

**Cohort One**

JAVA DEVELOPER – SUMMATIVE CAPSTONE PROJECT

**Test Plan and Test Results**

Project Title

**Car Rental Management**

**Start Date:** 9<sup>th</sup> February, 2021

**End Date:** 17<sup>th</sup> May, 2021

**Prepared by:**

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**Prepared on:** 17<sup>th</sup> May, 2021

This document shows the tests conducted on the carDate Vehicle Hiring system.

The application has been deployed to Heroku at this URL:

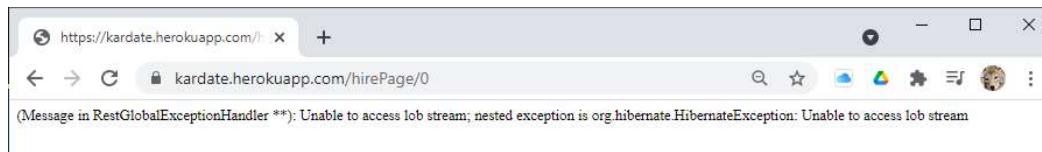
<https://kardate.herokuapp.com/>

Note the following:

1. Sign-in user name, password, and their roles. The user “sikon” having the roles ADMIN and MANAGER has access to all functions.

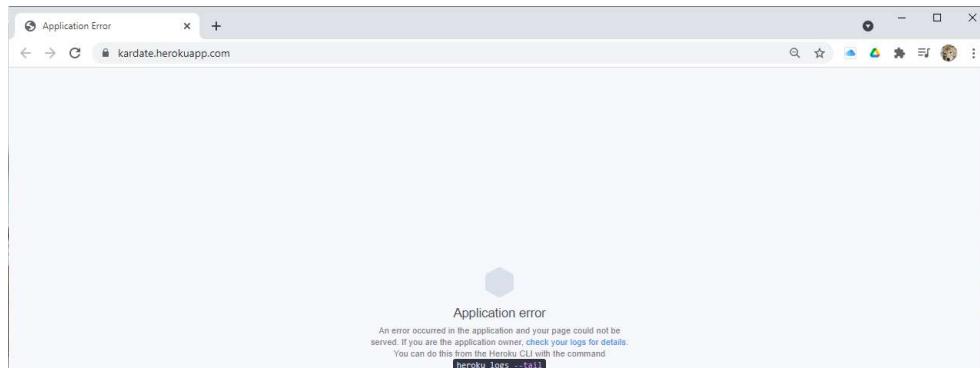
User name	Password	Roles
root	root	ADMIN
sikon	sikon	ADMIN, MANAGER
peter	peter	USER

2. Grace period has been set up as 0 in Configurations page. This disables the checking of input date time (for Hiring begin and return) against current date time, so as to facilitate testing. You can change it to non-zero. However, once changed to non-zero, it cannot be changed back to 0. Refer to Section 9 on Grace period override.
3. Blank Vehicle Pictures (happens only to Heroku deployment). In the application, Customer pictures are stored in the database, and Vehicle pictures stored in the file system. Pictures hosted in the file system tend to disappear after a few days and will show up blanked on the web pages. You can delete and re-upload the Pictures if you want to.
4. Unable to access lob stream (happens only to Heroku deployment): if you encounter this error while opening the Hires page, go to Customers page using this url (<https://kardate.herokuapp.com/custPage/0>), delete Pictures attached to Customers who have Hires, as well as Pictures of Alternate contacts of Customers with Hires. If this still does not resolve the problem, delete all Pictures of all Customers and all Vehicles.



The mechanism of this error is not understood as it only happens to Heroku deployment started on May 11<sup>th</sup>. There is not enough time to investigate.

5. Application error: if you encounter this error upon sign-in, the application has crashed. This happens only on Heroku. Please contact the LEE SikOn at [encore428@gmail.com](mailto:encore428@gmail.com) to reset the application.



Section 1 to 5 walks through all the business features of the application. Users will be able to use this application after reading and understanding those test cases.

Section 6 fills in additional technical tests to make up for missing test cases required by test cases template.

Section 7 shows how Configurations can be used to vary the Hire fare computation, and how such Configuration changes affect new and existing Hires.

Section 8 repeats Javascript intensive test cases using two other browsers, Edge and Firefox, as required by test cases template.

Section 9 demonstrates a testing environment support feature bases on Grace Period setting on Configurations.

Section	screen shots count	Objectives
1	15	Shows the setting up of the application system with basic configuration, Employees, Customers, and Vehicles.
2	96	Demonstrates the viewing, creation, and modifications of Customers and Vehicles, and the associated upload and maintenance of their pictures.
3	20	The creation of a Hire. A pinned Customer and pinned Vehicle concept is used to pick a Customer and a Vehicle to be matched into a Hire, so as to eliminate a separate search and select process during the creation of Hire. An Invoice in PDF form, which acts like a Car collection notes can be generated after the creation of a Hire.
4	23	Shows the return of a Hire, and the generation of a finalized Invoice in PDF form.
5	22	Shows many ways Hire records are filtered and sorted to facilitate the business operation. It also demonstrates change of personal password and initial menu.
6	29	This section conducts technical unit tests base on the general criteria to verify the input validation capabilities of each input form.
7	22	Showcase the use of Configuration and how it affects the application processing.
8	47	This section tests two more browsers, Edge and Firefox, by repeating test cases that involve Javascripts.
9	14	This section further tests another feature meant for test system, which is the use of Grace Period of 0.

Test cases template:

<b>Functional</b>	<b>Result</b>
All the mandatory fields should be validated.	Done, refer to Section 6.
Test the numeric fields should not accept the alphabets and proper error message should display.	Done, refer to Section 6.
Test to see negative numbers, if allowed for numeric fields.	Done, refer to Section 6.
Test the max length of every field to ensure the data is not truncated.	Done, refer to Section 6.
Test that a confirmation message should display delete operations.	Done, through out all sections.
Test the Java script is properly working in different browsers (IE, Firefox, Chrome, safari and Opera).	Done, tested on Chrome, Firefox, and Edge, refer to Section 8.
<b>Usability</b>	
Web page content should be correct without any spelling or grammatical errors	Done
Check for broken links and images.	Done, none found.
Home link should be there on every single page.	Done.
Check if the dropdown data is not truncated due to the field size	Done.

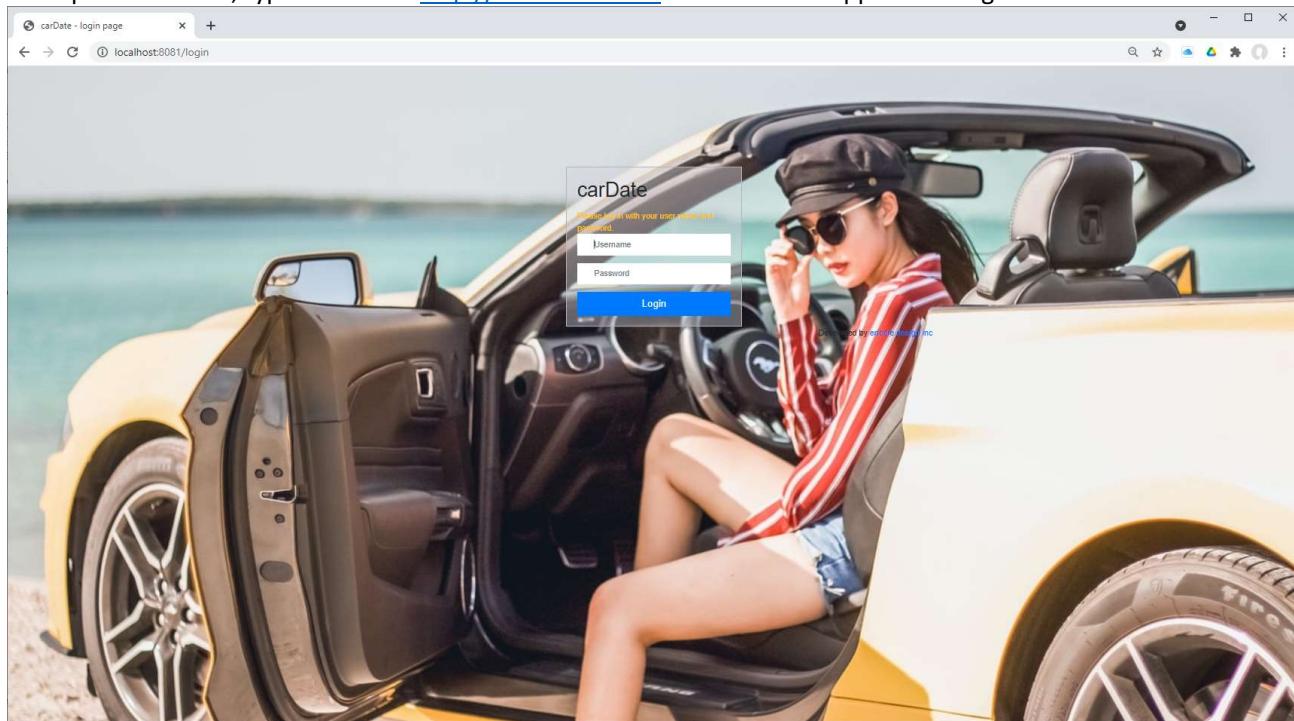
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## 1. System set-up

This section sets up the application system from scratch, and performs tests on creation of Customer and Vehicle data.

1. With the application shut down, execute the drop table statements from step 1 of “src\test\sql\_scripts”. This empties the database. Execute step 2 also if the tables are not already created.
2. Now start the application. The required application tables will be created by the system.
3. Now execute step 4 of “src\test\sql\_scripts” to create basic application static data and the initial ROLE\_ADMIN user “root”.
4. You are now ready to execute step 5 of “src\test\sql\_scripts” to create business configuration parameters. There are two versions of the script. For test environment, the value for EFF\_DATE and OFFSET\_DAYS are push back by 30 days (or any number of days you want for your test plan). For production system, it should be 0. Go on and execute the test version.
5. Open a browser, type in the url “<http://localhost:8081>” to access the application login screen:



As system owner, Login as “root” using password “root”.

6. Login successful. Note on the top right that says "logout root". Here it indicates that the Employee by the login name "root" is signed in. Note that the Initial Menu is "home", and "home" refers to this page where the Employee views his own profile. On the top left of the page, there is a home icon. Clicking that icon will always bring you to this page.

The screenshot shows a web browser window titled "carDate - My Profile" with the URL "localhost:8081/homePage". The page has a blue header bar with icons for a car, employees, configurations, and a search bar. The main content area is titled "My Profile" and contains a form with the following data:

Employee Id :	1	
Sign-in name:	root	
Password:	Old password: <input type="text"/>	New password: <input type="text"/>
Repeat:	<input type="text"/>	
Full name:	Simon Sridhar	
Phone no:	+9198989897	
Email:	root@carDate.com	
Job title:	Director	
Initial Menu:	home	
is Active?:	true	
Sign-in expiring:	2021-07-27	
Password expiring:	2021-05-27	

At the bottom right of the form are "Save" and "Reset" buttons. Below the form, the text "Copyright © carDate Ltd." is visible.

Click "Employees" on the top navigation bar.

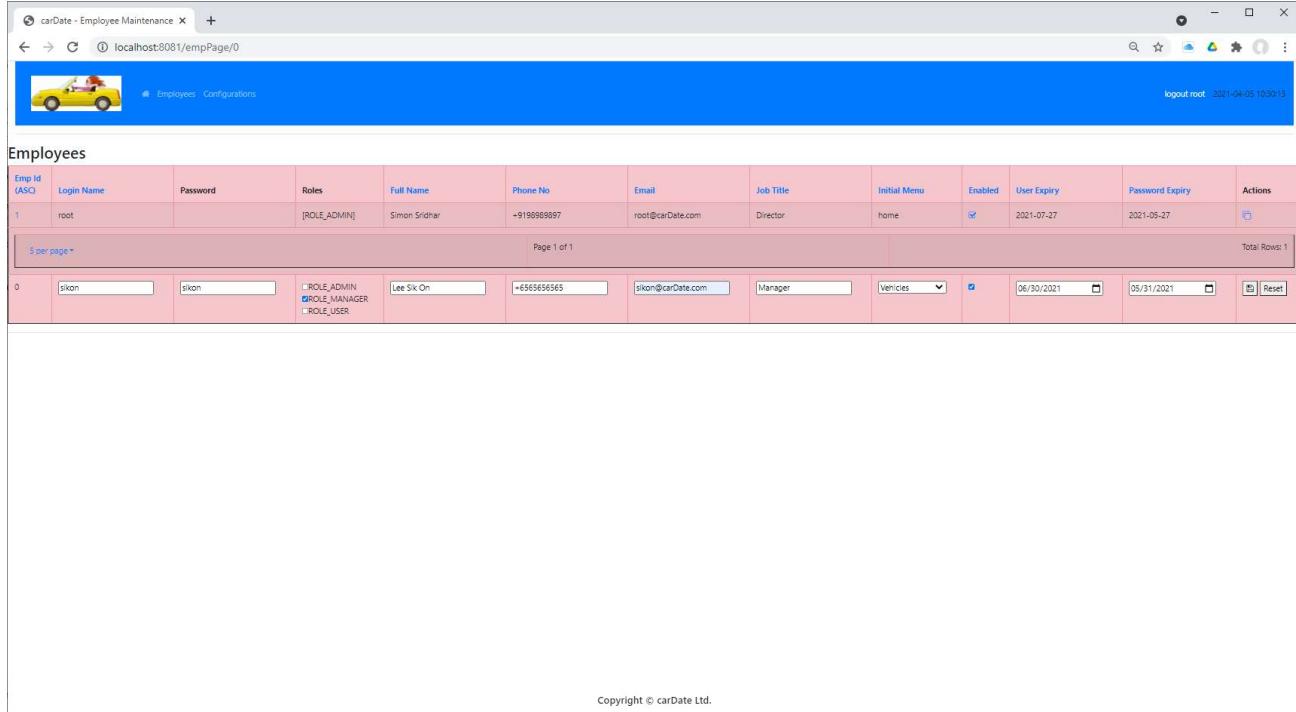
7. On this screen, the system owner can view and maintain Employees. You can see that "root" has been pre-created.

The screenshot shows a web browser window titled "carDate - Employee Maintenance" with the URL "localhost:8081/empPage/0". The page has a blue header bar with icons for a car, employees, configurations, and a search bar. The main content area is titled "Employees" and displays a table of employee data. The table has the following columns:

Emp Id (ASQ)	Login Name	Password	Roles	Full Name	Phone No	Email	Job Title	Initial Menu	Enabled	User Expiry	Password Expiry	Actions
1	root		[ROLE\_ADMIN]	Simon Sridhar	+9198989897	root@carDate.com	Director	home		2021-07-27	2021-05-27	

Below the table, there are buttons for "5 per page" and "Total Rows: 1". At the bottom right of the table, there are "Save" and "Reset" buttons. Below the table, the text "Copyright © carDate Ltd." is visible.

8. Input a new user and assign to it the role ROLE\_MANAGER as below. Note that we are assigning for the manager the initial menu Vehicles.



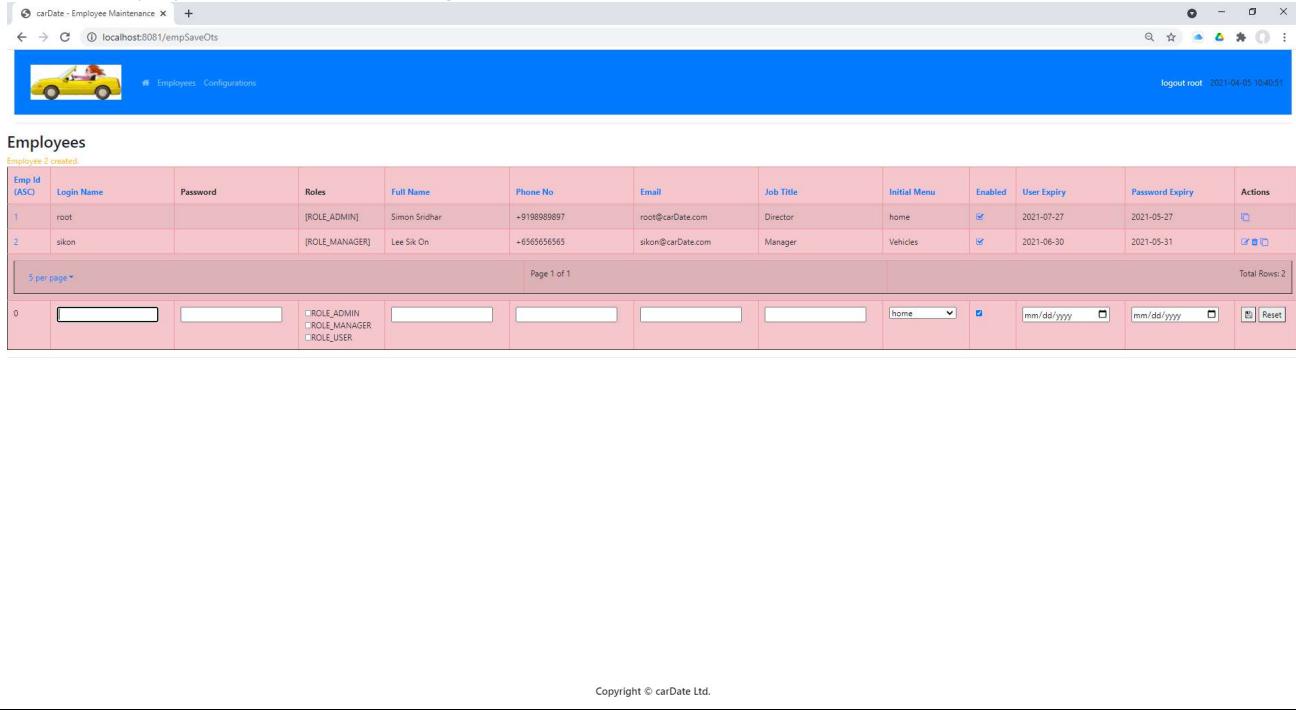
The screenshot shows a web browser window titled "carDate - Employee Maintenance". The URL is "localhost:8081/empPage/0". The page has a blue header bar with a yellow car icon, the text "Employees Configurations", and a "logout root" link. Below the header is a table titled "Employees" with columns: Emp Id (ASC), Login Name, Password, Roles, Full Name, Phone No, Email, Job Title, Initial Menu, Enabled, User Expiry, Password Expiry, and Actions. A single row is visible for "root" with the following values:

1	root		[ROLE_ADMIN] [ROLE_MANAGER] [ROLE_USER]	Simon Sridhar	+9198989897	root@carDate.com	Director	home	<input checked="" type="checkbox"/>	2021-07-27	2021-05-27	<input type="button" value="Edit"/>
---	------	--	---	---------------	-------------	------------------	----------	------	-------------------------------------	------------	------------	-------------------------------------

Below the table are buttons for "5 per page", "Page 1 of 1", and "Total Rows: 1". At the bottom right are "Reset" and "Save" buttons. The footer says "Copyright © carDate Ltd."

Now click the Save button () to save.

9. The Employee record for the manager is created.



The screenshot shows a web browser window titled "carDate - Employee Maintenance". The URL is "localhost:8081/empSaveOts". The page has a blue header bar with a yellow car icon, the text "Employees Configurations", and a "logout root" link. Below the header is a table titled "Employees" with columns: Emp Id (ASC), Login Name, Password, Roles, Full Name, Phone No, Email, Job Title, Initial Menu, Enabled, User Expiry, Password Expiry, and Actions. Two rows are now visible:

1	root		[ROLE_ADMIN]	Simon Sridhar	+9198989897	root@carDate.com	Director	home	<input checked="" type="checkbox"/>	2021-07-27	2021-05-27	<input type="button" value="Edit"/>
2	sikon		[ROLE_MANAGER]	Lee Sik On	+6565656565	sikon@carDate.com	Manager	Vehicles	<input checked="" type="checkbox"/>	2021-06-30	2021-05-31	<input checked="" type="checkbox"/> <input type="button" value="Edit"/>

Below the table are buttons for "5 per page", "Page 1 of 1", and "Total Rows: 2". At the bottom right are "Reset" and "Save" buttons. The footer says "Copyright © carDate Ltd."

10. Click the “Clone” button ( against the newly created Manager to create another user:

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You can see that some but not all of the details are cloned from the existing Employee. Type in the details as per the next screen shot, with Password same as Login Name, and click the save button to save the new record.

11. A third user is created.

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Notice the “edit” button next to both newly created users is absent against “root”. This is because an Employee is not allowed to edit himself. In order to enable editing of “root”, we will grant the Manager the additional role of ROLE\_ADMIN. Click the edit button ( next to the Manager.

12. The Manager is brought down to the edit area. Note the non-zero Emp Id on the left. This means upon savings, the Employee record is update, not created.

Emp Id (ASC)	Login Name	Password	Roles	Full Name	Phone No	Email	Job Title	Initial Menu	Enabled	User Expiry	Password Expiry	Actions
1	root		[ROLE_ADMIN]	Simon Sridhar	+919898989897	root@carDate.com	Director	home	<input checked="" type="checkbox"/>	2021-07-27	2021-05-27	<a href="#">Edit</a>
2	sikon		[ROLE_MANAGER]	Lee Sik On	+6565656565	sikon@carDate.com	Manager	Vehicles	<input checked="" type="checkbox"/>	2021-06-30	2021-05-31	<a href="#">Edit</a> <a href="#">Delete</a>
3	peter		[ROLE_USER]	Peter	+6012345678	peter@carDate.com	Officer	Customers	<input checked="" type="checkbox"/>	2021-06-30	2021-05-31	<a href="#">Edit</a> <a href="#">Delete</a>

5 per page \* Page 1 of 1 Total Rows: 3

2 [sikon] [ ] [ROLE\_ADMIN ROLE\_MANAGER ROLE\_USER] Lee Sik On +6565656565 sikon@carDate.com Manager Vehicles  06/30/2021 mm/dd/yyyy  05/31/2021 mm/dd/yyyy [Edit](#) [Reset](#)

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Check on the check-box next to ROLE\_ADMIN and click on the “save” button.

13. Notice that an additional role is added to the Manager:

Emp Id (ASC)	Login Name	Password	Roles	Full Name	Phone No	Email	Job Title	Initial Menu	Enabled	User Expiry	Password Expiry	Actions
1	root		[ROLE_ADMIN]	Simon Sridhar	+919898989897	root@carDate.com	Director	home	<input checked="" type="checkbox"/>	2021-07-27	2021-05-27	<a href="#">Edit</a>
2	sikon		[ROLE_ADMIN, ROLE_MANAGER]	Lee Sik On	+6565656565	sikon@carDate.com	Manager	Vehicles	<input checked="" type="checkbox"/>	2021-06-30	2021-05-31	<a href="#">Edit</a> <a href="#">Delete</a>
3	peter		[ROLE_USER]	Peter	+6012345678	peter@carDate.com	Officer	Customers	<input checked="" type="checkbox"/>	2021-06-30	2021-05-31	<a href="#">Edit</a> <a href="#">Delete</a>

5 per page \* Page 1 of 1 Total Rows: 3

0 [ ] [ ] [ROLE\_ADMIN ROLE\_MANAGER ROLE\_USER] Lee Sik On +6565656565 sikon@carDate.com Manager Vehicles home  mm/dd/yyyy  mm/dd/yyyy [Edit](#) [Reset](#)

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Do also note that only “Employees” and “Configurations” are visible on the navigation bar. These two are the only functions granted to ROLE\_ADMIN.

Now click on the logout hyperlink on the top right to log out, and login against as the Manager.

14. The Manager has initial menu set to "Vehicles", and therefore is shown this "Vehicles" page upon login.

carDate - Vehicle Maintenance

localhost:8081/vehPage/0



Customers Vehicles Hires Employees Configurations

logout sukon 2021-04-05 10:54:28

## Vehicles

Filter:

Vehicle Id (ASCI)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire History	Actions
<input type="button" value="Show only Hired"/>												Total Rows: 0
0	<input type="text"/>		Aston Martin <input type="button" value="▼"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>		<input style="width: 50px;" type="text" value="FREE"/> <input type="button" value="▼"/>	<input type="text" value="0.0"/>	<input type="button" value="Print"/> <input type="button" value="Reset"/>	

Page 1 of 0

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Note that the navigation bar contains the items Customers, Vehicles, Hires, Employees, and Configurations. These are granted to Employees with `ROLE_ADMIN` and `ROLE_MANAGER` roles.

15. Create the first Vehicle as below:

carDate - Vehicle Maintenance

localhost:8081/vehPage/0



Customers Vehicles Hires Employees Configurations

logout sikon 2023-04-05 11:34:45

## Vehicles

Filter:		<input type="button" value="Apply"/>	<input type="button" value="Clear"/>									
Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
	Show only Hired			5 per page ▾								Total Rows: 0
0	<input type="text" value="BMW101"/>		<input type="text" value="BMW"/>	<input type="text" value="X5"/>	<input type="text" value="4800"/>	<input type="text" value="350"/>	<input type="text" value="241"/>		<input type="text" value="FREE"/>	<input type="text" value="100"/>	<input type="button" value="Reset"/>	

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Then click the save button () to save.



Then click the save button () to save.

## 16. The first Vehicle is created.

The screenshot shows a web-based application titled "carDate - Vehicle Maintenance". The main content area displays a table titled "Vehicles" with one row of data. The columns include: Vehicle Id (ASC), License Plate, Pictures, Brand, Model, Engine, BHP, Top Speed, Current Hirer, Status, Daily Rate, Hire history, and Actions. The single entry is: Vehicle Id 7, License Plate BMW101, Pictures (image icon), Brand BMW, Model X5, Engine 4800, BHP 350, Top Speed 241, Current Hirer (empty), Status FREE, Daily Rate \$100.00, and Actions (edit, delete, details). Below the table are filtering and pagination controls: "Show only Hired", "5 per page", "Page 1 of 1", and "Total Rows: 1". At the bottom right are "Reset" and "Search" buttons. The top navigation bar includes links for Customers, Vehicles, Hires, Employees, and Configurations. A blue header bar at the top right shows the user "logout sikon" and the date "2021-04-05 11:36:51".

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Now click Customers.

