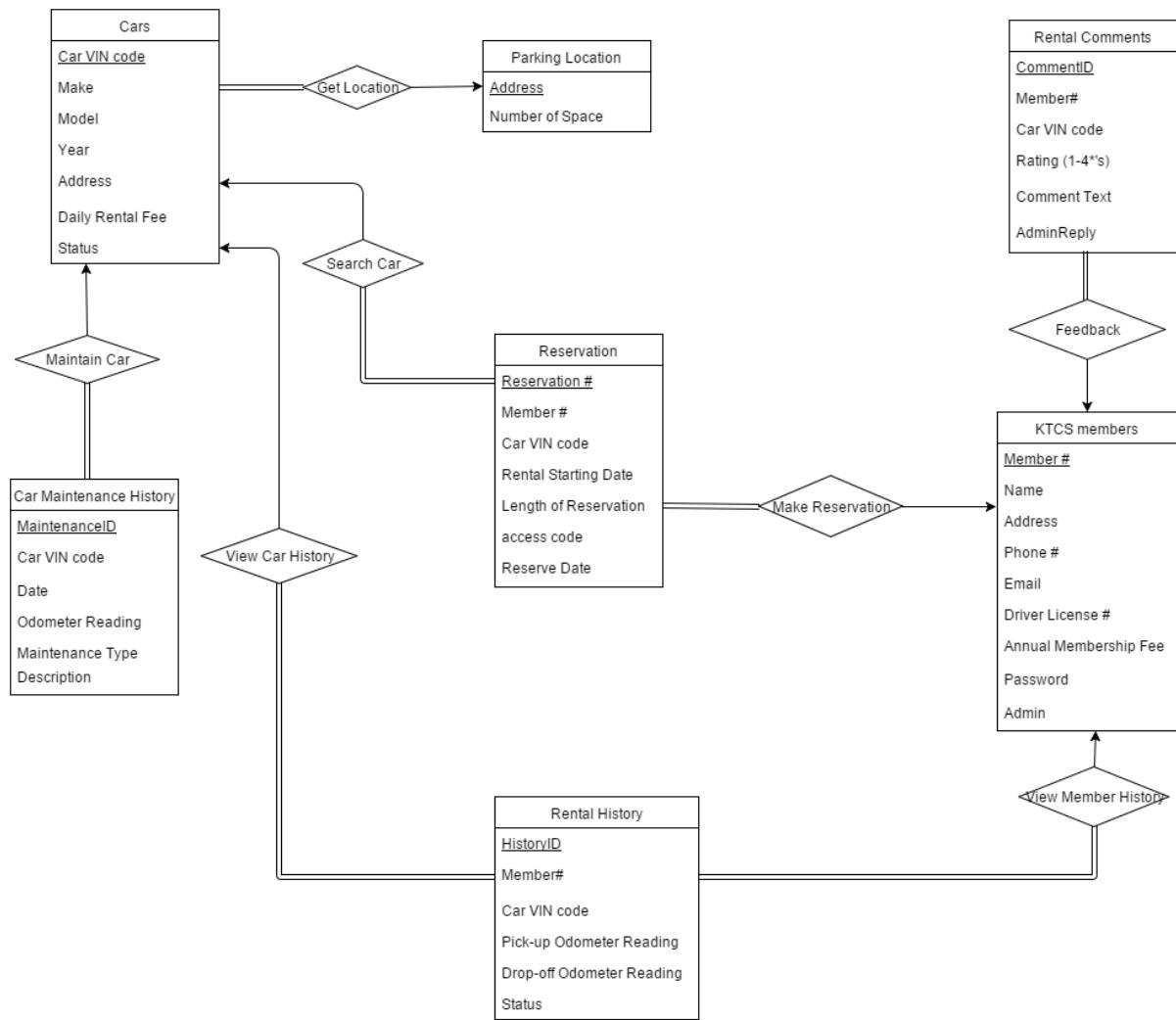
Database Design Assumptions

- The Pick-up Location and Drop-off Location should always be the same location.
- Combining Car Rental History and Member Rental History into one table called “Rental History” because they are containing common attributes except the primary key.
- In “KTCS members”, we assume that all attributes should be NOT NULL. And the default value for Admin attribute is set to NO.
- In “Cars”, we assume that all attributes should be NOT NULL. The default status is normal. For each reservation, after the customer drop off the car. The attribute status under Cars table will be rewritten with the user’s input.
- In “Rental Comment”, we assume the ratings are mandatory but not the text comments. So, comments could be NULL. We assume that administrator is not mandatory to reply customer’s feedback. So AdminReply could be NULL.
- In “Car Maintenance History”, we assume that the description could be NULL.

Customer Inputting Assumptions

- The customer will enter valid pick-up date and drop-off date for searching all available cars.
- For each reservation, the customer only reserve one car.
- For each reservation, the customer only pick-up and drop-off the car once and inputting the valid information.
- For each reservation, the customer can give feedback multiple times, but it will rewrite the previous feedback in the database.
- For each reservation, the rental fee will be charged on the first day of rental starting.
- The administrator can only reply to user’s comment once.
- The administrator can only add one car into the fleet. And we assume the administrator will only add cars under normal status into the fleet.

PART II: ER Diagram & Relational Schemas



Show Create Table Queries

Cars Table

```

cars    CREATE TABLE `cars` (
  `CarVINcode` varchar(17) NOT NULL,
  `Make` varchar(50) NOT NULL,
  `Model` varchar(50) NOT NULL,
  `Year` year(4) NOT NULL,
  `Address` varchar(50) NOT NULL,
  `DailyRentalFee` int(11) NOT NULL,
  `Status` varchar(50) NOT NULL,
  PRIMARY KEY (`CarVINcode`),
  KEY `Address` (`Address`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1

```

Car Maintenance History Table

```
car_maintenance_history CREATE TABLE `car_maintenance_history` (
    `MaintenanceID` varchar(8) NOT NULL,
    `CarVINcode` varchar(17) NOT NULL,
    `Date` date NOT NULL,
    `OdometerReading` int(6) NOT NULL,
    `MaintenanceType` varchar(50) NOT NULL,
    `Description` text,
    PRIMARY KEY (`MaintenanceID`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1
```

KTCS Members Table

```
ktcs_members CREATE TABLE `ktcs_members` (
    `MemberNum` int(8) NOT NULL,
    `Name` varchar(50) NOT NULL,
    `Address` varchar(50) NOT NULL,
    `PhoneNum` varchar(11) NOT NULL,
    `Email` varchar(50) NOT NULL,
    `DriverLicenseNum` varchar(15) NOT NULL,
    `AnnualMembershipFee` int(11) NOT NULL,
    `Password` varchar(50) NOT NULL,
    `Admin` varchar(10) NOT NULL,
    PRIMARY KEY (`MemberNum`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1
```

Parking Location Table

```
parking_location CREATE TABLE `parking_location` (
    `Address` varchar(50) NOT NULL,
    `NumberOfSpace` int(11) NOT NULL,
    PRIMARY KEY (`Address`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1
```

Rental Comments Table

```
rental_comments CREATE TABLE `rental_comments` (
    `CommentID` varchar(8) NOT NULL,
    `MemberNum` int(8) NOT NULL,
    `CarVINcode` varchar(17) NOT NULL,
    `Rating` int(1) NOT NULL,
    `CommentText` text,
    `AdminReply` text,
    PRIMARY KEY (`CommentID`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1
```

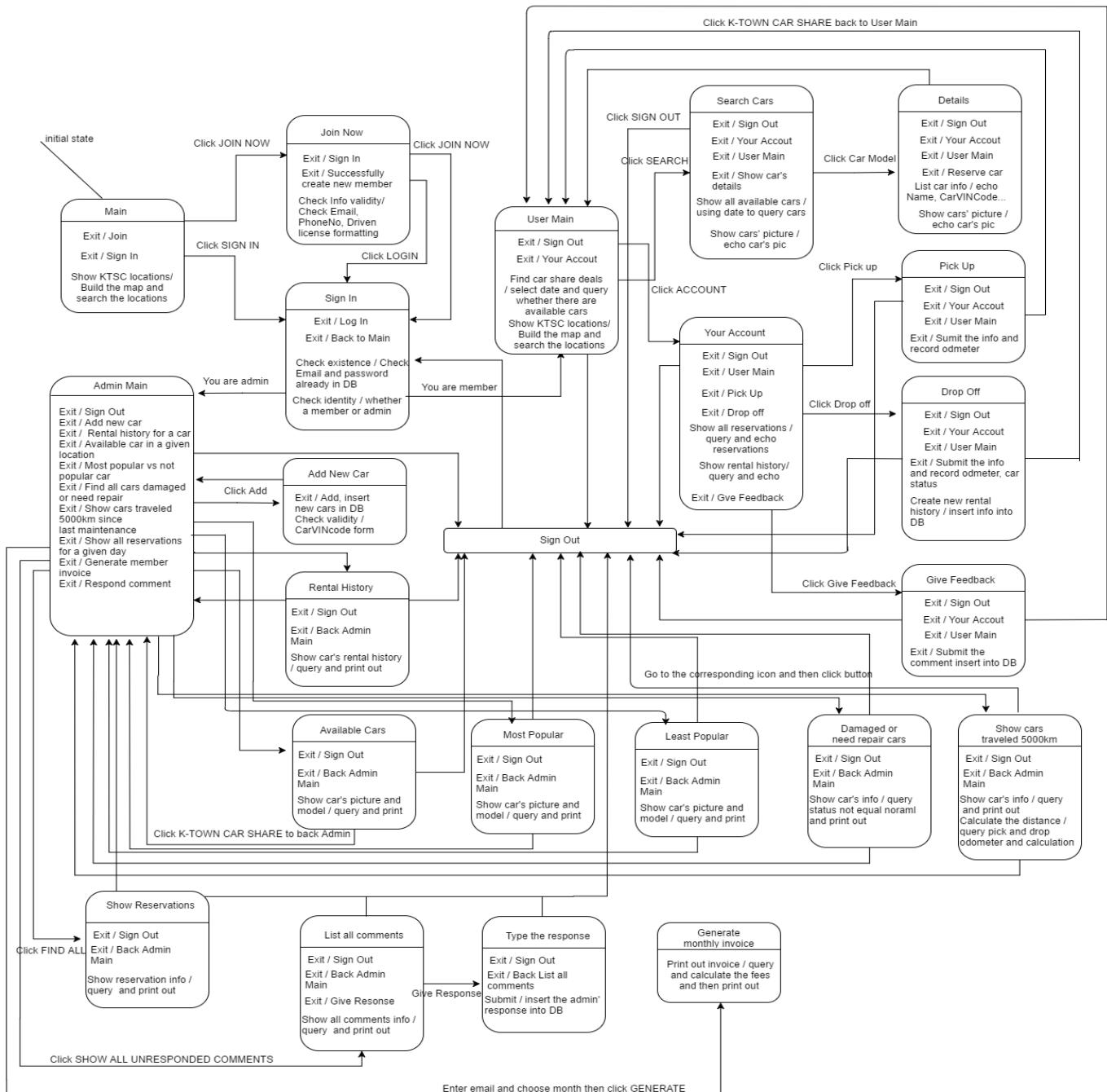
Rental History Table

```
rental_history CREATE TABLE `rental_history` (
  `HistoryID` int(12) NOT NULL,
  `CarVINcode` varchar(17) NOT NULL,
  `MemberNum` int(8) NOT NULL,
  `PickupOdometerReading` int(10) NOT NULL,
  `DropoffOdometerReading` int(10) NOT NULL,
  `Status` varchar(50) NOT NULL,
  PRIMARY KEY (`HistoryID`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1
```

