JAVA DEVELOPER – SUMMATIVE CAPSTONE PROJECT

Cohort One

Car Rental Management
Start Date: 9th February, 2021
End Date: 17th May, 2021

Car Rental Management system
Purpose:
This project is being taken up for demonstrating skills acquired during the training.

Project name: CarZoom
Project Description: Car Hire Application. This application requires advance booking to generate hire. There will be customers, vehicles and dates to select systematically. Invoice will be generated from booking, and can be exported to PDF.

This application system:

- Based on Oracle database version 12c to store all business data,
- Using Java version 11, Spring Framework.
- Accessible with internet browsers, HerokuApp.
- Utilizing Javascript, Thymeleaf, and Bootstrap for client side presentation, styling, and interaction,
- The system will be accessed only by Employees of the car rental company.
- Each Employee signs in with an assigned UserName and password. Each Employee can inquire own personal details as well as change own password.
- An Employee with ADMIN Role will be initialized in the database and the access given to the system owner. Only Employees assigned an ADMIN Role can create, modify Employee records, reset passwords, grant and revoke Employee Roles. An Employee can be assigned zero, one, or more Roles.
- Each business operation requires specific Roles. Only Employees granted those Roles can perform the business operation.
- Creation and deletion of Roles, as well as association of Roles to specific business operations is an application program maintenance task. Association of Roles to specific Employees is however a business operation that requires ADMIN Role.
- Access to record deletion is granted only to Employees with ADMIN or MANAGER Roles. Employee deletion is only allowed for ADMIN. The physical deletion however will always be subject to referential integrity constraints in the database.

Business Operations by Roles:
ALL: for all users. (Pending)

- Log-in
- View non-sensitive own details.
- Change your own password.

ADMIN: for administrators

- Maintain system configuration parameters, such as:
- Create, modify, suspend Employees. Suspended Employees are barred from log-in.

- Reset Employee passwords, Unsuspended Employees.
- Grant/Revoke Roles to Employees.

MANAGER :

- Create Vehicle into READY status.
- Maintain daily base rate for Cars, and other Car details.
- Set Car status to RETIRED. Retired Cars cannot be hired.
- Suspend/Unsuspend Customers.
- Upload a picture for each car. Pictures can be added, deleted, and reordered. Pictures can be shown to aid choosing.

USER: for front desk who serve customers

- Create, Modify Customers. Suspend Customers.
- There is only advance booking. Via select Customer, select Vehicle, select dates, and confirm the booking.
- All hires must be returned before the return Date.
- Hire return date can be extended, provide the extended date is available.
- Hire can be edit prior to Convert to Invoice.
- An invoice generated on a web page, can be exported to PDF format. One Invoice only associated with one Hire record.
- From the Hire records, a fleet utilization efficiency statistics will be generated and presented graphically.

Deployment

- Deployment at https://carzoom.herokuapp.com/
- Explore with the USER credential: user/user
- Explore with the MANAGER credential: manager/password
- Explore with the ADMIN credential: admin/password

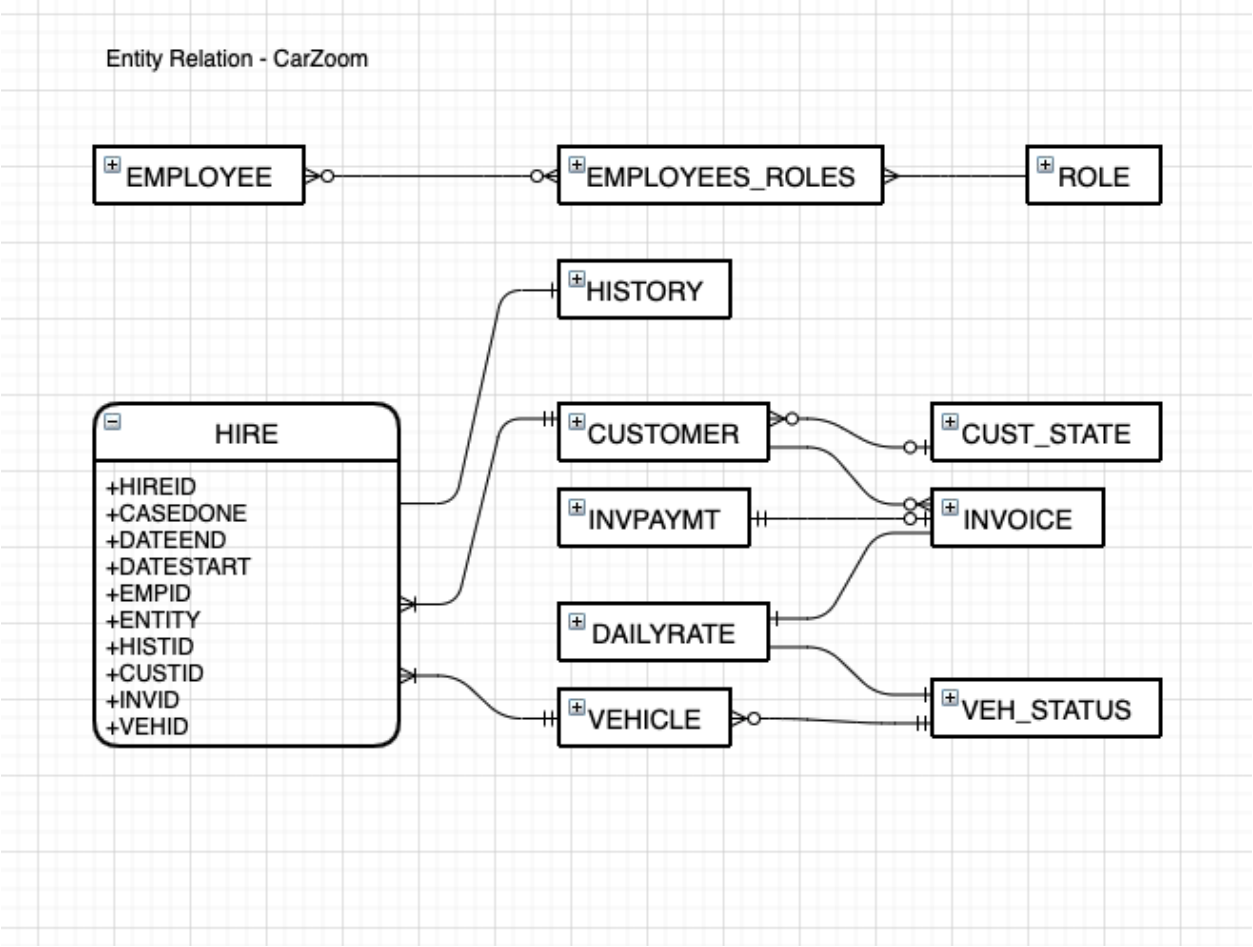
Functional Test

All the mandatory fields should be validated	Passed
Test the numeric fields should not accept the alphabets and proper error messages should display.	Pending
Test to see negative numbers, if allowed for numeric fields	Passed
Test the max length of every field to ensure the data is not truncated	Passed
Test that a confirmation message should display delete operations.	Passed
Test the Javascript is properly working in different browsers (Safari, and Chrome)	Passed

Usability Test

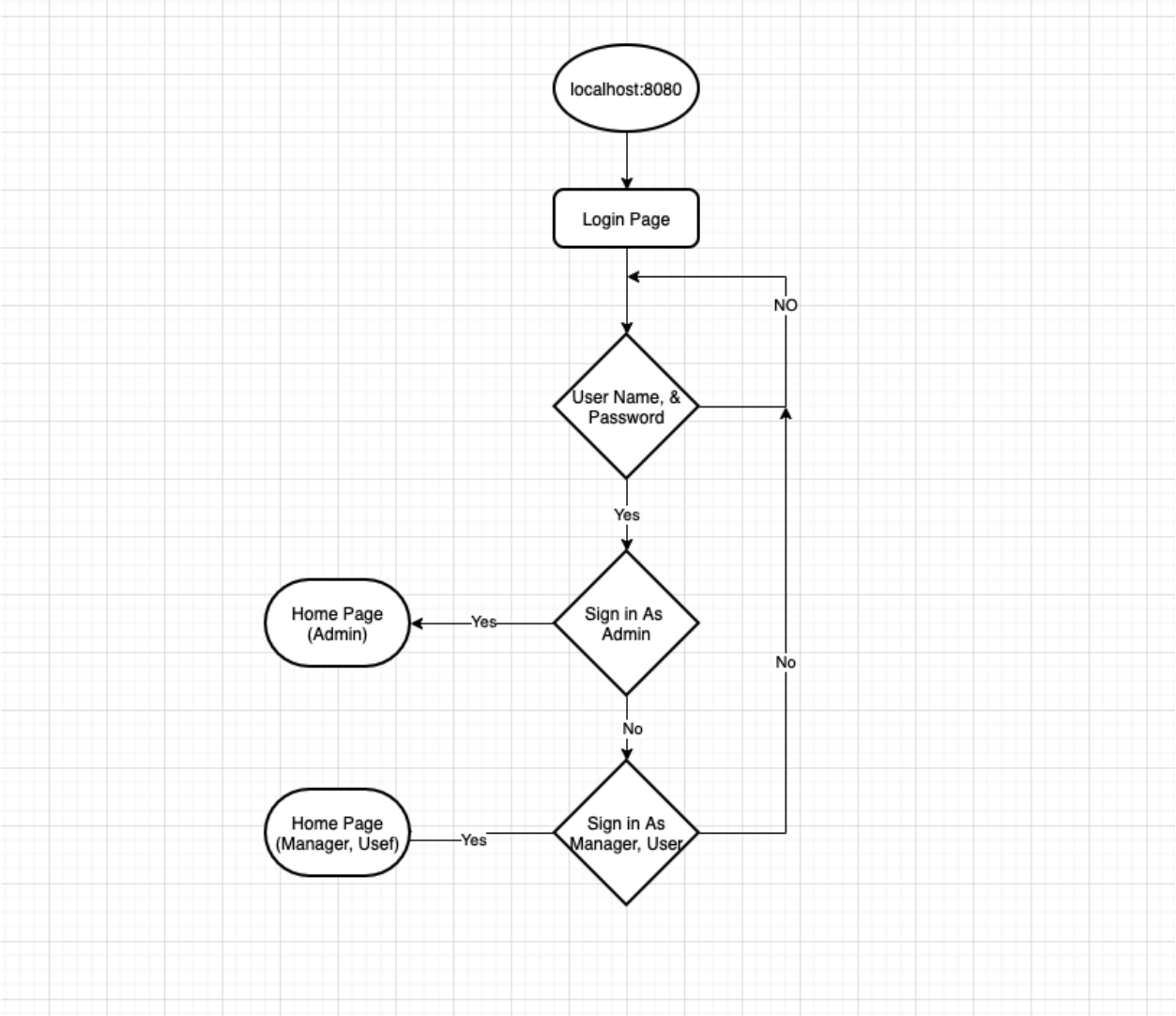
Web page content should be correct without any spelling or grammatical errors.	Passed
Check for broken links and images.	Passed
Home link should be there on every single page	Passed
Check for broken links and images.	Passed
Check if the dropdown data is not truncated due to the field size,	Passed

ER Diagram

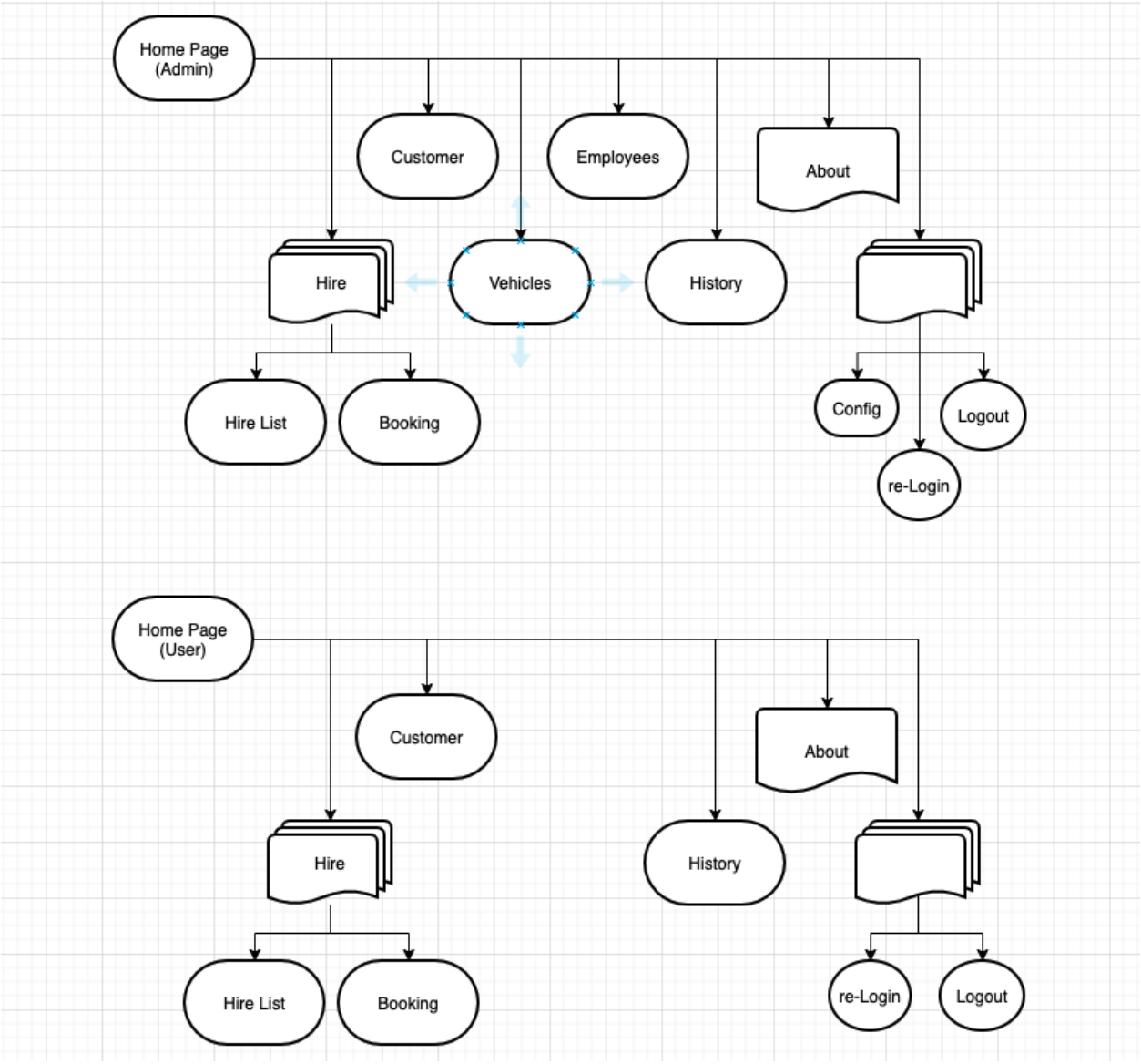

Entity Relation - CarZoom
EMPLOYEE
EMPLOYEES_ROLES
ROLE
HISTORY
HIRE
+HIREID
+CASEDONE
+DATEEND
+DATESTART
+EMPID
+ENTITY
+HISTID
+CUSTID
+INVID
+VEHID
CUSTOMER
CUST_STATE
INVPAYMT
INVOICE
DAILYRATE
VEHICLE
VEH_STATUS