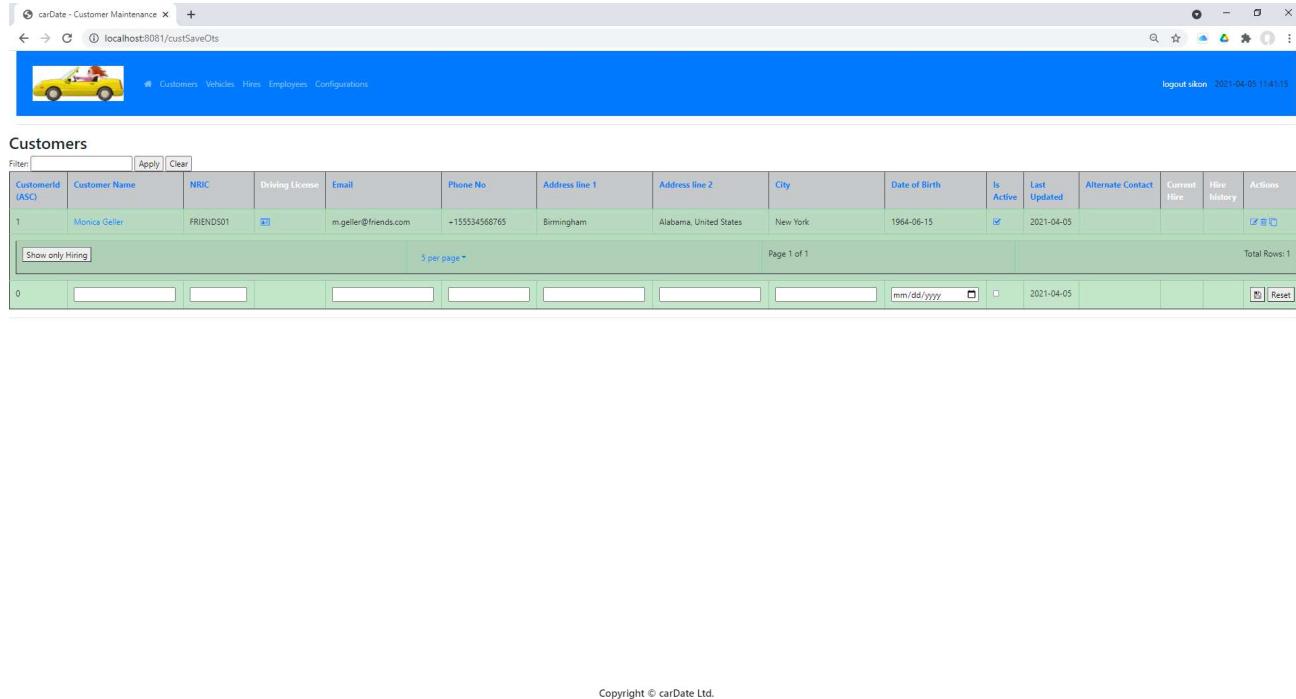
## 17. The Customers page is displayed to view and maintain Customer. Enter the first customer as below:

The screenshot shows a web-based application titled "carDate - Customer Maintenance". The main content area displays a table titled "Customers" with one row of data. The columns include: CustomerId (ASC), Customer Name, NRIC, Driving License, Email, Phone No, Address line 1, Address line 2, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hirer, Hire history, and Actions. The single entry is: CustomerId 0, Customer Name Monica Geller, NRIC FRIENDS01, Driving License (image icon), Email m.geller@friends.com, Phone No +15534568765, Address line 1 Birmingham, Address line 2 Alabama, United States, City New York, Date of Birth 06/15/1964, Is Active checked, Last Updated (date), Alternate Contact (image icon), Current Hirer (empty), Hire history (empty), and Actions (edit, delete, details). Below the table are filtering and pagination controls: "Show only Hiring", "5 per page", "Page 1 of 0", and "Total Rows: 0". At the bottom right are "Reset" and "Search" buttons. The top navigation bar includes links for Customers, Vehicles, Hires, Employees, and Configurations. A blue header bar at the top right shows the user "logout sikon" and the date "2021-04-05 11:40:40".

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Then click the save button to save.

## 18. Customer is created.



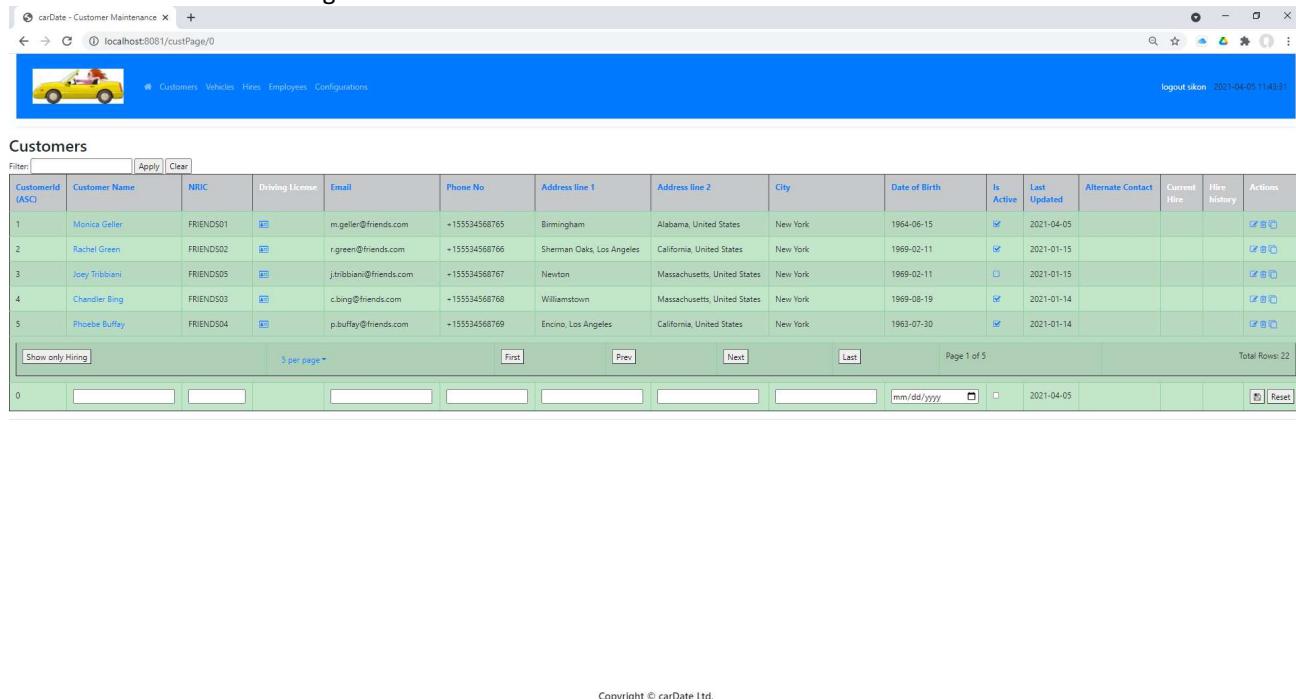
The screenshot shows a web-based application titled "carDate - Customer Maintenance". The main content area is titled "Customers". A table displays one customer record:

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions
1	Monica Geller	FRIENDS01	<input type="button" value="Edit"/>	m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Below the table, there are buttons for "Show only Hiring", "5 per page", "Page 1 of 1", and "Total Rows: 1". At the bottom, there are buttons for "mm/dd/yyyy", "2021-04-05", and "Reset".

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## 19. Proceed to execute step 7 of "src\test\sql\_scripts" to create more Customers and Vehicles. The click Reset button on the bottom right.



The screenshot shows the same application after creating five more customer records. The table now contains six rows of customer data:

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions
1	Monica Geller	FRIENDS01	<input type="button" value="Edit"/>	m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				<input type="button" value="Edit"/> <input type="button" value="Delete"/>
2	Rachel Green	FRIENDS02	<input type="button" value="Edit"/>	r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-01-15				<input type="button" value="Edit"/> <input type="button" value="Delete"/>
3	Joey Tribbiani	FRIENDS03	<input type="button" value="Edit"/>	j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-01-15				<input type="button" value="Edit"/> <input type="button" value="Delete"/>
4	Chandler Bing	FRIENDS03	<input type="button" value="Edit"/>	c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-01-14				<input type="button" value="Edit"/> <input type="button" value="Delete"/>
5	Phoebe Buffay	FRIENDS04	<input type="button" value="Edit"/>	p.buffy@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-01-14				<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Below the table, there are buttons for "Show only Hiring", "5 per page", "First", "Prev", "Next", "Last", "Page 1 of 5", and "Total Rows: 22". At the bottom, there are buttons for "mm/dd/yyyy", "2021-04-05", and "Reset".

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Note on the navigation row that shows these info:

- Show only Hiring button will be explained later.
- That we are displaying 5 items per page.
- That we are at page 1 of a total of 5 pages of Customers.
- That there are a total of 22 Customers to display.

Now go on and click "Vehicles" on the navigation bar.

20. 5 of 16 Vehicles are shown.

carDate - Vehicle Maintenance

localhost:8081/vehPage/0

Customers Vehicles Hires Configurations

logout skon 2021-04-05 13:21:11

Vehicles

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions	
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00			
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00			
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		FREE	\$120.00			
10	MCS2000		Mercedes	S Class	2000	254	249		FREE	\$120.00			
11	AUD6		Audi	RS6	4000	591	250		FREE	\$240.00			

Show only Hired

5 per page ▾

First | Prev | Next | Last

Page 1 of 4 Total Rows: 16

0  Aston Martin  0  0  FREE  0.0

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Click logout and complete this section of the set-up/test.

## 2. Static Data Maintenance

This section demonstrates the features available for the viewing and maintenance of Customers and Vehicles.

- Employee "peter" has been set up as ROLE\_USER and has initial menu Customers. Log in as "peter".

CustomerId (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions	
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05					
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05					
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05					
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05					
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05					

localhost:8081

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Customers page is shown. Click on "5 per page" drop down menu at the navigation row.  
Click "10 per page".

- Customers are now displayed 10 per page:

CustomerId (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions	
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05					
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05					
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05					
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05					
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05					
6	Ross Green	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05					
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14					
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14					
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15					
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14					

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Click on the picture icon () under "Driving License" next to Monica Geller.

3. A Modal appears for you to attach a picture of the driving license to this Customer.

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+15534568765	New York, United States	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				<input checked="" type="checkbox"/>
2	Rachel Green	FRIENDS02		r.green@friends.com	+15534568766	Sherman Oaks, Los Angeles, California, United States	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				<input checked="" type="checkbox"/>
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+15534568767	Newton, Massachusetts, United States	1969-02-11	<input type="checkbox"/>	2021-04-05				<input checked="" type="checkbox"/>
4	Chandler Bing	FRIENDS04		c.bing@friends.com	+15534568768	Williamstown, Massachusetts, United States	1969-03-19	<input checked="" type="checkbox"/>	2021-04-05				<input checked="" type="checkbox"/>
5	Phoebe Buffay	FRIENDS05		p.buffy@friends.com	+15534568769	Encino, Los Angeles, California, United States	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				<input checked="" type="checkbox"/>
6	Ross Green	FRIENDS06		ross.green@friends.com	+15534568761	Flushing, New York, United States	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				<input checked="" type="checkbox"/>
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+15534568775	Brooklyn, New York, United States	1954-04-29	<input type="checkbox"/>	2021-01-14				<input checked="" type="checkbox"/>
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+15534568785	Newark, New Jersey, United States	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				<input checked="" type="checkbox"/>
9	Kramer Cosmo	SEINFELD3		k.cosmo@seinfeld.com	+15534568795	Culver City, California, United States	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				<input checked="" type="checkbox"/>
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+15534568715	Manhattan, New York, United States	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				<input checked="" type="checkbox"/>

Show only Hiring    10 per page    First    Prev    Next    Last    Page 1 of 3    Total Rows: 22

mm/dd/yyyy    2021-04-05     Reset

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Click "Choose File":

4. On the file selection window, pick a picture with size over 2MB:

File name: 2015-01-17 11.06.09.jpg    Custom Files (\*.png;\*.jpg;\*.jpeg)    Open    Cancel

and click Open.

5. A preview of the selected picture is shown.

The screenshot shows a customer maintenance interface. On the left, a table lists customers with columns for CustomerID, Customer Name, NRIC, Driving License, Email, and Phone No. The customer Monica Geller is selected. On the right, a modal window titled "Customer Driving license" displays a preview of a driving license photo. Below the preview is a button labeled "Upload picture". The status bar at the bottom right shows "Page 1 of 3" and "Total Rows: 22".

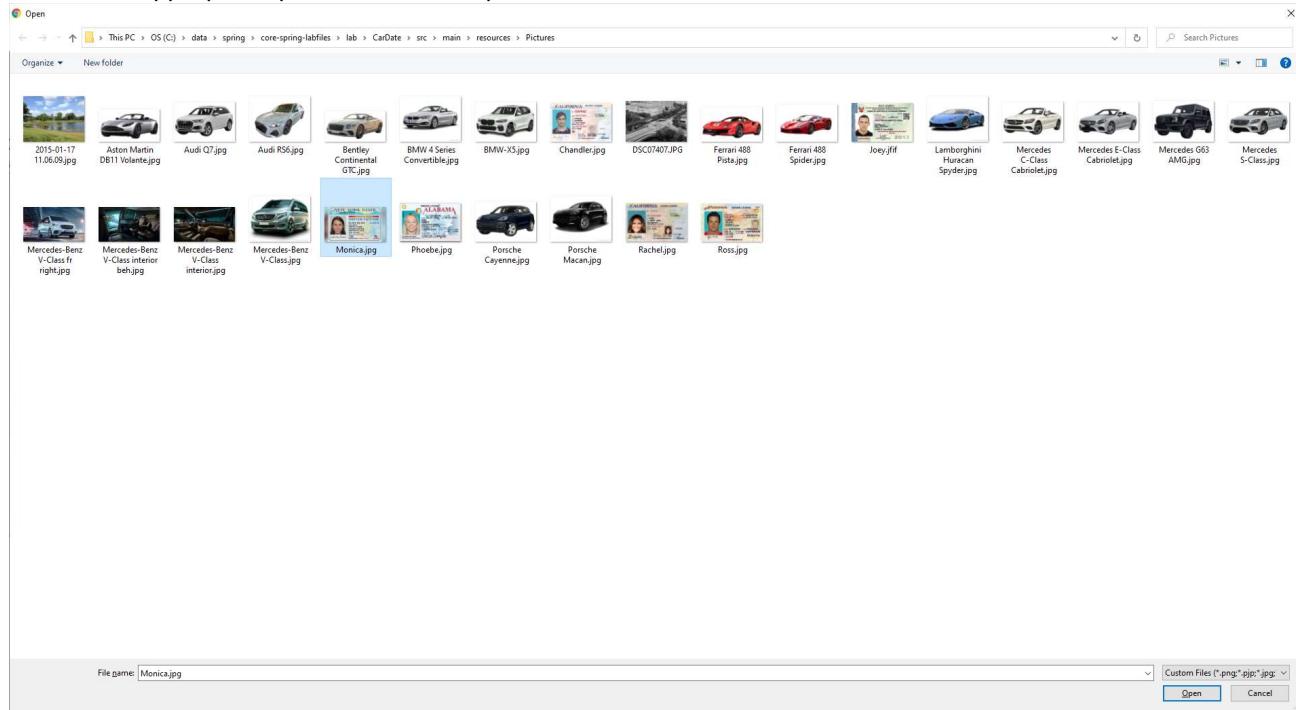
Click "Upload picture".

6. The upload is rejected as the file size exceeded the upper limit.

The screenshot shows the same customer maintenance interface. The "Upload picture" button is clicked, and a modal window appears with the message "Picture file size exceeded the maximum, please pick a picture of smaller file size." The status bar at the bottom right shows "Page 1 of 3" and "Total Rows: 22".

Click [Choose file] to pick another picture.

## 7. Pick an appropriate picture and click Open.



## 8. A preview of the picture is shown.

The screenshot shows a web browser window titled 'carDate - Customer Maintenance'. The URL is 'localhost:8081/custPic/1'. The page displays a table of customer information with columns for Customer ID, Customer Name, NRIC, Driving License, Email, and Phone No. The table includes rows for Monica Geller, Rachel Green, Joey Tribbiani, Chandler Bing, Phoebe Buffay, Ross Green, Jerry Seinfeld, George Costanza, Kramer Cosmos, and Elaine Benes. An 'Actions' column contains edit and delete icons. On top of the table, a modal dialog box titled 'Customer Driving license' is open, showing a preview of the selected image 'Monica.jpg'. The dialog has fields for 'Choose File' (set to 'Monica.jpg') and 'Upload picture'. At the bottom of the dialog is a 'Close' button. The main table has a footer with pagination and search/filter options.

Click [Upload picture] button to upload it.

9. The picture is uploaded, and reflected on the Modal, and also as thumbnail on Customers page.

The screenshot shows a modal window titled "Customer Driving license" with a thumbnail of a driver's license featuring a woman's face. Below the thumbnail are buttons for "Choose File" (disabled), "Replace with new picture", and "Delete picture". A message "New picture uploaded successfully." is displayed above a "Close" button. The background shows a table of customer data with various columns like Customer Name, NRIC, Driving License, Email, Phone No, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, and Hire History. The customer Monica Geller is selected, and the modal is overlaid on the table.

Click "Close".

10. Return from Modal.

The screenshot shows the same customer list as before, but the modal has been closed. The customer Monica Geller is no longer highlighted. The table structure remains the same, showing the same 10 rows of customer data.

Click on "Rachel Green" under Customer name. This will pin the Customer.

11. Rachel appears on the top of the screen as pinned Customer. Pinned Customer facilitates Customer related operations. This will be demonstrated later.

The screenshot shows a web-based application for managing customers. At the top, there's a navigation bar with links for Customers, Vehicles, and Hires. On the right side of the header, it says "logout peter 2021-04-05 12:51:33". Below the header is a blue banner with a yellow car icon and the text "Customers". A search bar labeled "Filter:" with "Apply" and "Clear" buttons is present. The main content area is a table titled "Customers" with 10 rows of data. The first row for Rachel Green has a blue pin icon next to her name. The table includes columns for Customer ID, Customer Name, NRIC, Driving License, Email, Phone No, Address Line 1, Address Line 2, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, and Hire History. At the bottom of the table, there are buttons for "Show only Hiring", "10 per page", "First", "Prev", "Next", "Last", and "Page 1 of 3". To the right, it says "Total Rows: 22". Below the table is a search bar with fields for "mm/dd/yyyy" and "2021-04-05", and a "Reset" button.

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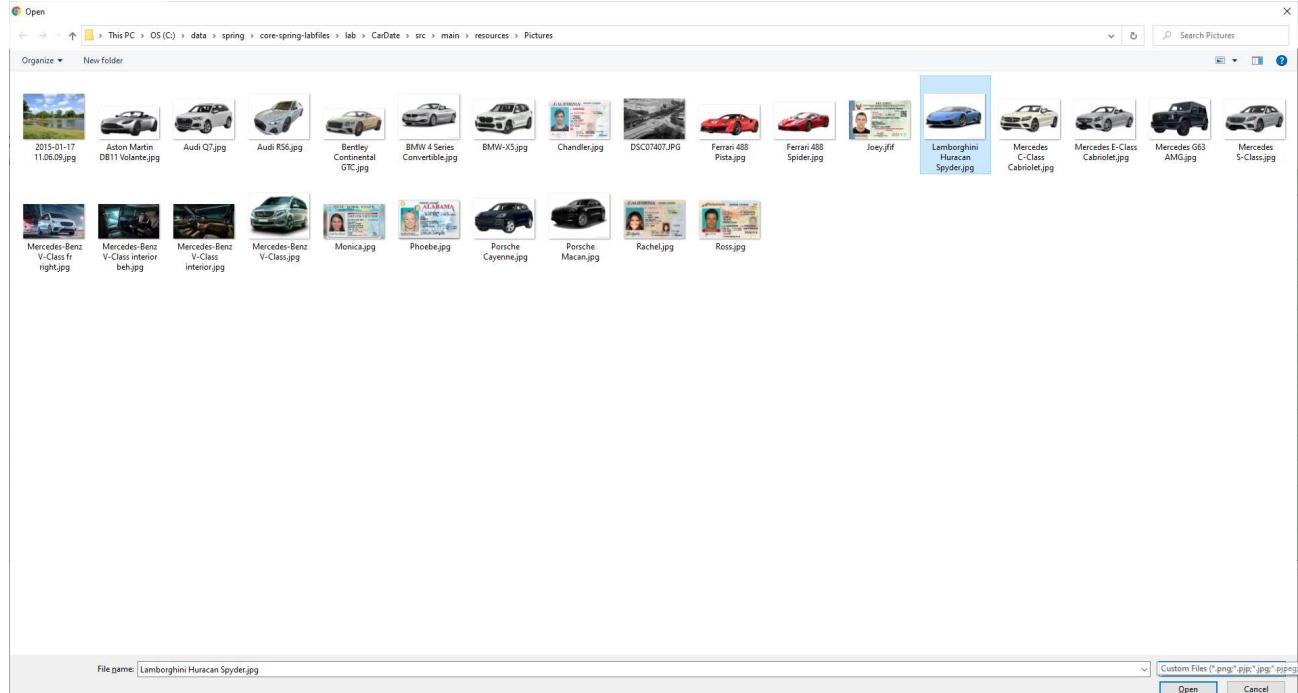
- Click on the picture icon (🖼) under “Driving License” next to Rachel. You may click the one at the pin Customer, or the one in the Customer list. They are the same.

12. A blank Modal is shown.

This screenshot shows the same customer management interface as the previous one, but with a modal window open over the customer list. The modal is titled "Customer Driving license" and contains a single input field labeled "Choose File" with the placeholder "No file chosen". Below the input field is a button labeled "Upload picture". In the background, the customer list table is visible, showing the same 10 rows of data. The first row for Rachel Green still has the blue pin icon. The modal has a "Close" button in the top right corner. At the bottom of the modal, it says "Page 1 of 3" and "Total Rows: 22". Below the modal, the copyright notice "Copyright © carDate Ltd." is visible.

- Click [Choose File].

### 13. Pick a car picture and click Open.



### 14. Preview of the chosen picture is shown.

The screenshot shows a web browser window titled 'carDate - Customer Maintenance'. The URL is 'localhost:8081/custPic'. The main page displays a list of customers with columns for Customer ID, Customer Name, NRIC, Driving License, Email, and Phone No. A modal dialog titled 'Customer Driving license' is open, showing a preview of the selected car picture ('Lamborghini Huracan Spyder.jpg'). The modal has a 'Choose File' button and an 'Upload picture' button. The background page shows a customer named 'Rachel Green' with details like 'FRIENDS02' and 'r.green@friends.com'. The bottom of the page includes navigation buttons for 'First', 'Prev', 'Next', and 'Last', and a footer with copyright information.

15. Note that the picture on the Modal is refreshed, as well as the two thumbnails on the Customers page behind.

The screenshot shows a web application interface. At the top, there's a browser header with the URL "localhost:8081/custPict/2". Below it is a navigation bar with links for "Customers", "Vehicles", and "Hires". The main area has a title "Customer Driving license" and a sub-section for "Rachel Green". It displays a blue sports car thumbnail and a file input field with the placeholder "Choose File". A message "New picture uploaded successfully" is shown above a "Close" button. In the background, a "Customers" table is visible, listing various characters from the TV show Friends. The table includes columns for Customer ID, Name, NRIC, Driving License, Email, Phone No., Address, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, and Actions. The table shows entries for Monica Geller, Rachel Green, Joey Tribbiani, Chandler Bing, Phoebe Buffay, Ross Green, Jerry Seinfeld, George Costanza, Kramer Cosmo, and Elaine Benes.

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You can correct the mistake by replacing it will a correct picture. Click [Choose File] again.

16. Pick the correct picture and click Open.

The screenshot shows a Windows File Explorer window displaying a grid of images. The images include various cars (Aston Martin DB11 Volante, Audi Q7, Audi RS6, Bentley Continental GT, BMW 4 Series Convertible, BMW X5, Chandler, DSC07407, Ferrari 488 Pista, Ferrari 488 Spider, Joey, Lamborghini Huracan Spyder, Mercedes-Benz C-Class Cabriolet, Mercedes-Benz E-Class Cabriolet, Mercedes-Benz G63, Mercedes-Benz S-Class) and ID cards (Monica, Phoebe, Rachel, Ross). The path in the address bar is "This PC > OS (C) > data > spring > core-spring-labfiles > lab > CarDate > src > main > resources > Pictures". At the bottom, there's a file selection dialog with the file name "Rachel.jpg" and buttons for "Open" and "Cancel".

17. Preview of the chosen picture is shown.

CustomerID (ASO)	Customer Name	NRIC	Driving License	Email	Phone No
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769
6	Ross Green	FRIENDS06		ross.green@friends.com	+155534568761
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568765
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715

Click [Replace with new picture].

18. The picture on the Modal is replaced, and as well as the thumbnails behind.

CustomerID (ASO)	Customer Name	NRIC	Driving License	Email	Phone No
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769
6	Ross Green	FRIENDS06		ross.green@friends.com	+155534568761
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568765
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715

You can also delete a picture. Click Delete picture.

19. You will get a prompt, to which you can click “OK” to proceed, or “Cancel” to back out.

localhost:8081 says  
Proceed to delete this picture?

OK Cancel

RACHEL GREEN  
DL 01111111  
EXP 01/01/2020  
LA DODGE RUDY JANE  
2344 2ND AVENUE CA 92101  
DOB 21/01/1987  
SEX F GENDER M  
MOTOR VEHICLE  
CLASS C  
NO RESTRICTIONS  
01011007  
Choose File No file chosen  
Replace with new picture Delete picture  
New picture uploaded successfully Close

CustomerID (ASO)	Customer Name	NRIC	Driving License	Email	Phone No		Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions	
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765		New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766		New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+155534568767		New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768		New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769		New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Green	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05			
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14			
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14			
9	Kramer Cosmo	SEINFELD3		k.cosmo@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15			
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14			

Show only Hiring 10 per page First Prev Next Last Page 1 of 3 Total Rows: 22

mm/dd/yyyy 2021-04-05 Rachel Green

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Click OK to proceed.

20. Note that the picture on Modal, as well as the two thumbnails behind, all disappeared.

RACHEL GREEN  
DL 01111111  
EXP 01/01/2020  
LA DODGE RUDY JANE  
2344 2ND AVENUE CA 92101  
DOB 21/01/1987  
SEX F GENDER M  
MOTOR VEHICLE  
CLASS C  
NO RESTRICTIONS  
01011007  
Choose File No file chosen  
Upload a picture  
Picture deleted successfully Close

CustomerID (ASO)	Customer Name	NRIC	Driving License	Email	Phone No		Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions	
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05			
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05			
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05			
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05			
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05			
6	Ross Green	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05			
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14			
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14			
9	Kramer Cosmo	SEINFELD3		k.cosmo@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15			
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14			

Show only Hiring 10 per page First Prev Next Last Page 1 of 3 Total Rows: 22

mm/dd/yyyy 2021-04-05 Rachel Green

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Now click Close.

## 21. Proceed to upload driving license pictures for the 5 Customers from Rachel to Ross.

Screenshot of the carDate - Customer Maintenance application showing the 'Customers' list page. The page displays a table of customer records with columns for CustomerID, Customer Name, NRIC, Driving License, Email, Phone No, Address line 1, Address line 2, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, and Actions. The table includes rows for Monica Geller, Rachel Green, Joey Tribbiani, Chandler Bing, Phoebe Buffay, Ross Green, Jerry Seinfeld, George Costanza, Kramer Cosmos, and Elaine Benes. The 'Actions' column for Ross Green contains an edit icon (pencil). The status bar at the bottom right shows 'logout peter 2021-04-05 13:35:16'.

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		r.geller@friends.com	+155534568765	Sherman Oaks, Los Angeles	California, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffy@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Green	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

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6    Ross Green    FRIENDS06    ross.green@friends.com    +155534568761    Flushing    New York, United States    New York    11/02/1969       2021-04-05       0   

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Now we demonstrate Customer editing. Click the edit icon () under Actions at the row corresponding to Ross.

## 22. Details of Ross is brought down to the edit area.

Screenshot of the carDate - Customer Maintenance application showing the 'Customers' list page. The page displays a table of customer records with columns for CustomerID, Customer Name, NRIC, Driving License, Email, Phone No, Address line 1, Address line 2, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, and Actions. The table includes rows for Monica Geller, Rachel Green, Joey Tribbiani, Chandler Bing, Phoebe Buffay, Ross Green, Jerry Seinfeld, George Costanza, Kramer Cosmos, and Elaine Benes. The 'Actions' column for Ross Green contains an edit icon (pencil). The status bar at the bottom right shows 'logout peter 2021-04-05 13:35:16'.

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		r.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffy@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Green	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

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6    Ross Green    FRIENDS06    ross.green@friends.com    +155534568761    Flushing    New York, United States    New York    11/02/1969       2021-04-05       0   

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Go on and click the save button.

23. The application detected that there have not been any changes, and inform you accordingly, and leave Ross's record in the edit area.