Reservation Table

```
reservation CREATE TABLE `reservation` (
  `ReservationNum` int(8) NOT NULL,
  `MemberNum` int(8) NOT NULL,
  `CarVINcode` varchar(17) NOT NULL,
  `RentalStartingDate` date NOT NULL,
  `LengthOfReservation` int(11) NOT NULL,
  `AccessCode` int(4) NOT NULL,
  `ReservationDate` date NOT NULL,
  PRIMARY KEY (`ReservationNum`, `MemberNum`, `CarVINcode`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1
```

PART III: State Machine Diagram



PART IV: SQL Statements and Sample Output

KTCS Members

1. Register as new user

```
INSERT INTO ktcs_members (MemberNum, Name, Address, PhoneNum, Email, DriverLicenseNum, AnnualMembershipFee, Password, Admin)
VALUES ('$MemberNumber', '$Name', '$Address', '$Phone_Number', '$Email', '$Driver_License_Number', '120', '$Password2', 'NO')
```

MemberNum	Name	Address	PhoneNum	Email	DriverLicenseNum	AnnualMembershipFee	Password	Admin
17369632	Andy Chu	740 Kilmar Crescent	6134495669	andy.chuatwork@gmail.com	D12341234567890	120	Dalian	NO
31406207	Megan Wang	225 Bamburgh Circle, Apartment # 1410	6134495669	megan.kat@hotmail.com	D12341234567890	120	Iphone	NO
46798512	Andy Chu	740 Kilmar Crescent	6134495669	msn.world.andy@hotmail.com	D12341234567890	120	Dalian	YES
66983609	Jiefan Luo	248 Division Street	5145617615	rogersjie@hotmail.com	D12341234567890	120	12345	NO
79096027	Ash Ketchum	740 Kilmar Crescent	6134352876	simonkhzhang@gmail.com	D12341234567890	120	Pikachu	NO
81756719	Roger Luo	55 Union Street	6138898888	Roger.luo@hotmail.com	D12231994567890	120	Dalian	NO
88857666	Kelly Xiao	740 Kilmar Crescent	6134352876	KellyXiao6@hotmail.com	D12341234567890	120	Dalian	NO

2. Search for all available cars

```
SELECT CarVINcode, Make, Model
FROM cars
WHERE cars.CarVINcode NOT IN
    (SELECT CarVINcode
     FROM CARS NATURAL JOIN
        (SELECT *, DATE_ADD(RentalStartingDate, INTERVAL LengthOfReservation DAY) AS DropOffDate FROM reservation)
     as t1
      WHERE '$dropoff' >= RentalStartingDate AND '$pickup' <= DropOffDate)
```

CarVINcode	Make	Model	Year	Address	DailyRentalFee	Status
1BENZ41JXMN109186	BMW	M2	2014	355 Pine Street	60	normal
1CMHG00433A008263	Ford	Focus	2012	355 Pine Street	50	damaged
1HGBH41JXMN109186	Honda	Civic	2008	55 Earl Street	40	not running
1HGCM82633A004352	Lexus	Rx350	2014	400 Victoria Street	60	normal

ReservationNum	MemberNum	CarVINcode	RentalStartingDate	LengthOfReservation	AccessCode	ReserveTime
12833513	68914184	1CMHG00433A008263	2017-04-05	3	4411	2017-04-04
40512638	46798512	1HGBH41JXMN109186	2017-02-24	6	7941	2017-02-20
61703874	68914184	1CMHG00433A008263	2017-04-03	1	4975	2017-04-04
75846921	46798512	1CMHG00433A008263	2017-02-01	8	7884	2017-02-01
84569241	63974562	1CMHG00433A008263	2017-02-09	5	4656	2017-02-08
87994504	68914184	1HGBH41JXMN109186	2017-04-06	8	6373	2017-04-04

Note* Pick up date is 2017-04-05 and Drop off date is 2017-04-06

CarVINcode	Make	Model
1HGCM82633A004352	Lexus	Rx350

3. Reserve a car

```
insert into reservation values('$resNum', '$memNum', '$VIN', '$pickup', '$length', '$accessCode', '$today')
```

Note* In PHP file, get the variables that user inputted in web application.

```
$VIN = $_GET["carVINcode"];
$_SESSION["CarVINcode"] = $VIN;
$user = $_SESSION["emaillogged"];
$pickup = $_SESSION["pickup"];
$dropoff = $_SESSION["dropoff"];
$length = (strtotime($dropoff) - strtotime($pickup))/86400;
$accessCode = rand(1000, 9999);
$resNum = rand(1000, 99999999);
$today = date("Y-m-d");
```

ReservationNum	MemberNum	CarVINcode	RentalStartingDate	LengthOfReservation	AccessCode	ReservationDate
17354989	79096027	1BENZ41JXMN109186	2017-04-04	1	1189	2017-04-04
56250437	66983609	1HGCM82633A004352	2017-04-05	1	2020	2017-04-06
78943490	66983609	1HGBH41JXMN109186	2017-04-04	3	6750	2017-04-04
83562922	31406207	1CMHG00433A008263	2017-04-04	1	6719	2017-04-04
86443025	31406207	1CMHG00433A008263	2017-04-06	2	8209	2017-04-04
98219958	31406207	1CMHG00433A008888	2017-04-04	1	9224	2017-04-04

4. Drop off a car

```
1 INSERT INTO rental_history (HistoryID, CarVINcode , MemberNum, PickupOdometerReading,
DropoffOdometerReading, Status )
2           VALUES ( 15916137, '1HGCM82633A004352', '17369632', 10000,
15000, 'damaged')|
```

We have successfully inserted a new rental history to the database when you drop off a car and the attributes values are from our form. Here, we drop off the Lexus and the drop off odometer is 15000. The first row will generate the HistoryID 15916137. The sample output shown below:

	HistoryID	CarVINcode	MemberNum	PickupOdometerReading	DropoffOdometerReading	Status
<input type="checkbox"/>   	15916137	1HGCM82633A004352	17369632	10000	15000	damaged
<input type="checkbox"/>   	47817920	1CMHG00433A008888	31406207	23456	34567	damaged
<input type="checkbox"/>   	96037793	1HGBH41JXMN109186	66983609	13500	19000	normal
<input type="checkbox"/>   	201702095	1CMHG00433A008263	63974562	123456	123486	normal
<input type="checkbox"/>   	201702149	1CMHG00433A008263	46798512	157845	157895	normal

At the same time, we update the car Status in cars table and rental history table. Now the Lexus's Status become “damaged”.

+ Options		CarVINcode	Make	Model	Year	Address	DailyRentalFee	Status
<input type="checkbox"/>	Edit Copy Delete	1BENZ41JXMN109186	BMW	M2	2014	355 Pine Street	60	normal
<input type="checkbox"/>	Edit Copy Delete	1CMHG00433A008263	Ford	Focus	2012	355 Pine Street	50	damaged
<input type="checkbox"/>	Edit Copy Delete	1HGBH41JXMN109186	Honda	Civic	2008	55 Earl Street	40	not running
<input type="checkbox"/>	Edit Copy Delete	1HGCM82633A004352	Lexus	Rx350	2014	400 Victoria Street	60	damaged

5. Give Feedback

```
INSERT INTO rental_comments (CommentID, MemberNum , CarVINcode, Rating, CommentText )
VALUES ( '$randomNum', '$MemberNum', '$CarVINcode', '$rateNum', '$Comments' )
```

Comment ID is randomly generated by the php code. MemberNum and CarVINcode are passed from the previous “detailed information” page.

CommentID	MemberNum	CarVINcode	Rating	CommentText	AdminReply
248431	31406207	1CMHG00433A008888	3	Good Car	thank you !
302685	66983609	1HGBH41JXMN109186	4	I love Honda this car !!!!	Thank you!
JS768591	63974562	1CMHG00433A008263	2		NULL
SJ859463	46798512	1CMHG00433A008263	4	Will rent this car again. Good for family trip.	NULL
SJ971456	46798512	1HGBH41JXMN109186	3		NULL

6. Member's Rental History

```
SELECT * FROM `rental_history` WHERE rental_history.MemberNum =
( SELECT ktcs_members.MemberNum FROM `ktcs_members` WHERE Email = '$checkemail' )
```

Email is the email address stored in the session after logging in. The example uses “rogersjie@hotmail.com” as the email.