Flow Chart

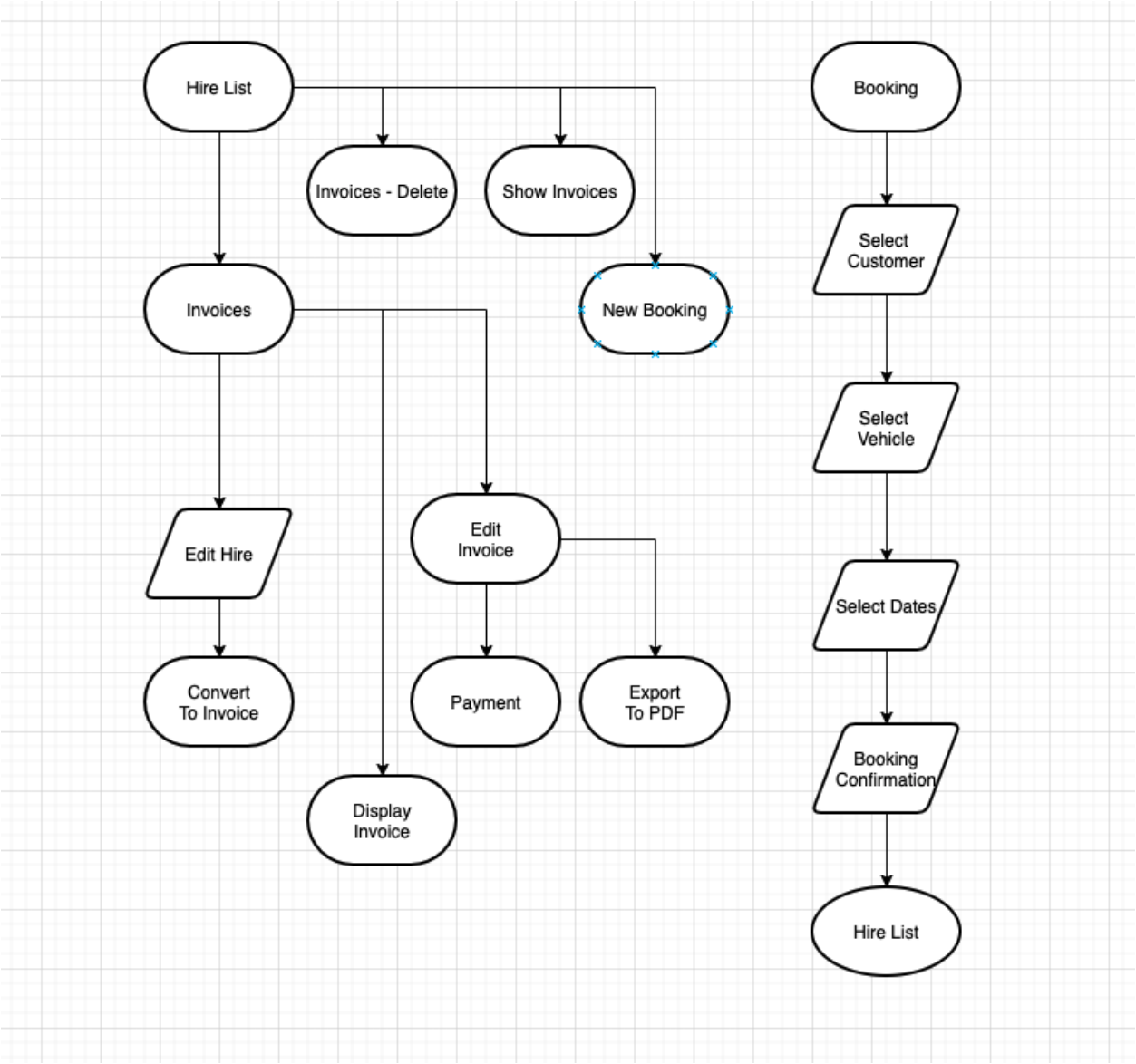
- Login sequence



- Login Page from Admin and User Employee

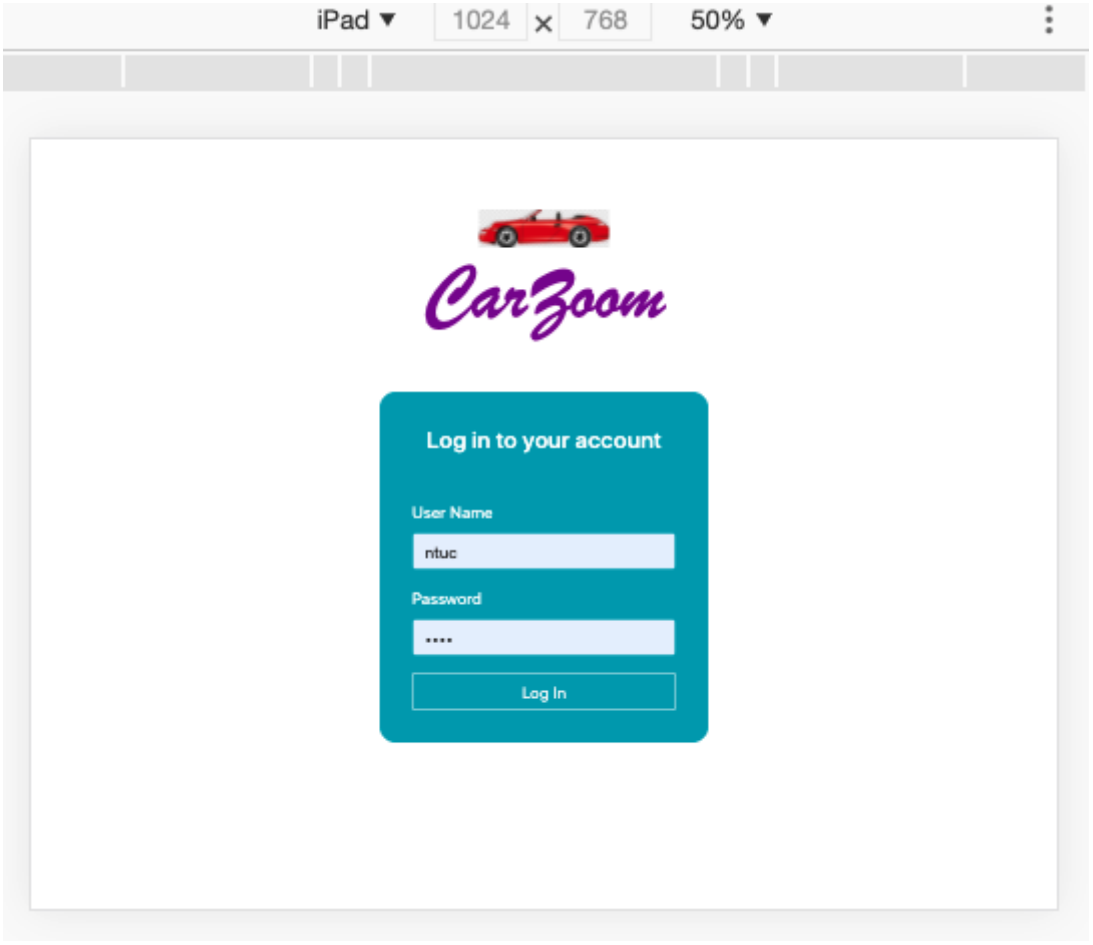


- Booking and Hire List FlowChart

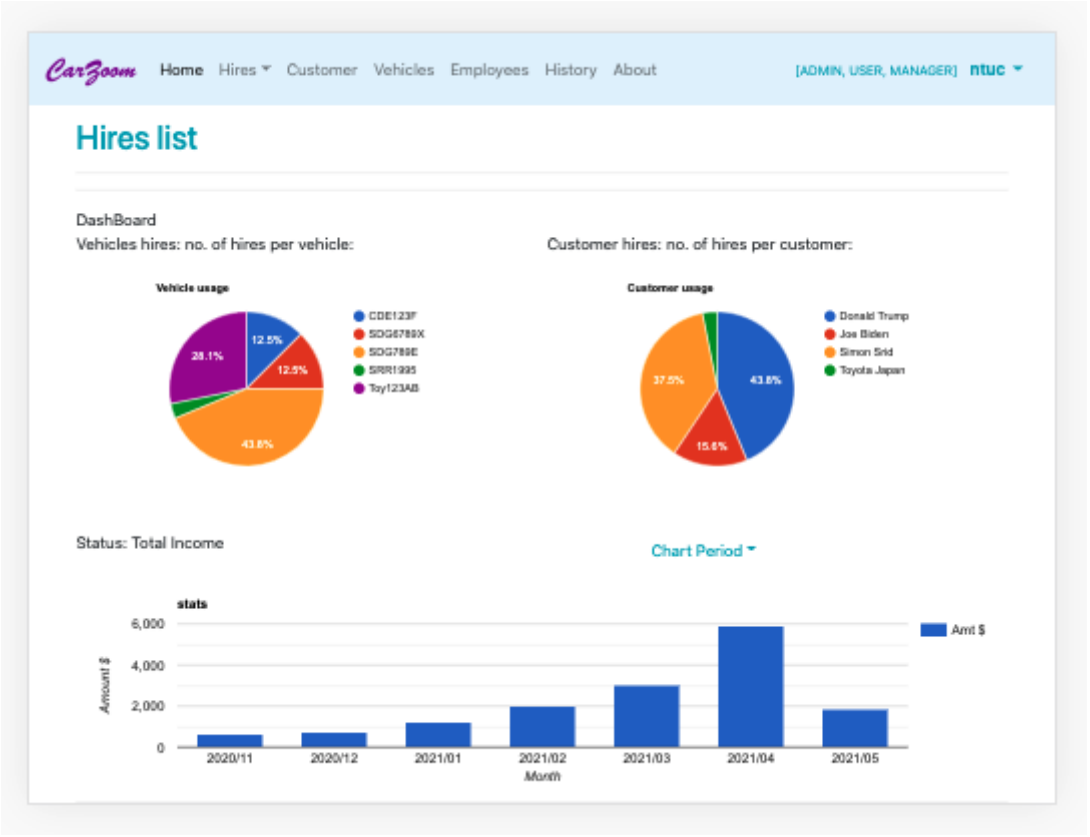


Screenshots

- Login Page

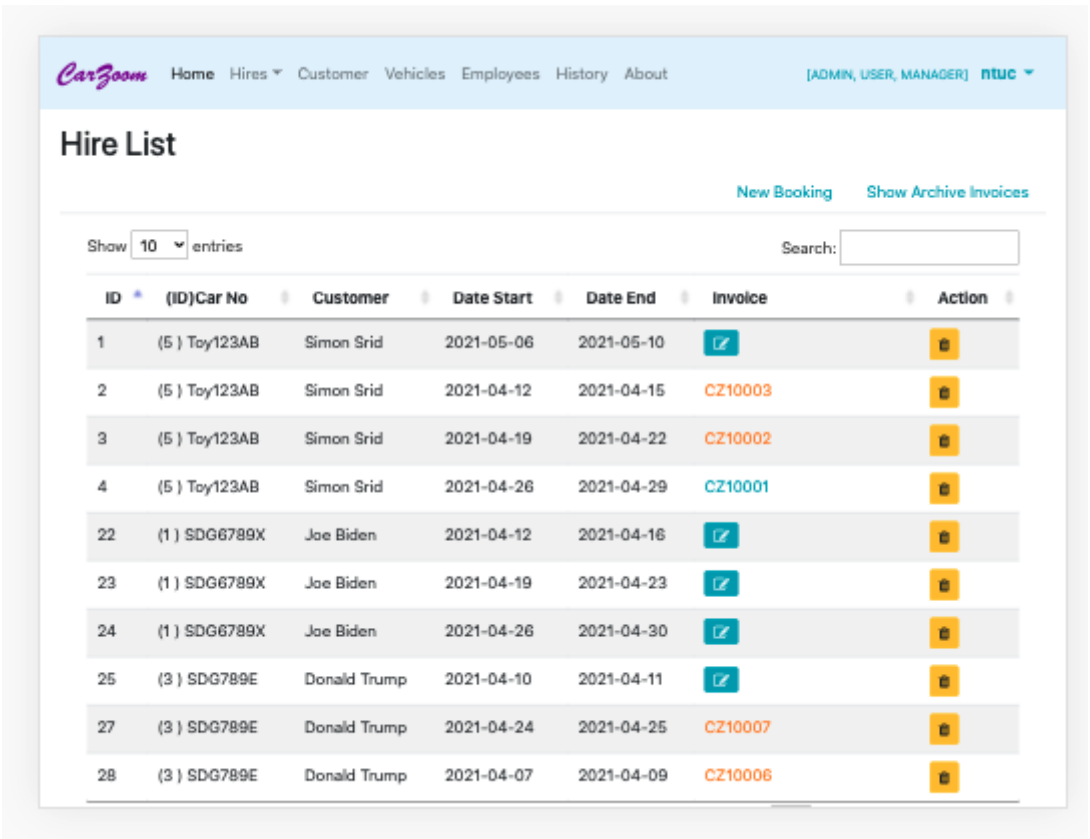


- Home Page

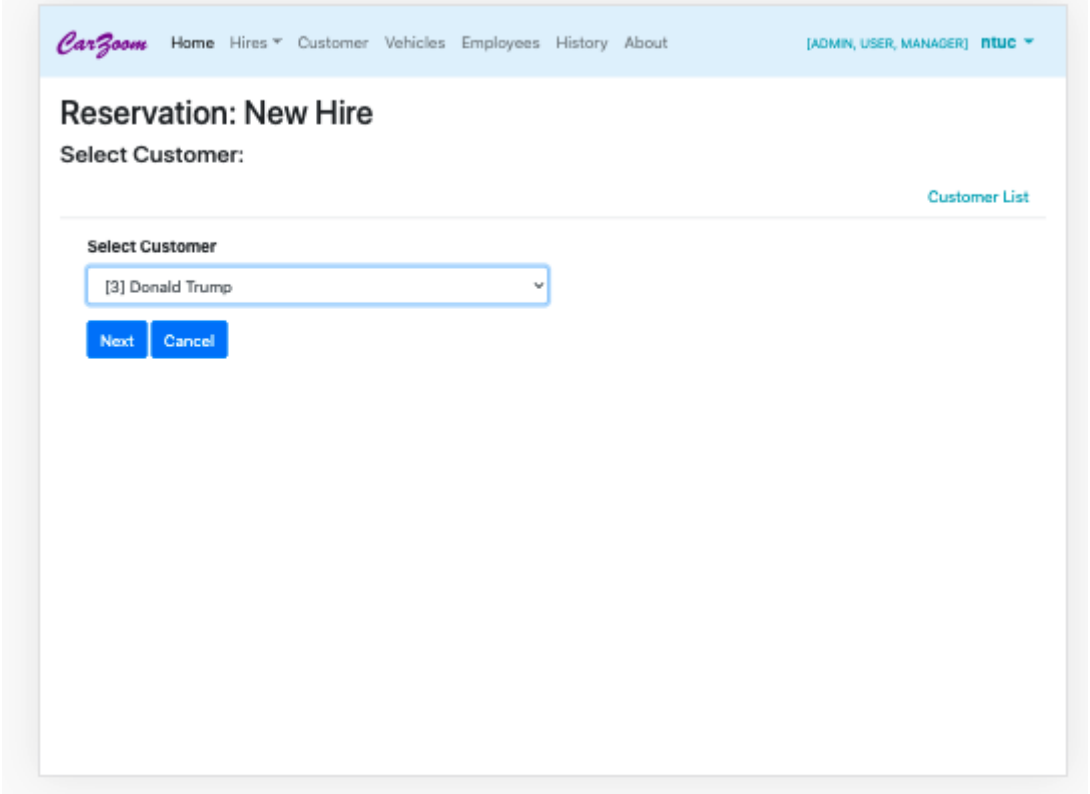

CarZoom
Home
Hires
Customer
Vehicles
Employees
History
About
[ADMIN, USER, MANAGER]
ntuc
Hires list
DashBoard
Vehicles hires: no. of hires per vehicle:
Customer hires: no. of hires per customer:
Vehicle usage
CDE123F
SDG6789X
SDG789E
SRR1995
Toy123AB
12.5%
12.5%
43.8%
28.1%
Customer usage
Donald Trump
Joe Biden
Simon Srid
Toyota Japan
43.8%
15.6%
37.5%
Status: Total Income
Chart Period
stats
Amt $
6,000
4,000
2,000
0
Amount $
2020/11
2020/12
2021/01
2021/02
2021/03
2021/04
2021/05
Month