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Proceed to change Ross's name from Ross Green to Ross Geller, and save it.

24. Ross's record is saved.

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25. Click the link icon ( under Alternate Contact at the row corresponding to Ross. Here you witness one usage of pinned Customer. This action is to tag Ross as the alternate contact of pinned Customer Rachel.

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Click OK.

26. Note that Ross Geller appears under Alternate Contact column for Rachel Green.

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05		Ross Geller		
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Let's do another one. Pin Phoebe Buffay.

## 27. With Phoebe pinned, nominate Chandler as her alternate contact.

carDate - Customer Maintenance   friends cast - Google Search   +

localhost:8081/custPin/5

localhost:8081 says  
Proceed to nominate "Chandler Bing" as alternate contact for "Phoebe Buffy"?

**OK**   **Cancel**

Customers															
Filter:		Apply		Clear											
CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534548769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534548766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05		Ross Geller		
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534548767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534548768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffy@friends.com	+155534548769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.green@friends.com	+155534548761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534548775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534548785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmo	SEINFELD3		k.cosmo@seinfeld.com	+155534548795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534548715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Show only Hiring   10 per page   First   Prev   Next   Last   Page 1 of 3   Total Rows: 22

mm/dd/yyyy   2021-04-05   Phoebe Buffay  

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Click OK.

## 28. Click Next to move to page 2.

carDate - Customer Maintenance   friends cast - Google Search   +

localhost:8081/custPage/1

localhost:8081 says  
Proceed to nominate "Chandler Bing" as alternate contact for "Phoebe Buffy"?

**OK**   **Cancel**

Customers															
Filter:		Apply		Clear											
CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
11	Neuman Dic	SEINFELD4		newman@seinfeld.com	+155534548725	New York	New York, United States	New York	1955-08-07	<input checked="" type="checkbox"/>	2021-01-14				
12	Frank Costanza	SEINFELD5		f.costanza@seinfeld.com	+155534548735	Upper West Side	New York, United States	New York	1972-06-08	<input checked="" type="checkbox"/>	2021-01-15				
13	Patrick Jane	MENTAL000		p.janes@mentalist.com	+155534548765	Launceston	Australia	Sacramento	1969-07-30	<input type="checkbox"/>	2021-01-15				
14	Teresa Lipson	MENTAL001		t.lipson@mentalist.com	+155534548765	Chicago	Illinois, United States	Sacramento	1972-06-19	<input checked="" type="checkbox"/>	2021-01-15				
15	Wayne Rigby	MENTAL005		w.rigby@mentalist.com	+155534548765	Chepstow	United Kingdom	Sacramento	1978-07-02	<input checked="" type="checkbox"/>	2021-01-15				
16	Kimball Cho	MENTAL004		k.cho@mentalist.com	+155534548765	San Francisco	California, United States	Sacramento	1973-03-16	<input checked="" type="checkbox"/>	2021-01-15				
17	Grace Van Pelt	MENTAL002		g.vanpelt@mentalist.com	+1555345483765	St. George	Utah, United States	Sacramento	1983-04-04	<input checked="" type="checkbox"/>	2021-01-15				
18	Murphy Brown	MURPHY01		m.brown@murphybrown.com	+155534668765	Beverly Hills	California, United States	Georgetown	1946-05-09	<input checked="" type="checkbox"/>	2021-01-15				
19	Conny Sherwood	MURPHY02		c.sherwood@murphybrown.com	+155534668765	Alexandria	Louisiana, United States	Georgetown	1964-09-14	<input checked="" type="checkbox"/>	2021-01-15				
20	Miles Silverberg	MURPHY03		m.silverberg@murphybrown.com	+155534668765	Evanston	Illinois, United States	Georgetown	1961-02-27	<input checked="" type="checkbox"/>	2021-01-15				

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mm/dd/yyyy   2021-04-05   Phoebe Buffay  

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Note that while Phoebe has been paged away, she stays the pinned customer.

29. Enter some text at the Filter box and click Apply. This causes only Customers with the filter text found in the details to be displayed. Try "ow".

carDate - Customer Maintenance | Friends cast - Google Search | + | localhost:8081/custFilter?keyword=ow | logout peter [2021-04-05 13:59:46]

**Customers**

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+15534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		cbing@friends.com	+15534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
15	Wayne Ripsby	MENTAL05		w.ripsby@mentalist.com	+15534561765	Chepstow	United Kingdom	Sacramento	1978-07-02	<input checked="" type="checkbox"/>	2021-01-15				
18	Murphy Brown	MURPHY01		m.brown@murphybrown.com	+155344668765	Beverly Hills	California, United States	Georgetown	1946-05-09	<input checked="" type="checkbox"/>	2021-01-15				
19	Conny Sherwood	MURPHY02		csherwood@murphybrown.com	+15534768765	Alexandria	Louisiana, United States	Georgetown	1964-09-14	<input checked="" type="checkbox"/>	2021-01-15				
20	Miles Silverberg	MURPHY03		m.silverberg@murphybrown.com	+155344888765	Evanston	Illinois, United States	Georgetown	1961-02-27	<input checked="" type="checkbox"/>	2021-01-15				
21	Frank Fontana	MURPHY04		f.fontana@murphybrown.com	+155344968765	Brooklyn	New York, United States	Georgetown	1949-08-24	<input checked="" type="checkbox"/>	2021-01-15				
22	Jim Dale	MURPHY05		j.dale@murphybrown.com	+15534168765	Saint Paul	Minnesota, United States	Georgetown	1936-05-23	<input checked="" type="checkbox"/>	2021-01-15				

Show only Hiring      10 per page \*      Page 1 of 1      Total Rows 7

mm/dd/yyyy    mm/dd/yyyy    2021-04-05    Phoebe Buffay   

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Note that the pinned Customer stays on the page despite not meeting the filter requirement.  
Now click the Clear button.

30. The Clear button removes the filter and return the page to show Customers without filter.

carDate - Customer Maintenance | Friends cast - Google Search | + | localhost:8081/custFilter?keyword=ow | logout peter [2021-04-05 13:59:46]

**Customers**

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+15534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+15534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+15534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS04		cbing@friends.com	+15534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+15534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+15534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+15534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-04-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155345988765	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmo	SEINFELD3		k.cosmo@seinfeld.com	+15534568795	Culver City	California, United States	New York	1969-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+15534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Show only Hiring      10 per page \*      First      Prev      Next      Last      Page 1 of 3      Total Rows 22

mm/dd/yyyy    mm/dd/yyyy    2021-04-05    Phoebe Buffay   

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To unpin a Customer, just click on her name once at the pinned Customer row.

31. The pinned Customer is dismissed and disappeared from the page.

Customers																
CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address Line 1	Address Line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions	
1	Monica Geller	FRIENDS01		m.geller@friends.com	+15534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05					
2	Rachel Green	FRIENDS02		r.green@friends.com	+15534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05		Ross Geller			
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+15534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05					
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+15534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05					
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+15534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05		Chandler Bing			
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+15534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05					
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+15534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14					
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+15534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14					
9	Kramer Cosmo	SEINFELD3		k.cosmo@seinfeld.com	+15534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15					
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+15534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14					

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32. Click on the active icon () under “Is Active” column on the Monica row.

Customers																
CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address Line 1	Address Line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions	
1	Monica Geller	FRIENDS01		m.geller@friends.com	+15534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05					
2	Rachel Green	FRIENDS02		r.green@friends.com	+15534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	De-activate Monica Geller		Ross Geller			
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+15534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05					
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+15534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05					
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+15534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05		Chandler Bing			
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+15534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05					
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+15534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14					
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+15534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14					
9	Kramer Cosmo	SEINFELD3		k.cosmo@seinfeld.com	+15534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15					
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+15534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14					

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### 33. You are prompted to de-activate Monica.

localhost:8081 says  
Proceed to de-activate "Monica Geller?"

**OK**   **Cancel**

Logout peter 2021-04-05 14:06:50

Customers															
CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Show only Hiring   10 per page   First   Prev   Next   Last   Page 1 of 3   Total Rows: 22

mm/dd/yyyy   2021-04-05  

localhost:8081/custAndOts/-1

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Click OK.

34. Monica is deactivated. You will notice that the Employee peter is not able to re-activate the Customer. The function is only granted to Employees with ROLE\_MANAGER.

localhost:8081/custAndOts/-1

Logout peter 2021-04-05 14:06:24

Customers															
CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Show only Hiring   10 per page   First   Prev   Next   Last   Page 1 of 3   Total Rows: 22

mm/dd/yyyy   2021-04-05  

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35. Now go on to tag 4 other Customers for alternate contacts as below:

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05		Chandler Bing		
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05		Ross Geller		
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05		Chandler Bing		
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05		Ross Geller		
5	Phoebe Buffay	FRIENDS04		p.buffy@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05		Chandler Bing		
6	Ross Geller	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05		Rachel Green		
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

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mm/dd/yyyy    2021-04-05     Reset

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36. To un-tag alternate contact, click on the eraser icon () under the Alternate Contact column. Try this on Chandler.

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05		Chandler Bing		
2	Rachel Green	FRIENDS02		r.green@friends.com	+155534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05		Ross Geller		
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05		Chandler Bing		
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05		Ross Geller		
5	Phoebe Buffay	FRIENDS04		p.buffy@friends.com	+155534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05		Chandler Bing		
6	Ross Geller	FRIENDS06		ross.green@friends.com	+155534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05		Rachel Green		
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

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Click OK.

### 37. And the alternate contact Chandler is cleared.

carDate - Customer Maintenance    friends cast - Google Search    |    +

localhost:8081/custLink/-4

Customers

Alternate contact of Customer [4] has been cleared.

Filter: [ ] Apply [ ] Clear

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155334568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05	Chandler Bing			
2	Rachel Green	FRIENDS02		r.green@friends.com	+155334568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05	Ross Geller			
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155334568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05	Chandler Bing			
4	Chandler Bing	FRIENDS04		c.bing@friends.com	+155334568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS05		p.buffy@friends.com	+155334568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05	Chandler Bing			
6	Ross Geller	FRIENDS06		ross.green@friends.com	+155334568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05	Rachel Green			
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155334568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155334568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155334568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155334568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

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0    mm/dd/yyyy    2021-04-05    [ ] Reset

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The Customer name under Alternate Contact column serves one more purpose. It pins that customer, so that you can easily pull out the details when needed. For example, you are trying to contact Joey, but he does not respond. So you look over to the Alternate Contact column and see Chandler. You just click “Chandler Bing” under the Alternate Contact column.

### 38. And Chandler Bing surfaces are the pinned Customer.

carDate - Customer Maintenance    friends cast - Google Search    |    +

localhost:8081/custPin/4

Customers

Filter: [ ] Apply [ ] Clear

CustomerID (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155334568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155334568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05	Chandler Bing			
2	Rachel Green	FRIENDS02		r.green@friends.com	+155334568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05	Ross Geller			
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+155334568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05	Chandler Bing			
4	Chandler Bing	FRIENDS04		c.bing@friends.com	+155334568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffy@friends.com	+155334568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05	Chandler Bing			
6	Ross Geller	FRIENDS06		ross.green@friends.com	+155334568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05	Rachel Green			
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155334568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155334568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+155334568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155334568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Show only Hiring    10 per page \*    First    Prev    Next    Last    Page 1 of 3    Total Rows: 22

0    mm/dd/yyyy    2021-04-05    Chandler Bing    [ ] Reset

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The clone icon ( ) allows you to create a new Customer by copying from an existing customer. They this on Phoebe.

### 39. Most of the details are copied. Use them to complete the creation of another Customer.

Screenshot of the carDate - Customer Maintenance application showing the Customers list page. The URL is localhost:8081/custUpdaOts/-/.

The page displays a table of customer records. A new record is being created for Chandler Bing (Customer ID 4). The table includes columns for Customer ID, Customer Name, NRIC, Driving License, Email, Phone No, Address line 1, Address line 2, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, and Actions.

Customer details for Chandler Bing:

4	Chandler Bing	FRIENDS03		cbing@friends.com	+15534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
---	---------------	-----------	--	-------------------	--------------	--------------	------------------------------	----------	------------	-------------------------------------	------------	--	--	--	--

Other customers listed:

1	Monica Geller	FRIENDS01		m.geller@friends.com	+15534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+15534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+15534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		cbing@friends.com	+15534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+15534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+15534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+15534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+15534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+15534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+15534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Page navigation and search controls are present at the bottom of the table.

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Note that although Phoebe is active, the cloning creates an inactive record. This is because the Employee peter is not of role ROLE\_MANAGER and is not authorized to create Customers of Active status.

### 40. Let's try to set Ursula to Active anyway.

Screenshot of the carDate - Customer Maintenance application showing the Customers list page. The URL is localhost:8081/custUpdaOts/-/.

The page displays a table of customer records. A new record is being created for Ursula Buffay (Customer ID 0). The table includes columns for Customer ID, Customer Name, NRIC, Driving License, Email, Phone No, Address line 1, Address line 2, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, and Actions.

Customer details for Ursula Buffay:

0	Ursula Buffay	FRIENDS07		ubuffy@friends.com	+15534568772	Encino, Los Angeles	California, United States	New York	07/30/1963	<input type="checkbox"/>	2021-04-05				
---	---------------	-----------	--	--------------------	--------------	---------------------	---------------------------	----------	------------	--------------------------	------------	--	--	--	--

Other customers listed:

1	Monica Geller	FRIENDS01		m.geller@friends.com	+15534568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+15534568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+15534568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		cbing@friends.com	+15534568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+15534568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+15534568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+15534568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+15534568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmos	SEINFELD3		k.cosmos@seinfeld.com	+15534568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+15534568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				

Page navigation and search controls are present at the bottom of the table.

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Click the save button.

#### 41. The unauthorized operation is detected and stopped by the application.

carDate - Customer Maintenance | Lisa Kudrow - Google Search | + | localhost:8081/custSaveOts

Customers

You are not allowed to create Customer at Active status.

CustomerId (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155334568765	Birmingham	Alabama, United States	New York	1964-06-19	<input type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155334568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155334568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155334568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155334568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+155334568761	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155334568773	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155334568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmo	SEINFELD3		k.cosmos@seinfeld.com	+155334568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155334568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				
<input type="button" value="Show only Hiring"/> <input type="button" value="10 per page"/> <input type="button" value="First"/> <input type="button" value="Prev"/> <input type="button" value="Next"/> <input type="button" value="Last"/> <span style="float: right;">Page 1 of 3</span>															
<span style="float: left;">Copyright © carDate Ltd.</span> Total Rows: 22															
0	Ursula Buffay	FRIENDS07		ubuffay@friends.com	+155334568772	Encino, Los Angeles	California, United States	New York	07/30/1963	<input type="checkbox"/>	2021-04-05	Chandler Bing		0	<input type="button" value="Reset"/>

Uncheck the Active flag and click the save button.

42. The cloned Customer is created, as it can be seen that the number of Customers has increased from 22 to 23. The new Customer is not visible because this page is sorted by CustomerId and the new Customer has the largest Id. You can tell that this page is sorted by Ascending CustomerId sequence by the (ASC) annotation below the column heading CustomerId.

carDate - Customer Maintenance | Lisa Kudrow - Google Search | + | localhost:8081/custSaveOts

Customers

CustomerId (ASC)	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire history	Actions
1	Monica Geller	FRIENDS01		m.geller@friends.com	+155334568765	Birmingham	Alabama, United States	New York	1964-06-15	<input type="checkbox"/>	2021-04-05				
2	Rachel Green	FRIENDS02		r.green@friends.com	+155334568766	Sherman Oaks, Los Angeles	California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05				
3	Joey Tribbiani	FRIENDS03		j.tribbiani@friends.com	+155334568767	Newton	Massachusetts, United States	New York	1969-02-11	<input type="checkbox"/>	2021-04-05				
4	Chandler Bing	FRIENDS03		c.bing@friends.com	+155334568768	Williamstown	Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05				
5	Phoebe Buffay	FRIENDS04		p.buffay@friends.com	+155334568769	Encino, Los Angeles	California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05				
6	Ross Geller	FRIENDS06		ross.geller@friends.com	+155334568771	Flushing	New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05				
7	Jerry Seinfeld	SEINFELD0		j.seinfeld@seinfeld.com	+155334568775	Brooklyn	New York, United States	New York	1954-04-29	<input type="checkbox"/>	2021-01-14				
8	George Costanza	SEINFELD2		g.costanza@seinfeld.com	+155334568785	Newark	New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14				
9	Kramer Cosmo	SEINFELD3		k.cosmos@seinfeld.com	+155334568795	Culver City	California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15				
10	Elaine Benes	SEINFELD1		e.benes@seinfeld.com	+155334568715	Manhattan	New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14				
0	Ursula Buffay	FRIENDS07		ubuffay@friends.com	+155334568772	Encino, Los Angeles	California, United States	New York	07/30/1963	<input type="checkbox"/>	2021-04-05	Chandler Bing		0	<input type="button" value="Reset"/>
<input type="button" value="Show only Hiring"/> <input type="button" value="10 per page"/> <input type="button" value="First"/> <input type="button" value="Prev"/> <input type="button" value="Next"/> <input type="button" value="Last"/> <span style="float: right;">Page 1 of 3</span>															
<span style="float: left;">Copyright © carDate Ltd.</span> Total Rows: 23															

Click on the column heading NRIC.

43. Note that the (ASC) annotation now moves to NRIC column. This indicates that the page is now sorted by NRIC in ascending sequence.

The screenshot shows a web-based application titled "carDate - Customer Maintenance". The main content area is a table titled "Customers" with the following columns: Customer ID, Customer Name, NRIC (ASC), Driving License, Email, Phone No, Address line 1, Address line 2, City, Date of Birth, Is Active, Last Updated, Alternate Contact, Current Hire, Hire history, and Actions. The table contains 17 rows of customer data. The "NRIC (ASC)" column header has an "(ASC)" annotation above it, indicating the sort order. The "Is Active" column header also has an annotation. The "Actions" column contains icons for edit, delete, and details. At the bottom of the table, there are buttons for "Show only Hiring", "10 per page", "First", "Prev", "Next", and "Last", along with a page number indicator "Page 1 of 3" and a total row count "Total Rows: 23". Below the table, there are input fields for filtering and sorting, and a date picker set to "2021-04-05". The status bar at the bottom right shows "logout peter 2021-04-05 14:40:16".

Note the newly created Customer Ursula now appears because of the NRIC value.  
Click column heading NRIC once more.

44. The (ASC) annotation turns into (DESC), but stays at NRIC column. Clicking the current sorted-by column heading reverses the sort order. Note that the current page number has changed from 1 to 3. This is a mechanism that derives a page number when the order is reversed, so that the page stays around the same set of records as before.

This screenshot shows the same application interface as the previous one, but with the NRIC column header clicked again, changing the sort order to descending. The "NRIC (DESC)" annotation is now present above the column header. The rest of the table structure and data remain the same. The footer and status bar are identical to the previous screenshot.

Click column heading Date of Birth.

45. When you switch sort field, the sort order changes to ascending, the annotation (ASC) moves to the nominated sort field, and page number goes back to 1.

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Most of the columns can be sorted.

46. Click Next to move to page 2.

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Note that you are on page 2. You will later return to Customers page, and you will go right onto this page, sorted by ascending Date of Birth.

47. Now let's go to Vehicles page. Click Vehicles on the navigation bar, and the following appears.

The screenshot shows a web browser window titled "carDate - Vehicle Maintenance" at "localhost:8081/vehPage/0". The top navigation bar includes links for Customers, Vehicles, and Hires. A yellow car icon is on the left. The main content area has a blue header "Vehicles". Below it is a table with columns: Pinned Customer Id, Customer Name, NRIC, Email, Phone No, Is Active, Alternate Contact, Current Hire, Hire history, and Actions. A single row is shown for "Chandler Bing" with ID 4. The table has a light green header and rows. At the bottom, there are buttons for "Show only Hired", "5 per page", "First", "Prev", "Next", "Last", "Page 1 of 4", and "Total Rows: 16".

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
4	Chandler Bing	FRIENDS03	cbing@friends.com	+155534568768	<input checked="" type="checkbox"/>				<input type="button" value="x"/>

Note that the pinned Customer continues to appear even on a Vehicles page. Also note that there are no buttons under the Actions column, and the Vehicle edit area is absent. This is because peter the Employee only has ROLE\_USER authority, and is not allowed to update Vehicles except for the albums.

48. You can also have pinned Vehicle. Click the License Plate BMW101, and it appears as pinned Vehicle.

The screenshot shows a web browser window titled "carDate - Vehicle Maintenance" at "localhost:8081/vehPin/". The top navigation bar includes links for Customers, Vehicles, and Hires. A yellow car icon is on the left. The main content area has a blue header "Vehicles". Below it is a table with columns: Pinned Customer Id, Customer Name, NRIC, Email, Phone No, Is Active, Alternate Contact, Current Hire, Hire history, and Actions. A single row is shown for "Chandler Bing" with ID 4. The table has a light green header and rows. The vehicle row for "BMW101" is highlighted with a yellow background. At the bottom, there are buttons for "Show only Hired", "5 per page", "First", "Prev", "Next", "Last", "Page 1 of 4", and "Total Rows: 16".

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
4	Chandler Bing	FRIENDS03	cbing@friends.com	+155534568768	<input checked="" type="checkbox"/>				<input type="button" value="x"/>

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49. Click Customers at the navigation bar, and the display switches back to Customers page. Note that the pinned Vehicle is shown here, and the pinned Customer too. Do note that the page number, sort field and sort order for Customers page are all retained.

Pinned Vehicle Id	License Plate	Model	Brand	Daily Rate	Status	Hired to	Hire history	Actions																																																																																																												
7	BMW101	XS	BMW	100.0	FREE			x																																																																																																												
<b>Customers</b>																																																																																																																				
Filter: <input type="text"/> <input type="button" value="Apply"/> <input type="button" value="Clear"/> <table border="1"> <thead> <tr> <th>Customer Id</th> <th>Customer Name</th> <th>NRIC</th> <th>Driving License</th> <th>Email</th> <th>Phone No</th> <th>Address line 1</th> <th>Address line 2</th> <th>City</th> </tr> </thead> <tbody> <tr><td>4</td><td>Chandler Bing</td><td>FRIENDS03</td><td></td><td>cbing@friends.com</td><td>+15553456768</td><td>Williamstown</td><td>Massachusetts, United States</td><td>New York</td></tr> <tr><td>5</td><td>Phoebe Buffay</td><td>FRIENDS04</td><td></td><td>pbuffay@friends.com</td><td>+15553456769</td><td>Encino, Los Angeles</td><td>California, United States</td><td>New York</td></tr> <tr><td>23</td><td>Ursula Buffay</td><td>FRIENDS07</td><td></td><td>ubuffay@friends.com</td><td>+15553456772</td><td>Encino, Los Angeles</td><td>California, United States</td><td>New York</td></tr> <tr><td>1</td><td>Monica Geller</td><td>FRIENDS01</td><td></td><td>m.geller@friends.com</td><td>+15553456765</td><td>Birmingham</td><td>Alabama, United States</td><td>New York</td></tr> <tr><td>19</td><td>Corky Sherwood</td><td>MURPHY02</td><td></td><td>c.sherwood@murphybrown.com</td><td>+15553476765</td><td>Alexandria</td><td>Louisiana, United States</td><td>Georgetown</td></tr> <tr><td>2</td><td>Rachel Green</td><td>FRIENDS02</td><td></td><td>r.green@friends.com</td><td>+15553456766</td><td>Sherman Oaks, Los Angeles</td><td>California, United States</td><td>New York</td></tr> <tr><td>3</td><td>Joey Tribbiani</td><td>FRIENDS05</td><td></td><td>j.tribbiani@friends.com</td><td>+15553456767</td><td>Newton</td><td>Massachusetts, United States</td><td>New York</td></tr> <tr><td>13</td><td>Patrick Jane</td><td>MENTAL00</td><td></td><td>p.jane@mentalist.com</td><td>+15553456765</td><td>Launceston</td><td>Australia</td><td>Sacramento</td></tr> <tr><td>4</td><td>Chandler Bing</td><td>FRIENDS03</td><td></td><td>cbing@friends.com</td><td>+15553456768</td><td>Williamstown</td><td>Massachusetts, United States</td><td>New York</td></tr> <tr><td>6</td><td>Ross Geller</td><td>FRIENDS06</td><td></td><td>ross.geller@friends.com</td><td>+15553456761</td><td>Fushing</td><td>New York, United States</td><td>New York</td></tr> <tr><td>14</td><td>Teresa Lisbon</td><td>MENTAL001</td><td></td><td>t.lisbon@mentalist.com</td><td>+15553456765</td><td>Chicago</td><td>Illinois, United States</td><td>Sacramento</td></tr> </tbody> </table> Page 2 of 3      Total Rows 23									Customer Id	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City	4	Chandler Bing	FRIENDS03		cbing@friends.com	+15553456768	Williamstown	Massachusetts, United States	New York	5	Phoebe Buffay	FRIENDS04		pbuffay@friends.com	+15553456769	Encino, Los Angeles	California, United States	New York	23	Ursula Buffay	FRIENDS07		ubuffay@friends.com	+15553456772	Encino, Los Angeles	California, United States	New York	1	Monica Geller	FRIENDS01		m.geller@friends.com	+15553456765	Birmingham	Alabama, United States	New York	19	Corky Sherwood	MURPHY02		c.sherwood@murphybrown.com	+15553476765	Alexandria	Louisiana, United States	Georgetown	2	Rachel Green	FRIENDS02		r.green@friends.com	+15553456766	Sherman Oaks, Los Angeles	California, United States	New York	3	Joey Tribbiani	FRIENDS05		j.tribbiani@friends.com	+15553456767	Newton	Massachusetts, United States	New York	13	Patrick Jane	MENTAL00		p.jane@mentalist.com	+15553456765	Launceston	Australia	Sacramento	4	Chandler Bing	FRIENDS03		cbing@friends.com	+15553456768	Williamstown	Massachusetts, United States	New York	6	Ross Geller	FRIENDS06		ross.geller@friends.com	+15553456761	Fushing	New York, United States	New York	14	Teresa Lisbon	MENTAL001		t.lisbon@mentalist.com	+15553456765	Chicago	Illinois, United States	Sacramento
Customer Id	Customer Name	NRIC	Driving License	Email	Phone No	Address line 1	Address line 2	City																																																																																																												
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<input type="button" value="Show only Hiring"/> <input type="button" value="10 per page"/> <input type="button" value="First"/> <input type="button" value="Prev"/> <input type="button" value="Next"/> <input type="button" value="Last"/> <input type="button" value="mm/dd/yyyy"/> <input type="button" value="2021-04-05"/> <input type="button" value="Chandler Bing"/> <input type="button" value="Reset"/>																																																																																																																				

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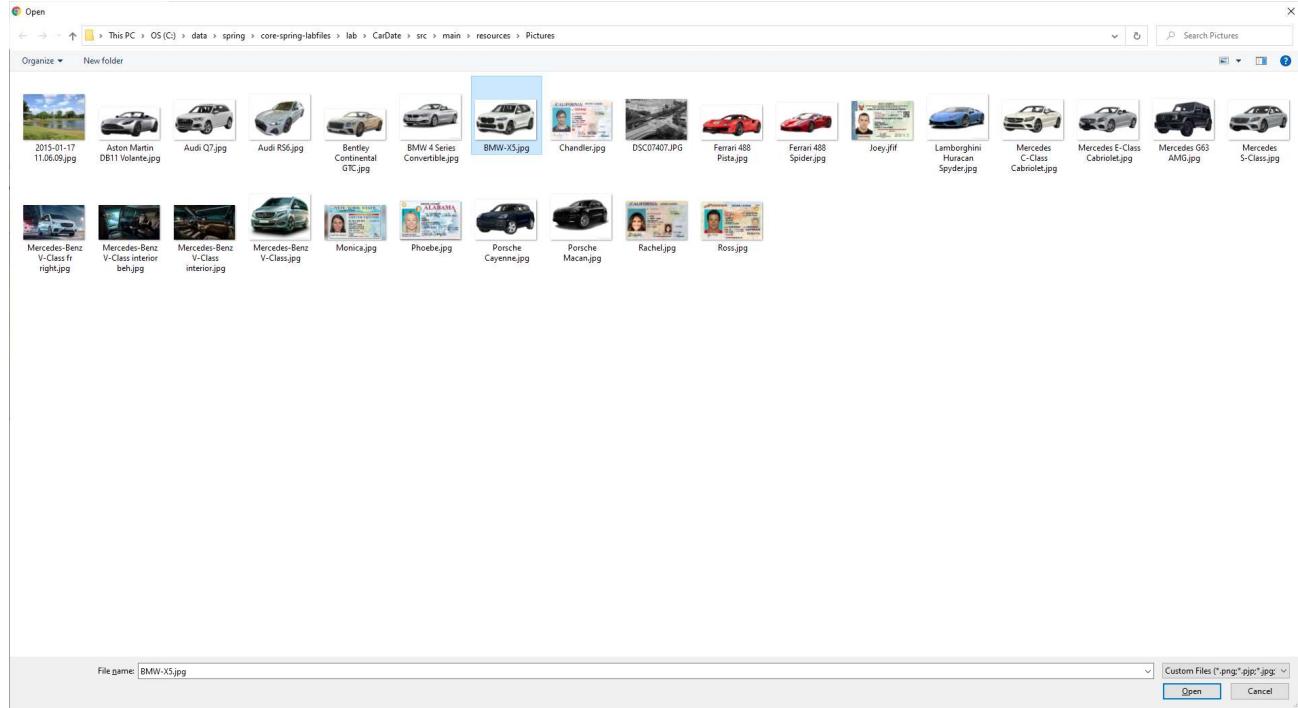
50. Click Vehicles at navigation bar to go back Vehicles page, and click on the picture icon ( next to BMW101 to maintain the album of this Vehicle.