HistoryID	CarVINcode	MemberNum	PickupOdometerReading	DropoffOdometerReading	Status
96037793	1HGBH41JXMN109186	66983609	13500	19000	normal

KTCS Management

1. Add vehicle to the KTCS fleet

```
insert into cars values('$VIN', '$make', '$model', '$year', '$address', '$fee', 'normal')
```

```
$VIN = $_POST["VIN"];
$make = $_POST["make"];
$model = $_POST["model"];
$year = $_POST["year"];
$address = $_POST["address"];
$fee = $_POST["fee"];
```

CarVINcode	Make	Model	Year	Address	DailyRentalFee	Status
1BENZ41JXMN109186	BMW	M2	2014	355 Pine Street	60	normal
1CMHG00433A008263	Ford	Focus	2012	355 Pine Street	50	damaged
1HGBH41JXMN109186	Honda	Civic	2008	55 Earl Street	40	not running
1HGCM82633A004352	Lexus	Rx350	2014	400 Victoria Street	60	normal

The first line of the cars table is the newly added car.

2. Show the rental history for a car

```
1 | SELECT * FROM rental_history WHERE CarVINcode = '1CMHG00433A008263'
```

← ↑ →	HistoryID	CarVINcode	MemberNum	PickupOdometerReading	DropoffOdometerReading	Status
<input type="checkbox"/>	201702095	1CMHG00433A008263	63974562	123456	123486	normal
<input type="checkbox"/>	201702149	1CMHG00433A008263	46798512	157845	157895	normal

3. List all available cars in the specific location and reservation for those cars

```
SELECT CarVINcode, Make, Model
FROM cars
WHERE cars.CarVINcode NOT IN
    (SELECT CarVINcode
     FROM CARS NATURAL JOIN
     (SELECT *, DATE_ADD(RentalStartingDate, INTERVAL LengthOfReservation DAY) AS DropOffDate FROM reservation) as t1
     WHERE '$today' >= RentalStartingDate AND '$today' <= DropOffDate) AND Address = '$location'
```

\$today = "2017-04-06" \$location = "355 Pine Street"

CarVINcode	Make	Model
1BENZ41JXMN109186	BMW	M2

4. Find the cars with highest/lowest number of rentals

```
SELECT *
FROM (SELECT cars.CarVINcode, cars.Make, cars.Model, count(rental_history.CarVINcode) as counts, year
      FROM rental_history RIGHT JOIN cars on rental_history.CarVINcode = cars.CarVINcode
      group by rental_history.CarVINcode) AS T1
WHERE counts = '$count'
```

```
SELECT MAX(counts)
FROM (SELECT count(rental_history.CarVINcode) as counts
      FROM rental_history RIGHT JOIN cars on rental_history.CarVINcode = cars.CarVINcode
      group by rental_history.CarVINcode) AS T1
```

CarVINcode	Make	Model	counts	year
1CMHG00433A008263	Ford	Focus	2	2012

```
SELECT MIN(counts)
FROM (SELECT count(rental_history.CarVINcode) as counts
      FROM rental_history RIGHT JOIN cars on rental_history.CarVINcode = cars.CarVINcode
      group by rental_history.CarVINcode) AS T1
```

CarVINcode	Make	Model	counts	year
1BENZ41JXMN109186	BMW	M2	0	2014

5. Find all the damaged cars or cars in need of repair

```
SELECT Make, CarVINcode, Status FROM cars WHERE Status != 'normal'
```

← ↑ →	▼	Make	CarVINcode	Status
<input type="checkbox"/>		Ford	1CMHG00433A008263	damaged
<input type="checkbox"/>		Honda	1HGBH41JXMN109186	not running
<input type="checkbox"/>		Lexus	1HGCM82633A004352	damaged

6. Show all cars that have traveled more than 5000 km since last maintenance.

```
1 | select CarVINcode , Make, Model, distance
2 |   from cars natural join
3 |     (select t1.CarVINcode, (current - lastmaintain) as distance from
4 |       (SELECT CarVINcode, max(OdometerReading) as lastmaintain FROM car_maintenance_history
5 |        group by CarVINcode) as t1
6 |        join (SELECT CarVINcode, max(DropoffOdometerReading) as current FROM rental_history
7 |          group by CarVINcode) as t2 on t1.CarVINcode
8 |          where t1.CarVINcode = t2.CarVINcode) as t3
9 |          where distance > 5000
```

+ Options

CarVINcode	Make	Model	distance
1CMHG00433A008263	Ford	Focus	22199

7. Show all the reservations on a given day

```
1 | SELECT * FROM reservation WHERE ReservationDate = '2017-04-06'
```

	ReservationNum	MemberNum	CarVINcode	RentalStartingDate	LengthOfReservation	AccessCode	ReservationDate
<input type="checkbox"/>	87329228	17369632	1HGCM82633A004352	2017-04-06	1	7216	2017-04-06

8. Give response to members' comments

```
1 | UPDATE rental_comments SET AdminReply = 'thank you!' where CommentID = '248431'
```

	CommentID	MemberNum	CarVINcode	Rating	CommentText	AdminReply
<input type="checkbox"/>	248431	31406207	1CMHG00433A008888	3	Good Car	thank you !
<input type="checkbox"/>	302685	66983609	1HGBH41JXMN109186	4	I love Honda this car !!!!	Thank you!
<input type="checkbox"/>	JS768591	63974562	1CMHG00433A008263	2		NULL Thank you
<input type="checkbox"/>	SJ859463	46798512	1CMHG00433A008263	4	Will rent this car again. Good for family trip.	NULL
<input type="checkbox"/>	SJ971456	46798512	1HGBH41JXMN109186	3		NULL NULL

9. Generate member monthly invoice

1 | SELECT memberNum FROM ktcs_members WHERE Email = 'megan.katt@hotmail.com'

Enable foreign key checks

Profiling []

Show all | Number of rows: 25

+ Options
memberNum
31406207

1 | SELECT CarVINcode, MemberNum, LengthOfReservation, RentalStartingDate, DailyRentalFee, (LengthOfReservation * DailyRentalFee) as Total
2 | FROM reservation NATURAL JOIN cars
3 | Where MemberNum = 31406207 AND Month(RentalStartingDate) = 4

Enable foreign key checks

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code]

Show all | Number of rows: 25

Sort by key: None

+ Options
CarVINcode MemberNum LengthOfReservation RentalStartingDate DailyRentalFee Total
1BENZ41JXMN109186 31406207 1 2017-04-06 60 60
1CMHG00433A008263 31406207 1 2017-04-04 50 50
1CMHG00433A008263 31406207 2 2017-04-06 50 100

PART V: Discussion

Our group did not experience any significant challenges during development because of our experience in creating websites due to two group member's participation in the CISC 282 web design class. The only major topic of discussion of challenges that we faced was trying to share our code base. We did not use a code repository to push and update our codebases. Instead we transferred the edited PHP and SQL files between each other through Slack. This caused some headaches, as the variable names were different for each group member's version of the file, so we had to go through the file and change the variable names every time we replaced one member's file with another's edited file. Furthermore, we did not test our application on the same database, instead testing the application separately using the local database stored on each group member's computer. This was the cause of some problems we encountered; sometimes a group member would add/rename a column table and change his/her code to reflect this change. After another group member takes in the edited code, his/her application would not work because the new column table was not added/renamed. All in all, the development process went by relatively smoothly, with only a few headaches faced along the way.

We used a Bootstrap template as a design framework for the web application. After agreeing on the template (Fonts, icons, design structure to be used), we changed the color palette to one that we were all satisfied with. Afterwards, we built every single page in the web application using the Bootstrap template.

The technologies we used to develop the web application are: Bootstrap, HTML, CSS, PHP, MySQL and SQL. We choose Bootstrap to design our web application because of its ease of use, portability and the varieties of unique templates to choose from. Two of our groups members also have prior experience with using Bootstrap, so the decision was unanimous for using Bootstrap to help design our web application. Both the SQL and PHP files used our Bootstrap template.

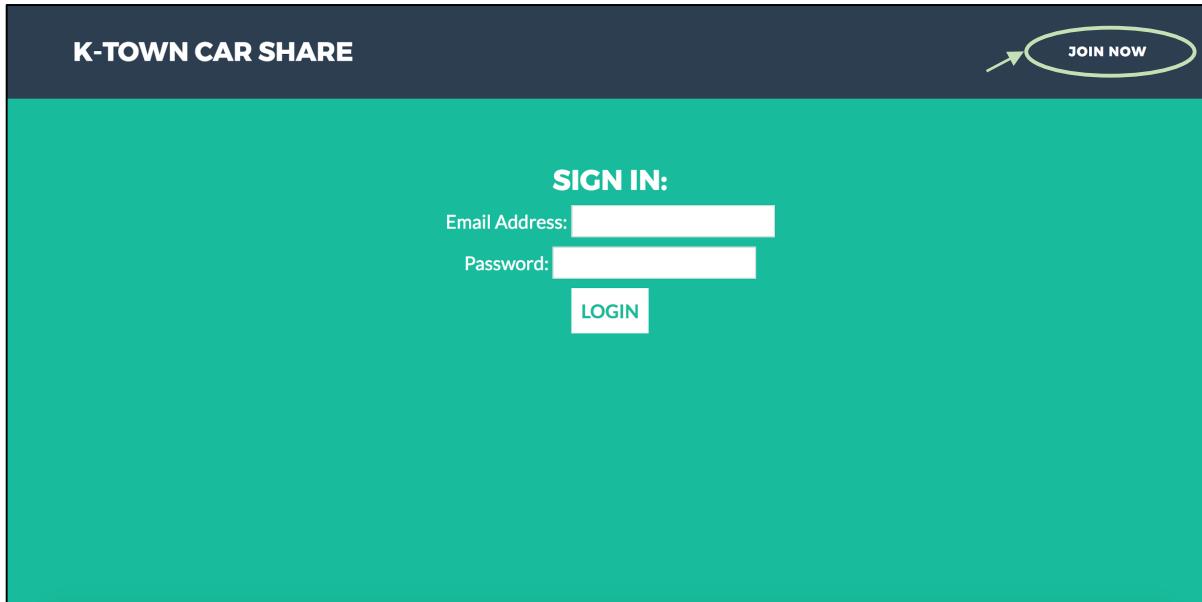
The icons and images used in our web application were all created/edited using Adobe Photoshop CS6. This advanced program allowed us to easily create unique icons and edit each image (Vehicle images) in high detail.