Booking, Steps to Create new Hire

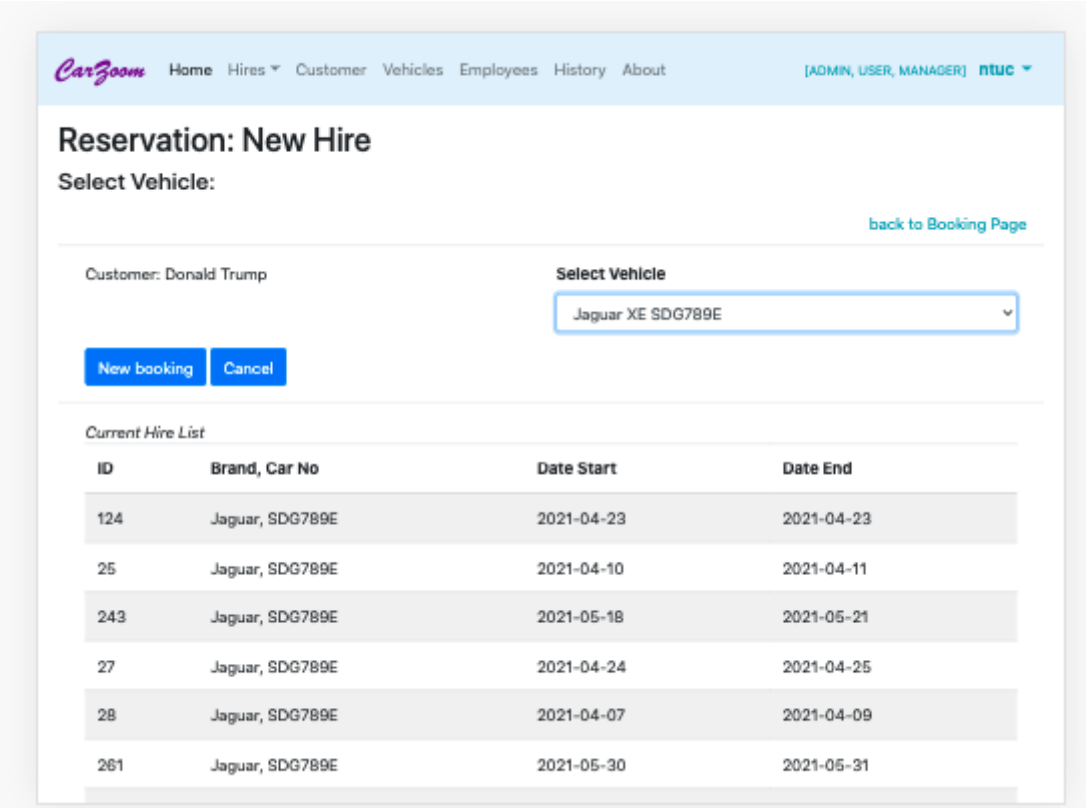
- Hire List



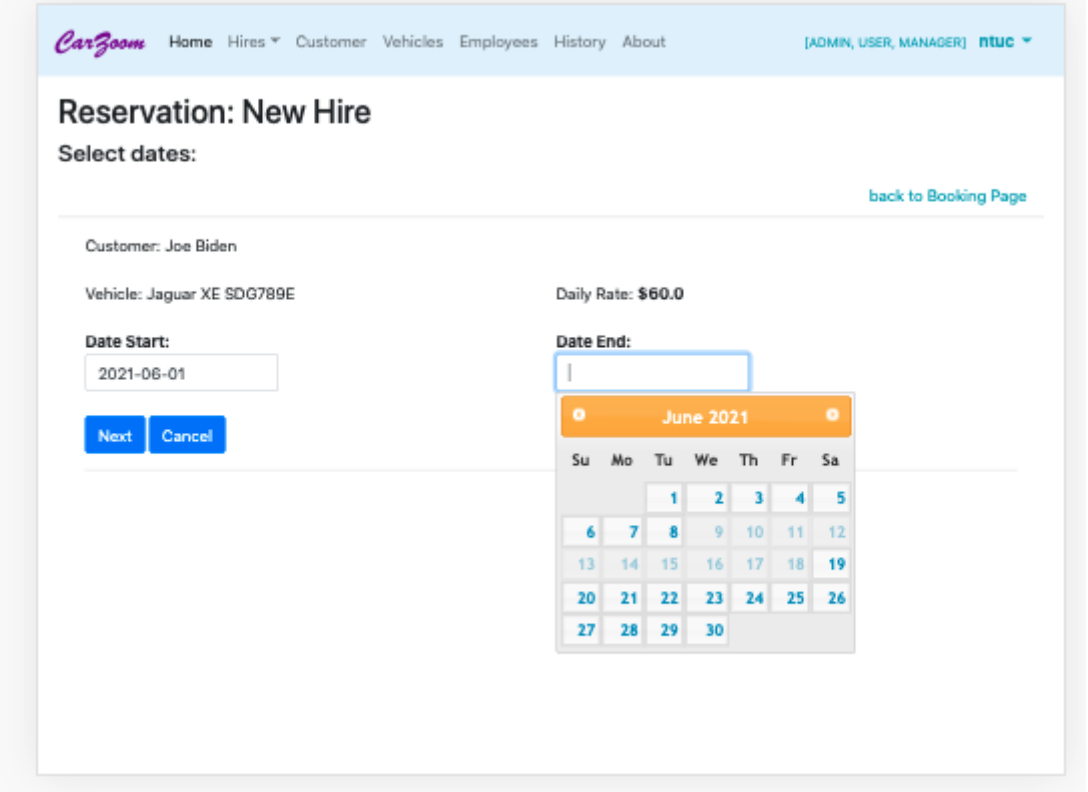
- Select Customer



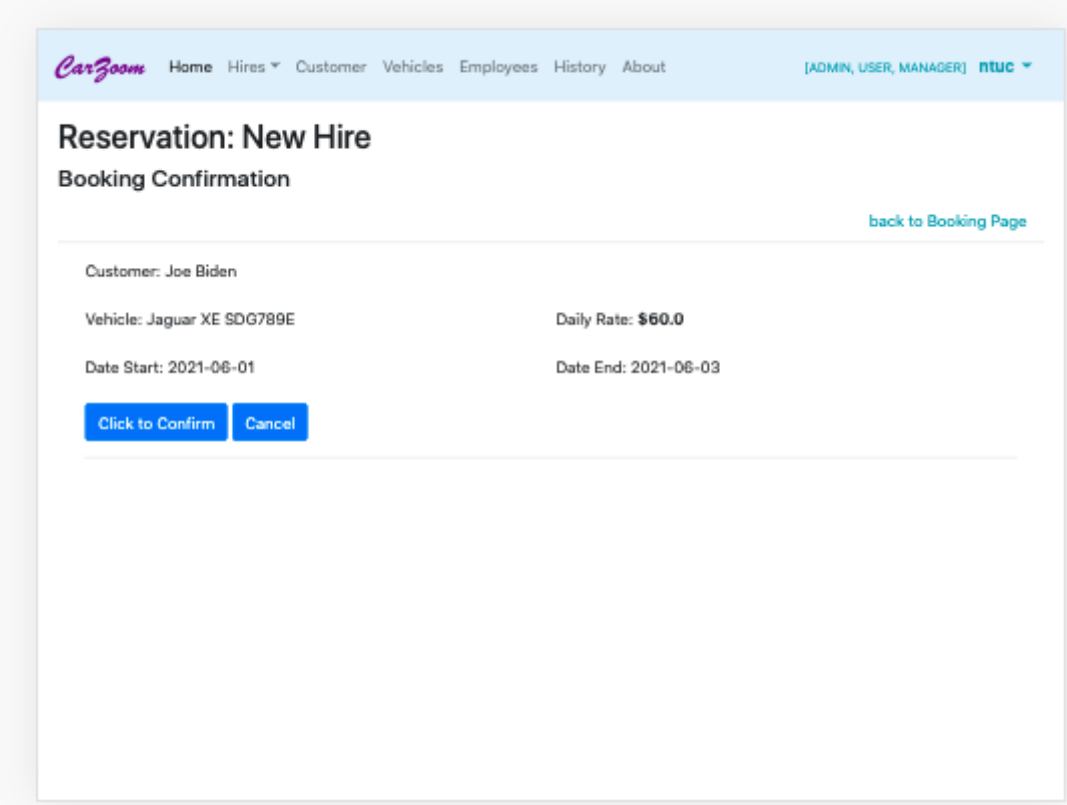
- Select Vehicle



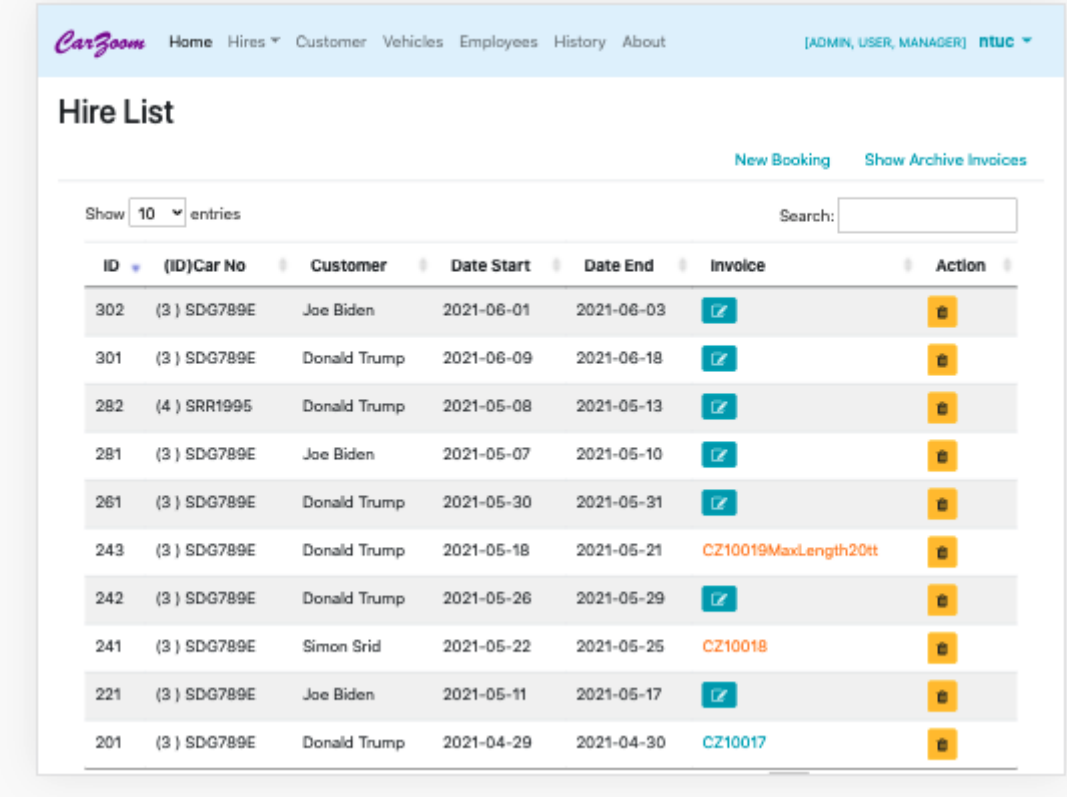
- Select Dates



- Click to confirm

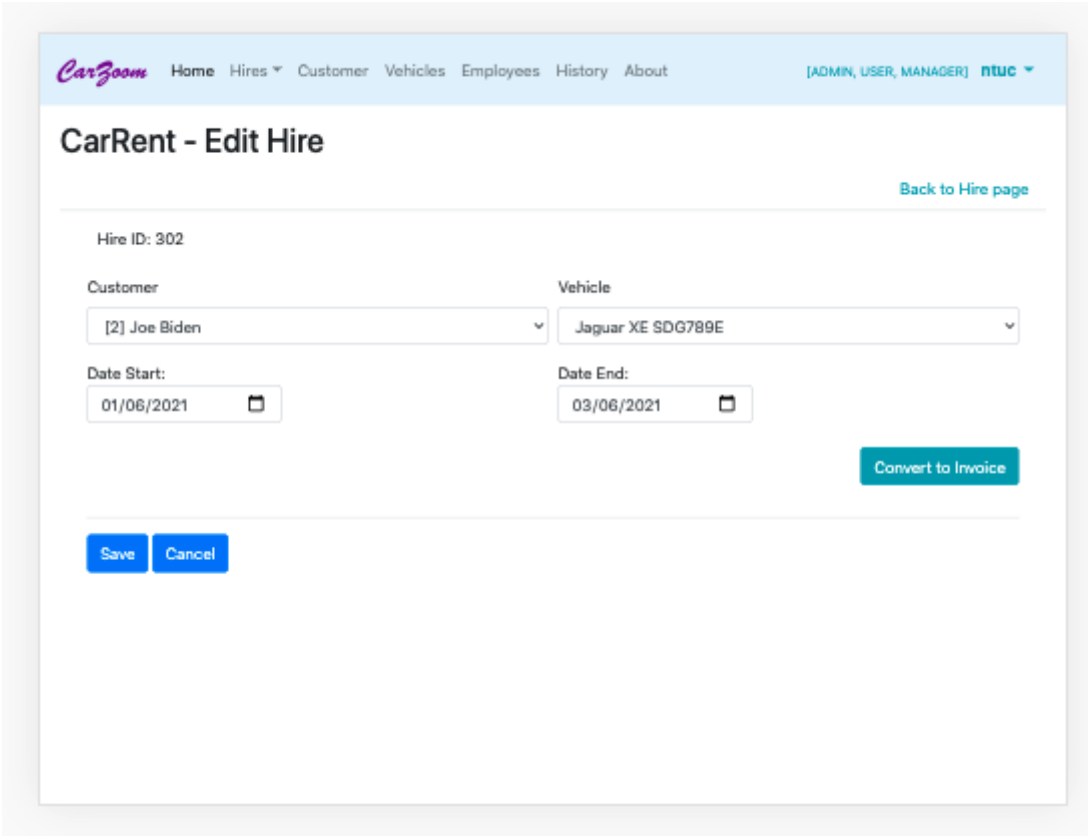


- Hire List with new hire

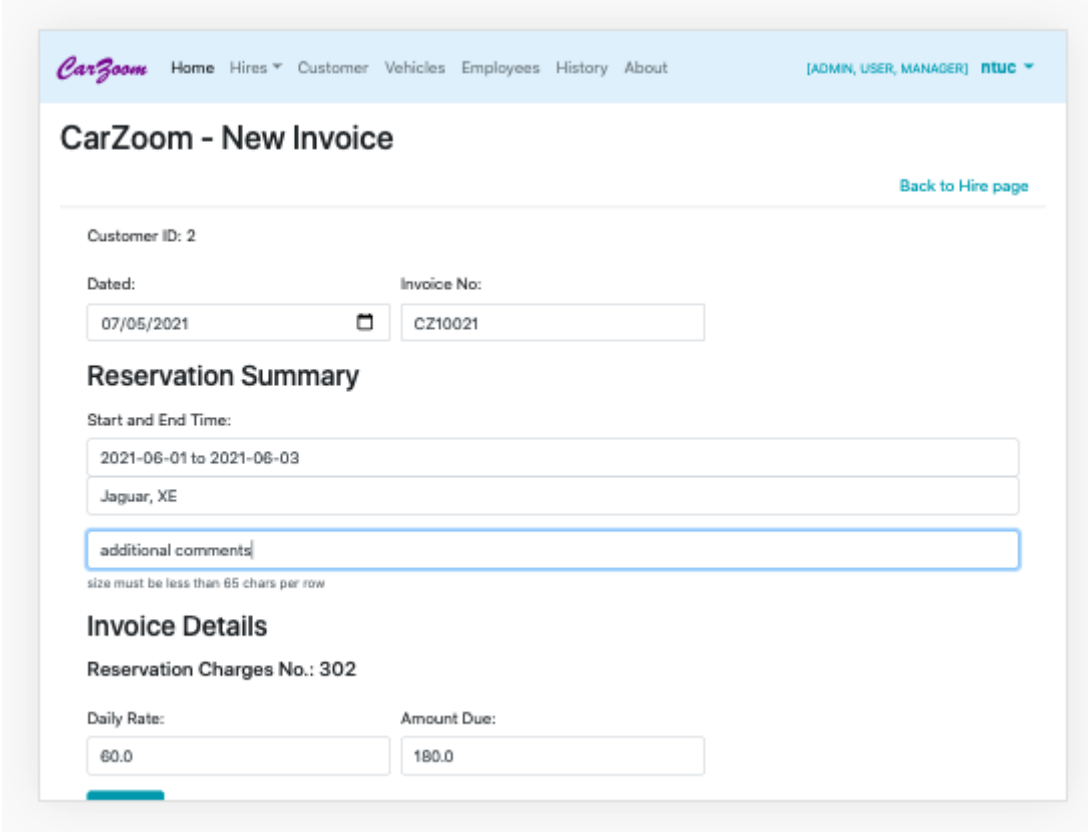


Invoice

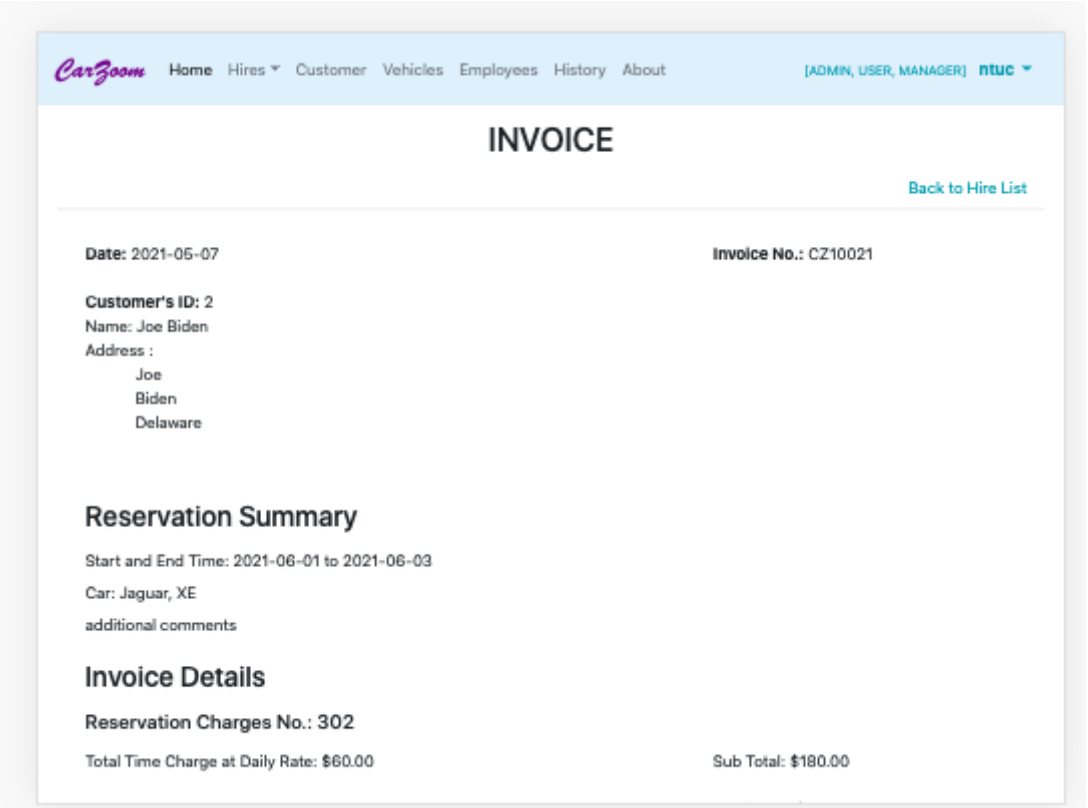