Pinned Customer Id	Customer Name	NRIC	Email	Actions																																																																													
4	Chandler Bing	FRIENDS03	cbing@friends.com	x																																																																													
<b>Vehicles</b>																																																																																	
Filter: <input type="text"/> <input type="button" value="Apply"/> <input type="button" value="Clear"/> <table border="1"> <thead> <tr> <th>Vehicle Id (ASC)</th> <th>License Plate</th> <th>Pictures</th> <th>Brand</th> <th>Model</th> <th>Engine</th> <th>BHP</th> <th>Top Speed</th> <th>Current Hire</th> <th>Status</th> <th>Daily Rate</th> <th>Hire history</th> <th>Actions</th> </tr> </thead> <tbody> <tr><td>7</td><td>BMW101</td><td></td><td>BMW</td><td>XS</td><td>4800</td><td>350</td><td>241</td><td></td><td>FREE</td><td>\$100.00</td><td></td><td>x</td></tr> <tr><td>8</td><td>BEV101</td><td></td><td>Bentley</td><td>Continental GTC</td><td>6000</td><td>552</td><td>314</td><td></td><td>FREE</td><td>\$150.00</td><td></td><td></td></tr> <tr><td>9</td><td>MCD0000</td><td></td><td>Mercedes</td><td>C Class Cabriolet</td><td>2000</td><td>390</td><td>248</td><td></td><td>FREE</td><td>\$120.00</td><td></td><td></td></tr> <tr><td>10</td><td>MCS2000</td><td></td><td>Mercedes</td><td>S Class</td><td>2000</td><td>254</td><td>249</td><td></td><td>FREE</td><td>\$120.00</td><td></td><td></td></tr> <tr><td>11</td><td>AUDI6</td><td></td><td>Audi</td><td>RS6</td><td>4000</td><td>581</td><td>250</td><td></td><td>FREE</td><td>\$240.00</td><td></td><td></td></tr> </tbody> </table> Page 1 of 4      Total Rows 16				Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hire	Status	Daily Rate	Hire history	Actions	7	BMW101		BMW	XS	4800	350	241		FREE	\$100.00		x	8	BEV101		Bentley	Continental GTC	6000	552	314		FREE	\$150.00			9	MCD0000		Mercedes	C Class Cabriolet	2000	390	248		FREE	\$120.00			10	MCS2000		Mercedes	S Class	2000	254	249		FREE	\$120.00			11	AUDI6		Audi	RS6	4000	581	250		FREE	\$240.00		
Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hire	Status	Daily Rate	Hire history	Actions																																																																					
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9	MCD0000		Mercedes	C Class Cabriolet	2000	390	248		FREE	\$120.00																																																																							
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<input type="button" value="Show only Hired"/> <input type="button" value="5 per page"/> <input type="button" value="First"/> <input type="button" value="Prev"/> <input type="button" value="Next"/> <input type="button" value="Last"/> <input type="button" value="mm/dd/yyyy"/> <input type="button" value="2021-04-05"/> <input type="button" value="Chandler Bing"/> <input type="button" value="Reset"/>																																																																																	

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Click [Choose File].

51. Pick a picture for the Vehicle, and click Open.



52. Click [Add Picture].

The screenshot shows a web browser window for 'carDate - Vehicle Maintenance' at the URL 'localhost:20081/vehPicts/7'. The page displays a list of vehicles in a table format. A modal dialog box titled 'BMW / X5' is open over the table, showing a preview of a car image and an 'Add Picture' button. The table has columns for 'Customer Id', 'Customer Name', 'NRIC', 'Email', 'Vehicle Id', 'License Plate', 'Pictures', 'Brand', and 'Model'. The table contains 16 rows of vehicle data. At the bottom of the page, there are navigation buttons for 'First', 'Prev', 'Next', and 'Last', and a status message 'Page 1 of 4 Total Rows: 16'.

53. The picture is added to the Vehicle Album. Since this Vehicle has no profile picture, the newly added picture is also designated as the profile picture, and shows up as thumbnails on the pinned Vehicle as well as the Vehicles page behind. Click Close.

carDate - Vehicle Maintenance

Pinned Customer Id: 4 | Customer Name: Chandler Bing | NRIC: FRIENDS03 | Email: cbing@friends.com

Vehicles

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	HP	Top Speed	Current Hire	Status	Daily Rate	Hire History	Actions
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		
5	EEN510		Bentley	Continental GTC					FREE	\$150.00		
9	MCD2000		Mercedes	C Class Cabriolet	2000	224	209		FREE	\$120.00		
10	MCS2000		Mercedes	S Class	4000	391	250		FREE	\$120.00		
11	AUDI6		Audi	RS6					FREE	\$240.00		

Show only Hired | 5 per page \* | First | Prev | Next | Last | Page 1 of 4 | Total Rows: 16

54. Click Next button twice to go to page 3, click on the picture icon ( next to MCD2100 to maintain its album.

carDate - Vehicle Maintenance

Pinned Customer Id: 4 | Customer Name: Chandler Bing | NRIC: FRIENDS03 | Email: cbing@friends.com

Vehicles

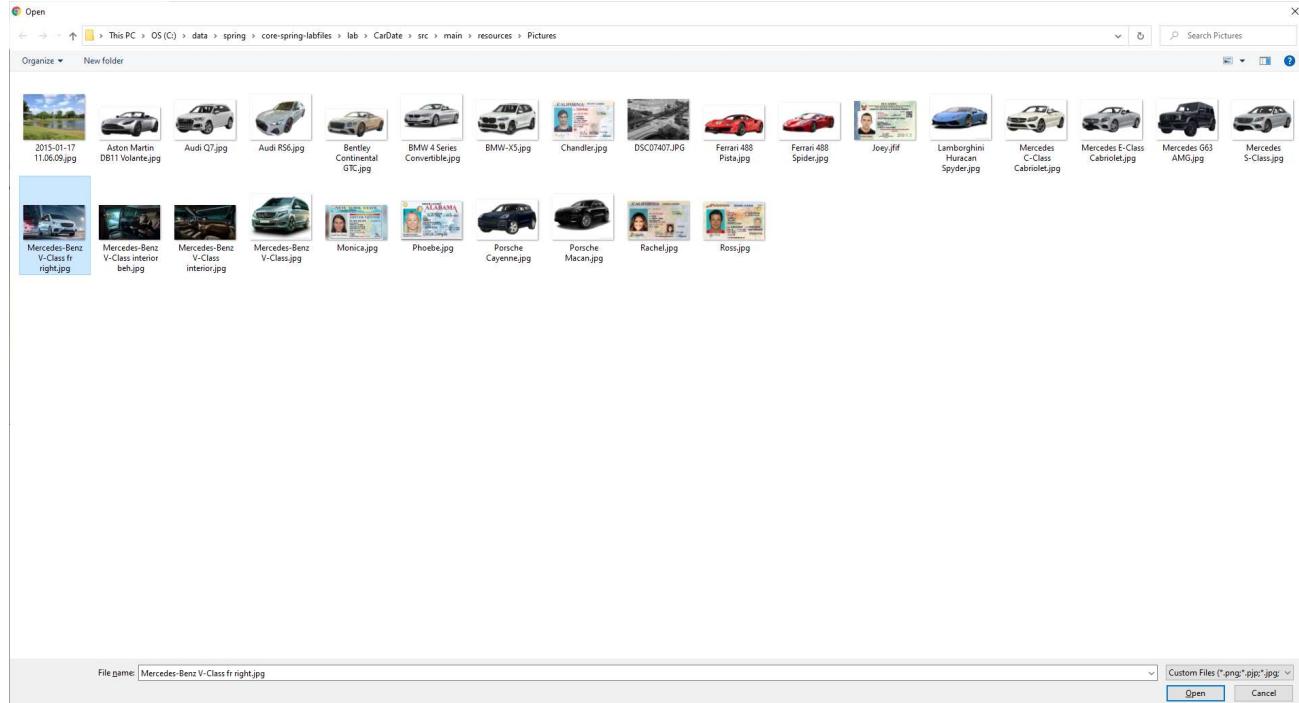
Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	HP	Top Speed	Current Hire	Status	Daily Rate	Hire History	Actions
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		
17	ASM114		Aston Martin	DB11 Volante	4000	503	300		FREE	\$400.00		
18	FRE4889		Ferrari	488 Spider	3900	660	327		FREE	\$600.00		
19	MCD2100		Mercedes-Benz	V-Class	2100	190	207		FREE	\$130.00		
20	AUDI7		Audi	Q7	3000	225	230		FREE	\$220.00		
21	LGG5200		Lamborghini	Huracan Spyder	5200	571	324		FREE	\$600.00		

Show only Hired | 5 per page \* | First | Prev | Next | Last | Page 3 of 4 | Total Rows: 16

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Click [Choose File].

## 55. Pick a picture and click Open.



## 56. Picture preview is shown, click [Add Picture].

The screenshot shows a web application titled 'carDate - Vehicle Maintenance'. The URL is 'localhost:8081/vehPicts/19'. The main interface includes sections for 'Customers', 'Vehicles', and 'Hires'. A modal dialog box is open over a table of vehicles. The dialog has a title 'Mercedes Benz / V Class' and a sub-title 'MCD2100'. It contains a 'Choose File' button followed by a preview image of a Mercedes-Benz V-Class. Below the preview is an 'Add Picture' button. The background table lists vehicle details such as vehicle ID, license plate, brand, model, engine, and top speed. The table header includes columns for 'Active', 'Alternate Contact', 'Current Hire', 'Hire History', and 'Actions'. At the bottom of the page, there are navigation links for 'First', 'Prev', 'Next', 'Last', and 'Page 3 of 4', along with a total row count of 'Total Rows: 16'. The footer of the page includes the copyright notice 'Copyright © carDate Ltd.'

57. The picture is added to the empty album. Since the Vehicle has no profile picture, this new picture is designated profile picture and updated onto the thumbnail behind the Modal.

The screenshot shows a web-based vehicle management system. A modal window titled "Mercedes Benz / V Class" is open, prompting the user to "Choose File" or "Add Picture". A thumbnail of a white Mercedes-Benz V-Class is displayed. Below the modal, a message says "New picture uploaded successfully!" with a "Close" button. The background shows a list of vehicles with columns for vehicle ID, license plate, pictures, brand, model, current hire, status, daily rate, hire history, and actions. The vehicle MCD3100 is selected. The bottom of the screen shows navigation buttons like First, Prev, Next, Last, and a page indicator "Page 3 of 4".

Click [Choose File] again.

58. Pick another picture and click open.

The screenshot shows a Windows File Explorer window displaying a folder containing various vehicle images and ID cards. The files include: 2015-01-17 11.06.05.jpg, Aston Martin DB11 Volante.jpg, Audi Q7.jpg, Audi RS6.jpg, Bentley Continental GT.jpg, BMW 4 Series Convertible.jpg, BMW X5.jpg, Chandler.jpg, DSC07407.JPG, Ferrari 488 Pista.jpg, Ferrari 488 Spider.jpg, Joey.jif, Lamborghini Huracan Spyder.jpg, Mercedes C-Class Cabriolet.jpg, Mercedes E-Class Cabriolet.jpg, Mercedes G63 AMG.jpg, Mercedes S-Class.jpg, 2015-01-17 11.06.05.jpg, Mercedes-Benz V-Class fr right.jpg, Mercedes-Benz V-Class interior beh.jpg, Mercedes-Benz V-Class interior.jpg, Monica.jpg, Phoebe.jpg, Porsche Cayenne.jpg, Porsche Macan.jpg, Rachel.jpg, Ross.jpg. The file "Mercedes-Benz V-Class interior beh.jpg" is highlighted. At the bottom, there is an "Open" button.

59. Picture preview is shown, click [Add Picture].

The screenshot shows a web browser window for 'carDate - Vehicle Maintenance' at 'localhost:8081/vehPicts/19'. On the left, there's a sidebar with icons for Customers, Vehicles, and Hires. The main area has tabs for 'Customers', 'Vehicles', and 'Hires'. A modal dialog is open over a table of vehicles. The modal title is 'Mercedes Benz / V Class' and it contains a file input field with 'Choose File | Mercedes-B...terior beh.jpg'. Below the input is a thumbnail image of a white Mercedes-Benz V-Class van. At the bottom of the modal is a 'Close' button.

Pinned Customer Id	Customer Name	NRIC	Email
4	Chandler Bing	FRIENDS03	cbing@friends.com

Vehicles				
Vehicle Id (ASC)	License Plate	Pictures	Brand	Model
7	BMW101		BMW	X5
17	ASM114		Aston Martin	DB11 Volante
18	FR4669		Ferrari	488 Spider
19	MCD2100		Mercedes Benz	V Class
20	AUD07		Audi	Q7
21	LBSG300		Lamborghini	Huracan Spyder

On the right, there are two tables: 'Active' and 'Current Hire'. The 'Active' table shows rows for the same vehicles as the main list. The 'Current Hire' table is currently empty. At the bottom, there are buttons for 'First', 'Prev', 'Next', 'Last', and 'Page 3 of 4'. The total number of rows is 16.

60. Picture is added to the album. Thumbnail behind does not change because the Vehicle already has a profile picture. Click [Choose File] again.

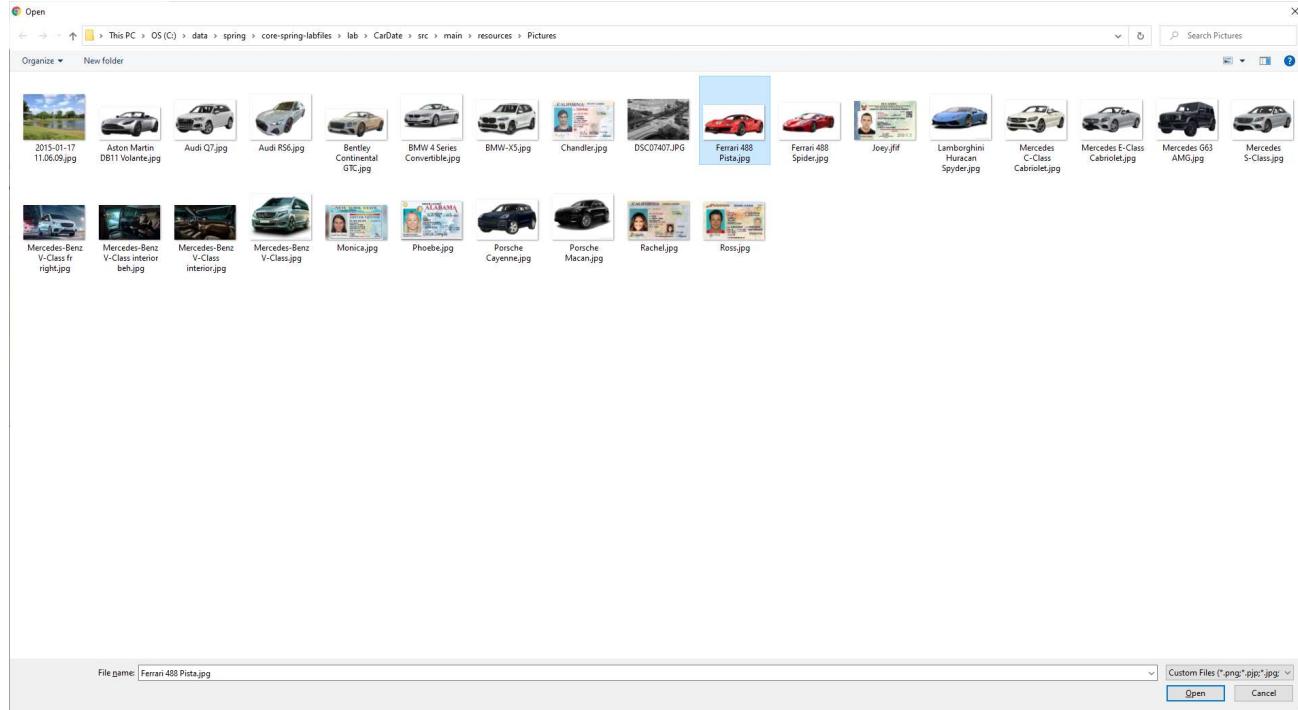
This screenshot is nearly identical to the previous one, showing the same application interface and vehicle list. However, the modal dialog now displays a message 'New picture uploaded successfully' above the 'Close' button. The thumbnail for the Mercedes-Benz V-Class in the modal has changed to show the interior of the vehicle.

Pinned Customer Id	Customer Name	NRIC	Email
4	Chandler Bing	FRIENDS03	cbing@friends.com

Vehicles				
Vehicle Id (ASC)	License Plate	Pictures	Brand	Model
7	BMW101		BMW	X5
17	ASM114		Aston Martin	DB11 Volante
18	FR4669		Ferrari	488 Spider
19	MCD2100		Mercedes Benz	V Class
20	AUD07		Audi	Q7
21	LBSG300		Lamborghini	Huracan Spyder

On the right, the 'Active' and 'Current Hire' tables are visible. The 'Active' table includes the newly uploaded image of the V-Class. The 'Current Hire' table is still empty. The page navigation buttons and row count are at the bottom.

## 61. Pick a wrong picture, click Open.



## 62. Click [Add Picture].

The main application interface includes:

- A top navigation bar with links for Customers, Vehicles, and Hires.
- A sidebar on the left showing a profile picture and the name "Chandler Bing".
- A main table listing vehicles with columns for Vehicle Id, License Plate, Pictures, Brand, and Model.
- Buttons for Show only Hired, 5 per page, First, Last, and Page 3 of 4.
- A right-hand panel showing hire history with columns for Current Hirer, Status, Daily Rate, and Actions.

63. Repeat the above step so you have four pictures in the album, with two wrong pictures.

The screenshot shows a web-based vehicle management system. On the left, there's a sidebar with 'Customers', 'Vehicles', and 'Hires'. Below it, a 'Vehicles' section lists various cars with filters for 'Brand' (BMW, Audi, Mercedes-Benz) and 'Model'. A modal window titled 'Mercedes Benz / V Class' is open, showing a placeholder for an uploaded file and a preview of a blue Mercedes-Benz V-Class car. To the right, a 'Hire History' table displays several rows of rental information, including 'Status' (FREE), 'Daily Rate' (\$100.00 to \$600.00), and 'Actions'.

Click [Choose File] to add yet another picture.

64. Pick this picture and click Open.

A Windows file explorer window is shown, navigating through 'This PC > OS (C) > data > spring > core-spring-labfiles > lab > CaDate > src > main > resources > Pictures'. The folder contains numerous files representing different vehicles and ID cards. One file, 'Mercedes-Benz V-Class.jpg', is highlighted with a blue selection box. At the bottom, a file dialog box is open with the 'File name' field set to 'Mercedes-Benz V-Class.jpg', and 'Custom Files (\*.png;\*.jpg;\*.jpeg)' selected. Buttons for 'Open' and 'Cancel' are visible.

## 65. Chosen picture in preview.

The screenshot shows a web browser window with a blue header bar. Below it is a navigation bar with links for 'Customers', 'Vehicles', and 'Hires'. The main content area has a table for 'Vehicles' with columns for 'Vehicle ID (ASC)', 'License Plate', 'Pictures', 'Brand', and 'Model'. One row in the table is highlighted. To the right of the table is a modal dialog box. At the top of the modal is a file input field with the text 'Choose File: Mercedes-Benz V-Class.jpg'. Below the file input is a button labeled 'Add Picture'. Underneath the button is a preview area showing five different car images: a white Mercedes-Benz V-Class, the interior of a car, a red Ferrari 488 Spider, a blue Lamborghini Huracan Spyder, and a silver Mercedes-Benz V-Class. At the bottom right of the modal is a blue 'Close' button.

Click [Add Picture].

## 66. Now the album has 5 pictures. Click Close to exit Modal.

This screenshot is identical to the previous one, showing the same web application interface and modal dialog. The difference is that the file input field now displays 'No file chosen' instead of the previously chosen file path. The preview area still shows the five car images: a white Mercedes-Benz V-Class, the interior of a car, a red Ferrari 488 Spider, a blue Lamborghini Huracan Spyder, and a silver Mercedes-Benz V-Class. The 'Close' button at the bottom right of the modal is still present.

67. Note the literal 5 next to the Vehicle profile picture thumbnail. It indicates that this Vehicle has 5 pictures in its album.

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
4	Chandler Bing	FRIENDS03	cbing@friends.com	+15553496768	<input checked="" type="checkbox"/>				<a href="#">x</a>

Vehicles

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		<a href="#">x</a>
17	ASM114		Aston Martin	DB11 Volante	4000	503	300		FREE	\$400.00		<a href="#">x</a>
18	FR4889		Ferrari	488 Spider	3900	660	327		FREE	\$600.00		<a href="#">x</a>
19	MCD2100		Mercedes Benz	V Class	2100	190	207		FREE	\$130.00		<a href="#">x</a>
20	AUD7		Audi	Q7	3000	225	250		FREE	\$220.00		<a href="#">x</a>
21	LBSG5200		Lamborghini	Huracan Spyder	5200	571	324		FREE	\$600.00		<a href="#">x</a>

Show only Hired    5 per page \*    [First](#)    [Prev](#)    [Next](#)    [Last](#)    Page 3 of 4    Total Rows 16

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Click on the thumbnail to view and maintain the album.

68. All five pictures are shown in the Modal.

Mercedes Benz / V Class

MC02100

[Choose File](#) [No file chosen]

[Add Picture](#)

[Replace](#)

[Replace](#)

[Set profile picture](#) [Replace](#)

[Replace](#)

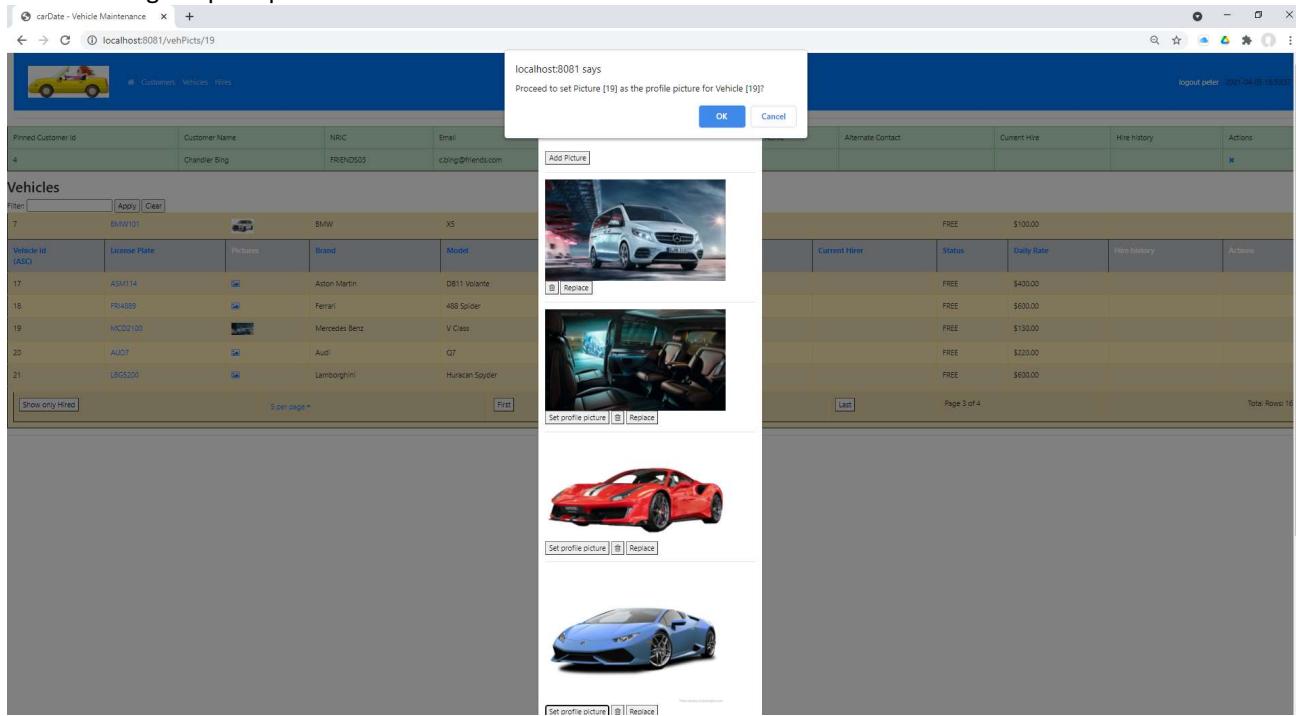
[Replace](#)

Active	Alternate Contact	Current Hirer	Hire history	Actions
				<a href="#">x</a>

[List](#)    Page 3 of 4    Total Rows 16

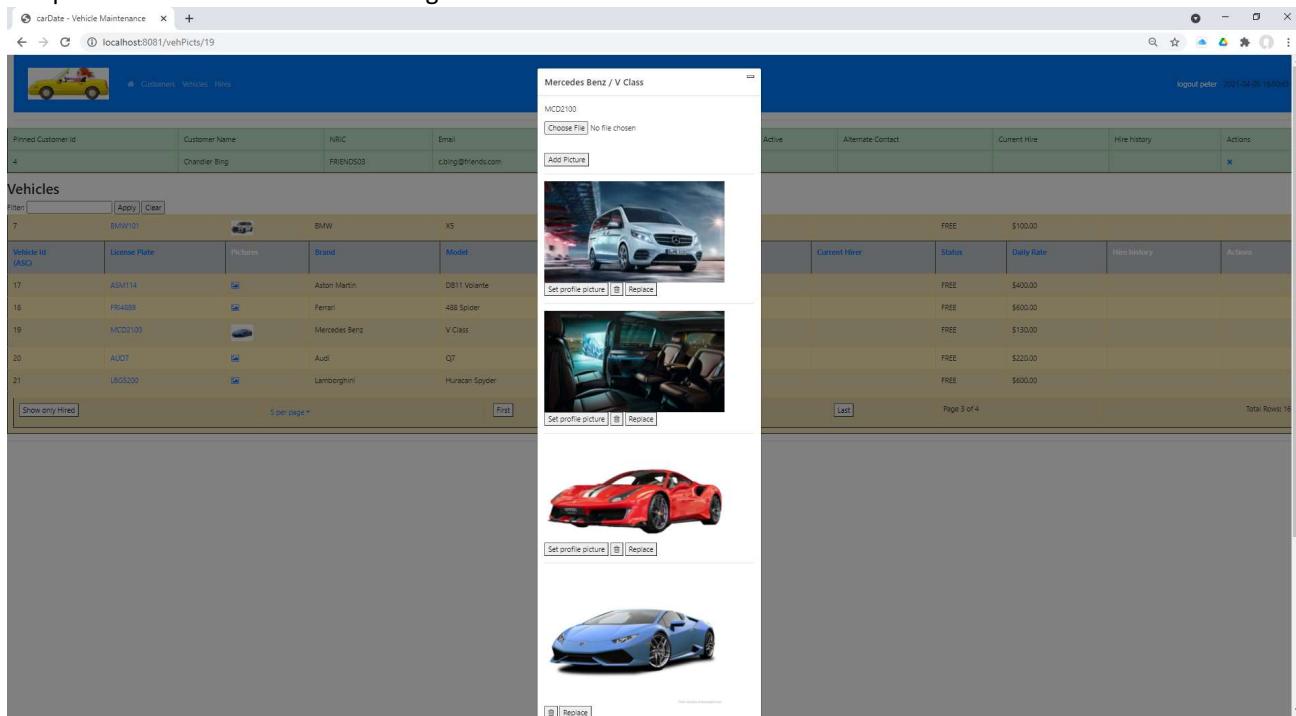
Let's set the blue car as the profile picture by clicking the [Set profile picture] button underneath it.