If we had the chance, we all agree that using a central code repository would eliminate most problems that we encountered during development. The ability to share the same edited code between each member's computer without having to worry about different variable and reference names would have been extremely beneficial.

User's Guide (Customer):

1. Sign Up (Register)

1.1. Click the “JOIN NOW” button on the top right corner of the **Login Page**

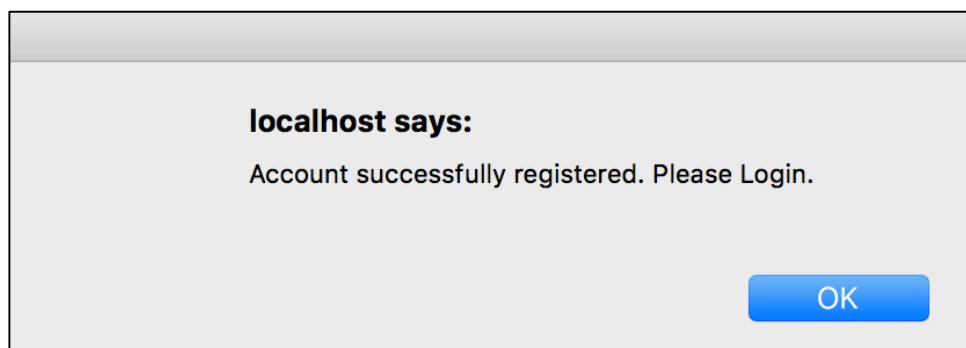


1.2. You are now on the **Member Registration Page**. Fill in ALL textboxes and then click the “CREATE” button on the bottom of the page.

Constraints:

- You must enter in a valid Driver License Number in the format AXXX-XXXXX-XXXXX, where A is an upper-case letter and X is a digit 0-9.
- You must enter in a valid Phone Number in the format XXXYYYYYYY, where X is the area code and Y is the telephone number.

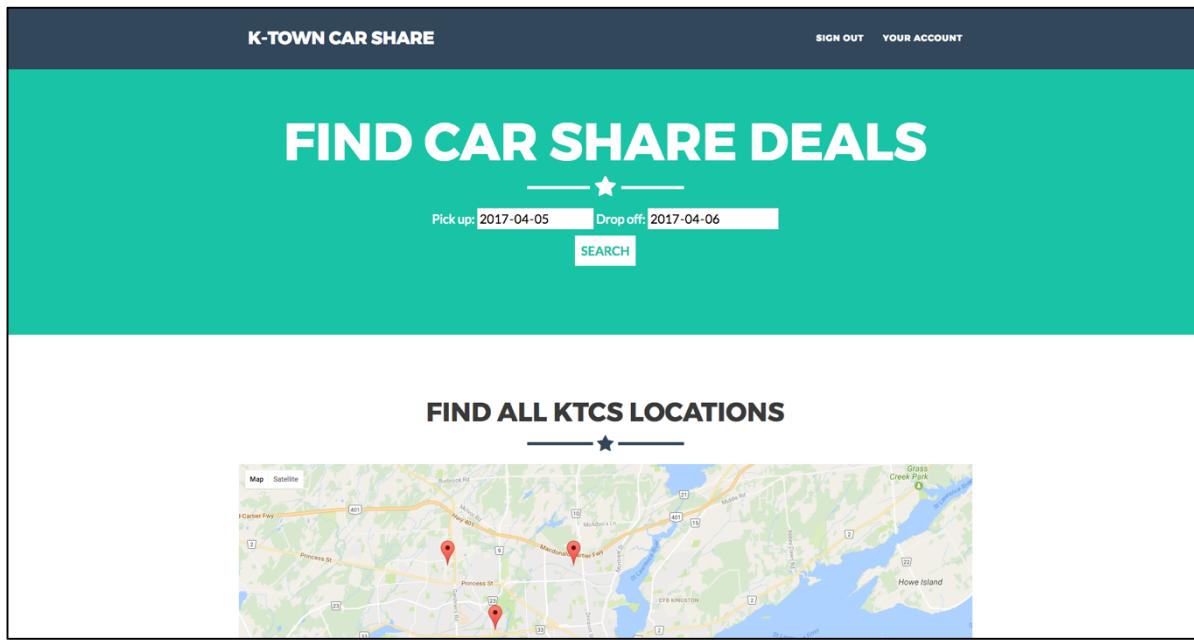
1.3. If account registration was successful, an alert box like the image below will appear. After clicking “OK” button, you will be directed back to the **Login page**.



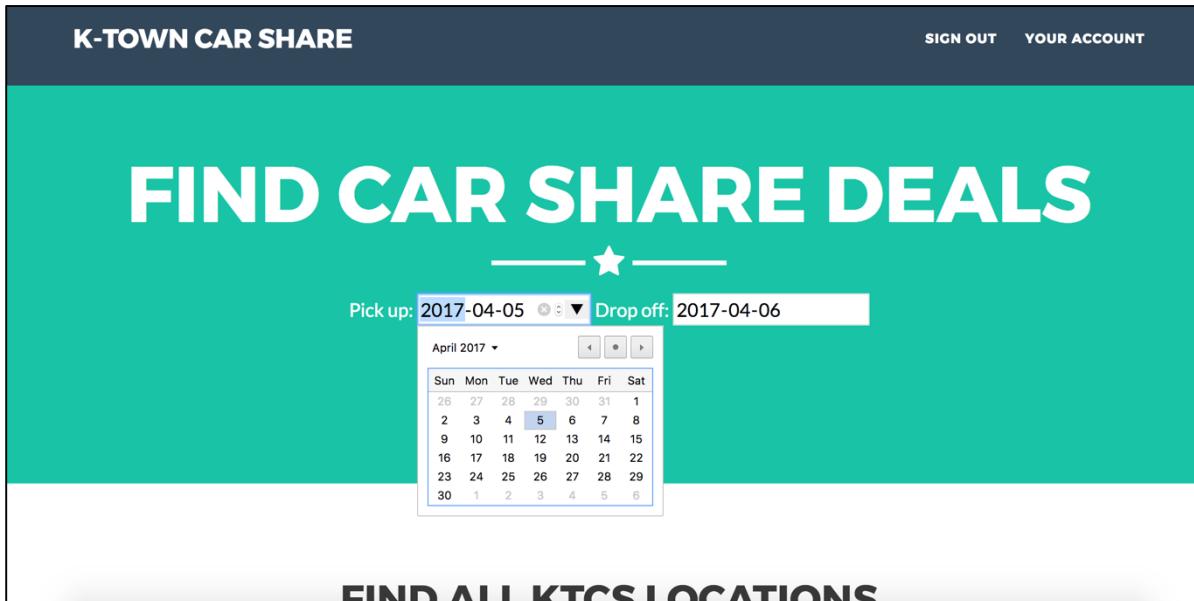
2. Log In

- 2.1.** Enter in the Email you used to register your account with and the Password.
Click “LOGIN” to proceed to the **User Main page**.

3. Search for Available Vehicles and Reserve a Vehicle



- 3.1.** You are now on the **User Main page**, shown in the above image. Here, you can search for available vehicles and reserve them. Select a pick up and drop off date in the two drop down menus. Click the “SEARCH” button.



3.2. All available cars in the chosen Pick Up and Drop Off time period will be shown. Select any one of the vehicles of your liking by clicking on the name tag of the vehicle. In the image example below, only one vehicle is available in the chosen period, the Lexus RX350.

K-TOWN CAR SHARE SIGN OUT YOUR ACCOUNT

ALL AVAILABLE CARS



LEXUS RX350

3.3. After clicking on the vehicle name another page will appear, displaying more information about the vehicle, like the car VIN code, model year, Pick Up/Drop Off location and the Daily Rental Fee. Click the “RESERVE” button if this is a preferred vehicle.

K-TOWN CAR SHARE SIGN OUT YOUR ACCOUNT

DETAILED INFORMATION

Name: Lexus Rx350
Car VIN Code: 1HGCM82633A004352
Year: 2014
Pick Up/Drop Off Location: 400 Victoria Street
Daily Rental Fee: 60

RESERVE

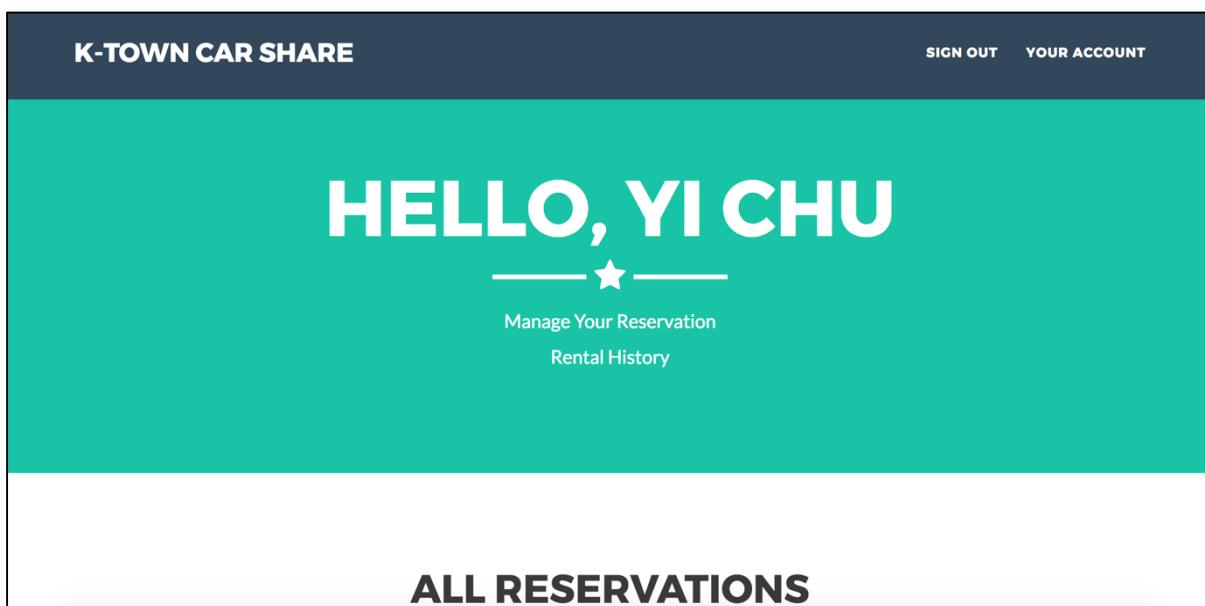


3.4. If vehicle reservation was successful, an alert box will appear. After clicking the “OK” button, you will be redirected to the **User Main page**.