- Edit Hire, Convert to Invoice



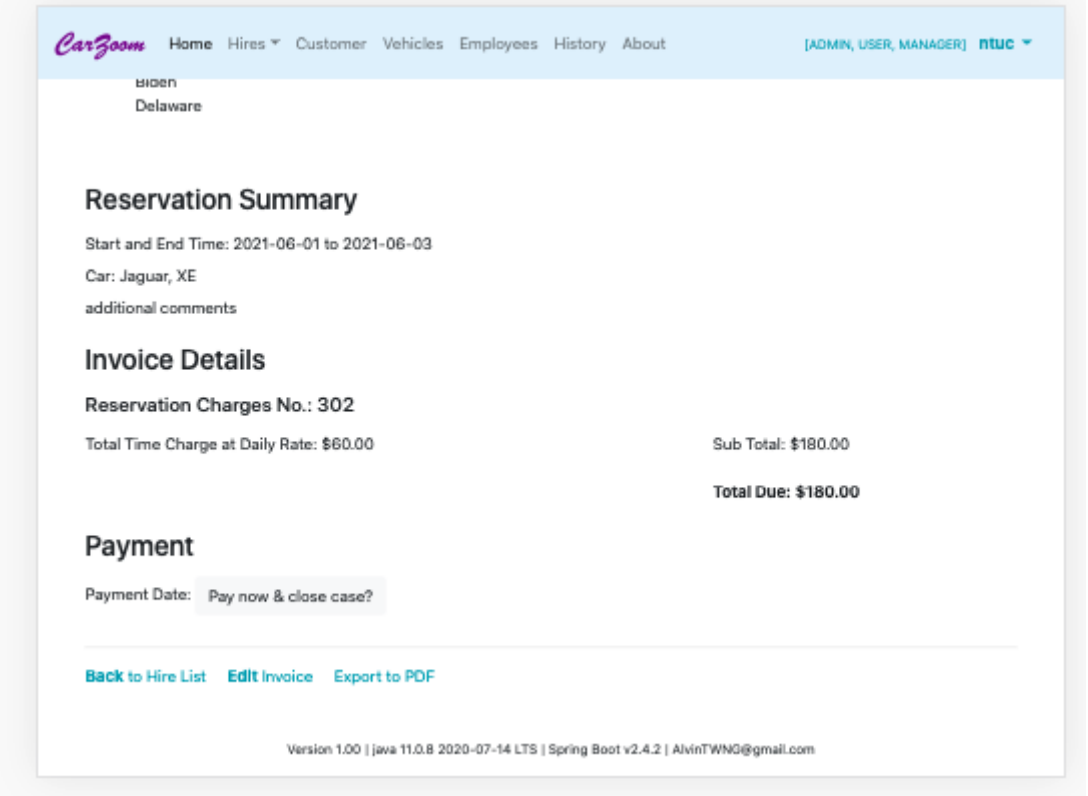
- New Invoice, edit if necessary



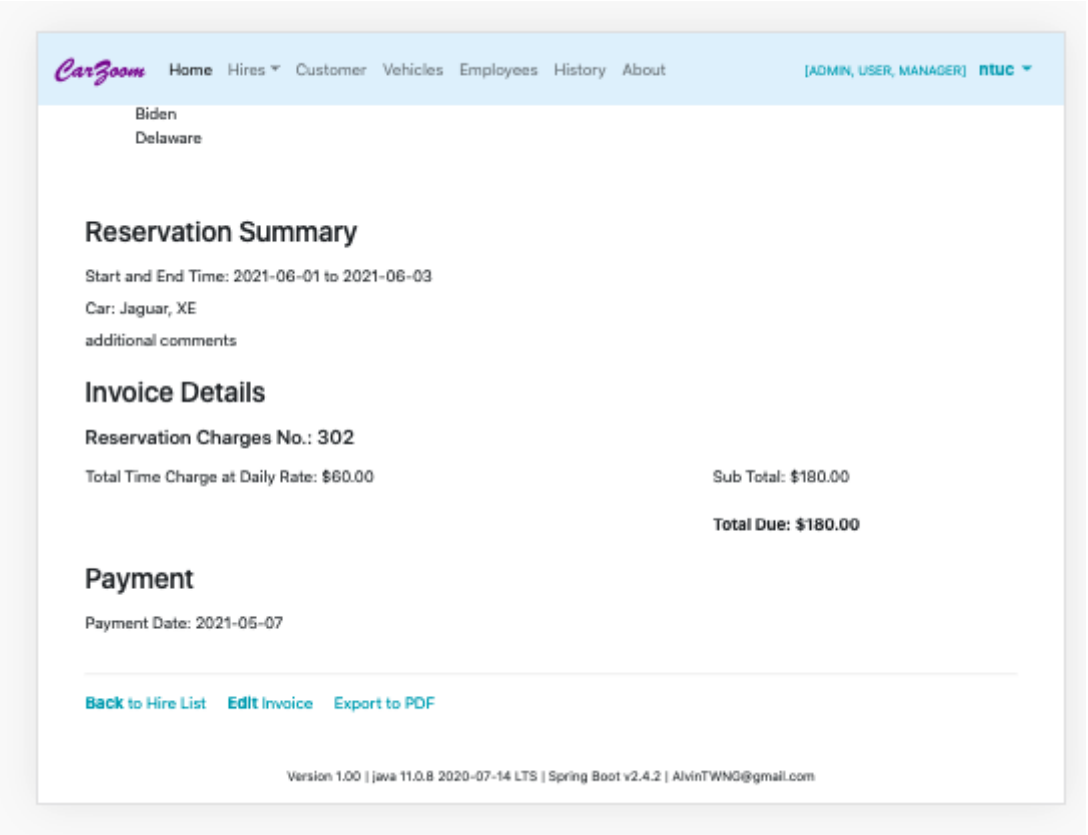
- On-Line Invoice



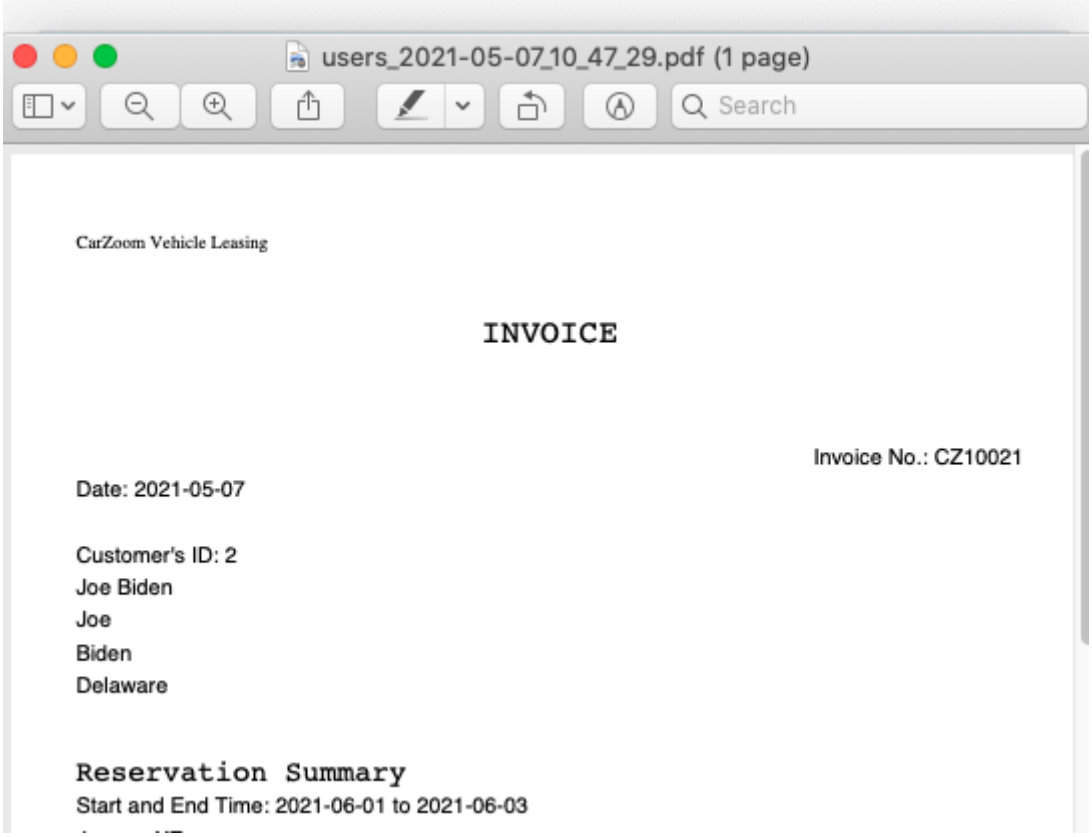
- On-Line Invoice, payment selection



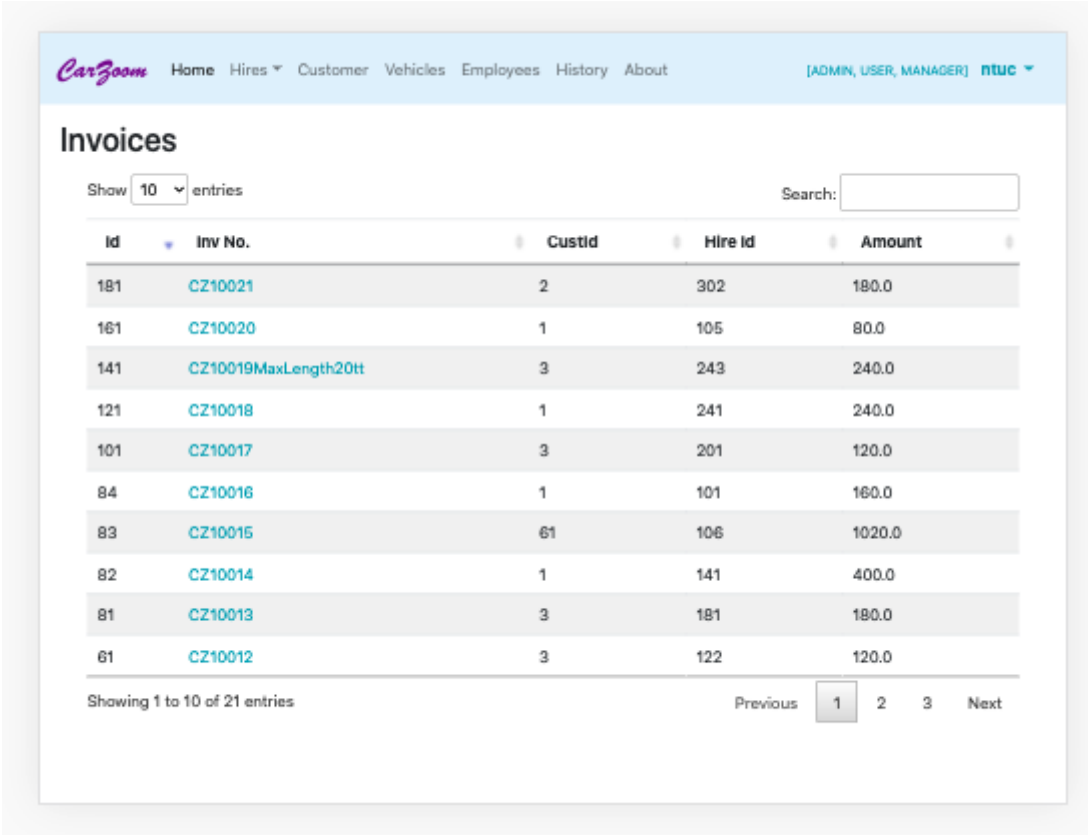
- On-Line Invoice, payment paid



- Export to PDF

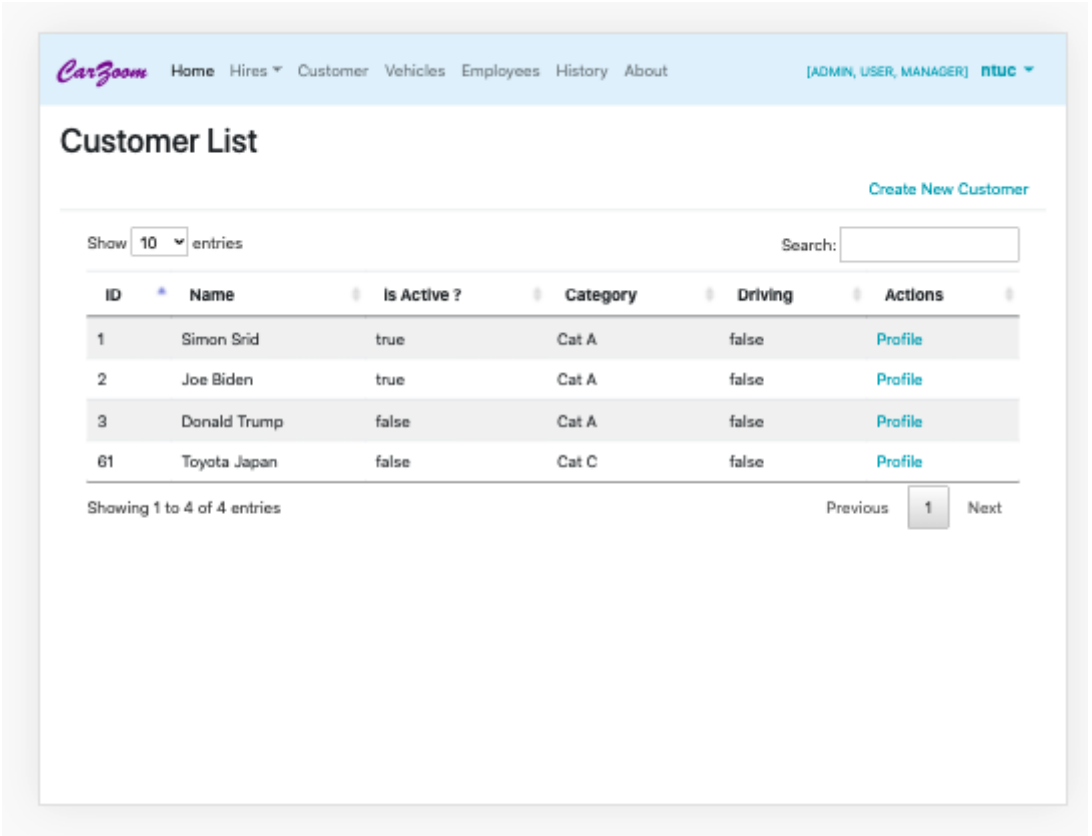


- List of Invoices

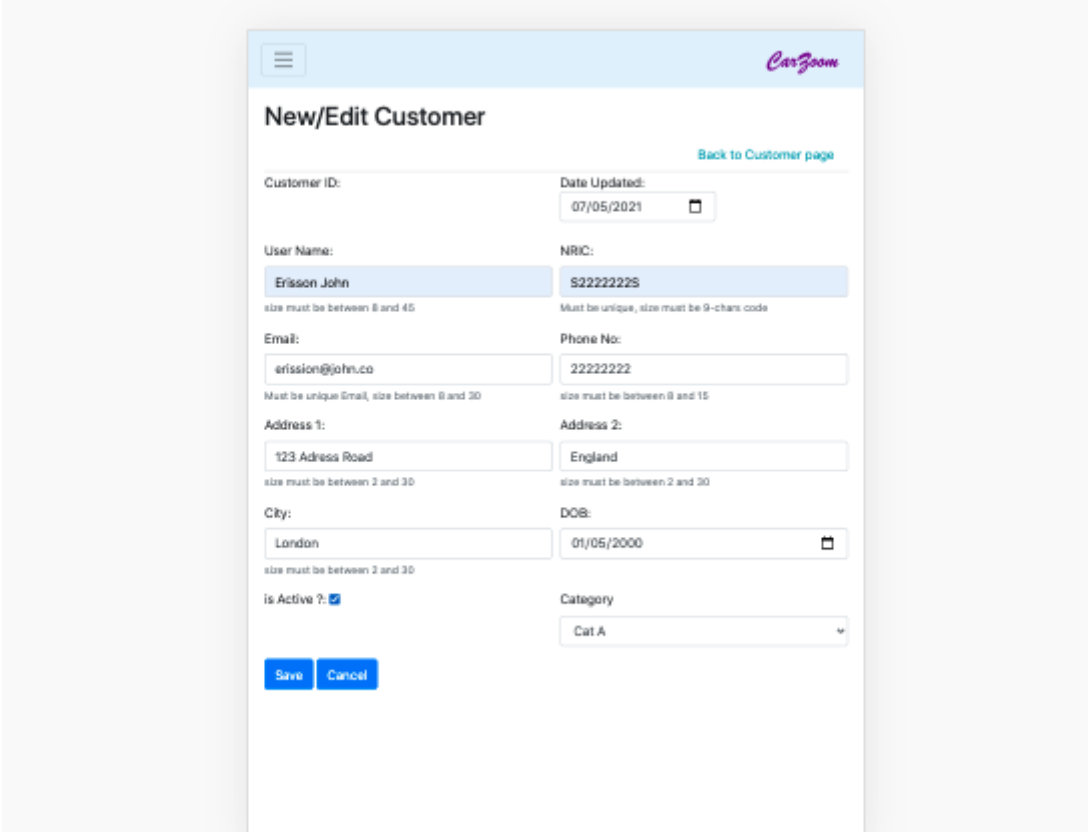


Customer CRUD