69. You will get a prompt.



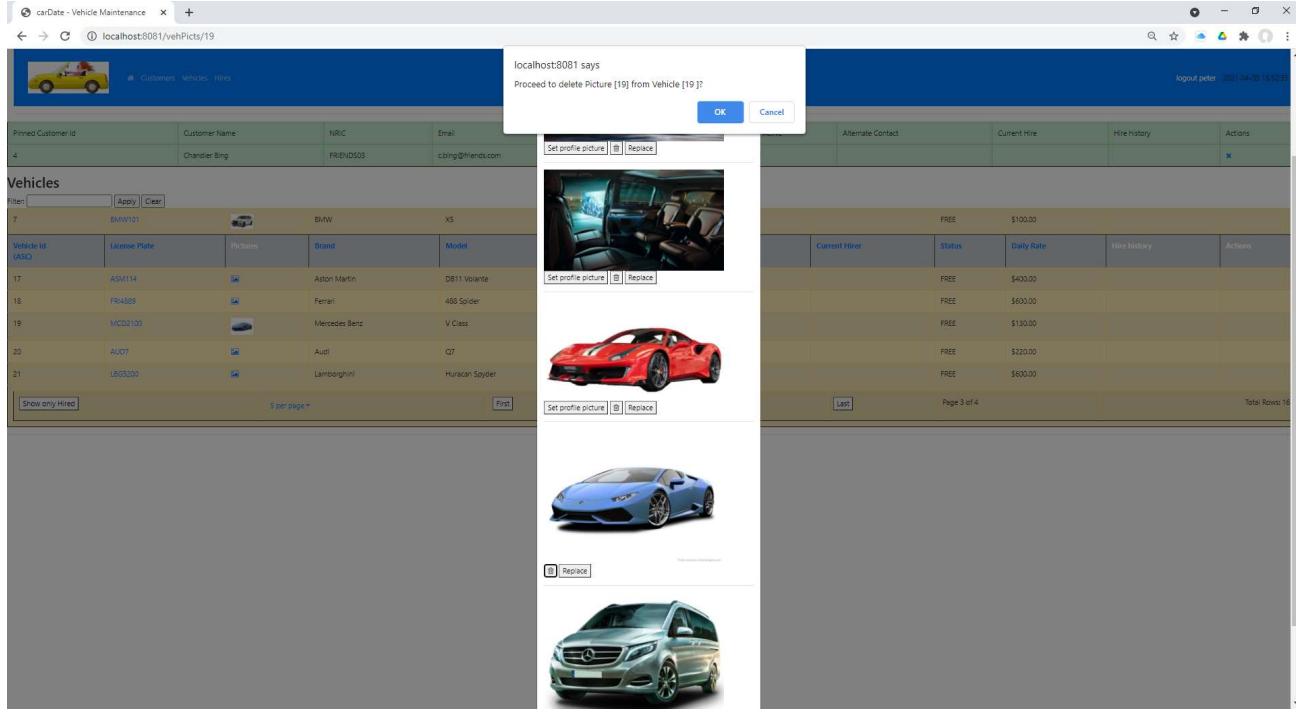
Click OK.

70. Note that the set profile picture button for the first picture appears, while it disappears for the blue car picture. The thumbnail also changes behind the Modal.



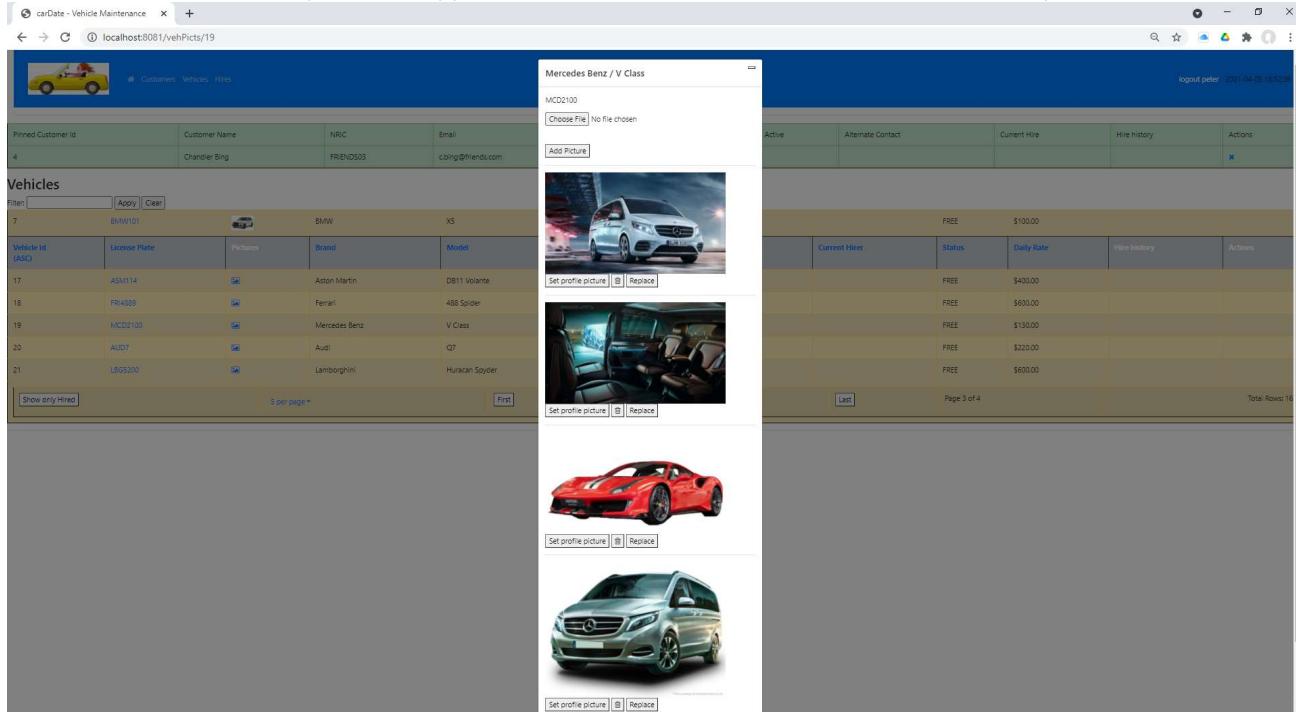
Now let's delete the blue car picture from the album by clicking its corresponding bin button.

## 71. You will get a prompt first.



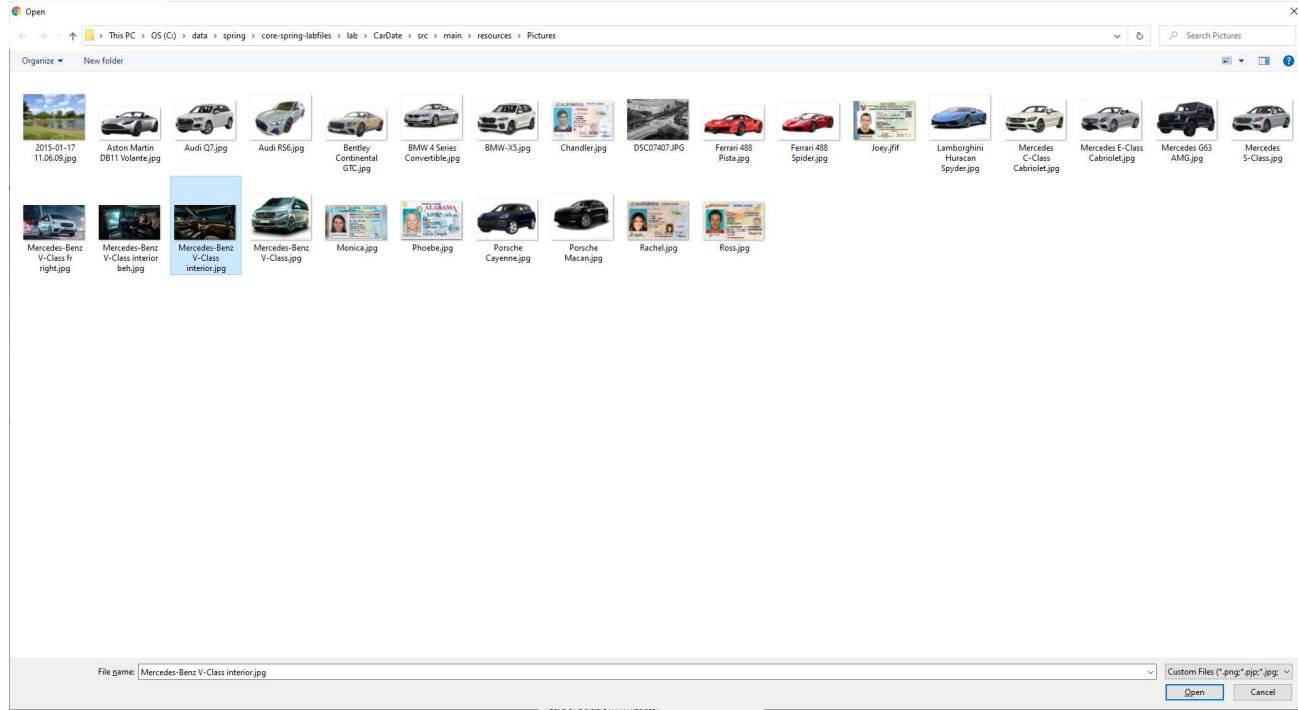
Click OK.

72. Note that the blue car picture disappears, and the thumbnail behind the Modal is also replaced with an icon.



Now click [Choose File].

### 73. Pick this file.



Click Open.

### 74. Picture preview is shown.

Logout Peter 2021-04-08 15:46:00

Active Alternate Contact Current Hire Hire history Actions

FREE \$100.00

FREE \$400.00

FREE \$600.00

FREE \$130.00

FREE \$220.00

FREE \$600.00

Total Rows 16

We want the picture to replace that picture of the red car. Click [Replace] button underneath the red car.

## 75. You will get a prompt.

A screenshot of a web browser window titled "carDate - Vehicle Maintenance". The URL is "localhost:8081/vehPicts/19". A modal dialog box is open in the center, prompting the user to "Proceed to replace Picture [18] with the new picture for Vehicle [19]?" with "OK" and "Cancel" buttons. In the background, there are two tabs: "Customers" and "Vehicles". The "Vehicles" tab is active, showing a list of vehicles with columns for Vehicle ID, License Plate, Pictures, Brand, and Model. One vehicle, MCD2100, is selected. On the right side of the screen, there is a grid view of vehicle images with "Set profile picture" and "Replace" buttons below each. The top right corner shows a user session: "logout peter 2021-04-28 18:59:00".

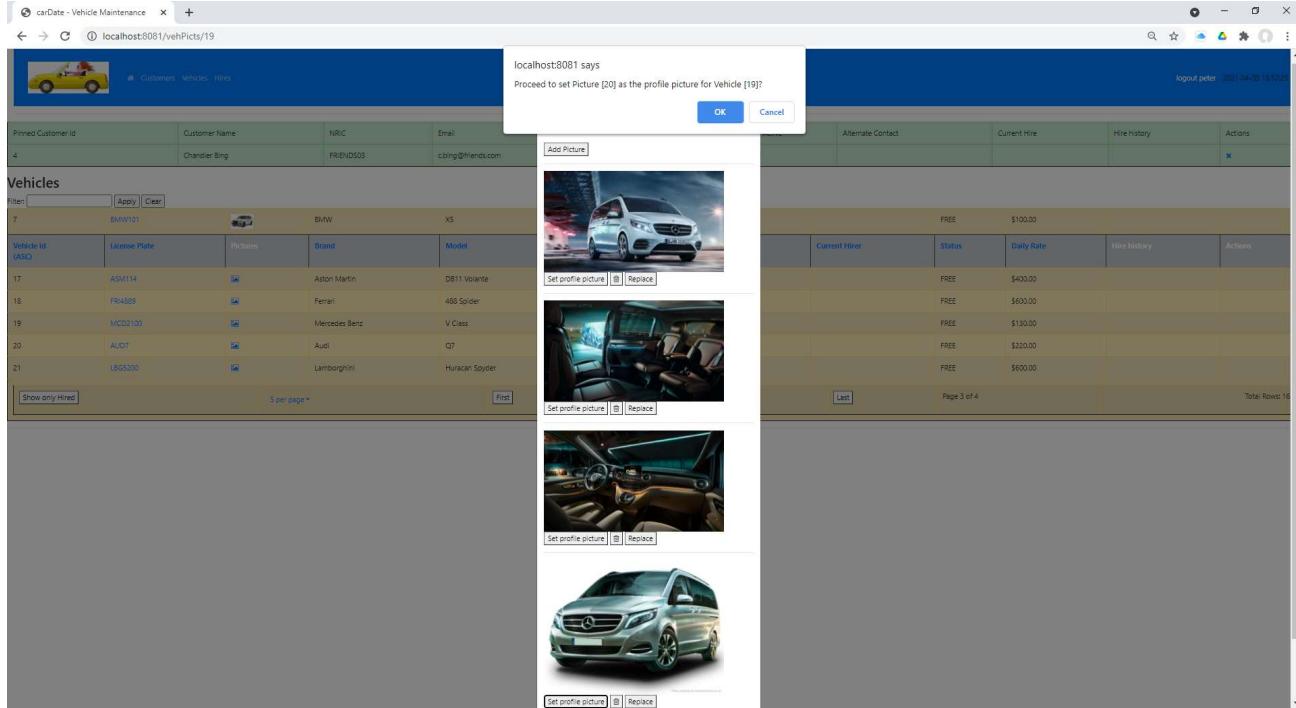
Click OK.

## 76. Note that the red car picture is replaced.

A screenshot of the same web browser window after the action from the previous step. The modal dialog is no longer present. The vehicle list and grid view are identical to the previous screenshot, but the red sports car image has been replaced by the silver Mercedes-Benz V-Class image in the "Set profile picture" row for vehicle MCD2100.

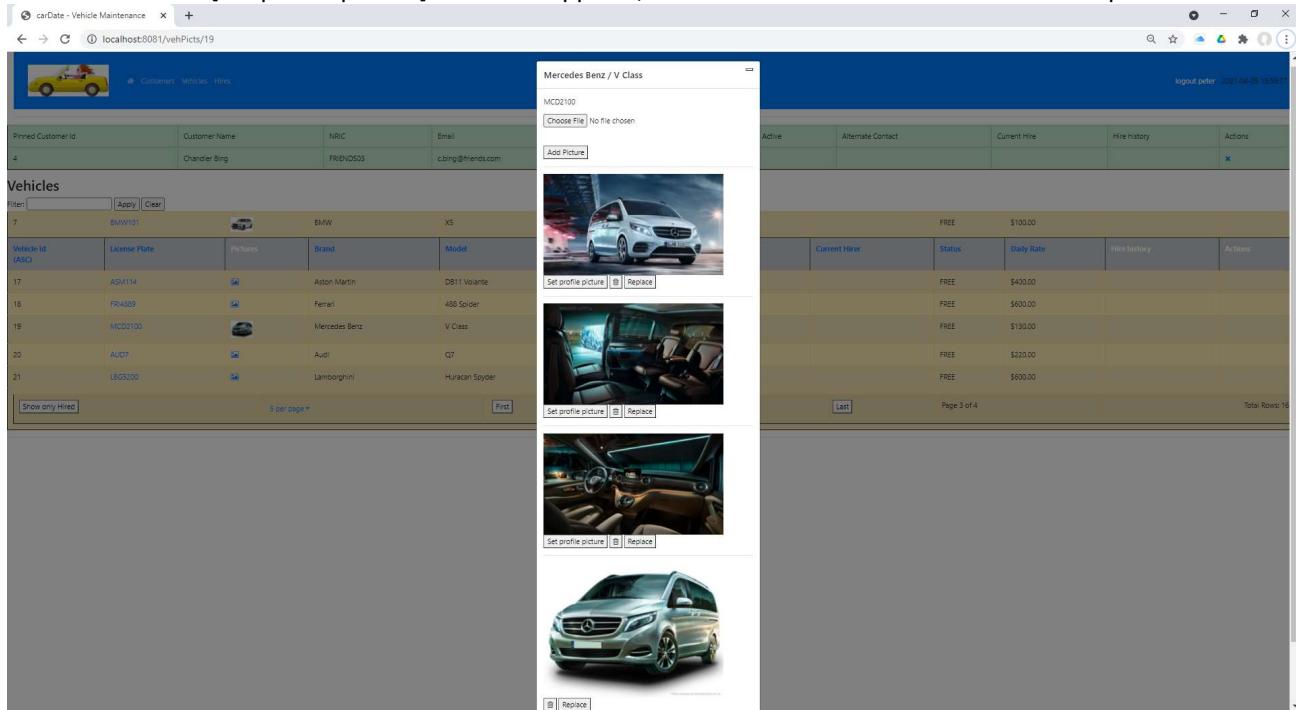
Next we will set the bottom picture as profile picture for the Vehicle. Click it's [Set profile picture] button.

## 77. You will get a prompt.



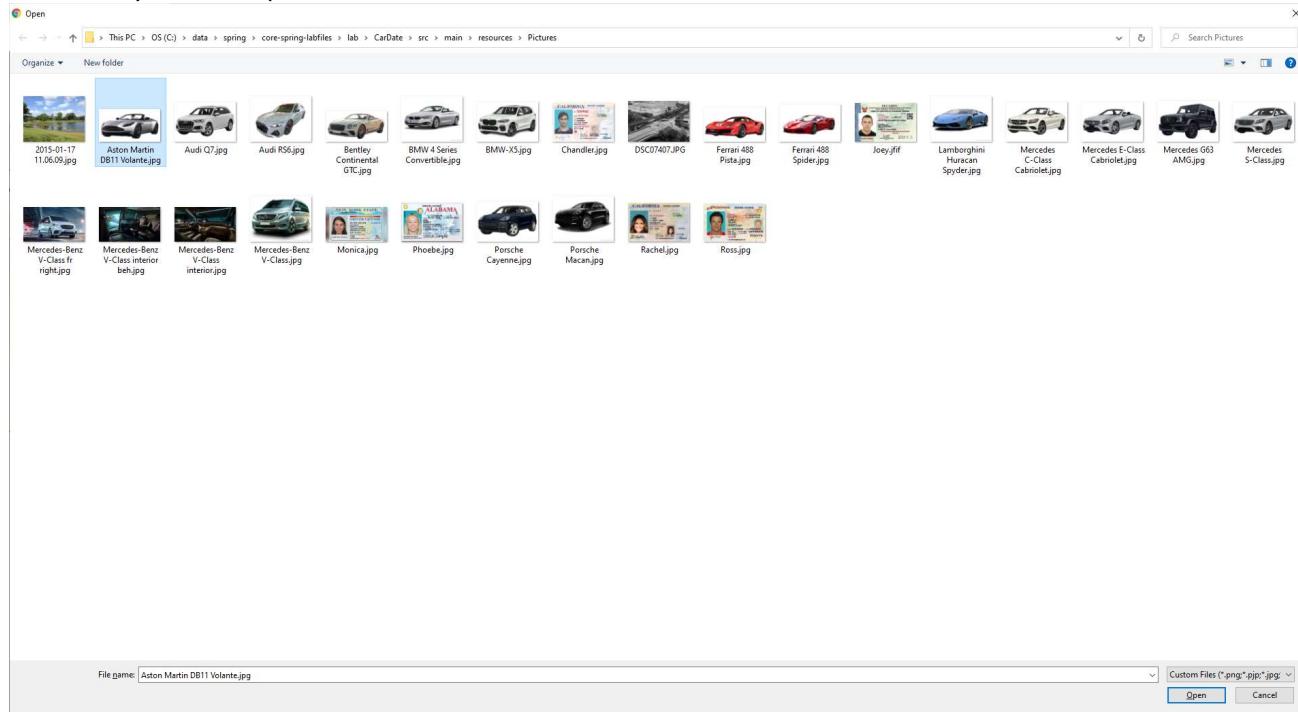
Click OK.

## 78. Note that the [Set profile picture] button disappears, and the thumbnail behind the Modal is updated.



Click [Choose File].

## 79. Pick any irrelevant picture.



And click Open.

## 80. Picture preview is shown.

Click [Replace] button under the picture which currently is the profile picture.

## 81. You will get a prompt.

The screenshot shows a web browser window titled "carData - Vehicle Maintenance". In the center, there is a modal dialog box with the title "localhost:8081 says" and the message "Proceed to replace Picture [20] with the new picture for Vehicle [19]?". Below the message are two buttons: "OK" (highlighted in blue) and "Cancel". To the left of the modal, the main application interface displays a list of vehicles. On the right, a detailed view of a selected vehicle (Mercedes-Benz V-Class) is shown, including its exterior and interior images, along with "Set profile picture" and "Replace" buttons. The overall layout includes a header bar with tabs like "Customers", "Vehicles", and "Hires".

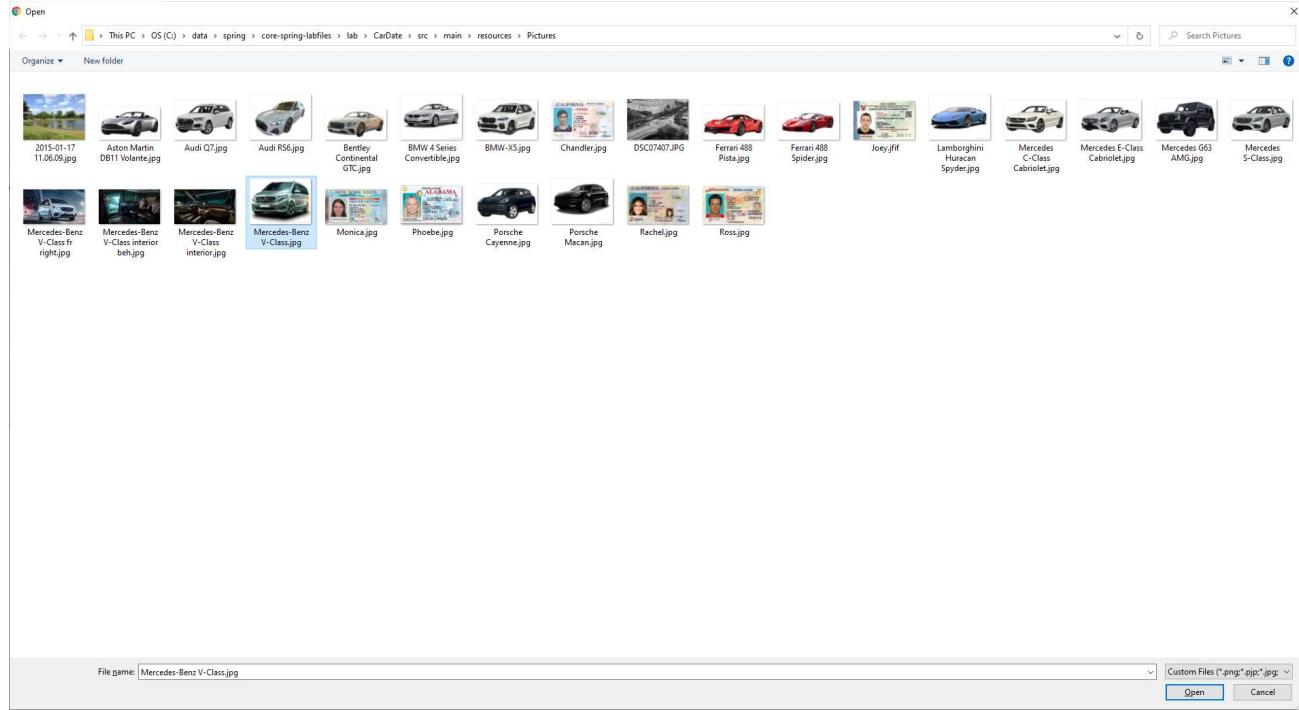
Click OK.

## 82. Note that the album as well as the thumbnail behind the Modal are updated.

This screenshot shows the same application state as the previous one, but the modal has been closed by clicking "OK". The vehicle's picture has been successfully replaced with a new image of an Aston Martin DB11 Volante. The modal now displays the message "Picture [20] replaced" and a "Close" button. The rest of the application interface remains the same, showing the vehicle list and the detailed view of the selected vehicle.

Now click [Choose File] to bring back the correct picture.