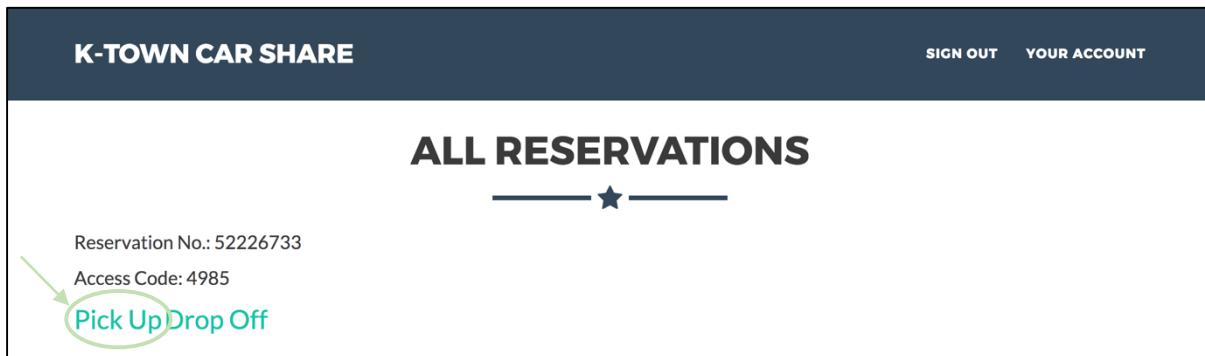
4. Pick Up Vehicle

4.1. After successfully reserving your vehicle, you will be returned to the **User Main page**. Click on the “YOUR ACCOUNT” button on the top right corner of the page.

4.2. You will be redirected to the **User Account Management Page**. Here you can manage your reservations by recording the Pick Up and Drop Off information to notify KTCS that you’ve either picked up or dropped off the vehicle after use. You can also view your rental history in this page. A screenshot of the **User Account Management Page** is shown below.



4.3. Click the “Manage Your Reservation” sub header to auto scroll down to the “ALL RESERVATIONS” section. This is where you notify KTCS if you’ve either picked up or dropped off the vehicle. You can also view the vehicle access code here. Click the “Pick Up” Button.



4.4. You will be directed to the **Pick-Up Page**, shown below. Before using the reserved vehicle, customers are required to fill out the form on this page. The vehicle will not start until this form is completed and submitted. Observe the odometer reading from the vehicle's dashboard and enter it in the "Record your odometer:" textbox. After correctly filling out all the information, click the "Submit" button. You can also click the "Reset" button to restart all textbox entries.

The screenshot shows a web page titled "K-TOWN CAR SHARE" with a "SIGN OUT" and "YOUR ACCOUNT" link at the top right. The main title is "RECORD THE PICK UP INFORMATION" with a decorative star icon. Below the title are two input fields: "Record your pickup date: yyyy-mm-dd" and "Record your odometer:". A note says "Before you start driving please carefully check your car status." with three radio button options: "normal" (selected), "damaged", and "not running". At the bottom are "Submit" and "Reset" buttons.

4.5. After filling in the correct information and clicking the "Submit" button, an alert box indicating the successful form submission will pop-up and the vehicle engine will be unlocked. You will then be directed back to the **User Account Management Page**. You may now proceed to use the vehicle are your discretion.

5. Drop Off Vehicle

5.1. After finishing using the vehicle, you are required to log onto the KTCS website. Proceed to the **User Account Management Page** and click the "Drop Off" button.

The screenshot shows a web page titled "K-TOWN CAR SHARE" with a "SIGN OUT" and "YOUR ACCOUNT" link at the top right. The main title is "RECORD THE DROP OFF INFORMATION" with a decorative star icon. Below the title are two input fields: "Record your drop-off date: yyyy-mm-dd" and "Record your odometer: 35000". A note says "Before you drop-off the car please carefully check your car status." with three radio button options: "normal" (selected), "damaged", and "not running". At the bottom are "Submit" and "Reset" buttons.

5.2. Before completely dropping off the vehicle, customers are required to fill out the form on this page, just like when they pick-up the vehicle. Observe the odometer reading from the vehicle's dashboard and enter it in the "Record your odometer:" textbox. Select "damaged" or "not running" if there is something wrong with the vehicle. After correctly filling out all the information, click the "Submit" button. You can also click the "Reset" button to restart all textbox entries.

5.3. After filling in the correct information and clicking the "Submit" button, an alert box indicating the successful form submission will pop-up. You will then be directed back to the **User Account Management Page**. You have successfully used KTCS's car sharing services! Thank you for your business.

6. View Rental History

6.1. After completing reservation, you can view your Rental History and give feedback of the reservations. First, log in and click the "YOUR ACCOUNT" button on the top right corner of the **User Main page**.

6.2. You will be directed to the **User Account Management Page**. Click on the "Rental History" sub header to auto scroll down to the "RENTAL HISTORY" section. You can view some detailed information about each reservation and obtain a History ID number for future references. You can also leave feedback on that reservation. To leave feedback, click on the "Give Feedback" button.

The screenshot shows the K-Town Car Share user interface. At the top, there is a dark header bar with the text "K-TOWN CAR SHARE" on the left and "SIGN OUT" and "YOUR ACCOUNT" on the right. Below this, the main content area has a white background. In the center, the text "RENTAL HISTORY" is displayed in bold capital letters, followed by a decorative horizontal line with a star in the middle. Below this section, there is a list of reservation details: HistoryID: 30944724, CarVINcode: 1HGCM82633A004352, MemberNum: 54827205, PickupOdometerReading: 30000, DropoffOdometerReading: 35000, and Status: normal. At the bottom of this list, there is a blue button labeled "Give Feedback". A green oval has been drawn around this button, and a green arrow points to it from the left side of the image.

6.3. After clicking the “Give Feedback” button, you will be directed to the **Feedback Page**. A screenshot of this page is shown below. On this page, you can select a rating from One to Four stars, and give comments about your reservation experience. After entering all the required information, click the “Submit” Button to complete your feedback.

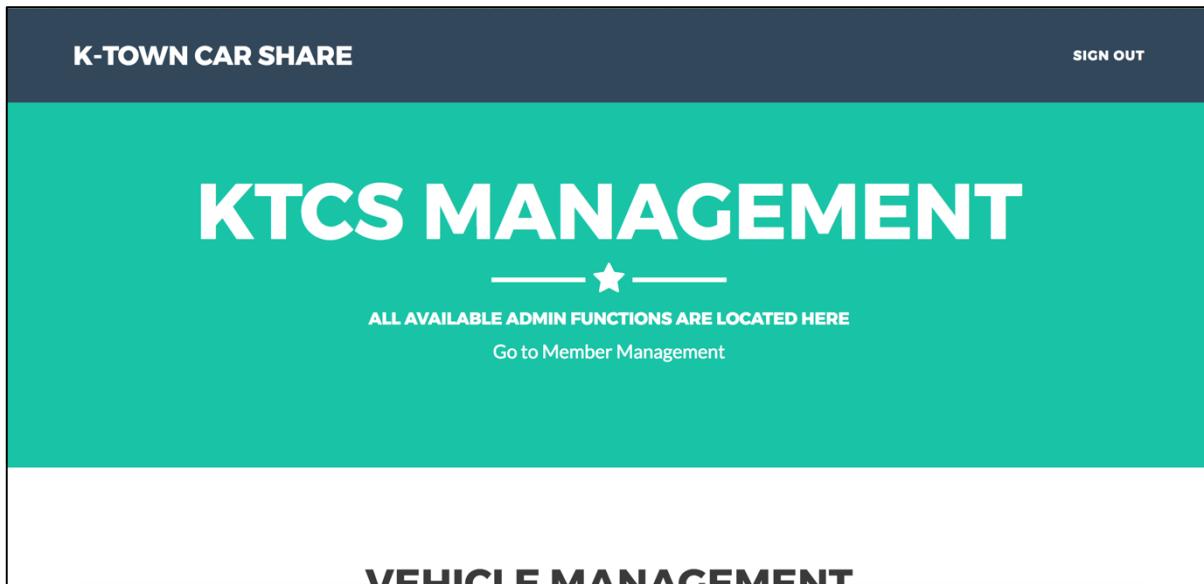
The screenshot shows a web page titled "K-TOWN CAR SHARE" at the top left and "SIGN OUT YOUR ACCOUNT" at the top right. The main title "GIVE A FEEDBACK FOR THE RENTAL" is centered above a horizontal bar with a star icon. Below the title, a label "Please choose a rating:" is followed by four radio buttons labeled "One Star", "Two Star", "Three Stars", and "Four Stars". A text input field labeled "Write your comment:" is provided, along with two buttons at the bottom left: "Submit" and "Reset".

7. Sign Out

7.1. To sign out, click on the “SIGN OUT” button on the top right corner. This button is accessible on every page that a customer is permitted to use, and is located at the same top-right corner spot for every page. You will be returned to the **Login Page** afterwards.

User's Guide (Management):

The KTCS Management pages are considerably different compared to the customer pages. Management is provided with a large list of additional functionalities like the ability to add vehicles to the KTCS fleet and generate monthly invoices for customers. The main home page for management is called **Admin Main**. This page is divided into two sections: **Vehicle Management** and **Customer Management**.