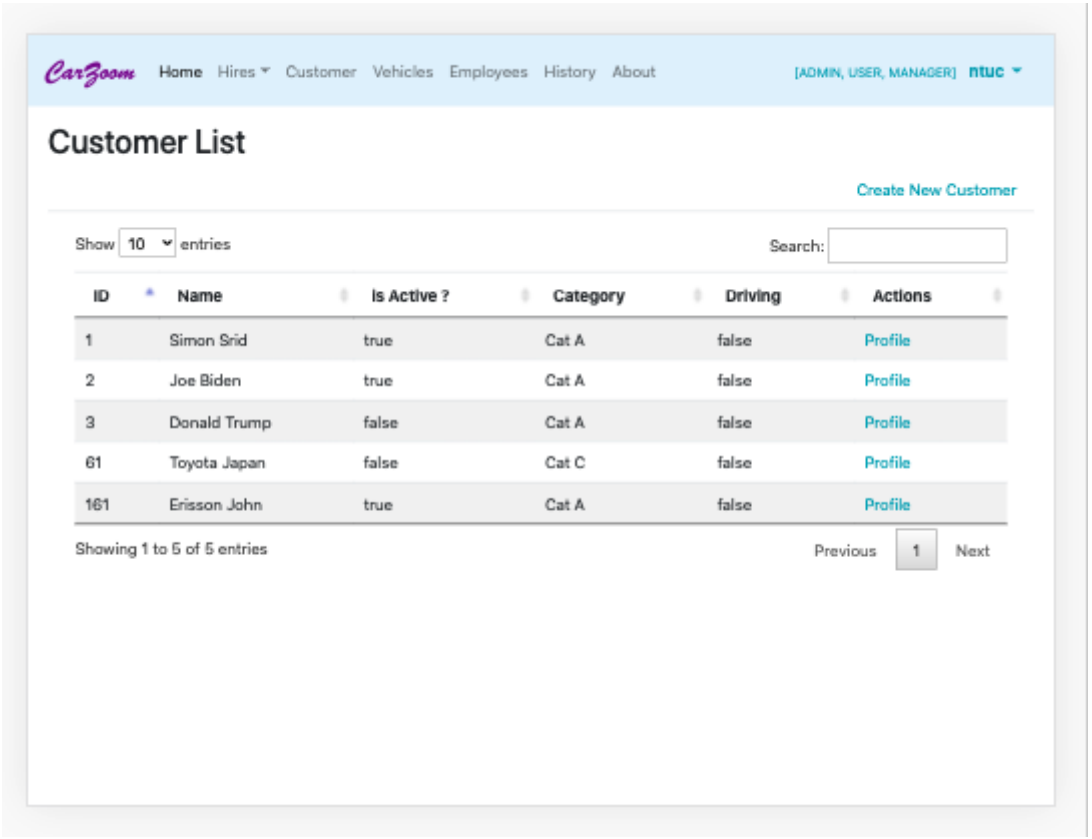
- Customer List



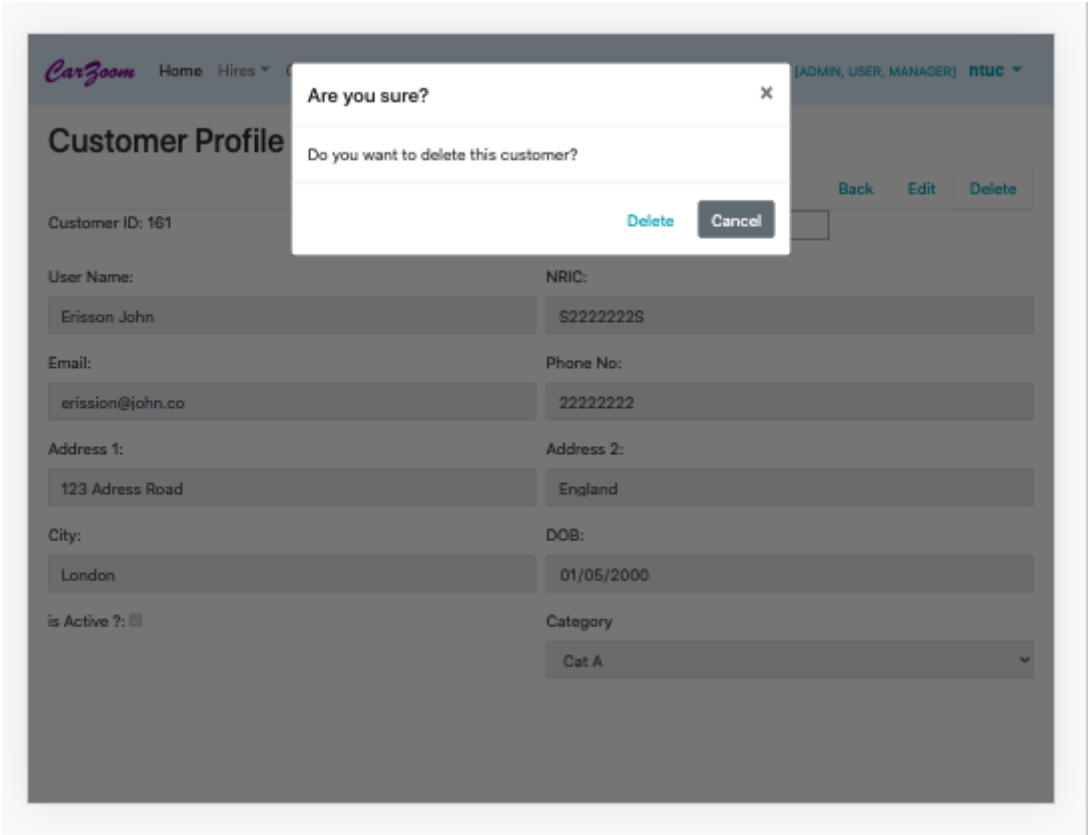
- New Customer



- Customer List, New Customer added

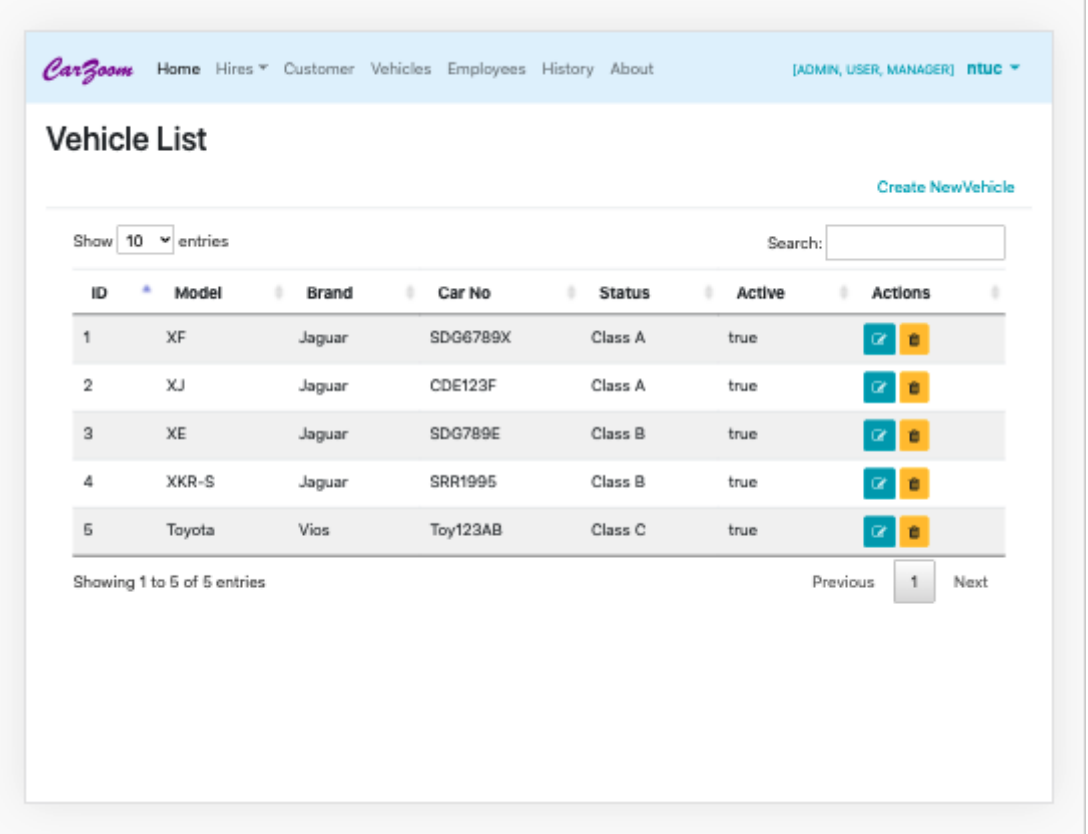


- Deleting this Customer

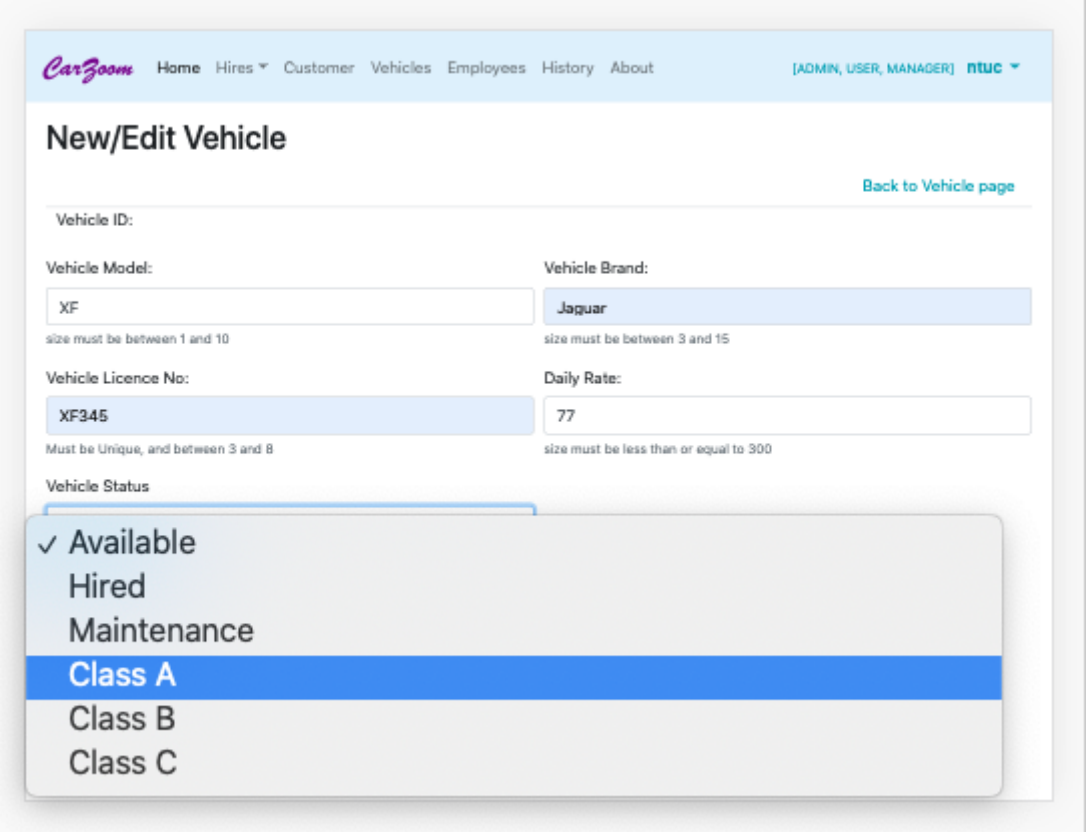


Vehicle CRUD

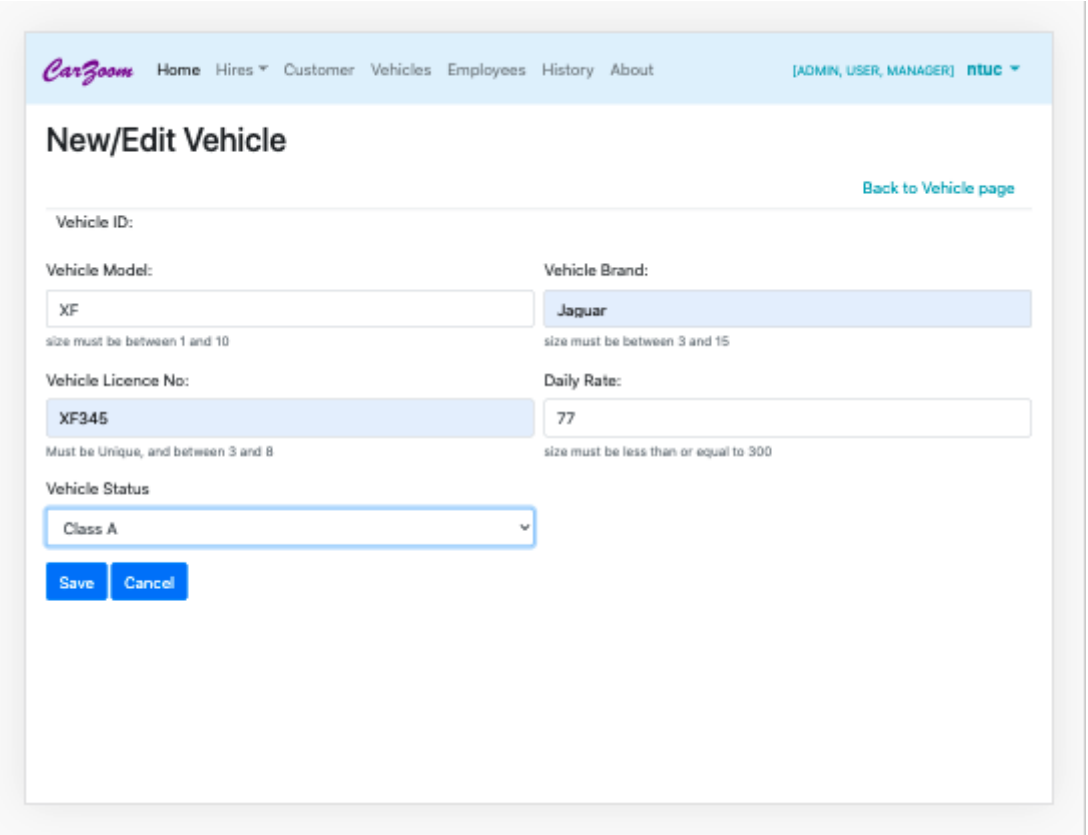
- Vehicle List



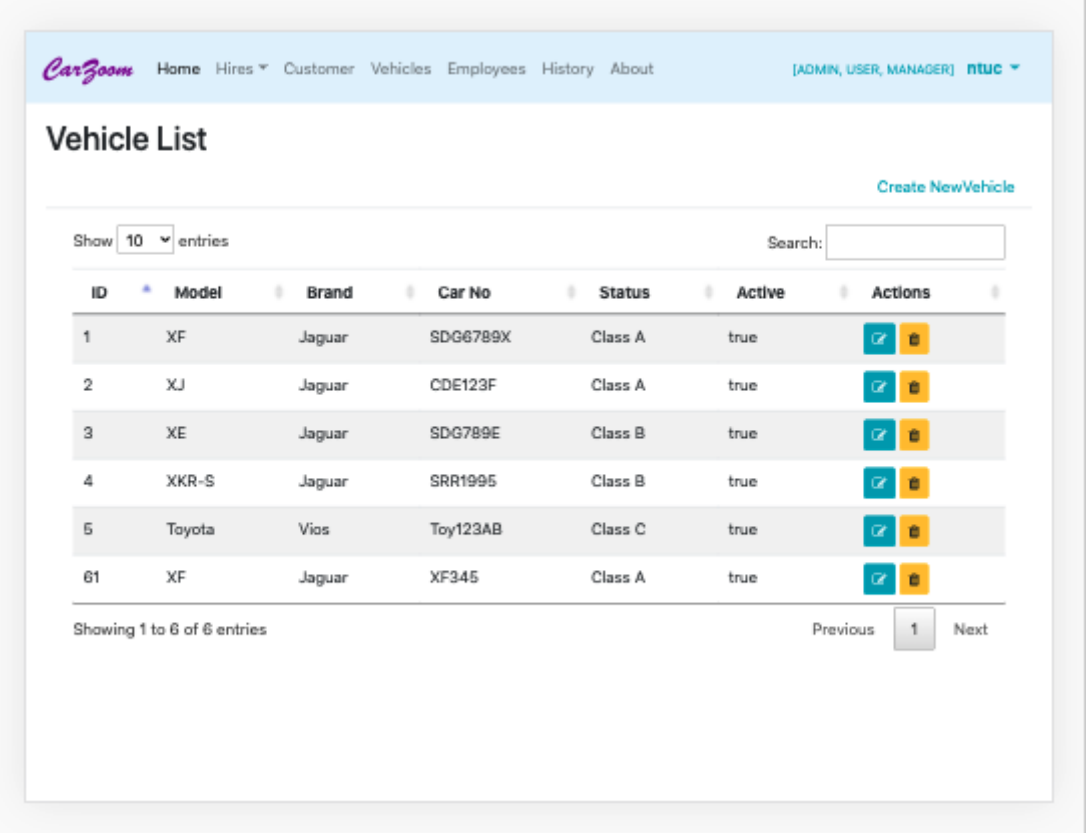
- Create New Vehicle



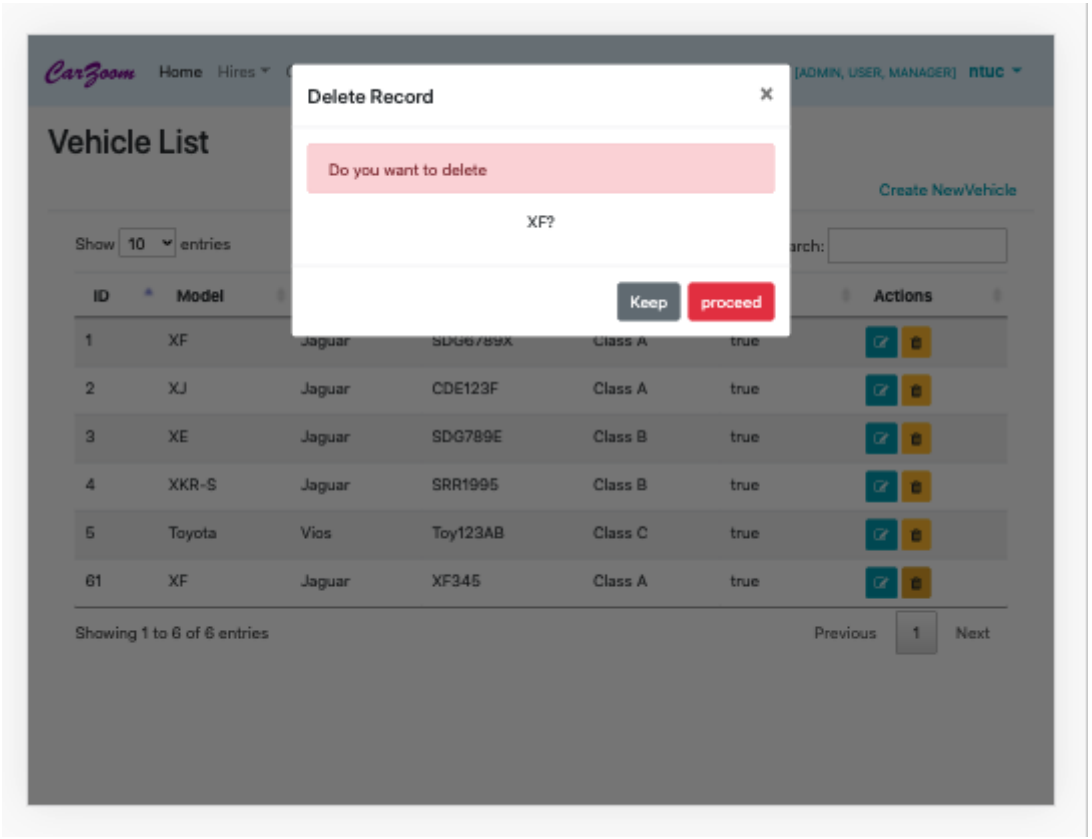
- Create New Vehicle