### 83. Pick the correct picture.

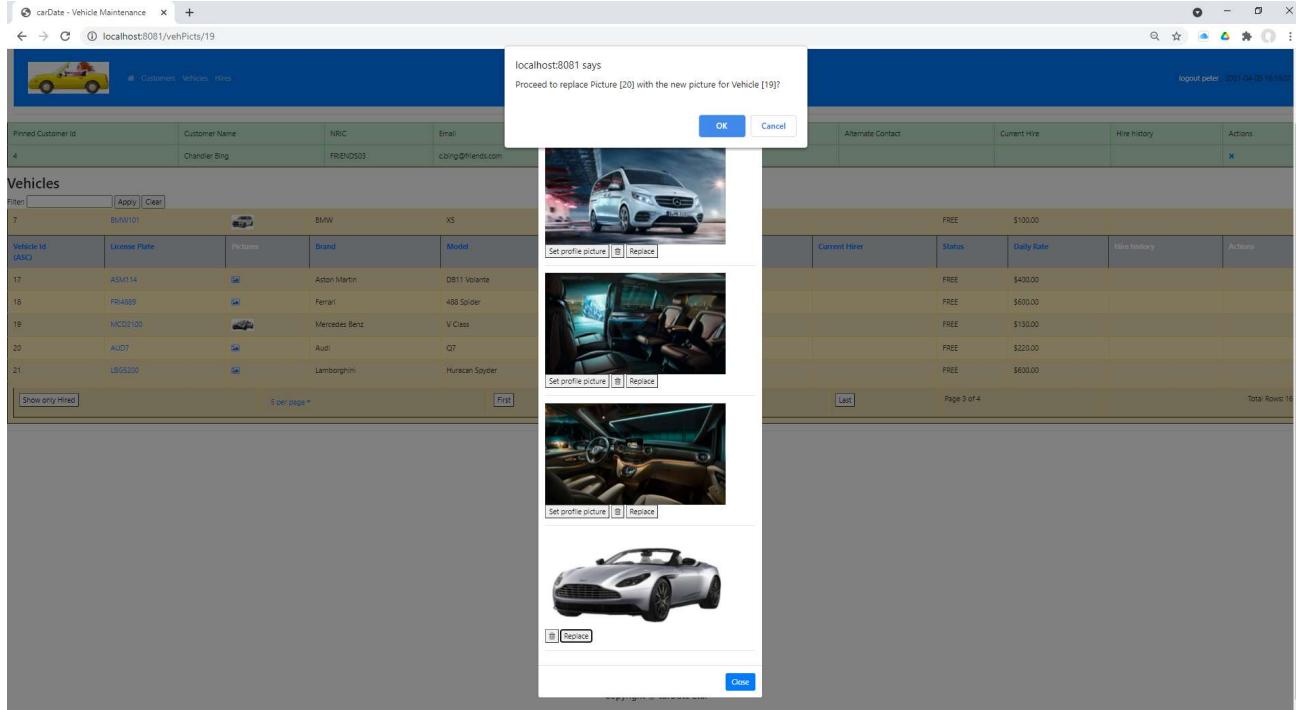


And click Open.

### 84. Preview of chosen picture is shown.

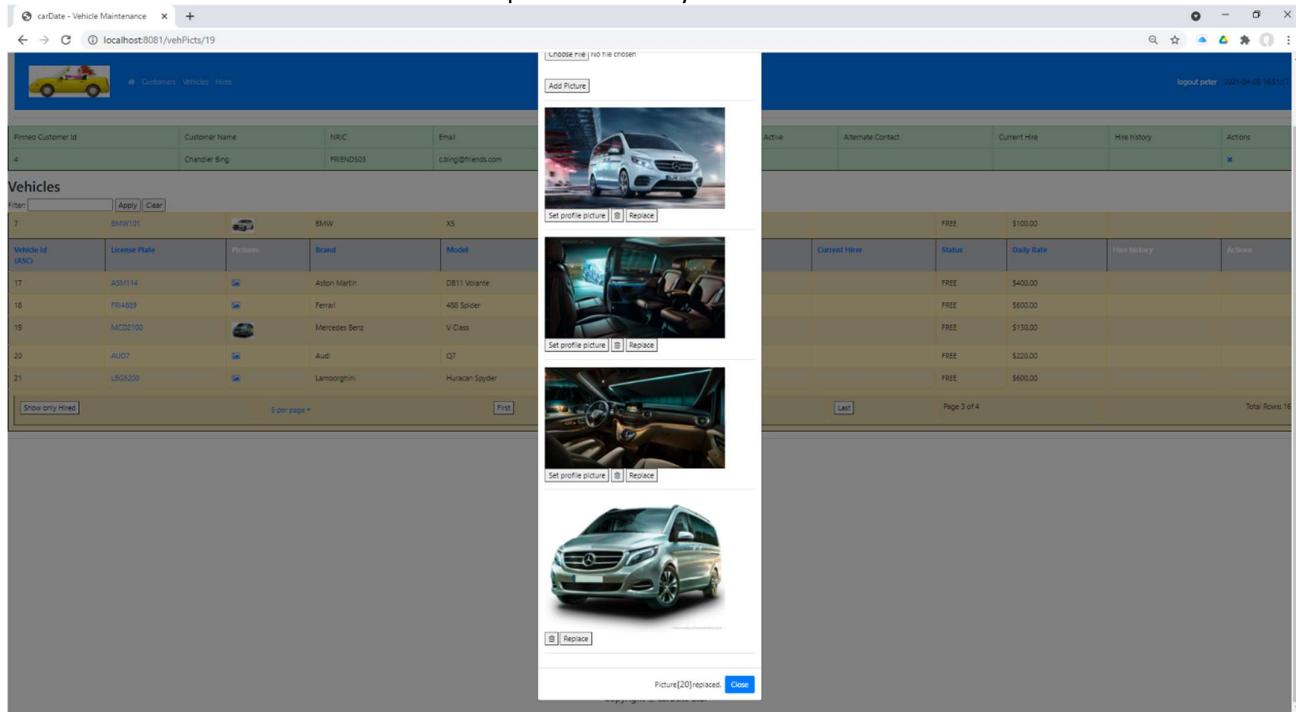
Click [Replace] button under the bottom picture.

## 85. You will get a prompt.



Click OK.

## 86. The album and the thumbnail are both updated correctly.



Click Close.

87. Proceed to upload one picture each for all the other Vehicles. Click “5 per page” drop down to switch to 20 per page.

The screenshot shows a web browser window titled "carDate - Vehicle Maintenance". At the top, there is a pinned customer entry for "Chandler Bring" with ID 4, showing details like NRIC FRIENDS03, Email cbring@friends.com, and Phone No +1553456768. Below this is a section titled "Vehicles" with a table of 22 vehicle entries. The first row of the table (Vehicle ID 7, License Plate BMW101) is highlighted in yellow, indicating it is pinned. The table includes columns for Vehicle Id (ASC), License Plate, Pictures, Brand, Model, Engine, BHP, Top Speed, Current Hirer, Status, Daily Rate, Hire history, and Actions. At the bottom of the table, there are buttons for "Show only Hired", "20 per page", "Page 1 of 1", and "Total Rows: 16".

Note that the pinned Customer continues to appear even on a Vehicles page. Click the cross under the Actions column to dismiss it.

88. You can also dismiss the pinned Vehicle by clicking on the License plate at the pinned Vehicle row:

This screenshot shows the same "carDate - Vehicle Maintenance" page as above, but the pinned vehicle (BMW101) is no longer highlighted in yellow. The rest of the vehicle list remains visible. The bottom of the page shows the same navigation and status information as the previous screenshot.

Do it.

## 89. The pinned Vehicle is dismissed.

Vehicles

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00		
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		FREE	\$120.00		
10	MCS2000		Mercedes	S Class	2000	254	249		FREE	\$120.00		
11	AUD6		Audi	R8	4000	591	250		FREE	\$240.00		
12	FRI438		Ferrari	488 Pista	3900	711	340		FREE	\$380.00		
13	BMW420		BMW	4 Series Convertible	2000	181	235		FREE	\$120.00		
14	MCD2200		Mercedes	E Class Cabriolet	2200	249	246		FREE	\$150.00		
15	MCD6300		Mercedes	GE3 AMG	5500	544	210		FREE	\$400.00		
16	PS690		Porsche	Macan	6000	400	266		FREE	\$500.00		
17	ASM114		Aston Martin	DB11 Volante	4000	503	300		FREE	\$400.00		
18	FRI488		Ferrari	488 Spider	3900	660	327		FREE	\$600.00		
19	MCD2100		Mercedes Benz	V Class	2100	190	207		FREE	\$130.00		
20	AUD7		Audi	Q7	3000	225	250		FREE	\$220.00		
21	LBG5200		Lamborghini	Huracan Spyder	5200	571	324		FREE	\$600.00		
22	PSC4800		Porsche	Cayenne	4800	383	275		FREE	\$500.00		

Show only Hired      20 per page \*      Page 1 of 1      Total Rows: 16

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You should notice that “peter” not granted ROLE\_MANAGER is unable to edit Vehicles besides maintaining the album. Logout, and login in as “sikon”.

## 90. Actions icons are now found against each Vehicle.

Vehicles

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00		
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00		
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		FREE	\$120.00		
10	MCS2000		Mercedes	S Class	2000	254	249		FREE	\$120.00		
11	AUD6		Audi	R8	4000	591	250		FREE	\$240.00		

Show only Hired      5 per page \*      First      Prev      Next      Last      Page 1 of 4      Total Rows: 16

0      Aston Martin      0      0      0      FREE      0.0     

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There are three icons under Actions column against each Vehicle, even the pinned Vehicle. There is also the bottom editing area to create new Vehicles.  
Click the edit icon against Vehicle MCD2000.

91. The Vehicle record is brought down to the editing area.

The screenshot shows a web-based application titled "carDate - Vehicle Maintenance". The main page displays a list of vehicles. A specific vehicle entry for "BEN610" is highlighted, indicating it has been selected for editing. The vehicle details shown are: Brand: Bentley, Model: Continental GTC, Engine: 6000, BHP: 552, Top Speed: 314, Status: FREE, Daily Rate: \$150.00. Below the table, there are filters for "Vehicle Id (ASC)", "License Plate", "Pictures", "Brand", "Model", "Engine", "BHP", "Top Speed", "Current Hirer", "Status", "Daily Rate", "Hire history", and "Actions". There are also buttons for "Show only Hired", "5 per page", "First", "Prev", "Next", "Last", and "Page 1 of 4". At the bottom, there are buttons for "Reset" and "Total Rows: 16".

Try change the License Plate number to MCD6300, which duplicates with another Vehicle. Click save button.

92. The application detects and rejects this change.

This screenshot shows the same application after attempting to change the license plate of the selected vehicle. The license plate is now set to "MCD6300". A red error message at the top of the page states: "There is another Vehicle with the same license plate, or other problems, please correct the data and retry." The rest of the interface is identical to the previous screenshot, showing the vehicle list and various filtering options.

Click edit button of the Vehicle again to bring down a fresh copy:

93. Let's change the daily Rate to \$150, and status to SUSPENDED. This status is used when you need to put an otherwise FREE Vehicle off service, may be because it has been sent for repair.

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00		
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		FREE	\$120.00		
10	MCS2000		Mercedes	S Class	2000	254	249		FREE	\$120.00		
11	AUD6		Audi	RS6	4000	591	250		FREE	\$240.00		

Show only Hired    5 per page \*    First    Prev    Next    Last    Page 1 of 4    Total Rows: 16

9 MCD2000 Mercedes C Class Cabriolet 2000 390 248 FREE  0

SUSPENDED

Click Save.

94. Vehicle record is updated.

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00		
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		SUSPENDED	\$150.00		
10	MCS2000		Mercedes	S Class	2000	254	249		FREE	\$120.00		
11	AUD6		Audi	RS6	4000	591	250		FREE	\$240.00		

Show only Hired    5 per page \*    First    Prev    Next    Last    Page 1 of 4    Total Rows: 16

0

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When the Vehicle has been repaired and is ready to put back to service, you can repeat this process to change its status back to FREE.

95. Filter can be used. Try "de" by typing into the text box and click Apply.

The screenshot shows a web-based vehicle management system. At the top, there's a navigation bar with links for Customers, Vehicles, Hires, Employees, and Configurations. On the right, there's a user icon and a timestamp: 'Logout ikon 2021-04-08 17:26:02'. Below the navigation is a search bar with the placeholder 'Filter: de' and buttons for 'Apply' and 'Clear'. The main area is titled 'Vehicles' and contains a table with the following columns: Vehicle Id (ASC), License Plate, Pictures, Brand, Model, Engine, BHP, Top Speed, Current Hirer, Status, Daily Rate, Hire history, and Actions. A row for vehicle ID 8 (BEN510) is highlighted in yellow. The table includes a header row with sorting icons. At the bottom of the table are buttons for 'Show only Hired', '5 per page', 'First', 'Prev', 'Next', 'Last', and a dropdown for 'Page' (set to 1 of 2). There are also buttons for 'FREE' and '0.0' rate, and a 'Reset' button. The footer of the page says 'Copyright © carDate Ltd.'

96. Sort field and sort order can be changed too.

This screenshot shows the same vehicle management system after applying a different filter. The URL in the address bar is now 'localhost:8081/vehSort/topSpeed'. The table data has been sorted by 'Top Speed (ASC)'. The row for vehicle ID 19 (MCD2100) is now highlighted in yellow. The rest of the interface is identical to the previous screenshot, including the search bar, table structure, and footer copyright information.

### 3. Vehicle Hiring

This section shows how Vehicles can be hired. It also starts to show the use of Business Configurations to manipulate date time during an application testing exercise.

- Before we start demonstrating hiring, we look at the Business Configurations. Click Configurations on the Navigation bar. This is only available to Employees with ROLE\_ADMIN or ROLE\_MANAGER.

Note the days offset. It has value -30. Notice that the date time on the top right corner is 04-05 (April 5<sup>th</sup>). This application date time is taken from the server clock which is May 5<sup>th</sup>, and have 30 days deducted to obtain Apr 5<sup>th</sup>. The purpose of this will become apparent later.

- Log out, and then login as ROLE\_USER. On the Customers page, pin Rachel. Imagine that Customer Rachel has come to the service counter, and you found her record, and pin it.

3. Go on to Vehicles page, pin BEN610. You can image you did some searching and sorting and pictures showing, and after some considerations, Rachel decides to hire the Vehicle BEN610.

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
2	Rachel Green	FR/END502	r.green@friends.com	+155534568766		Ross Geller			

**Vehicles**

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hire	Status	Daily Rate	Hire history	Actions
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00		
7	BMW101		BMW	X5	4800	350	241		FREE	\$100.00		
8	BEN610		Bentley	Continental GTC	6000	552	314		FREE	\$150.00		
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		SUSPENDED	\$150.00		
10	MCS3000		Mercedes	S Class	2000	254	249		FREE	\$120.00		
11	AUD6		Audi	R8	4000	591	250		FREE	\$240.00		

Show only Hired      5 per page \*      First      Prev      Next      Last      Page 1 of 4      Total Rows: 16

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4. Now move on to Hire page. On this page, you will notice that at the bottom row, a Hire record has been drafted for you.

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
2	Rachel Green	FR/END502	r.green@friends.com	+155534568766		Ross Geller			

**Current Hires**

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfilled by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
0	Rachel Green	BEN610	\$150.00	peter		04/05/2021 17:56	04/06/2021 12:00	\$0.00	\$0.00		\$0.00	

Show all Hires      5 per page \*      Page 1 of 0      Total Rows: 0

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- Hired by is “Rachel Green” the pinned Customer.
- Vehicle is “BEN610” the pinned Vehicle.
- Daily rate of \$150 is brought down from the pinned Vehicle.
- Fulfill by staff “peter” is auto-filled in as login Employee of current session is “peter”.
- Hire starts has been populated with the current date time. This current date time is obtained from the server clock and then with the days offset as in the business configurations applied.
- Planned Hire End is 12:00 the next day. Default hiring period is one day. Default return time is as set-up in Business Configuration.

## 5. Try to change Hire start to 19:00 and click Save.

Hire start time must be within the next 30 minutes.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Faultify by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
0	Rachel Green	BEN610	\$150.00	peter		04/05/2021 19:00	04/06/2021 12:00	0.0	\$0.00		\$0.00	<button>Trial</button> <button>Save</button> <button>Reset</button>

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It will be rejected as the maximum discrepancy allowed is 30 minutes from current date time as shown on top right. 30 is the Grace period set up in Business Configuration. This is to help prevent data input mistakes as well as fraud.

Click Reset so the application re-assign start time, set the Planned hire end to April 13 at 16:00. Click Save.

## 6. The hire fee is computed. But we require the Customer to place a deposit.

Deposit is higher of 1 Daily rate or 50% of rental.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Faultify by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
0	Rachel Green	BEN610	\$150.00	peter		04/05/2021 18:05	04/13/2021 16:00	0.0	\$1,230.00		\$0.00	<button>Trial</button> <button>Save</button> <button>Reset</button>

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Enter deposit amount of \$700 and click Trial.

7. Trail button is the same as Save button. The input will goes through the same validations and any error detected flagged back. The only difference is that, if there is no error, Save button will proceed to save the record, but Trial button will stop before that, and prompt you to click the Save to commit the Hire.

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
2	Rachel Green	FRIENDS02	r.green@friends.com	+155534568766	<input checked="" type="checkbox"/>	Ross Geller			<input type="button" value="x"/>

Pinned Vehicle Id	License Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
8	Continental GTC	Bentley	BEN610	FREE	\$150.0			<input type="button" value="x"/>

**Current Hires**

Please click <Save> to confirm Hire.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
0	Rachel Green	BEN610	\$150.00	peter		04/05/2021 18:05	04/13/2021 16:00	700.0	\$1,230.00		\$0.00	<input type="button" value="Trial"/> <input type="button" value="Save"/> <input type="button" value="Reset"/>

Page 1 of 0 Total Rows: 0

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#### Click Save to commit the Hire.

8. The Hire record is created.

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
2	Rachel Green	FRIENDS02	r.green@friends.com	+155534568766	<input checked="" type="checkbox"/>	Ross Geller	BEN610	1	<input type="button" value="x"/>

Pinned Vehicle Id	License Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
8	Continental GTC	Bentley	BEN610	HIRED	\$150.0	Rachel Green	1	<input type="button" value="x"/>

**Current Hires**

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<input type="button" value="Return"/> <input type="button" value="Invoice"/>

Page 1 of 1 Total Rows: 1

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Note that on the pinned Customer row, Current Hire has been populated with the Vehicle hired. Likewise on the pinned Vehicle row, Hirer Rachel Green is populated. Both also have Hire history count of 1. The status of the pinned Vehicle has also been updated to HIRED.

You should also notice that despite having pinned Customer and pinned Vehicle, they no longer appear in the Hire input area. This is because the pinned Customer has a current Hire and is no longer entitled for a new Hire. Likewise is the pinned Vehicle which is already Hired.

9. Click on the Invoice button against the Hire, and a PDF invoice of the Hire is created and opened in Acrobat reader.

**CarDate Leisure Vehicle Hiring Company Limited**  
2-111/A/3, road 6, Balanagar, Hyderabad  
Andhra Pradesh, 500042, India

**Vehicle Hiring Invoice**

Customer ID	2	Name	Rachel Green
Alternate contact	6	Name	Ross Geller
Vehicle Id	8	Daily rate	\$150.00
Brand	Bentley	License	BEN610
Model	Continental GTC		

Hiring Starts	2021-04-05 18:05	Hiring Id	1
Agreed Return	2021-04-13 16:00		

Hire type	Start	End	Quantity	Rate	Amount
Daily rental	2021-04-05	2021-04-13	8 days	\$150.00	\$1,200.00
Late return	2021-04-13 12:00	2021-04-13 16:00	4 hrs	\$7.50	\$30.00
				Total	\$1,230.00
Deposit received	2021-04-05				\$700.00
				Balance	\$530.00

I acknowledge that the said Vehicle is received in satisfactory condition:

Customer Signature and Date

You can see the rental fare breakdown.

10. Now go to Customers page and pin Chandler. Go to Vehicles page and pin AUD6. Then go to Hires page.

Pinned Customer Id

Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
Chandler Bing	FRIEND503	cbing@friends.com	+919999999999	<input checked="" type="checkbox"/>				<a href="#">*</a>

Pinned Vehicle Id

License Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
RS6	Audi	AUD6	FREE	\$240.0			<a href="#">*</a>

Current Hires

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>

Show all Hires 5 per page [\\*](#) Page 1 of 1 Total Rows: 1

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Note that Chandler has not been brought down to the Hires input area.

11. Click Trial button and see the following:

The screenshot shows the carDate Hires Maintenance page. At the top, there are several tabs: carDate - Hires Maintenance, Java TemporalAmount example, Java Date Time - LocalTime min, and datetime - What is the difference. The main content area has a blue header bar with a yellow car icon and navigation links: Customers, Vehicles, Hires. On the right, it shows the user is logged in as peter on 2021-04-05 18:23:07.

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
4	Chandler Bing	FRIENDS03	cbing@friends.com	+15553456768	<input checked="" type="checkbox"/>				<a href="#">x</a>

Pinned Vehicle Id	License Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
11	R56	Audi	AUD6	FREE	\$240.0			<a href="#">x</a>

**Current Hires**

The pinned customer [Chandler Bing] is not eligible for hiring.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>

Show all Hires [5 per page ▾](#) Page 1 of 1 Total Rows: 1

[Trial](#) [Save](#) [Reset](#)

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For a Customer to be eligible for hiring, he must be Active, has nominated an Alternate contact, and is not currently hiring a Vehicle. For Chandler, he has no Alternate contact.

For Vehicle, it must be of status FREE to be hired.

12. Go to Customer page and nominate Rachel as Alternate contact for Chandler. Back to Hires page. Set the return date to Apr 8, set deposit of \$400, and click Save button.

The screenshot shows the carDate Hires Maintenance page after updating the alternate contact for Chandler Bing. The alternate contact is now listed as Rachel Green.

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
4	Chandler Bing	FRIENDS03	cbing@friends.com	+15553456768	<input checked="" type="checkbox"/>	Rachel Green			<a href="#">x</a>

Pinned Vehicle Id	License Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
11	R56	Audi	AUD6	FREE	\$240.0			<a href="#">x</a>

**Current Hires**

You've made changes. Please click <Save> to confirm hire.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>

Show all Hires [5 per page ▾](#) Page 1 of 1 Total Rows: 1

[Trial](#) [Save](#) [Reset](#)

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It was noted that despite having no errors, and clicking Save button, the Hire was not saved. That is because Save button will not trigger a save to database if the Planned fee has changed. Before Save was clicked for the first time, the Planned fee was 0. After clicking, the fee is \$720. The application wants the user to see this and confirm before saving.

Now click Save again.

### 13. The Hire is created and saved.

The screenshot shows the 'carDate - Hires Maintenance' page. A new hire entry is being created:

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
4	Chandler Bing	FRIENDS03	cbing@friends.com	+15533456768	<input checked="" type="checkbox"/>	Rachel Green	AUD6	1	<input type="button" value="x"/>

Vehicle details:

Hired Vehicle Id	License Plate	Model	Brand	Veh status	Daily Rate	Current Hire	Hire History	Actions
11	R56	Audi	AUD6	HIRED	240.0	Chandler Bing	1	<input type="button" value="x"/>

Current Hires table:

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfilled by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,200.00		\$0.00	<input type="button" value="Return"/> <input type="button" value="Invoice"/>
2	Chandler Bing	AUD6	\$240.00	peter		2021-Apr-05 18:34	2021-Apr-06 12:00	\$400.00	\$720.00		\$0.00	<input type="button" value="Return"/> <input type="button" value="Invoice"/>

Page controls: Show all Hires, \$ per page, Page 1 of 1, Total Rows: 2.

### 14. The next test case is for April 6, when a Customer is to come and hire a Vehicle at 9am. With the grace period constraint, we have to wait 14 hours. This is when the Offset days and hours in Business Configuration come in to help. Logout and login as Manager, and move to the Configurations page.

The screenshot shows the 'carDate - Configurations Maintenance' page under 'Business Configurations'.

	Current	Next	Remarks
Id	2	0	
Effective date	2021-04-01	04/05/2021	Date this config comes into effect
Company name	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
Company address line 1	2-111/a3/road6, Balanagar, Hyderabad	2-111/a3/road6, Banagere, Hyderabad	
Company address line 2	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
Grace period	30	30	Number of minutes hire/return time can deviate from clock.
Opening time	09:00	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
Closing time	18:00	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
Return time	12:00	12:00:00	Vehicles should be returned before this time of the day, after which Additional charge will apply.
Collection time	14:00	14:00:00	Vehicles can be collected after this time of the day. Additional charge applies if hirer collects vehicle before this time.
hourly factor	5	5	Additional charges are levied by the hours. Hourly charge is this percentage of the daily rate.
extra-time factor	10	10	If vehicle is return after agreed date/time, Extra charge applies. Extra charge is this percent over the regular charge.
week-end factor	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
days offset	-30	-30	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
hours offset	0	0	This is for test environment only. This number of hours is added to the clock to obtain current time whenever clock is referred to.

Page controls:  .

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Change days offset from -30 to -29, and hours offset from 0 to -10. This will effectively move the system clock back by 14 hours less. Click Save.

15. The change is applied. The current date time is April 6<sup>th</sup> 9:00 am as shown on the top right of the page.

The screenshot shows the 'Business Configurations' section of the carDate application. The configuration details are as follows:

	Current	Next	Remarks
<b>Id</b>	23	0	
<b>Effective Date</b>	2021-04-05	04/06/2021	Date this config comes into effect
<b>Company name</b>	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
<b>Company address line 1</b>	2-111/a3,road6, Balanagar, Hyderabad	2-111/a3,road6, Balanagar, Hyderabad	
<b>Company address line 2</b>	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
<b>Grace period</b>	30	30	Number of minutes hire/return time can deviate from clock.
<b>Opening time</b>	0900	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
<b>Closing time</b>	1800	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
<b>Return time</b>	1200	12:00:00	Vehicles should be returned before this time of the day, after which Additional charge will apply.
<b>Collection time</b>	1400	14:00:00	Vehicles can be collected after this time of the day, Additional charge applies if hirer collects vehicle before this time.
<b>Hourly factor</b>	5	5	Additional charges are levied by the hours. Hourly charge is this percentage of the daily rate.
<b>extra-time factor</b>	10	10	If vehicle is return after agreed date/time, Extra charge applies. Extra charge is this percent over the regular charge.
<b>week-end factor</b>	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
<b>days offset</b>	-29	-29	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
<b>hours offset</b>	-10	-10	This is for test environment only. This number of hours is added to the clock to obtain current time whenever clock is referred to.

Buttons: **Save**, **Reset**.

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16. Go on to create two more Hires as below:

The screenshot shows the 'Current Hires' section of the carDate application. A new hire entry is being created:

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hire	Hire history	Actions
6	Ross Geller	FRIENDS06	rossgreen@friends.com	+15555456761	<input checked="" type="checkbox"/>	Rachel Green	BMW101	1	<b>X</b>

Below the table, a new hire row is visible:

Pinned Vehicle Id	Licence Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
7	XS	BMW	BMW101	HIRED	100.0	Ross Geller	1	<b>X</b>

**Current Hires**

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BENB10	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<b>Return</b> <b>Invoice</b>
2	Chandler Bing	AUDI6	\$240.00	peter		2021-Apr-05 18:54	2021-Apr-08 12:00	\$400.00	\$720.00		\$0.00	<b>Return</b> <b>Invoice</b>
3	Phoebe Buffay	MCS2000	\$120.00	sikon		2021-Apr-06 09:00	2021-Apr-09 17:00	\$250.00	\$420.00		\$0.00	<b>Return</b> <b>Invoice</b>
4	Ross Geller	BMW101	\$100.00	sikon		2021-Apr-06 09:01	2021-Apr-10 12:00	\$300.00	\$420.00		\$0.00	<b>Return</b> <b>Invoice</b>

Buttons: **Show all Hires**, **5 per page**, **Page 1 of 1**, **Total Rows: 4**, **Save**, **Reset**.

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17. Take a look at the invoice of Phoebe's Hire for the fare breakdown:

**CarDate Leisure Vehicle Hiring Company Limited**  
2-111/a3, road:6, Balanagar, Hyderabad  
Andhra Pradesh, 500042, India

**Vehicle Hiring Invoice**

Customer ID	5	Name	Phoebe Buffay
Alternate contact	4	Name	Chandler Bing
Vehicle Id	10	Daily rate	\$120.00
Brand	Mercedes	License	MCS2000
Model	S Class		

Hiring Starts	2021-04-06 09:00	Hiring Id	3
Agreed Return	2021-04-09 17:00		

Hire type	Start	End	Quantity	Rate	Amount
Early collection fee	2021-04-06 09:00	2021-04-06 14:00	5 hrs	\$6.00	\$30.00
Daily rental	2021-04-06	2021-04-09	3 days	\$120.00	\$360.00
Late return	2021-04-09 12:00	2021-04-09 17:00	5 hrs	\$6.00	\$30.00
				Total	\$420.00
Deposit received	2021-04-06				\$250.00
				Balance	\$170.00

I acknowledge that the said Vehicle is received in satisfactory condition:

Standard collection time is 14:00, just like the standard check-in time for hotel room. As Phoebe collects the Vehicle at 9:00, the 5 hour period from 09:00 to 14:00 is considered early collection, and is charged \$6.00 hourly. This hourly rate of \$6.00 is 5% of Daily rate of \$120.00. 5% is a Business Configuration and can be changed. When a Hire is created, the 5% setting is saved with the Hire and will not be affected by subsequent changes to the Business Configuration. Any change to Business Configuration will not affect Hires created after it.