The **Vehicle Management** section deals with six functionalities:

1. Add a vehicle to the KTCS fleet
2. Generate rental history of a vehicle
3. Generate list of all available vehicles in a given location
4. Show the most and least popular vehicles
5. Find all vehicles that are damaged or need repair and vehicles with more than 5000 km traveled since their last maintenance
6. Show all reservations on a given day



The **Customer Management** section deals with two functionalities:

1. Generate a customer's monthly invoice
2. Respond to customers' reservation feedbacks

The screenshot shows a web application interface for 'K-TOWN CAR SHARE'. At the top, there is a dark header bar with the text 'K-TOWN CAR SHARE' on the left and 'SIGN OUT' on the right. Below the header, the main content area has a light gray background. The title 'CUSTOMER MANAGEMENT' is centered at the top of this area. Below the title is a decorative horizontal bar consisting of two thin black lines with a single white star in the center. Underneath this bar is a section titled 'GENERATE CUSTOMER MONTHLY INVOICE'. It contains a text input field labeled 'Email:' followed by a small placeholder box. Below the email input is a label 'For the Month of:' followed by a dropdown menu set to 'January'. A green 'GENERATE' button is positioned below the dropdown. Another decorative horizontal bar with a central star follows. Below this bar is a section titled 'RESPOND TO CUSTOMERS' COMMENTS:'. Underneath this title is a small blue link labeled 'SHOW ALL UNRESPONDED COMMENTS'.

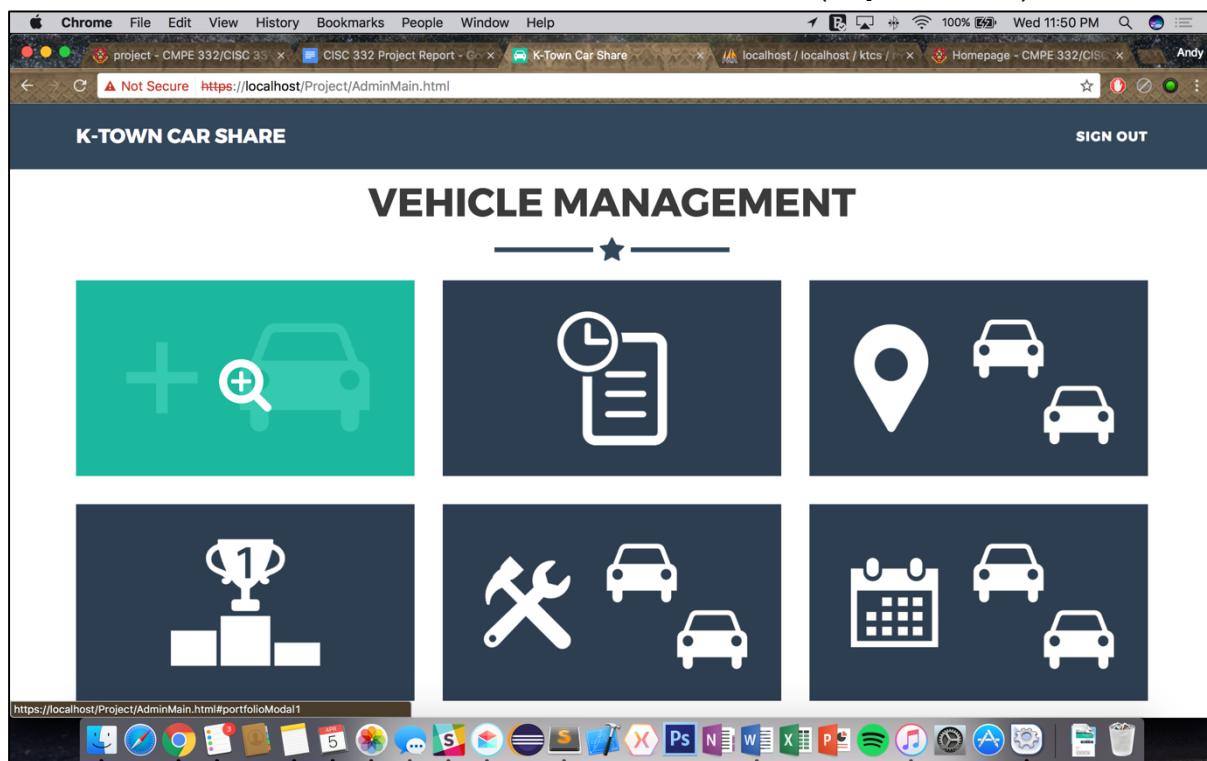
The following pages are the management guide for the **Vehicle Management** section.

User's Guide (Management) - Vehicle Management:

1. Add a Vehicle to the KTCS Fleet

1.1. On the **Admin Main Page**, scroll down to the **Vehicle Management** section.

Click on the icon shown in the screenshot below (Top Left icon).

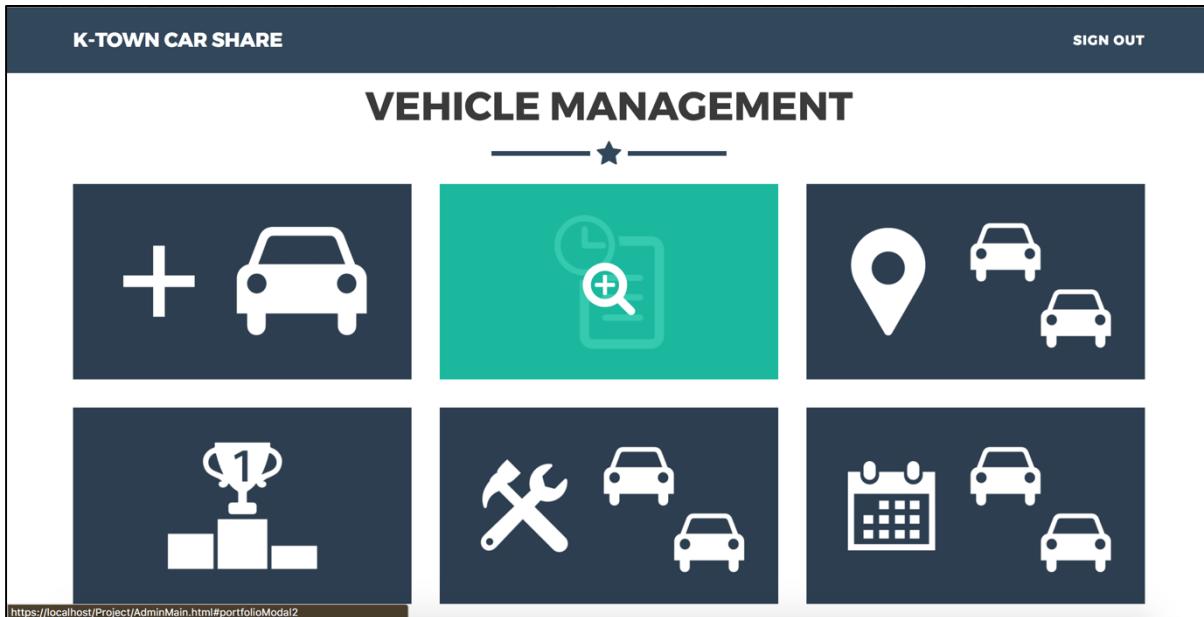


1.2. A pop-up page will appear. Fill in all the textboxes and click the “ADD” button to finish adding the vehicle to the fleet. You can always cancel and return to the **Admin Main Page** by clicking the “X” button on the top right corner of the pop-up page.

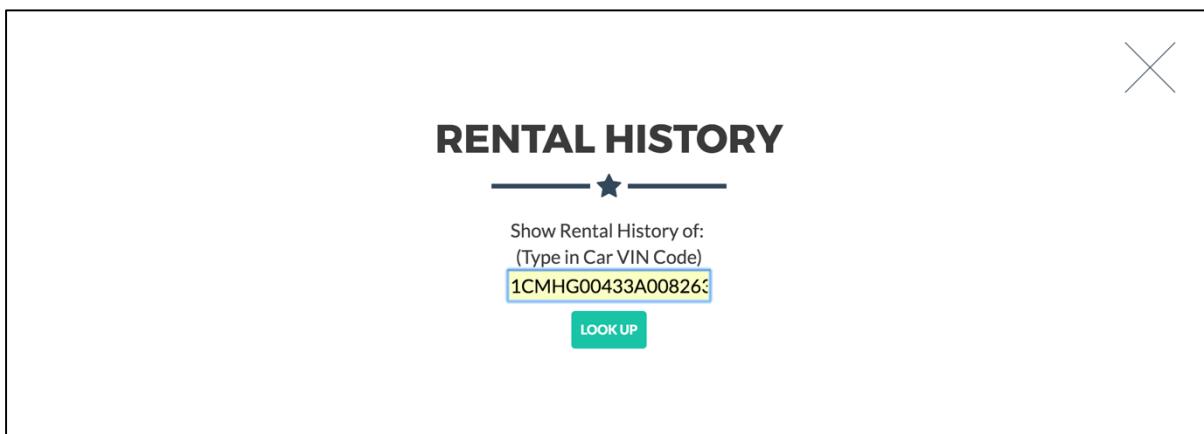
A screenshot of a modal dialog box titled "ADD A VEHICLE TO THE FLEET". It contains several input fields: "Car VIN Code" with the value "1CMHG00433A00888E" highlighted in yellow; "Make" with the value "Honda"; "Model" with the value "Civic"; "Year" with the value "2013"; "Pick Up/Drop Off Address" with the value "355 Pine Street" highlighted in yellow; and "Daily Rental Fee" with the value "30". At the bottom center is a green "ADD" button. In the top right corner of the modal is a close button represented by a large "X".