- Vehicle List, new vehicle created

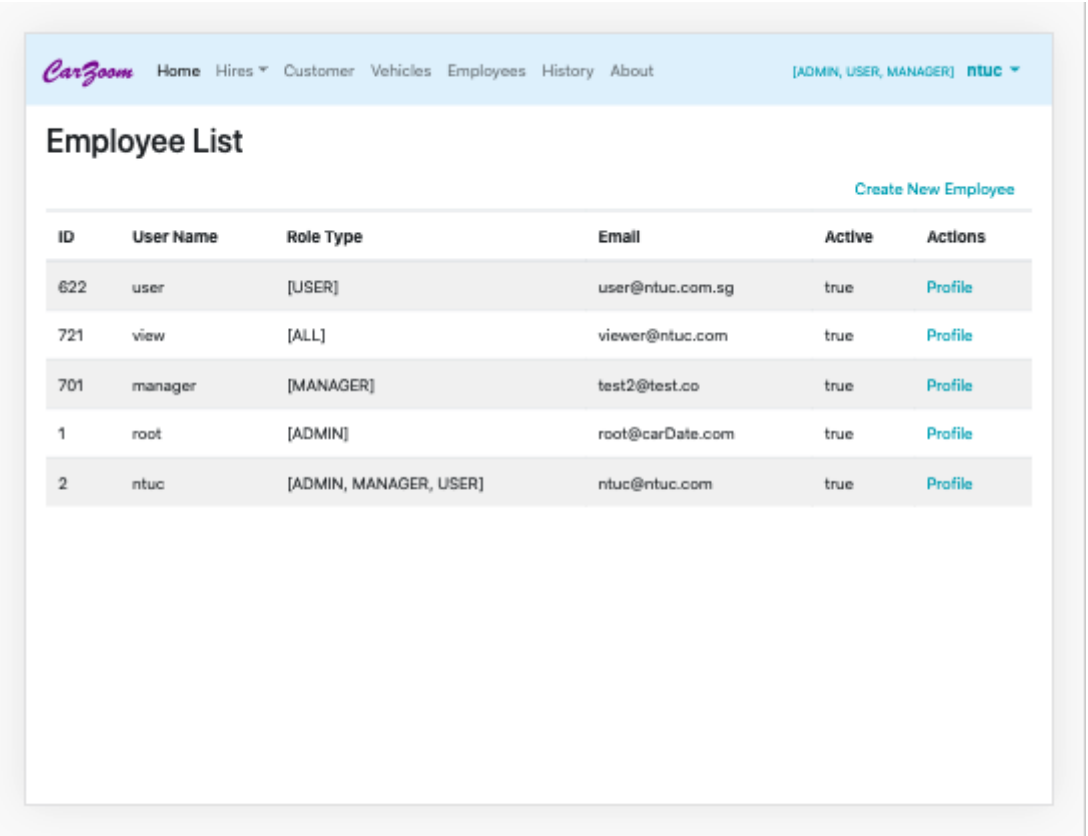


- To Delete Vehicle

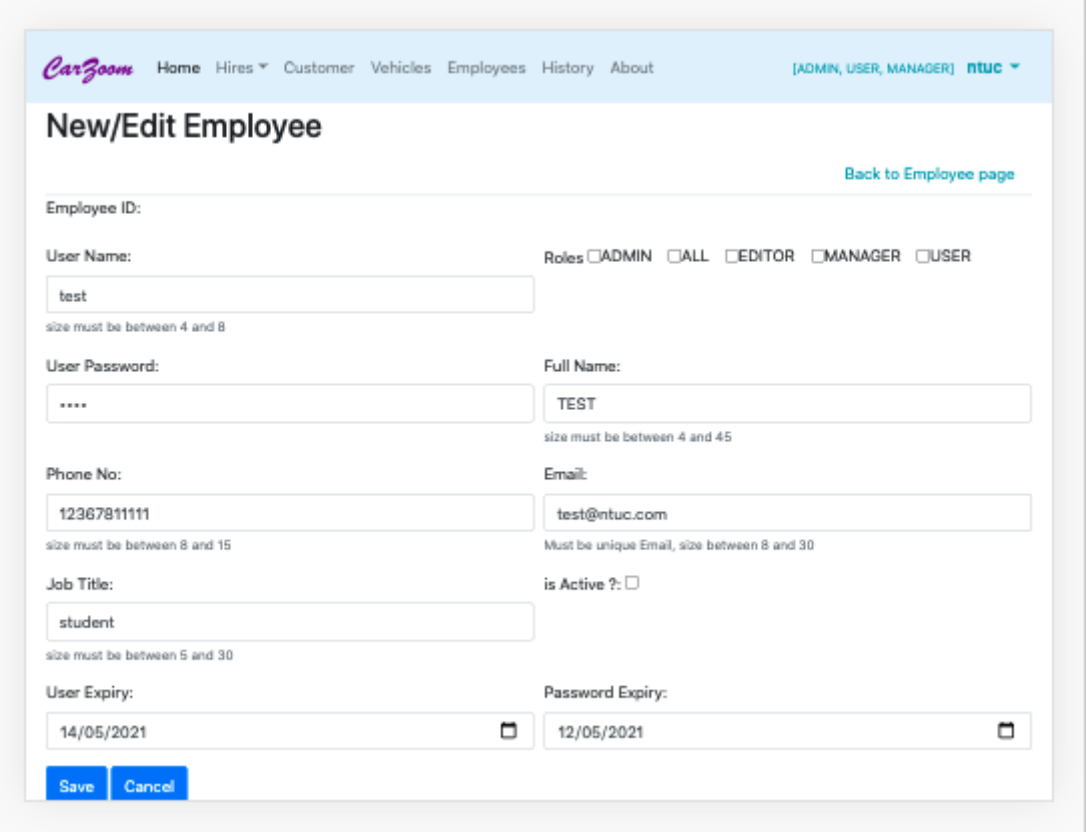


Employee CRUD

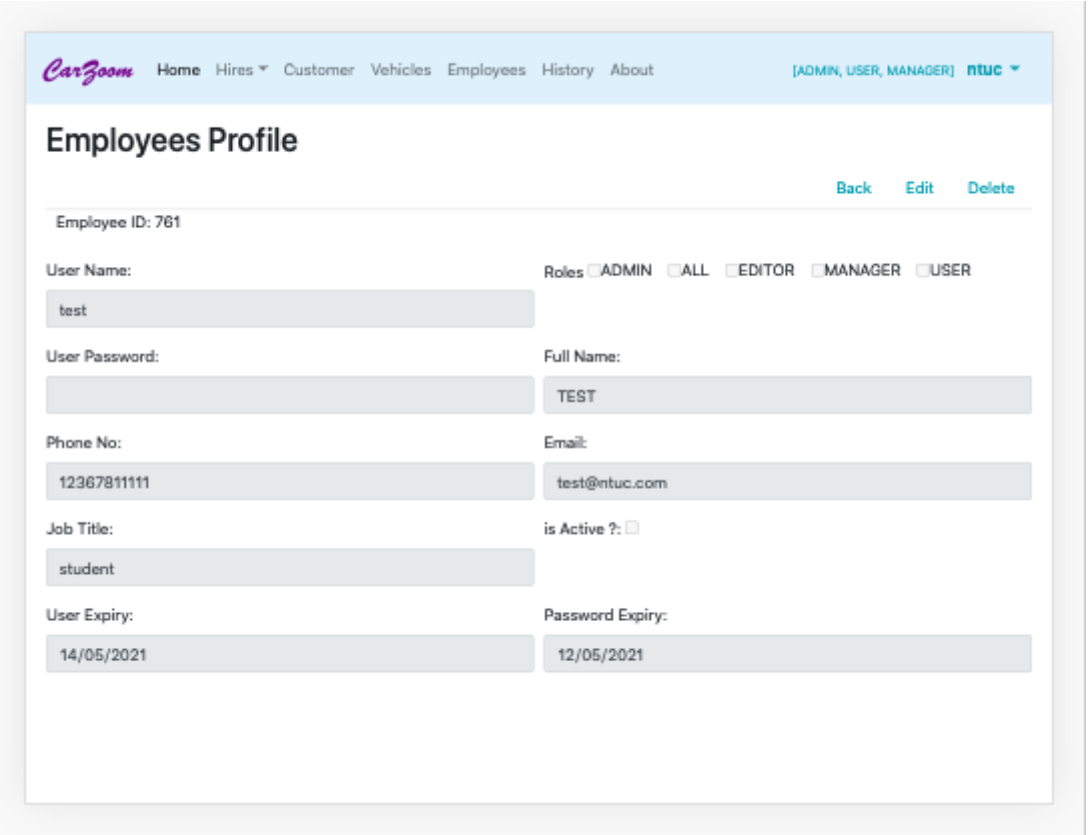
- Employee List



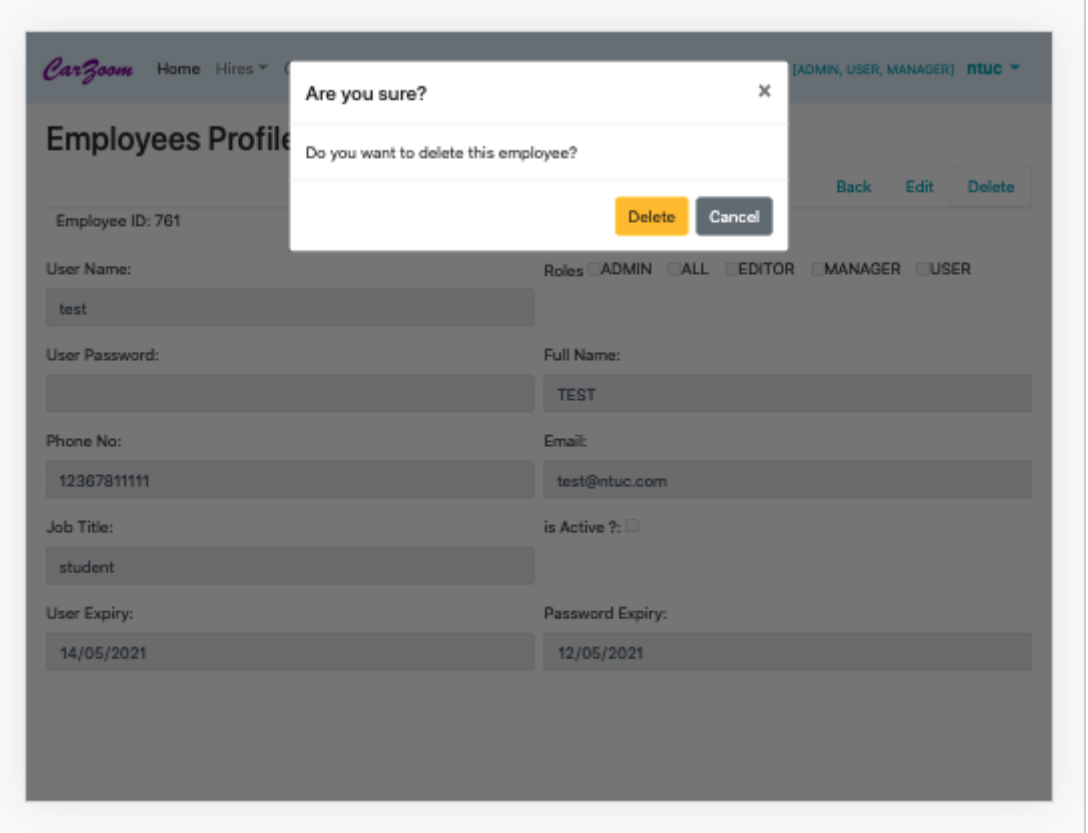
- To create new Employee



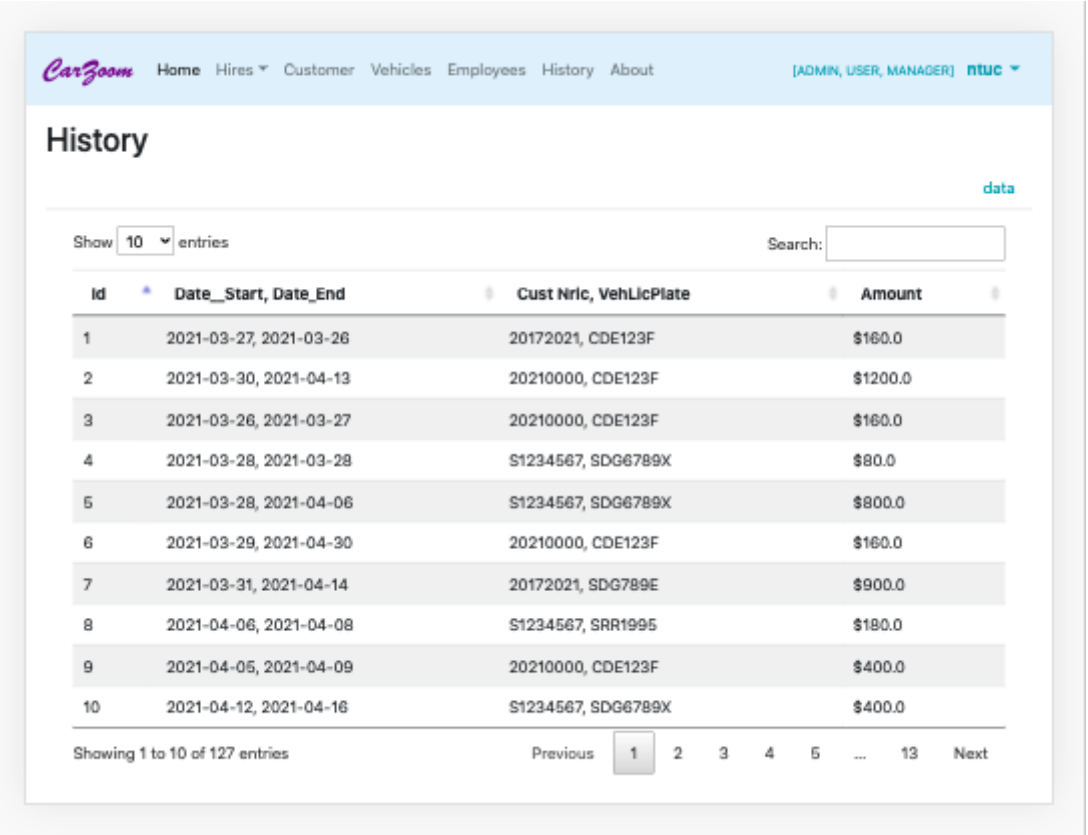
- Employee Profile



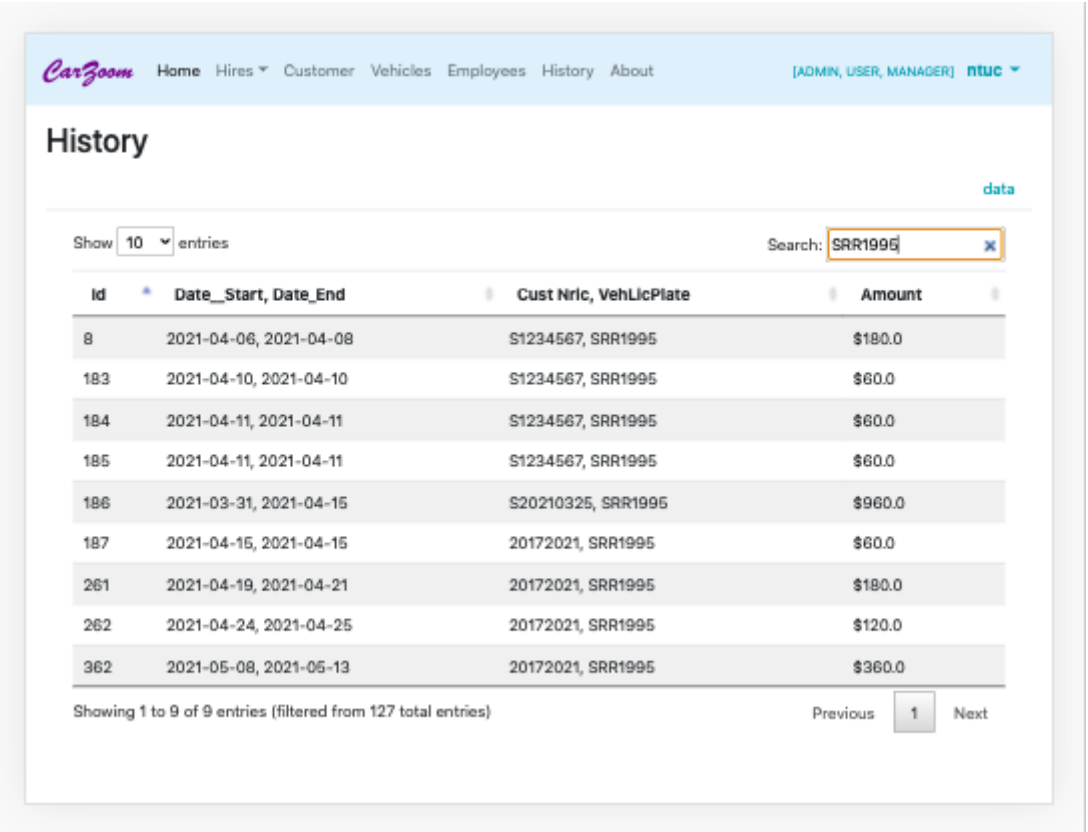
- Deleting this Employee



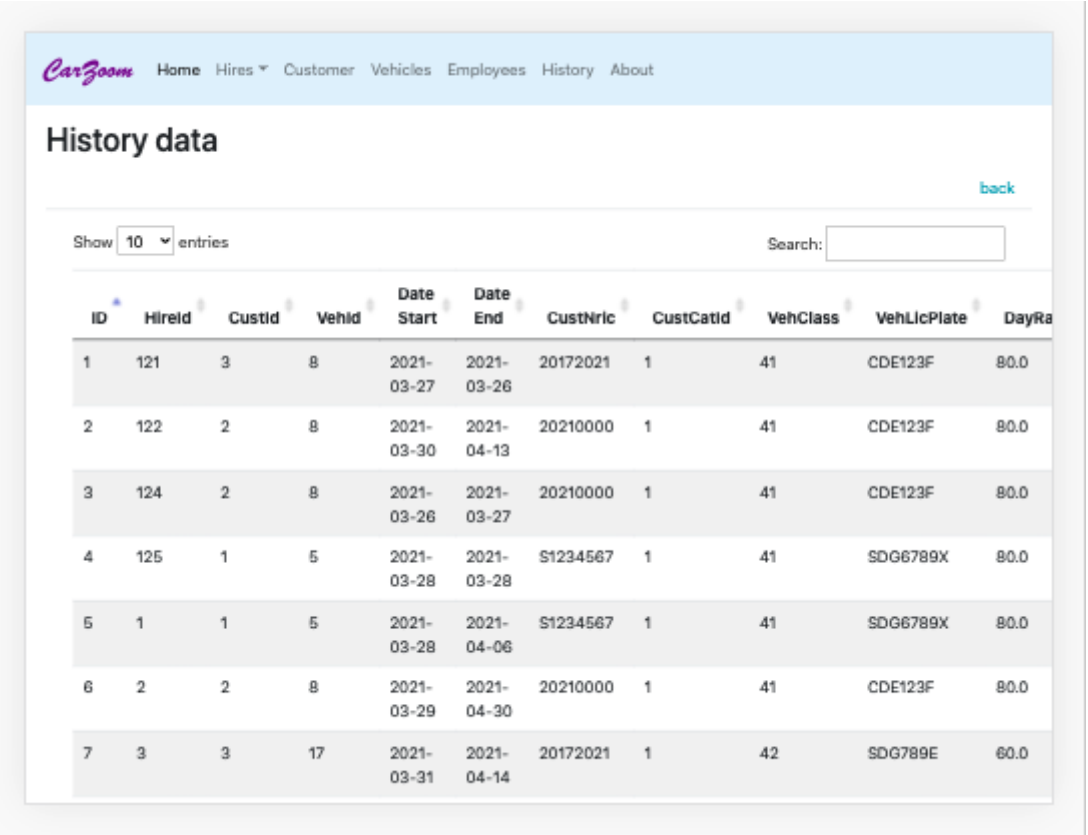