18. Now move to Customers page.

Hired Vehicle Id	License Plate	Model	Brand	Daily Rate	Status	Hired to	Hire History	Actions
7	BMW101	X5	BMW	100.0	Hired	Ross Geller	1	x

**Customers**

Customer Id (ASC)	Customer Name	Address	Driving License	Email	Phone No	Address line 1	Address line 2	City	Date of Birth	Is Active	Last Updated	Alternate Contact	Current Hire	Hire History	Actions		
1	Monica Geller	FRIENDS01	US	m.geller@friends.com	+15534568765	Birmingham		Alabama, United States	New York	1964-06-15	<input checked="" type="checkbox"/>	2021-04-05	Chandler Bing	BMW101	1		
2	Rachel Green	FRIENDS02	US	r.green@friends.com	+15534568766	Sherman Oaks, Los Angeles		California, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05	Ross Geller	BEN810	1		
3	Joey Tribbiani	FRIENDS03	US	j.tribbiani@friends.com	+15534568767	Newton		Massachusetts, United States	New York	1969-02-11	<input checked="" type="checkbox"/>	2021-04-05	Chandler Bing	BMW101	1		
4	Chandler Bing	FRIENDS04	US	c.bing@friends.com	+15534568768	Williamstown		Massachusetts, United States	New York	1969-08-19	<input checked="" type="checkbox"/>	2021-04-05	Rachel Green	AUD6	1		
5	Phoebe Buffay	FRIENDS05	US	p.buffay@friends.com	+15534568769	Enrico, Los Angeles		California, United States	New York	1963-07-30	<input checked="" type="checkbox"/>	2021-04-05	Chandler Bing	MCS2000	1		
6	Ross Geller	FRIENDS06	US	ross.geller@friends.com	+15534568761	Flushing		New York, United States	New York	1969-11-02	<input checked="" type="checkbox"/>	2021-04-05	Rachel Green	BMW101	1		
7	Jerry Seinfeld	SEINFELD01	US	j.seinfeld@seinfeld.com	+15534568775	Brooklyn		New York, United States	New York	1954-04-29	<input checked="" type="checkbox"/>	2021-01-14					
8	George Costanza	SEINFELD02	US	g.costanza@seinfeld.com	+15534568785	Newark		New Jersey, United States	New York	1959-09-23	<input checked="" type="checkbox"/>	2021-01-14					
9	Kramer Cosmo	SEINFELD03	US	k.cosmo@seinfeld.com	+15534568795	Culver City		California, United States	New York	1949-07-24	<input checked="" type="checkbox"/>	2021-01-15					
10	Eaine Benes	SEINFELD01	US	e.benes@seinfeld.com	+15534568715	Manhattan		New York, United States	New York	1961-01-13	<input checked="" type="checkbox"/>	2021-01-14					

Show only Hiring    10 per page    First    Prev    Next    Last    Page 1 of 3    Total Rows: 23

mm/dd/yyyy    2021-04-06    Ross Geller   

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Note under Current Hire column, you can see the Vehicle hired by each Customer, and clicking on any of them will pin that Vehicle to conveniently display the basic Vehicle details. For example, Vehicle BMW101 can be easily pinned by clicking its license plate number under Current Hire column of Customer Ross.

## 19. Likewise on the Vehicles page.

The screenshot shows the Vehicles page of the carData application. A customer row for Ross Geller (BMW101) is pinned, indicated by a yellow background. The pinned row contains the following details:

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hirer	Hire history	Actions
6	Ross Geller	FRIENDS06	ross.green@friends.com	+155534568761	<input checked="" type="checkbox"/>	Rachel Green	BMW101	1	

The main table below shows other vehicle records:

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
7	BMW101		BMW	X5	4800	350	241	Ross Geller	Hired	\$100.00	1	
8	BEN610		Bentley	Continental GTC	6000	552	314	Rachel Green	Hired	\$150.00	1	
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		Suspended	\$150.00		
10	MCS2000		Mercedes	S Class	2000	254	249	Phoebe Buffay	Hired	\$120.00	1	
11	AUD6		Audi	RS6	4000	591	250	Chandler Bing	Hired	\$240.00	1	

At the bottom, there are buttons for 'Show only Hired', '5 per page \*', 'First', 'Prev', 'Next', 'Last', 'Page 1 of 4', and 'Total Rows: 16'.

You can click on the Customer under the Current Hirer column to pin the Customer and thus display it on the screen. On the above screen, the Hirer of BMW101, Ross, is pinned and details shown.

## 20. To view the Alternate contact, just click on the Alternate Contact on the pinned Customer row. In this case, click Rachel under Alternate contact for pinned Customer Ross, and Rachel becomes the pinned Customer and details displayed as below.

The screenshot shows the Vehicles page of the carData application. A customer row for Rachel Green (BEN610) is pinned, indicated by a yellow background. The pinned row contains the following details:

Pinned Customer Id	Customer Name	NRIC	Email	Phone No	Is Active	Alternate Contact	Current Hirer	Hire history	Actions
2	Rachel Green	FRIENDS02	r.green@friends.com	+155534568766	<input checked="" type="checkbox"/>	Ross Geller	BEN610	1	

The main table below shows other vehicle records:

Vehicle Id (ASC)	License Plate	Pictures	Brand	Model	Engine	BHP	Top Speed	Current Hirer	Status	Daily Rate	Hire history	Actions
7	BMW101		BMW	X5	4800	350	241	Ross Geller	Hired	\$100.00	1	
8	BEN610		Bentley	Continental GTC	6000	552	314	Rachel Green	Hired	\$150.00	1	
9	MCD2000		Mercedes	C Class Cabriolet	2000	390	248		Suspended	\$150.00		
10	MCS2000		Mercedes	S Class	2000	254	249	Phoebe Buffay	Hired	\$120.00	1	
11	AUD6		Audi	RS6	4000	591	250	Chandler Bing	Hired	\$240.00	1	

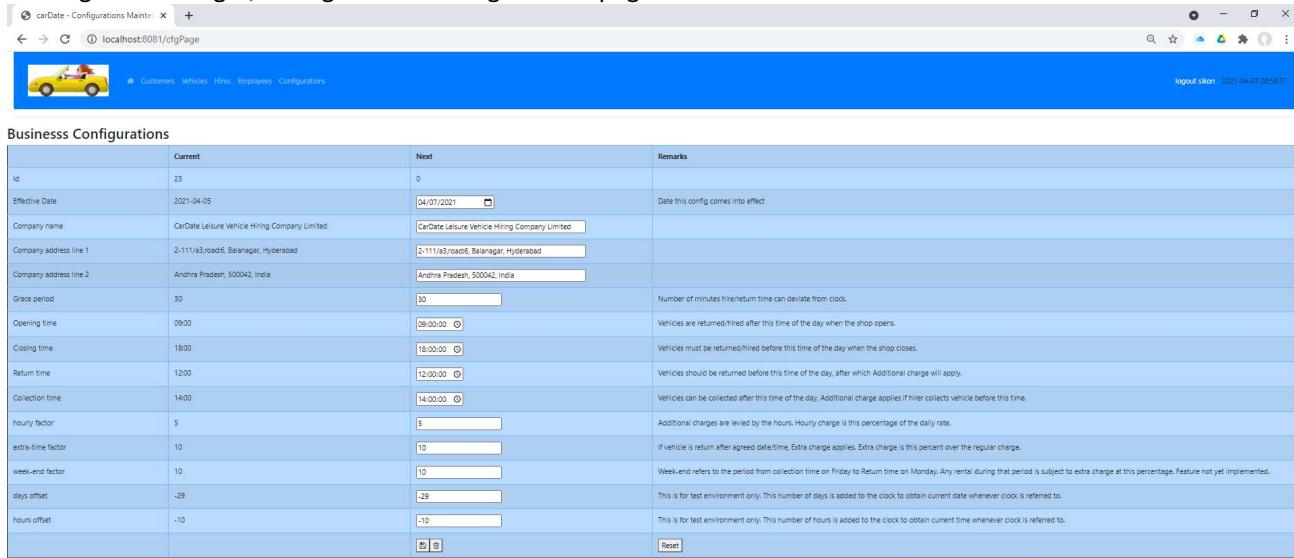
At the bottom, there are buttons for 'Show only Hired', '5 per page \*', 'First', 'Prev', 'Next', 'Last', 'Page 1 of 4', and 'Total Rows: 16'.

Imagine this scenario, you are at Vehicles page. The prior Hirer for BMW101 has left some personal items in the Vehicle. You need to contact the current Hirer who is Ross. You click on Ross under the Current Hirer column to have him displayed on top as pinned Customer. You tried to contact Ross by calling but could not get a response. So you click on Alternate Contact for Ross and get Rachel as pinned Customer instead. Now you can contact Rachel. You may go on to look for alternate contact of Rachel too if available.

## 4. Vehicle Return

This section shows how Hired Vehicles are returned.

### 1. Login as Manager, then go to the Configurations page.

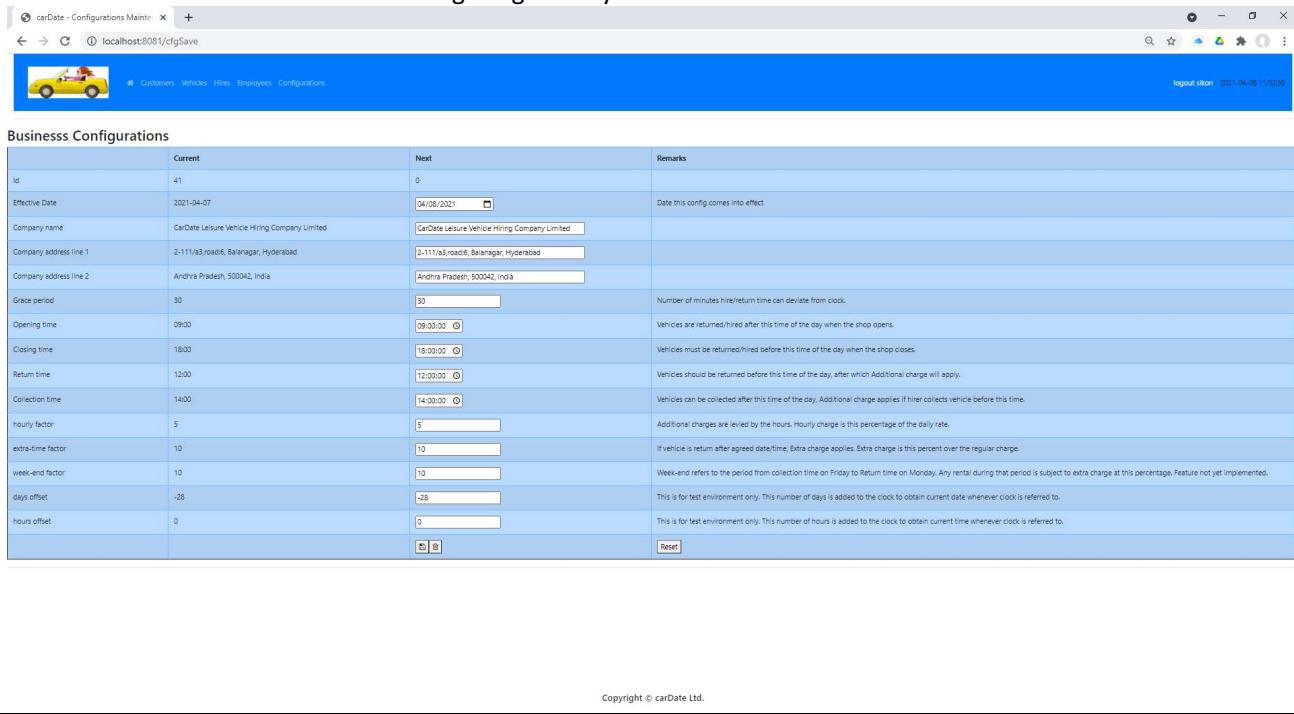


	Current	Next	Remarks
Id	23	0	
Effective Date	2021-04-05	04/07/2021	Date this config comes into effect
Company name	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
Company address line 1	2-111/a3/road6, Balanagar, Hyderabad	2-111/a3/road6, Balanagar, Hyderabad	
Company address line 2	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
Grace period	30	30	Number of minutes hire/return time can deviate from clock.
Opening time	09:00	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
Closing time	18:00	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
Return time	12:00	12:00:00	Vehicles should be returned before this time of the day, after which Additional charge will apply.
Collection time	14:00	14:00:00	Vehicles can be collected after this time of the day. Additional charge applies if hirer collects vehicle before this time.
hourly factor	5	5	Additional charges are levied by the hours. Hourly charge is this percentage of the daily rate.
extra-time factor	10	10	If vehicle is return after agreed date/time, Extra charge applies. Extra charge is this percent over the regular charge.
week-end factor	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
days offset	-29	-29	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
hours offset	-10	-10	This is for test environment only. This number of hours is added to the clock to obtain current time whenever clock is referred to.

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Since we are conducting test/demonstration, we are free to manipulate the date time. We want to move the date time to Apr 8<sup>th</sup> at 11:00, that is to add 1 day and 10 hours to the Apr 7<sup>th</sup> 01:00 date time shown top right. Change days offset to -28, and hours offset to 0, then click Save button.

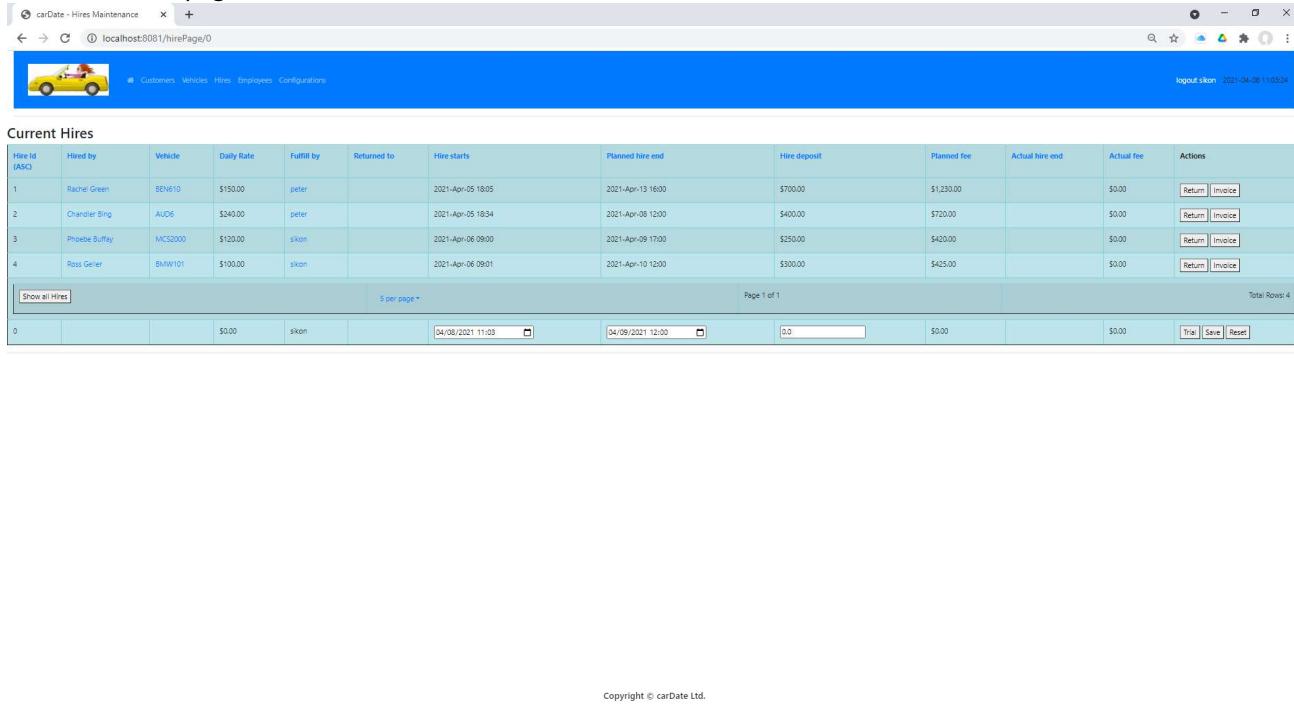
### 2. You can see the test date time changes right away to what we need.



	Current	Next	Remarks
Id	41	0	
Effective Date	2021-04-07	04/08/2021	Date this config comes into effect
Company name	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
Company address line 1	2-111/a3/road6, Balanagar, Hyderabad	2-111/a3/road6, Balanagar, Hyderabad	
Company address line 2	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
Grace period	30	30	Number of minutes hire/return time can deviate from clock.
Opening time	09:00	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
Closing time	18:00	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
Return time	12:00	12:00:00	Vehicles should be returned before this time of the day, after which Additional charge will apply.
Collection time	14:00	14:00:00	Vehicles can be collected after this time of the day. Additional charge applies if hirer collects vehicle before this time.
hourly factor	5	5	Additional charges are levied by the hours. Hourly charge is this percentage of the daily rate.
extra-time factor	10	10	If vehicle is return after agreed date/time, Extra charge applies. Extra charge is this percent over the regular charge.
week-end factor	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
days offset	-28	-28	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
hours offset	0	0	This is for test environment only. This number of hours is added to the clock to obtain current time whenever clock is referred to.

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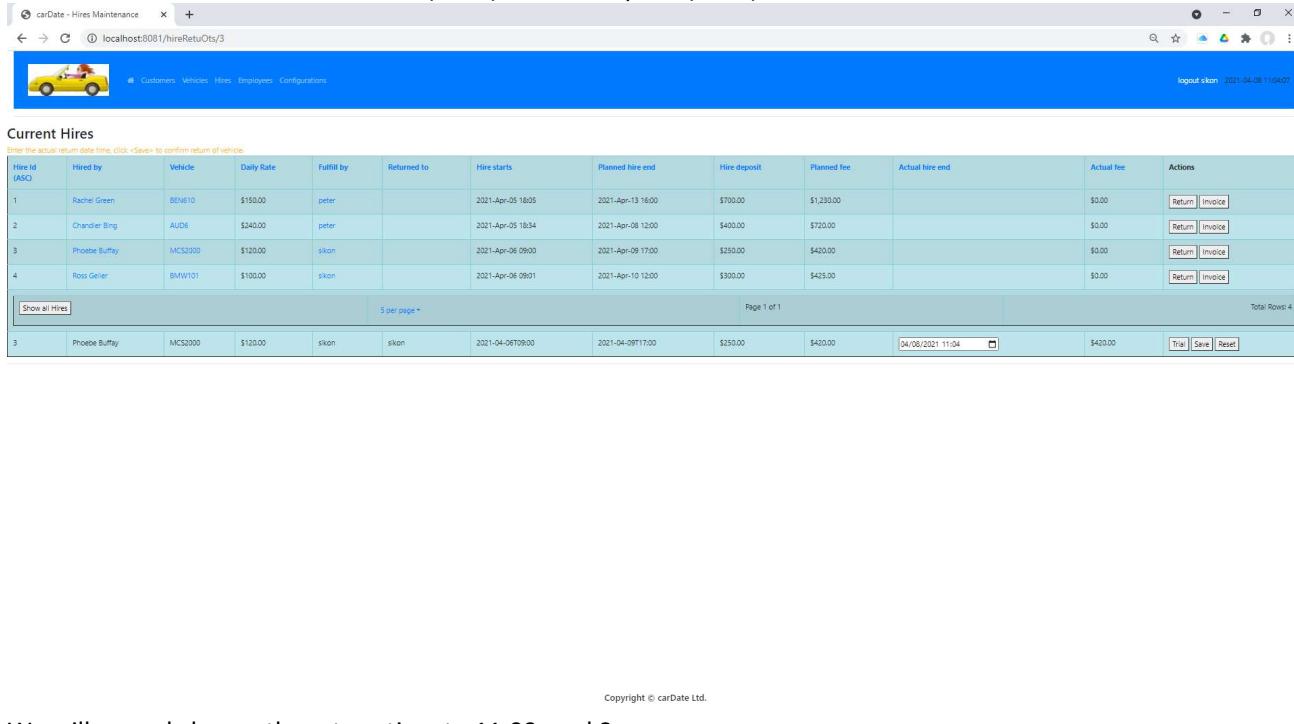
### 3. Go to Hires page:



The screenshot shows the 'carDate - Hires Maintenance' page at localhost:8081/hirePage/0. The title bar includes the application name, a search icon, and a user dropdown. The top navigation bar has links for Customers, Vehicles, Hires, Employees, and Configurations, with 'Hires' being the active tab. A yellow car icon is on the left. The main content area is titled 'Current Hires' and displays a table with four rows of hire information. The columns include: Hire Id (ASC), Hired by, Vehicle, Daily Rate, Fulfill by, Returned to, Hire starts, Planned hire end, Hire deposit, Planned fee, Actual hire end, Actual fee, and Actions. The first row (Hire Id 1) is for Rachel Green, hired by peter, starting 2021-Apr-05 18:05 and ending 2021-Apr-13 16:00 with a \$700.00 deposit and a \$1,230.00 planned fee. The second row (Hire Id 2) is for Chandler Bing, hired by peter, starting 2021-Apr-05 18:34 and ending 2021-Apr-08 12:00 with a \$400.00 deposit and a \$720.00 planned fee. The third row (Hire Id 3) is for Phoebe Buffay, hired by skon, starting 2021-Apr-06 09:00 and ending 2021-Apr-09 17:00 with a \$250.00 deposit and a \$420.00 planned fee. The fourth row (Hire Id 4) is for Ross Geller, hired by skon, starting 2021-Apr-06 09:01 and ending 2021-Apr-10 12:00 with a \$300.00 deposit and a \$425.00 planned fee. At the bottom of the table, there are buttons for 'Show all Hires', '\$ per page', 'Page 1 of 1', and 'Total Rows: 4'. Below the table, there are input fields for '0', '\$0.00', 'skon', date pickers for '04/08/2021 11:03' and '04/09/2021 12:00', a '55' input field, '\$0.00', and buttons for 'Trial', 'Save', and 'Reset'. The footer contains the copyright notice 'Copyright © carDate Ltd.'

Click on the Return button next to Phoebe's Hire.

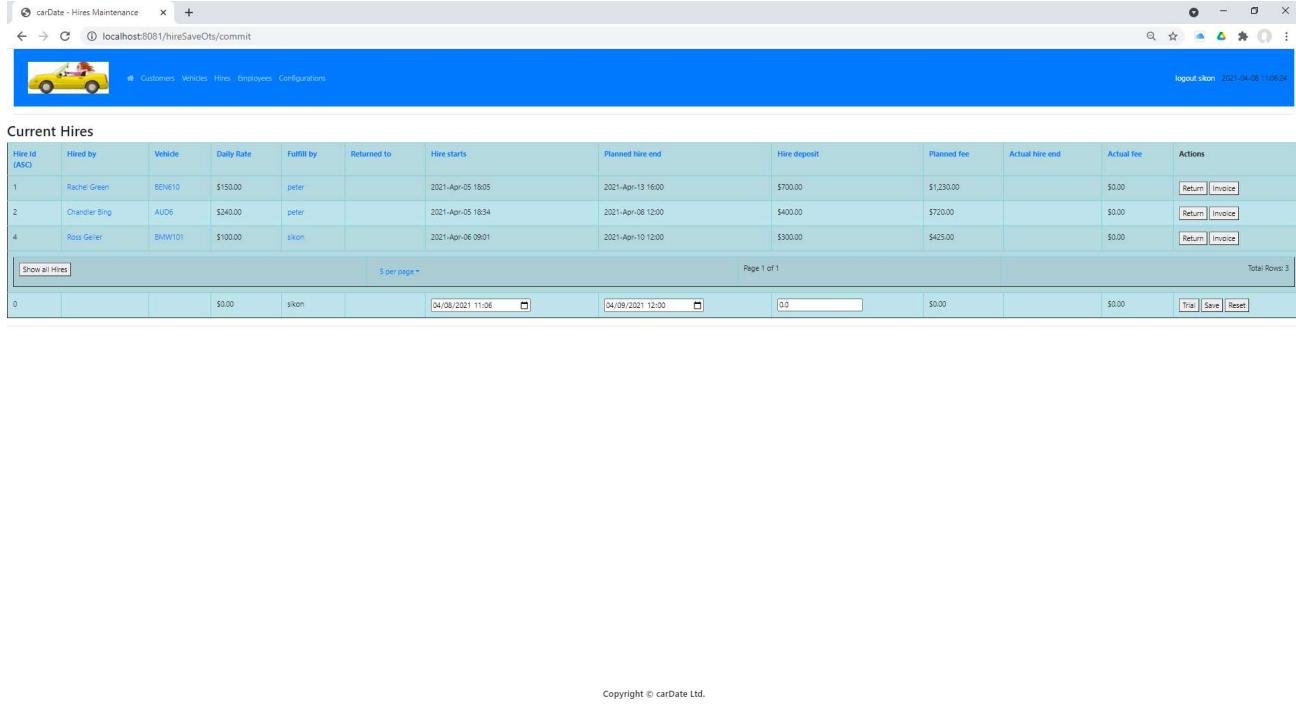
- Phoebe's Hire is brought down. The actual fee is computed. Although Phoebe is returning the Vehicle ahead of planned date time. The company does not refund for such cases, and will charge according to original plan. The officer should collect the fee (\$420) less the deposit (\$250) from the Customer now.



The screenshot shows the 'carDate - Hires Maintenance' page at localhost:8081/hireRetuOts/3. The title bar, navigation bar, and car icon are identical to the previous screenshot. The main content area is titled 'Current Hires' and displays a table with four rows of hire information. The first three rows are identical to the previous screenshot. The fourth row (Hire Id 4) is for Phoebe Buffay, who has returned the vehicle. The 'Returned to' field is now 'skon', and the 'Actual hire end' field is '2021-Apr-10 12:00'. The 'Actual fee' field is '\$420.00'. The 'Actions' column for this row contains 'Return' and 'Invoice' buttons. At the bottom of the table, there are buttons for 'Show all Hires', '\$ per page', 'Page 1 of 1', and 'Total Rows: 4'. Below the table, there are input fields for '3', 'Phoebe Buffay', 'MCS2000', '\$120.00', 'skon', 'skon', date pickers for '2021-04-06T09:00' and '2021-04-09T17:00', a '\$250.00' input field, '\$420.00', and buttons for 'Trial', 'Save', and 'Reset'. The footer contains the copyright notice 'Copyright © carDate Ltd.'

We will go and change the return time to 11:00, and Save.