2. Generate Rental History of a Vehicle

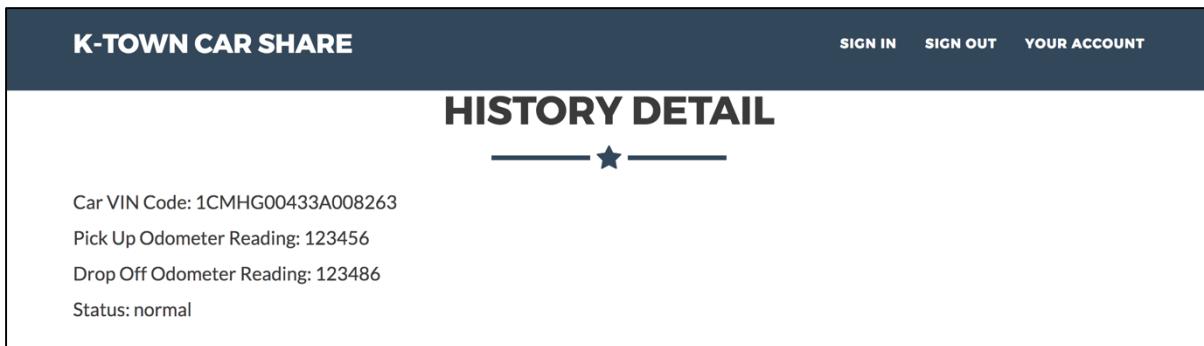
- 2.1.** On the **Admin Main Page**, scroll down to the **Vehicle Management** section.
Click on the icon shown in the screenshot below (**Top Middle** icon).



- 2.2.** A pop-up page will appear. Fill in a correct Car VIN Code in the textbox and click the “LOOK UP” button.



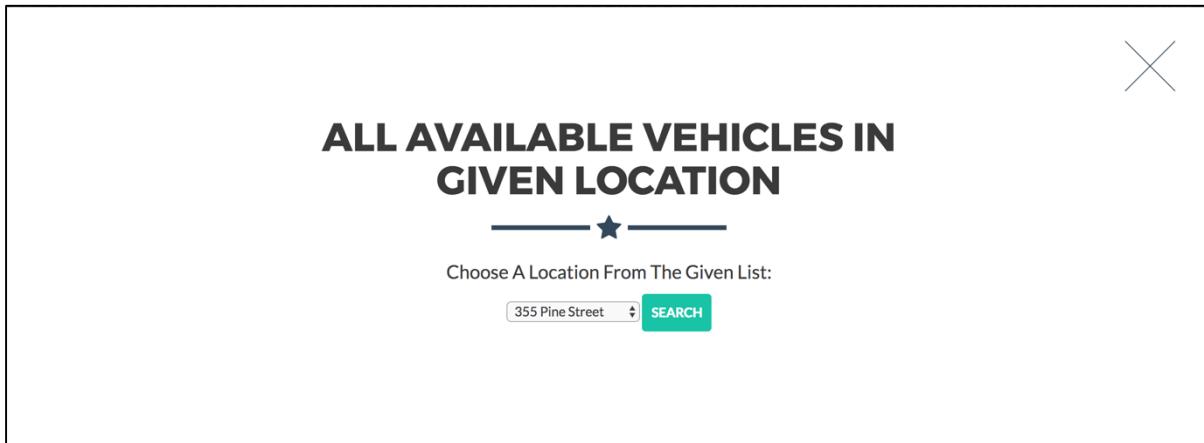
- 2.3.** You will be directed to another page that shows the details for every reservation of the searched vehicle.



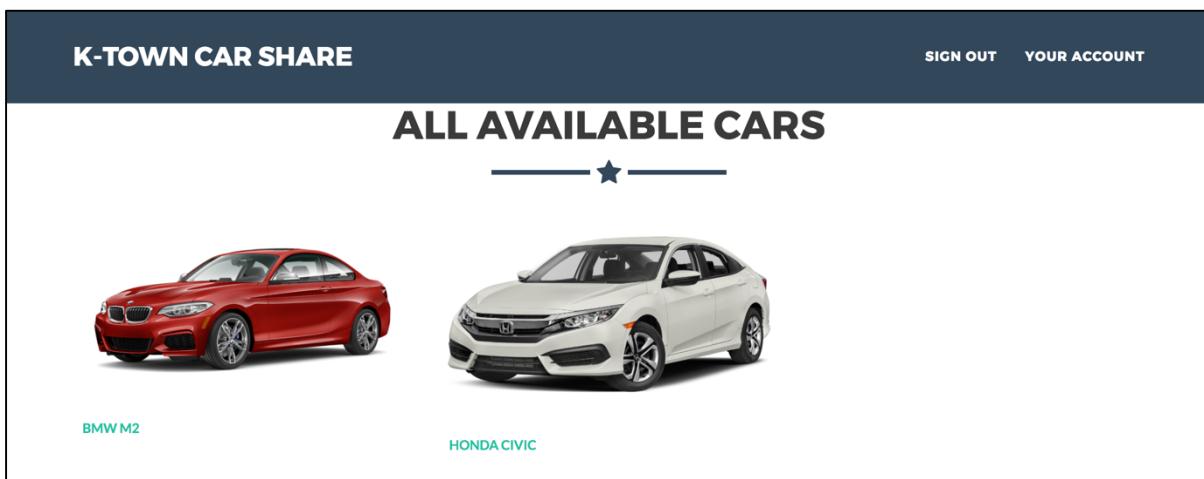
3. Generate list of all available vehicles in a chosen location

3.1. On the **Admin Main Page**, scroll down to the **Vehicle Management** section.
Click on the **Top Right** icon in the icon list.

3.2. A pop-up page will appear. Select an address from the dropdown menu and click the “SEARCH” button.



3.3. You will be directed to another page listing all the available cars in the chosen location. From here, you can select a car and see the reservations for the car, if given any.

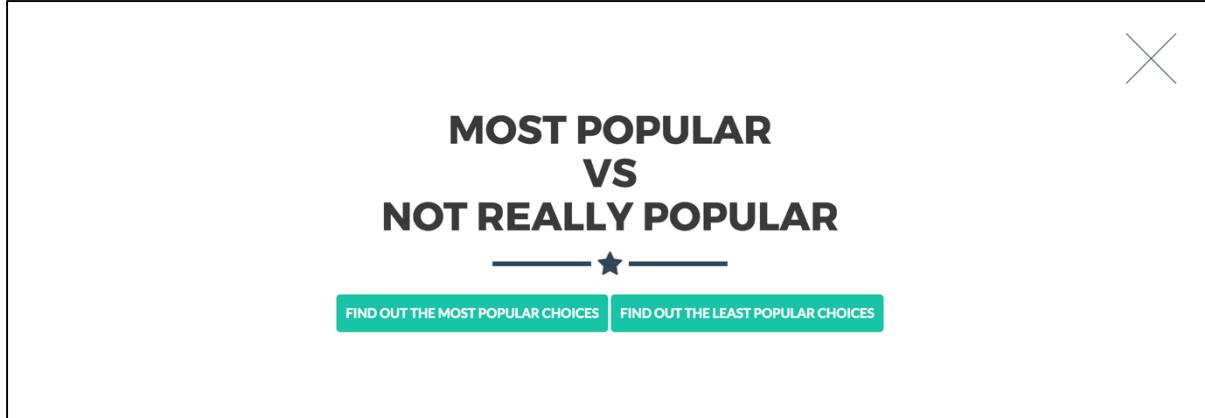


4. Show the least and most popular vehicles

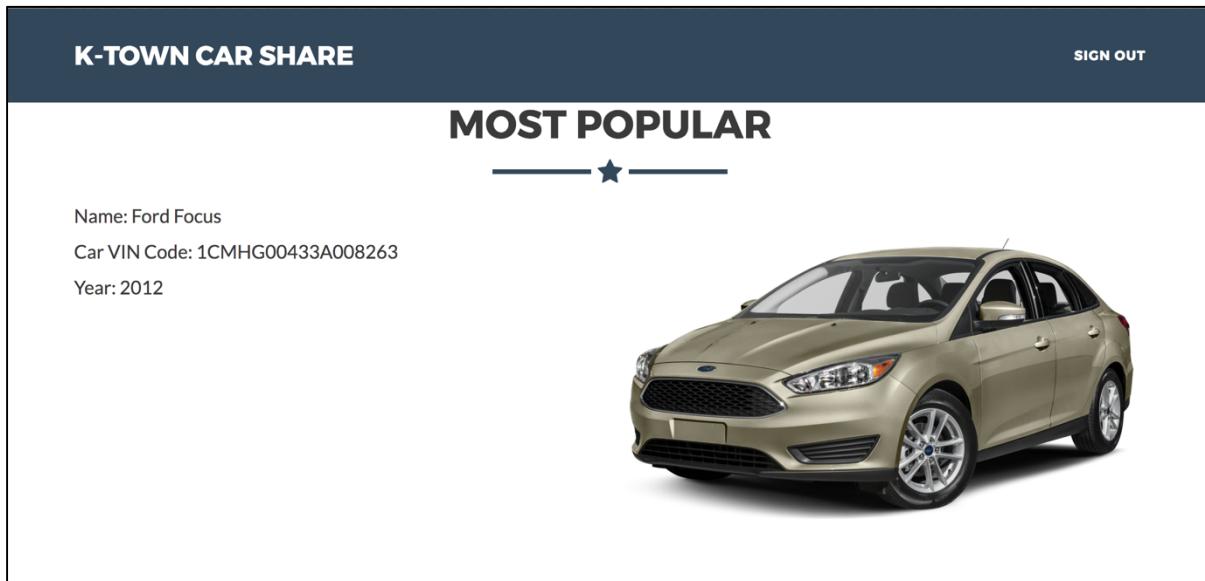
4.1. On the **Admin Main Page**, scroll down to the **Vehicle Management** section.
Click on the **Bottom Left** icon in the icon list.

4.2. A pop-up page will appear. Select either of these two options:

- Find out the Most Popular choices
- Find out the Least Popular choices



4.3. If you selected the “**Find out the Most Popular choices**” option, you will be directed to another page showing the most popular vehicle in the KTCS fleet.



4.4. If you selected the “**Find out the Least Popular choices**” option, you will be directed to another page showing the least popular vehicle in the KTCS fleet.

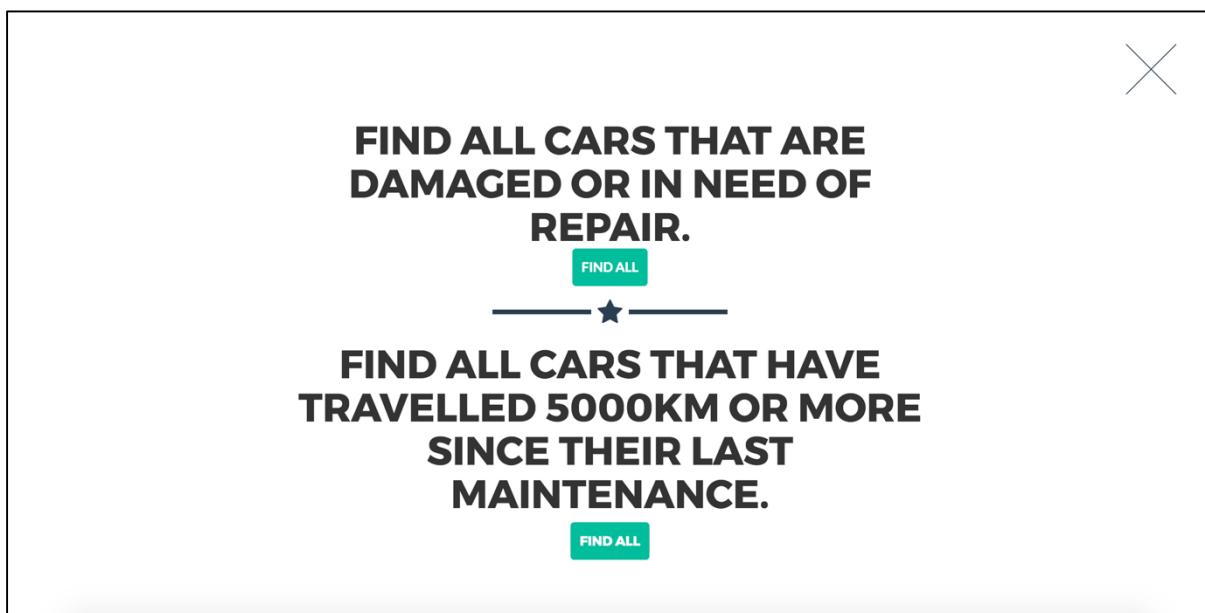
5. Find all vehicles that are damaged or need repair / vehicles with more than 5000 km traveled since their last maintenance

5.1. On the **Admin Main Page**, scroll down to the **Vehicle Management** section.

Click on the **Bottom Middle** icon in the icon list.

5.2. A pop-up page will appear. Select either of these two options:

- Find all cars that are damaged or in need of repair
- Show all cars that have travelled 5000km or more since their last maintenance



5.3. If you selected the “**Find all cars that are damaged or in need of repair**” option, you will be directed to another page showing all vehicles in the KTCS fleet that are damaged or need repair.

A screenshot of a web page titled "K-TOWN CAR SHARE" at the top left and "SIGN OUT" at the top right. The main title is "DAMAGED / NEED REPAIR VEHICLES" with a star below it. Below the title, there are two entries:

- Make: Ford
CarVINcode: 1CMHG00433A008263
Status: damaged
- Make: Honda
CarVINcode: 1HGBH41JXMN109186
Status: not running

5.4. If you selected the “**Find all cars that have travelled 5000km or more since their last maintenance**” option, you will be directed to another page showing all vehicles in the KTCS fleet that have travelled more than 5000km since their last maintenance.

The screenshot shows a dark blue header with "K-TOWN CAR SHARE" on the left and "SIGN OUT" on the right. Below the header is a large white section with the text "ALL CARS HAVE TRAVELED 5000KM OR MORE SINCE THEIR LAST MAINTENANCE" in bold capital letters, flanked by two short horizontal lines with a star in the center. At the bottom of this section is a teal-bordered box containing the following information:

CarVINcode: 1CMHG00433A008263
Make: Ford
Model: Focus
Distance: 22199

6. Show all reservations on a given day

6.1. On the **Admin Main Page**, scroll down to the **Vehicle Management** section. Click on the **Bottom Right** icon in the icon list.

6.2. A pop-up page will appear. Choose a date in the dropdown menu and click the “**FIND ALL**” button.

The screenshot shows a white pop-up window with a black 'X' in the top right corner. The title "SHOW ALL THE RESERVATIONS FOR A GIVEN DAY." is centered at the top, with a star icon below it. Below the title is a instruction: "Choose the date to show all reservations in that day." A date picker is displayed, showing "2017-04-06" in a blue input field, a "FIND ALL" button, and a calendar for April 2017. The calendar highlights the date "6" in blue. The days of the week are labeled from Sunday to Saturday. The month header "April 2017" includes a dropdown arrow and navigation arrows for the previous and next months.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

- 6.3.** You will be directed to another page showing the all the KTCS reservations on the chosen date.

The screenshot shows a web application interface for 'K-TOWN CAR SHARE'. At the top, there is a dark header bar with the 'K-TOWN CAR SHARE' logo on the left and 'SIGN OUT' and 'YOUR ACCOUNT' links on the right. Below the header, the main title 'ALL THE RESERVATIONS' is centered in a large, bold, black font. Underneath the title is a decorative horizontal line consisting of two short black bars connected by a single black star. Below this line, several reservation details are listed in a plain black font:

- Reservation Number: 27054871
- Member Number: 31406207
- Car VIN code: 1BENZ41JXMN109186
- Rental Starting From: 2017-04-06
- Length Of Reservation: 1
- Access Code: 4755
- Reservation Date: 2017-04-06

This conclude the User's Guide (Management) for the Vehicle Management section. The following pages are the management guide for the **Customer Management** section.

User's Guide (Management) - Customer Management:

1. Generate a customer's monthly invoice

- 1.1.** On the **Admin Main Page**, scroll down to the **Customer Management** section. You can navigate quickly to this section by clicking the “Go to Customer Management” sub header on the **Admin Main Page**.

The screenshot shows the K-Town Car Share Admin Main Page. At the top, there is a dark blue header with "K-TOWN CAR SHARE" on the left and "SIGN OUT" on the right. Below the header is a teal-colored section titled "KTCS MANAGEMENT" in large white letters, with a decorative star icon centered below it. A sub-header "ALL AVAILABLE ADMIN FUNCTIONS ARE LOCATED HERE" is present. A green oval highlights the "Go to Customer Management" link, which is underlined and located near the bottom of the teal section. An arrow points from the text "1.1." in the user guide to this highlighted link. At the bottom of the page, there is a white section titled "VEHICLE MANAGEMENT". The URL "https://localhost/Project/AdminMain.html#membermanagement" is visible at the very bottom of the page.

- 1.2.** In the “GENERATE CUSTOMER MONTHLY INVOICE” subsection, enter in the customer’s login email and select a month. Click the “GENERATE” button to generate the monthly invoice.

The screenshot shows the Customer Management page. At the top, there is a dark blue header with "K-TOWN CAR SHARE" on the left and "SIGN OUT" on the right. Below the header is a white section titled "CUSTOMER MANAGEMENT" in large black letters, with a decorative star icon centered below it. A sub-header "GENERATE CUSTOMER MONTHLY INVOICE" is present. Below this, there is a form with fields: "Email:" containing "megan.kat@hotmail.com", "For the Month of:", a dropdown menu set to "April", and a "GENERATE" button. At the bottom of the page, there is a section titled "RESPOND TO CUSTOMERS' COMMENTS:" with a link "SHOW ALL UNRESPONDED COMMENTS". The URL "https://localhost/Project/AdminMain.html#customermanagement" is visible at the very bottom of the page.

- 1.3.** You will be directed to another page showing the monthly invoice for the customer. It includes a list showing all the reservations the customer made in the chosen month, and a calculated total monthly invoice.

K-TOWN CAR SHARE SIGN OUT

MONTHLY INVOICE

★

Member: 31406207 - Email: megan.kat@hotmail.com - Month of: April

Car VIN code	Rental Start Date	Reservation Length (Days)	Daily Rental Fee (\$)	Total Amount Paid (\$)
1BENZ41JXMN109186	2017-04-06	1	60	60
1CMHG00433A008263	2017-04-04	1	50	50
1CMHG00433A008263	2017-04-06	2	50	100

Total Monthly Invoice is: \$210

2. Respond to customers' reservation feedbacks

- 2.1.** On the **Admin Main Page**, scroll down to the **Customer Management** section. You can navigate quickly to this section by clicking the “Go to Customer Management” sub header on the **Admin Main Page**.
- 2.2.** In the “RESPOND TO CUSTOMERS’ COMMENTS” subsection, click the “SHOW ALL UNRESPONDED COMMENTS” button to proceed to the next page.

K-TOWN CAR SHARE SIGN OUT

CUSTOMER MANAGEMENT

★

GENERATE CUSTOMER MONTHLY INVOICE

Email:

For the Month of:

GENERATE

RESPOND TO CUSTOMERS’ COMMENTS:

SHOW ALL UNRESPONDED COMMENTS



2.3. After clicking the “SHOW ALL UNRESPONDED COMMENTS” button, you will be directed to the **Respond Comment Page**. This is where management can view every single customer’s feedback and reply to the feedback. Click on the “Give Response” button on any of these cells to reply to a customer’s feedback.

K-TOWN CAR SHARE SIGN OUT

ALL CUSTOMER FEEDBACK

— ★ —

Choose which feedback that you want to give a reply to.

CommentID: 593772
MemberNum: 54827205
CarVINcode: 1HGCM82633A004352
Rating: 4
Customer Feedback: Excellent! Will reserve again in the future.
Give Response

CommentID: JS768591
MemberNum: 63974562

2.4. After clicking the “Give Response” button, you will be directed to another page where you can give a response to the customer’s feedback. Click the submit button to send your response.

K-TOWN CAR SHARE SIGN OUT

GIVE RESPONSE

— ★ —

Type your response below:

We appreciate your business!

Submit Reset