## 5. The Hire record disappears from the page.



The screenshot shows a web browser window titled "carDate - Hires Maintenance". The URL is "localhost:8081/hireSaveOts/commit". The page has a blue header bar with a yellow car icon and navigation links: Customers, Vehicles, Hires, Employees, Configurations. On the right, it says "logout sikon 2021-04-08 11:09:02". Below the header is a section titled "Current Hires" with a table. The table has columns: Hire Id (ASC), Hired by, Vehicle, Daily Rate, Fulfill by, Returned to, Hire starts, Planned hire end, Hire deposit, Planned fee, Actual hire end, Actual fee, and Actions. There are three rows of data:

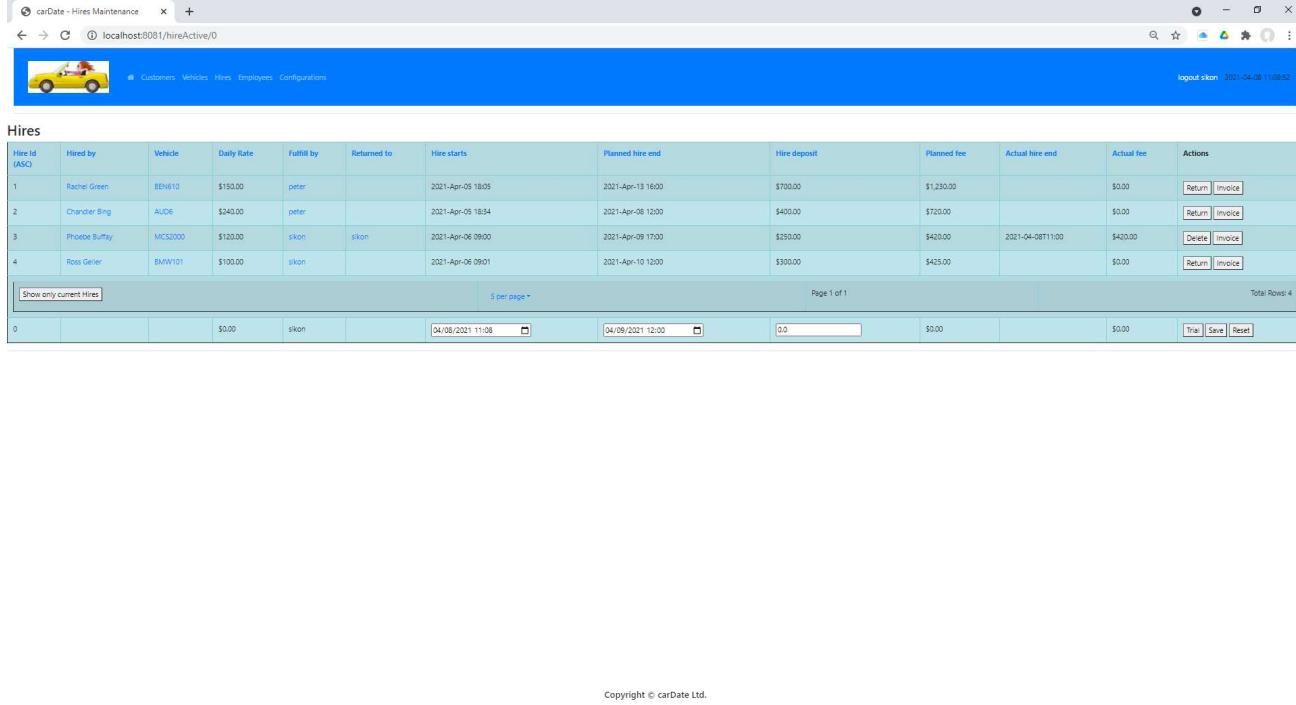
Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
2	Chandler Bing	AUD6	\$240.00	peter		2021-Apr-05 18:54	2021-Apr-06 12:00	\$400.00	\$720.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
4	Ross Geller	BMW101	\$100.00	sikon		2021-Apr-06 09:01	2021-Apr-10 12:00	\$300.00	\$425.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>

Below the table are buttons: "Show all Hires", "3 per page", "Page 1 of 1", and "Total Rows: 3". At the bottom are buttons: "Trial", "Save", and "Reset".

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This is because the page is set up to show only current Hires. Click on the Show all Hires button on the Navigation row. \*\* This is not a very smooth workflow. Will need some enhancement later on. One idea is that Hires returned today are still considered Current and should not be hidden. \*\*

## 6. Phoebe's Hire is shown. You can click the button (which has label changed to "Show only current Hires") to toggle between hide and show returned Hires.



The screenshot shows a web browser window titled "carDate - Hires Maintenance". The URL is "localhost:8081/hireActive/0". The page has a blue header bar with a yellow car icon and navigation links: Customers, Vehicles, Hires, Employees, Configurations. On the right, it says "logout sikon 2021-04-08 11:09:02". Below the header is a section titled "Hires" with a table. The table has columns: Hire Id (ASC), Hired by, Vehicle, Daily Rate, Fulfill by, Returned to, Hire starts, Planned hire end, Hire deposit, Planned fee, Actual hire end, Actual fee, and Actions. There are four rows of data, including Phoebe's hire which was previously hidden:

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
2	Chandler Bing	AUD6	\$240.00	peter		2021-Apr-05 18:54	2021-Apr-06 12:00	\$400.00	\$720.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
3	Phoebe Buffay	MCS2000	\$120.00	sikon	sikon	2021-Apr-06 09:00	2021-Apr-09 17:00	\$350.00	\$420.00	2021-Apr-09 11:00	\$420.00	<a href="#">Delete</a> <a href="#">Invoice</a>
4	Ross Geller	BMW101	\$100.00	sikon		2021-Apr-06 09:01	2021-Apr-10 12:00	\$300.00	\$425.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>

Below the table are buttons: "Show only current Hires", "3 per page", "Page 1 of 1", and "Total Rows: 4". At the bottom are buttons: "Trial", "Save", and "Reset".

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You should note that "sikon" who is the staff attending to the Vehicle return, has the login name denoted here under the Returned to column against the returned Hire.

Click the Invoice button next to Phoebe's Hire.

7. The invoice is generated and shown:

Customer ID	5	Name	Phoebe Buffay		
Alternate contact	4	Name	Chandler Bing		
Vehicle Id	10	Daily rate	\$120.00		
Brand	Mercedes	License	MCS2000		
Model	S Class				
Hiring Starts	2021-04-06 09:00	Hiring Id	3		
Agreed Return	2021-04-09 17:00	Actual Return	2021-04-08 11:00		
Hire type	Start	End	Quantity	Rate	Amount
Early collection fee	2021-04-06 09:00	2021-04-06 14:00	5 hrs	\$6.00	\$30.00
Daily rental	2021-04-06	2021-04-09	3 days	\$120.00	\$360.00
Late return	2021-04-09 12:00	2021-04-09 17:00	5 hrs	\$6.00	\$30.00
			Total		\$420.00
Deposit received	2021-04-06				\$250.00
			Balance		\$170.00

Agreed Return and Actual Return date time are shown. The fare is computed based on Agreed Return. The balance of \$170 which has to be paid is also shown on the invoice.

8. Next, Chandler returns the Vehicle. By the time we are done with the formalities, he reaches the service counter at 12:07, which is after the due time of 12:00. So when you click Return, it will show you that the Actual fee is \$13.20 more than the Planned fee because of the overdue.

Hired Vehicle Id	Licence Plate	Model	Brand	Ven Status	Daily Rate	Current Hire	Hire History	Actions
11	RS6	Audi	AUD6	HIRED	240.0	Chandler Bing	1	X

Hires

Order the actual return date/time, click <Save> to confirm return of vehicle.

Hire Id (ASQ)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 16:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<button>Return</button> <button>Invoice</button>
2	Chandler Bing	AUD6	\$240.00	peter		2021-Apr-05 18:34	2021-Apr-08 12:00	\$400.00	\$720.00		\$0.00	<button>Return</button> <button>Invoice</button>
3	Phoebe Buffay	MCS2000	\$120.00	sikon	sikon	2021-Apr-06 09:00	2021-Apr-09 17:00	\$250.00	\$420.00	2021-04-08T11:00	\$420.00	<button>Delete</button> <button>Invoice</button>
4	Ross Geller	BHW101	\$100.00	sikon		2021-Apr-06 09:01	2021-Apr-10 12:00	\$300.00	\$425.00		\$0.00	<button>Return</button> <button>Invoice</button>

Show only current Hires

5 per page ▾

Page 1 of 1

Total Rows: 4

This is when the Grace period comes in. The officer can override the Actual hire end by varying it no more than 30 minutes from the derived server clock. So let's override the Actual hire end to Apr 8 at 12:00, and click Save.

\*\* Need enhancement here: The display for Hire starts and Planned hire end in the edit area for a Hire return, and Actual hire end for the page, should follow that of Hire starts, to have the T replaced with a blank. \*\* This enhancement was applied on May 6 at 18:00. \*\*

9. Because the computed fee has changed, you are prompted once again to Save.

Actual Fee computed, please click <Save> to confirm Return of Hire.

Pinned Vehicle Id	License Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
11	RS6	Audi	AUDI	HIRED	\$240.00	Chandler Bing	1	<a href="#">X</a>

**Hires**

Hire Id (ASCI)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN10	\$150.00	peter		2021-Apr-05 1605	2021-Apr-13 1600	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
2	Chandler Bing	AUDI	\$240.00	peter		2021-Apr-05 1834	2021-Apr-08 1200	\$400.00	\$720.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
3	Phoebe Buffay	MCS2000	\$120.00	sikon	sikon	2021-Apr-06 0900	2021-Apr-09 1700	\$250.00	\$420.00	2021-04-08T11:00	\$420.00	<a href="#">Delete</a> <a href="#">Invoice</a>
4	Ross Geller	BMW101	\$100.00	sikon		2021-Apr-06 0901	2021-Apr-10 1200	\$300.00	\$425.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>

Show only current Hires 5 per page ▾ Page 1 of 1 Total Rows 4

2 Chandler Bing AUDI \$240.00 peter sikon 2021-04-08T18:34 2021-04-08T12:00 \$400.00 \$720.00 04/08/2021 12:00 [\[ \]](#) \$720.00 [\[ \]](#) [Save](#) [Reset](#)

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Click Save.

10. The Hire is returned.

Actual Fee computed, please click <Save> to confirm Return of Hire.

Pinned Vehicle Id	License Plate	Model	Brand	Veh Status	Daily Rate	Current Hire	Hire History	Actions
11	RS6	Audi	AUDI	FREE	\$240.00		1	<a href="#">X</a>

**Hires**

Hire Id (ASCI)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN10	\$150.00	peter		2021-Apr-05 1605	2021-Apr-13 1600	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
2	Chandler Bing	AUDI	\$240.00	peter	sikon	2021-Apr-05 1834	2021-Apr-08 1200	\$400.00	\$720.00	2021-04-08T12:00	\$720.00	<a href="#">Delete</a> <a href="#">Invoice</a>
3	Phoebe Buffay	MCS2000	\$120.00	sikon	sikon	2021-Apr-06 0900	2021-Apr-09 1700	\$250.00	\$420.00	2021-04-08T11:00	\$420.00	<a href="#">Delete</a> <a href="#">Invoice</a>
4	Ross Geller	BMW101	\$100.00	sikon		2021-Apr-06 0901	2021-Apr-10 1200	\$300.00	\$425.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>

Show only current Hires 5 per page ▾ Page 1 of 1 Total Rows 4

0 AUDI \$240.00 sikon 04/08/2021 12:08 [\[ \]](#) 04/09/2021 12:00 [\[ \]](#) \$0.00 \$0.00 [\[ \]](#) [Save](#) [Reset](#)

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Click on the Invoice button to show the invoice.

11. The invoice shows identical Agreed and Actual Return.

Customer ID	4	Name	Chandler Bing		
Alternate contact	2	Name	Rachel Green		
Vehicle Id	11	Daily rate	\$240.00		
Brand	Audi	License	AUD6		
Model	RS6				
Hiring Starts	2021-04-05 18:34	Hiring Id	2		
Agreed Return	2021-04-08 12:00	Actual Return	2021-04-08 12:00		
Hire type	Start	End	Quantity	Rate	Amount
Daily rental	2021-04-05	2021-04-08	3 days	\$240.00	\$720.00
				Total	\$720.00
Deposit received	2021-04-05				\$400.00
				Balance	\$320.00

12. Now we shall move to Apr 10<sup>th</sup> after 1pm. Change days offset from -28 to -26, and hours offset from 0 to 1.

	Current	Next	Remarks
Id	41	0	
Effective Date	2021-04-07	04/08/2021	Date this config comes into effect
Company name	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
Company address line 1	2-111/a3,road:6, Balanagar, Hyderabad	2-111/a3,road:6, Balanagar, Hyderabad	
Company address line 2	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
Grace period	30	30	Number of minutes hire/return time can deviate from clock.
Opening time	09:00	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
Closing time	18:00	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
Return time	12:00	12:00:00	Vehicles should be returned before this time of the day, after which additional charge will apply.
Collection time	14:00	14:00:00	Vehicles can be collected after this time of the day. Additional charge applies if hired collects vehicle before this time.
hourly factor	5	5	Additional charges are levied by the hour. Hourly charge is this percentage of the daily rate.
extra-time factor	10	10	If vehicle is return after agreed date/time, extra charge applies. Extra charge is this percent over the regular charge.
week-end factor	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
days offset	-28	-26	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
hours offset	0	1	This is for test environment only. This number of hours is added to the clock to obtain current time whenever clock is referred to.

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Click Save.

**13. Date time is changed to Apr 10 after 1pm.**

carDate - Configurations Maintenance

localhost:8081/cfgSave

Business Configurations

	Current	Next	Remarks
<b>Id</b>	42	0	
<b>Effective Date</b>	2021-04-08	04/10/2021	Date this config comes into effect
<b>Company name</b>	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
<b>Company address line 1</b>	2-111/a3, road 6, Bananagar, Hyderabad	2-111/a3, road 6, Bananagar, Hyderabad	
<b>Company address line 2</b>	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
<b>Grace period</b>	30	30	Number of minutes hire/return time can deviate from clock.
<b>Opening time</b>	09:00	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
<b>Closing time</b>	18:00	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
<b>Return time</b>	12:00	12:00:00	Vehicles should be returned before this time of the day, after which Additional charge will apply.
<b>Collection time</b>	14:00	14:00:00	Vehicles can be collected after this time of the day. Additional charge applies if hirer collects vehicle before this time.
<b>hourly factor</b>	5	5	Additional charges are levied by the hours. Hourly charge is this percentage of the daily rate.
<b>extra-time factor</b>	10	10	If vehicle is return after agreed date/time. Extra charge applies. Extra charge is this percent over the regular charge.
<b>week-end factor</b>	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
<b>days offset</b>	-26	-26	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
<b>hours offset</b>	1	1	This is for test environment only. This number of hours is added to the clock to obtain current time whenever clock is referred to.

**Buttons:** [Save] [Reset]

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**14. Ross has come to return to Vehicle. Go to Hires page, and click Return against that Hire.**

carDate - Hires Maintenance

localhost:8081/hireRtuOts/4

Hires

Before actual return date time, click +Save+ to confirm return of vehicle.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter	siklon	2021-Apr-08 16:05	2021-Apr-13 16:00	\$700.00	\$1230.00		\$0.00	[Return] [Invoice]
2	Chandler Bing	AUD6	\$240.00	peter	siklon	2021-Apr-08 18:34	2021-Apr-08 12:00	\$400.00	\$720.00	2021-04-08T12:00	\$720.00	[Delete] [Invoice]
3	Phoebe Buffay	MCS2000	\$120.00	siklon	siklon	2021-Apr-08 09:00	2021-Apr-09 17:00	\$250.00	\$420.00	2021-04-08T11:00	\$420.00	[Delete] [Invoice]
4	Ross Geller	BMW101	\$100.00	siklon		2021-Apr-08 09:01	2021-Apr-10 12:00	\$300.00	\$425.00		\$0.00	[Return] [Invoice]

Show only current Hires

5 per page • Page 1 of 1 Total Rows: 4

4 Ross Geller BMW101 \$100.00 siklon siklon 2021-04-06T09:01 2021-04-10T12:00 \$300.00 \$425.00 04/10/2021 13:14 [Save] [Reset]

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This is an overdue. We will again give the customer some benefit by overriding the actual return time to 13:00. Do that and click Save.

15. The fee is different, so you get to visual it one more time before committing.

A screenshot of a web browser displaying the carDate - Hires Maintenance application. The URL is localhost:8081/hireSaveOts/commit. The page shows a table of hired vehicles. One row is selected for vehicle R56, which is an Audi model. The daily rate for this vehicle is listed as \$240.0. Below the table, there is a section titled 'Hires' listing four hire records. The fourth hire record is for vehicle BMW101, with a daily rate of \$100.00. At the bottom right of the page, there are buttons for 'Trial', 'Save', and 'Reset'.

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Click Save.

16. Hire is returned.

A screenshot of the carDate - Hires Maintenance application, identical to the previous one but with a slight difference. The daily rate for vehicle R56 is now correctly listed as \$240.0. The rest of the interface, including the hire history table and footer, remains the same.

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Click Invoice button.

17. The invoice showed that the Actual Return is after the Agreed Return. Extra time charge applies.

Customer ID	6	Name	Ross Geller
Alternate contact	2	Name	Rachel Green
Vehicle Id	7	Daily rate	\$100.00
Brand	BMW	License	BMW101
Model	X5		

Hiring Starts	2021-04-06 09:01	Hiring Id	4
Agreed Return	2021-04-10 12:00	Actual Return	2021-04-10 13:00

Hire type	Start	End	Quantity	Rate	Amount
Early collection fee	2021-04-06 09:01	2021-04-06 14:00	5 hrs	\$5.00	\$25.00
Daily rental	2021-04-06	2021-04-10	4 days	\$100.00	\$400.00
Early collection fee (extra time)	2021-04-10 12:00	2021-04-10 13:00	1 hrs	\$5.50	\$5.50
				Total	\$430.50
Deposit received	2021-04-06				\$300.00
				Balance	\$130.50

When computing charges for extra time, the period of extra time is seen as another Hire. So we are computing for a Hire from Apr 10 12:00 to 13:00. As the standard collection time is 14:00, collection before that is considered early collection, and is charged hourly at 5% of the Daily rate. As this is a Hire resulting from late return, there is a 10% extra time levy. So the hour rate is (Daily rate x 5%) x (1 + 10%) = \$5.50.

18. We will now move the date time to Apr 14 at 16:00, to simulate and 1 day overdue return for Rachel.

	Current	Next	Remarks
Id	42	0	
Effective Date	2021-04-08	04/10/2021	Date this config comes into effect.
Company name	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
Company address line 1	2-111/83, road 6, Balanagar, Hyderabad	2-111/83, road 6, Balanagar, Hyderabad	
Company address line 2	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
Grace period	30	30	Number of minutes hire/return time can deviate from clock.
Opening time	09:00	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
Closing time	18:00	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
Return time	12:00	12:00:00	Vehicles should be returned before this time of the day, after which Additional charge will apply.
Collection time	14:00	14:00:00	Vehicles can be collected after this time of the day. Additional charge applies if hirer collects vehicle before this time.
hourly factor	5	5	Additional charges are levied by the hours. Hourly charge is this percentage of the daily rate.
extra-time factor	10	10	If vehicle is return after agreed date/time, Extra charge applies. Extra charge is this percent over the regular charge.
week-end factor	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
days offset	-26	-22	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
hours offset	1	1	This is for test environment only. This number of hours is added to the clock to obtain current time whenever clock is referred to.

Click Save.

19. Date time is moved to Apr 14 at 16:26:

carDate - Configurations Maintenance

localhost:8081/cfgSave

Business Configurations

	Current	Next	Remarks
<b>Id</b>	49	0	
<b>Effective Date</b>	2021-04-10	04/14/2021	Date this config comes into effect
<b>Company name</b>	CarDate Leisure Vehicle Hiring Company Limited	CarDate Leisure Vehicle Hiring Company Limited	
<b>Company address line 1</b>	2-111/a3,road6, Banagere, Hyderabad	2-111/a3,road6, Banagere, Hyderabad	
<b>Company address line 2</b>	Andhra Pradesh, 500042, India	Andhra Pradesh, 500042, India	
<b>Grace period</b>	30	30	Number of minutes hire/return time can deviate from clock.
<b>Opening time</b>	09:00	09:00:00	Vehicles are returned/hired after this time of the day when the shop opens.
<b>Closing time</b>	18:00	18:00:00	Vehicles must be returned/hired before this time of the day when the shop closes.
<b>Return time</b>	12:00	12:00:00	Vehicles should be returned before this time of the day, after which Additional charge will apply.
<b>Collection time</b>	14:00	14:00:00	Vehicles can be collected after this time of the day. Additional charge applies if hired collects vehicle before this time.
<b>Hourly factor</b>	5	5	Additional charges are levied by the hours. Hourly charge is this percentage of the daily rate.
<b>extra-time factor</b>	10	10	If vehicle is return after agreed date/time, Extra charge applies. Extra charge is this percent over the regular charge.
<b>week-end factor</b>	10	10	Week-end refers to the period from collection time on Friday to Return time on Monday. Any rental during that period is subject to extra charge at this percentage. Feature not yet implemented.
<b>days offset</b>	-22	-22	This is for test environment only. This number of days is added to the clock to obtain current date whenever clock is referred to.
<b>hours offset</b>	4	4	This is for test environment only. This number of hours is added to the clock to obtain current date whenever clock is referred to.
		<input type="button" value="Reset"/>	

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20. We will demonstrate a Hire return by different staff. Logout sikon, and Login with peter. Go to Hires page, click the Show all Hires button to show all Hires. Click Return button against Rachel's Hire.

carDate - Hires Maintenance

localhost:8081/hireRetuOts/1

Hires

Enter the actual return date/time, click <Save> to confirm return of vehicle.

Hire Id (ASQ)	Hired by	Vehicle	Daily Rate	Fulfilled by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter	sikon	2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<input type="button" value="Return"/> <input type="button" value="Invoice"/>
2	Chandler Bing	AUD6	\$240.00	peter	sikon	2021-Apr-05 18:34	2021-Apr-08 12:00	\$400.00	\$720.00	2021-04-08T12:00	\$720.00	<input type="button" value="Invoice"/>
3	Phoebe Buffay	MCS2000	\$120.00	sikon	sikon	2021-Apr-06 09:00	2021-Apr-09 17:00	\$250.00	\$420.00	2021-04-09T17:00	\$420.00	<input type="button" value="Invoice"/>
4	Ross Geller	BMW101	\$100.00	sikon	sikon	2021-Apr-06 09:01	2021-Apr-10 12:00	\$300.00	\$425.00	2021-04-10T13:00	\$430.50	<input type="button" value="Invoice"/>

Show only current Hires      5 per page ▾      Page 1 of 1      Total Rows: 4

1    Rachel Green    BEN610    \$150.00    peter    peter    2021-04-05T18:05    2021-04-13T16:00    \$700.00    \$1,230.00    04/14/2021 16:26    \$1,496.25   

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Return date time is taken from the derived server clock, and Actual fee computed based on actual. Returned to staff is peter.

Let's override the Actual hire end back to 16:00, and click Save.

## 21. The computed fee has changed.

The screenshot shows a table of vehicle hires. The first row for Rachel Green (BEN610) has a planned fee of \$1,230.00 and an actual fee of \$1,498.25. The 'Actions' column for this row contains 'Return' and 'Invoice' buttons.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter		2021-Apr-05 18:05	2021-Apr-13 16:00	\$700.00	\$1,230.00		\$0.00	<a href="#">Return</a> <a href="#">Invoice</a>
2	Chandler Bing	AUD6	\$240.00	peter	sikor	2021-Apr-05 18:34	2021-Apr-08 12:00	\$400.00	\$720.00	2021-04-08T12:00	\$720.00	<a href="#">Invoice</a>
3	Phoebe Buffay	MCS2000	\$120.00	sikor	sikor	2021-Apr-06 09:00	2021-Apr-09 17:00	\$250.00	\$420.00	2021-04-08T11:00	\$420.00	<a href="#">Invoice</a>
4	Ross Geller	BMW101	\$100.00	sikor	sikor	2021-Apr-06 09:01	2021-Apr-10 12:00	\$300.00	\$425.00	2021-04-10T13:00	\$430.50	<a href="#">Invoice</a>

Click Save button again.

## 22. The Hire is returned.

The screenshot shows the same table of vehicle hires. The first row for Rachel Green (BEN610) now has an actual fee of \$0.00. The 'Actions' column for this row contains 'Invoice' and 'Save' buttons.

Hire Id (ASC)	Hired by	Vehicle	Daily Rate	Fulfill by	Returned to	Hire starts	Planned hire end	Hire deposit	Planned fee	Actual hire end	Actual fee	Actions
1	Rachel Green	BEN610	\$150.00	peter	peter	2021-04-05T18:05	2021-04-13T16:00	\$700.00	\$1,230.00	2021-04-14T16:00	\$1,428.00	<a href="#">Invoice</a> <a href="#">Save</a>
2	Chandler Bing	AUD6	\$240.00	peter	sikor	2021-04-05 18:34	2021-04-08 12:00	\$400.00	\$720.00	2021-04-08T12:00	\$720.00	<a href="#">Invoice</a>
3	Phoebe Buffay	MCS2000	\$120.00	sikor	sikor	2021-04-06 09:00	2021-04-09 17:00	\$250.00	\$420.00	2021-04-08T11:00	\$420.00	<a href="#">Invoice</a>
4	Ross Geller	BMW101	\$100.00	sikor	sikor	2021-04-06 09:01	2021-04-10 12:00	\$300.00	\$425.00	2021-04-10T13:00	\$430.50	<a href="#">Invoice</a>

Click Invoice button.

23. The invoice is generated:

The screenshot shows a PDF document titled "CarDate Leisure Vehicle Hiring Company Limited" with address details: 2-111/a3, road:6, Balanagar, Hyderabad, Andhra Pradesh, 500042, India. The document is a "Vehicle Hiring Invoice" for Customer ID 2, Name Rachel Green, Alternate contact 6, Name Ross Geller, Vehicle Id 8, Daily rate \$150.00, Brand Bentley, License BEN610, Model Continental GTC. It includes hire details: Hiring Starts 2021-04-05 18:05, Hiring Id 1, Agreed Return 2021-04-13 16:00, Actual Return 2021-04-14 16:00. A table lists charges: Daily rental (2021-04-05 to 2021-04-13) 8 days at \$150.00 per day totaling \$1,200.00; Late return (2021-04-13 12:00 to 2021-04-13 16:00) 4 hrs at \$7.50 per hour totaling \$30.00; Daily rental (extra time) (2021-04-13 to 2021-04-14) 1 days at \$165.00 per day totaling \$165.00; Late return (extra time) (2021-04-14 12:00 to 2021-04-14 16:00) 4 hrs at \$8.25 per hour totaling \$33.00. Total amount is \$1,428.00. Deposit received was \$700.00, leaving a Balance of \$728.00. The right side of the screen shows the Adobe Acrobat interface with options like "Export PDF", "Convert to Microsoft Word", and a "Convert" button.

Customer ID	2	Name	Rachel Green
Alternate contact	6	Name	Ross Geller
Vehicle Id	8	Daily rate	\$150.00
Brand	Bentley	License	BEN610
Model	Continental GTC		

Hiring Starts	2021-04-05 18:05	Hiring Id	1
Agreed Return	2021-04-13 16:00	Actual Return	2021-04-14 16:00

Hire type	Start	End	Quantity	Rate	Amount
Daily rental	2021-04-05	2021-04-13	8 days	\$150.00	\$1,200.00
Late return	2021-04-13 12:00	2021-04-13 16:00	4 hrs	\$7.50	\$30.00
Daily rental (extra time)	2021-04-13	2021-04-14	1 days	\$165.00	\$165.00
Late return (extra time)	2021-04-14 12:00	2021-04-14 16:00	4 hrs	\$8.25	\$33.00
				Total	\$1,428.00
Deposit received	2021-04-05				\$700.00
				Balance	\$728.00

The first two charge items are the same as before. The two extra time items are the result of late return. As described before, extra time is computed as a separate Hire with 10% penalty.