- History



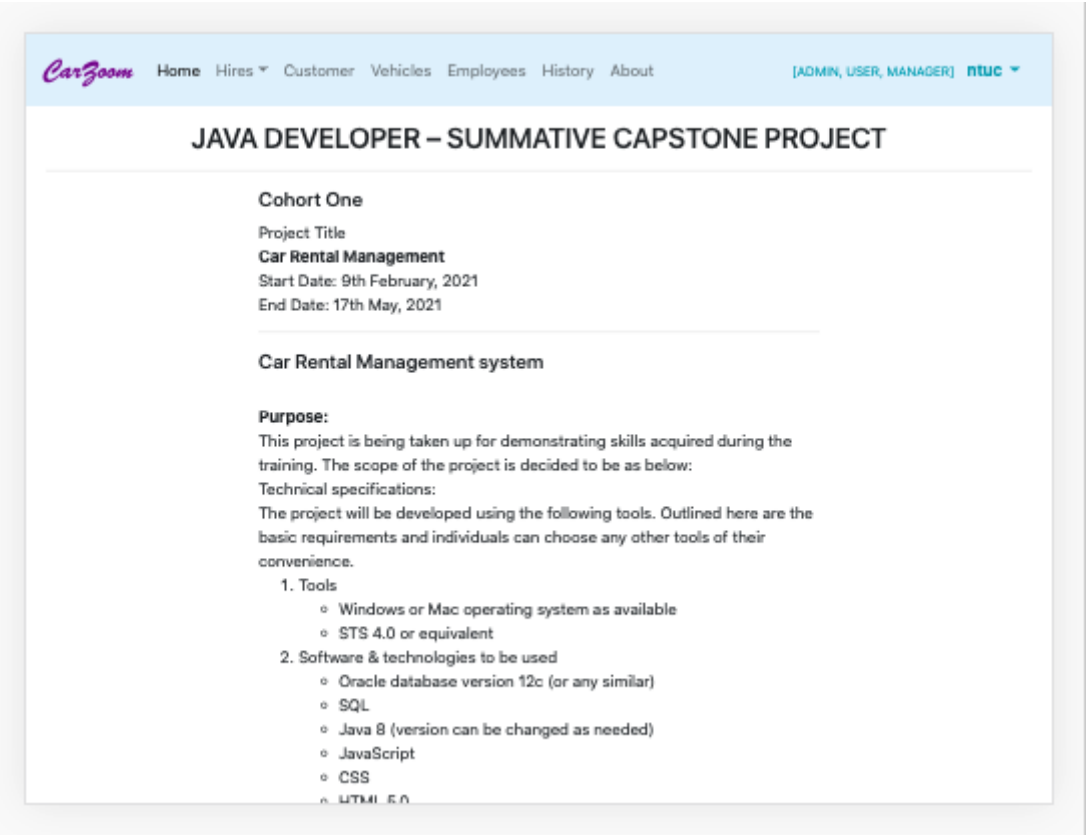
- Pagination, search



- History Data page

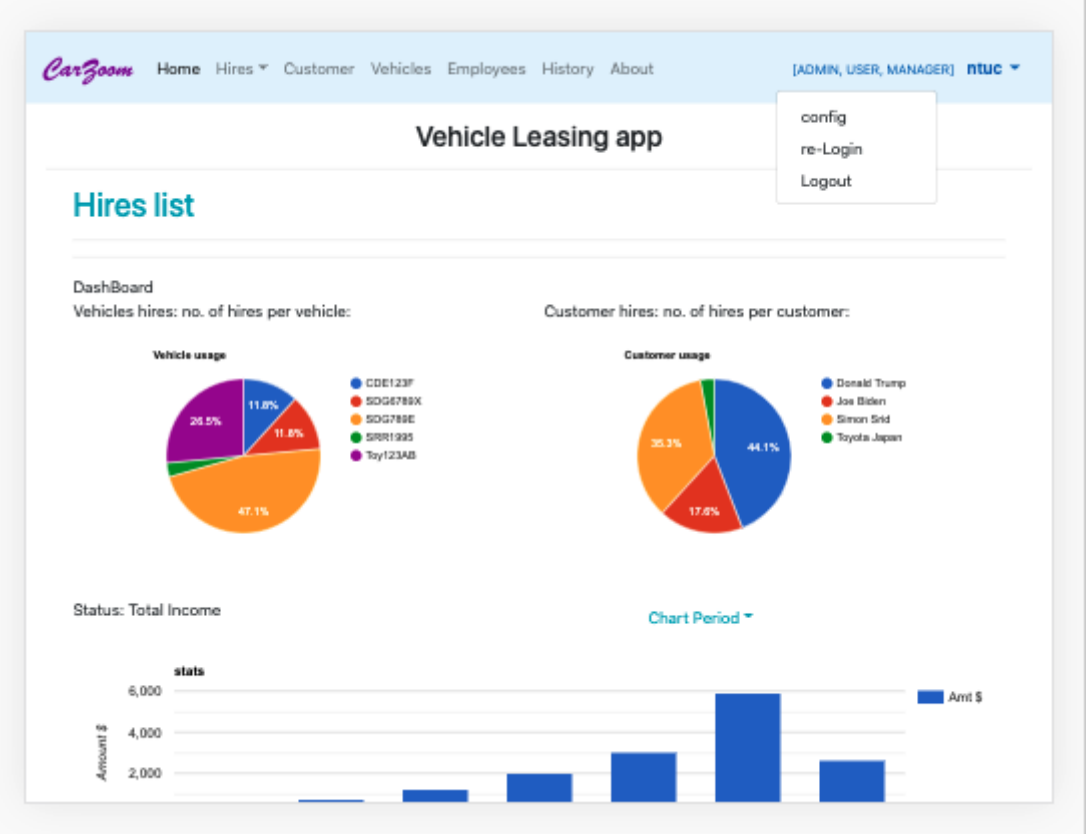


- About Page

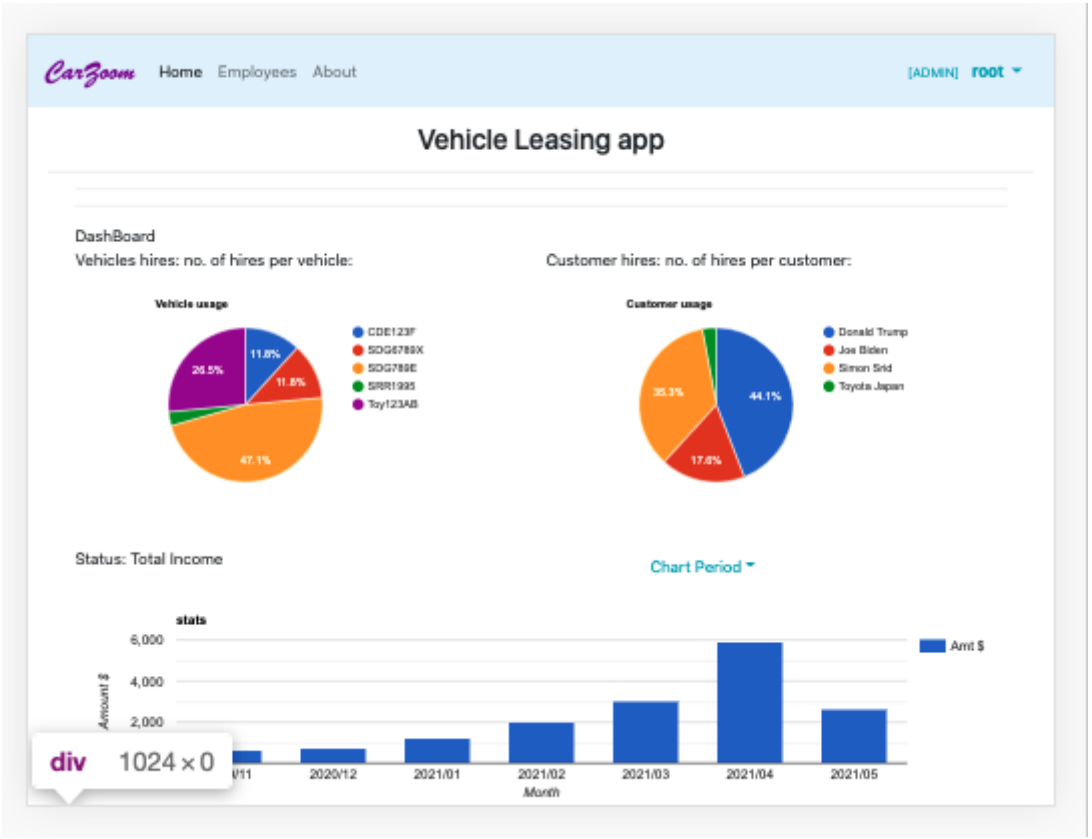


Configuration for Customer State, Vehicle Status, Hire Rate

- from drop down.



- Config Page


CarZoom
Home
Employees
About
[ADMIN] root
Vehicle Leasing app
DashBoard
Vehicles hires: no. of hires per vehicle:
Customer hires: no. of hires per customer:
Vehicle usage
CDE123F
SDG6789X
SDG789E
SRR1995
Toy123AB
11.8%
11.8%
47.1%
29.5%
Customer usage
Donald Trump
Joe Biden
Simon Srid
Toyota Japan
44.1%
17.6%
35.3%
Status: Total Income
Chart Period
stats
Amt $
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2,000
Amount $
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Month
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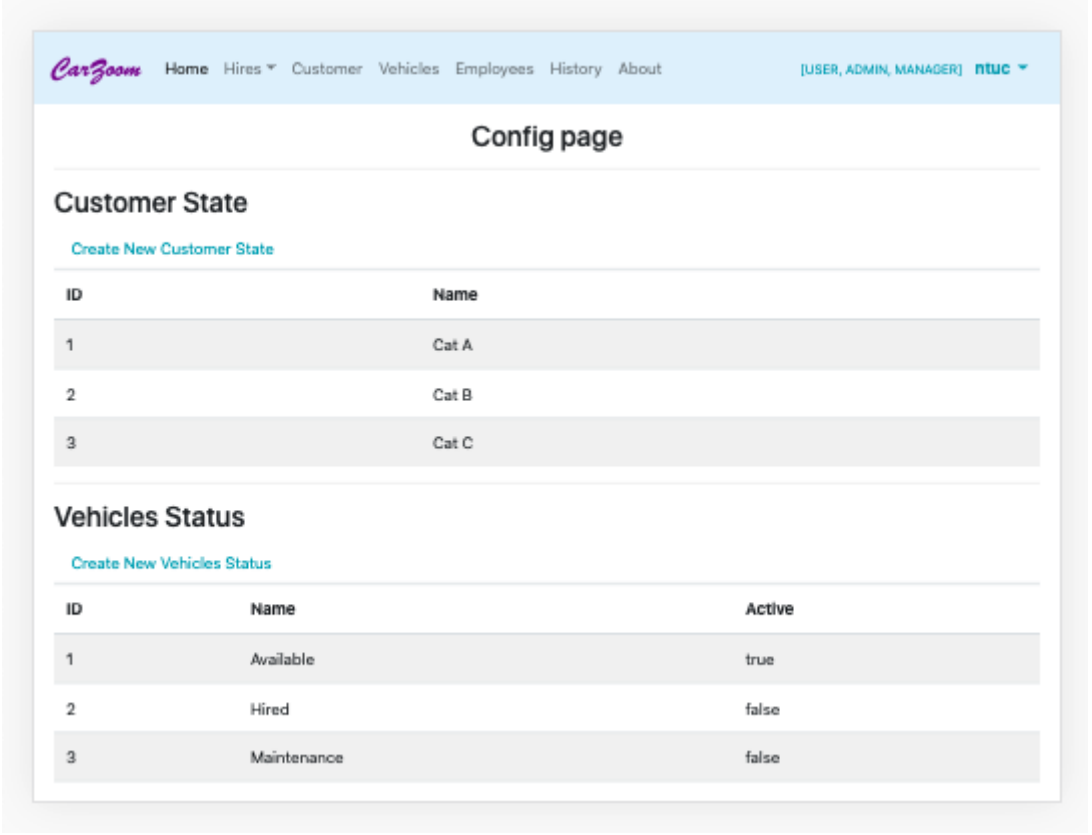
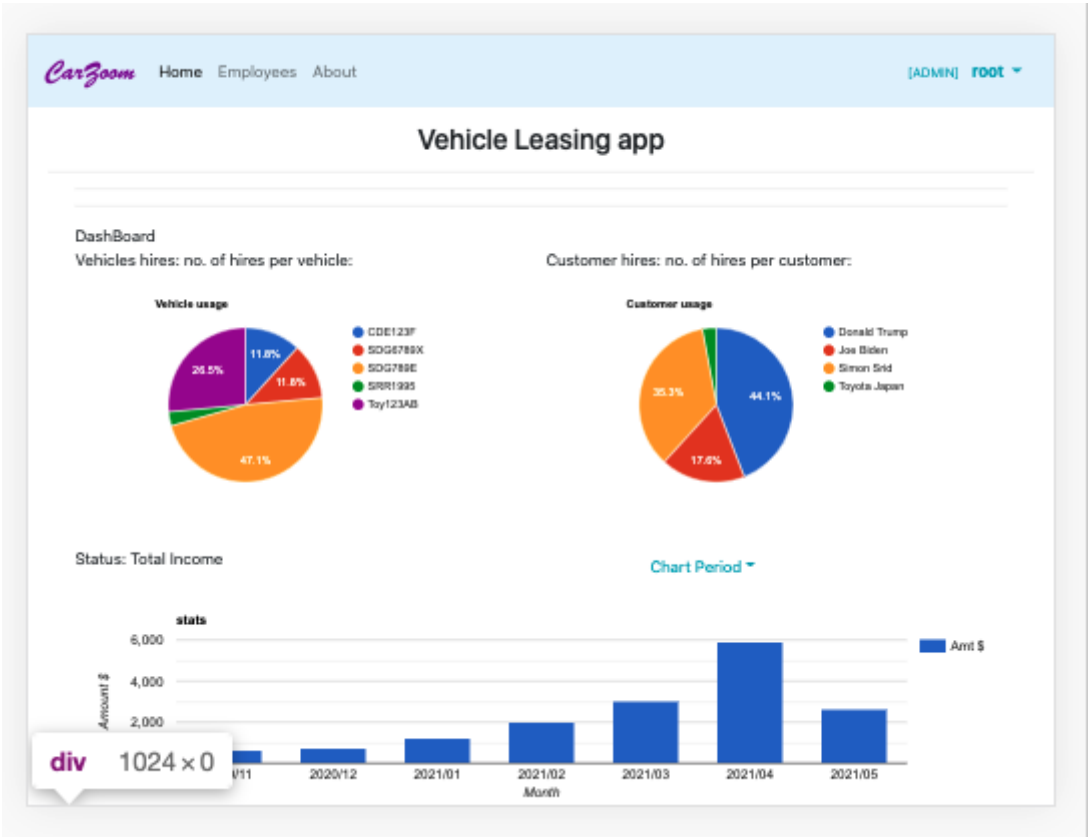
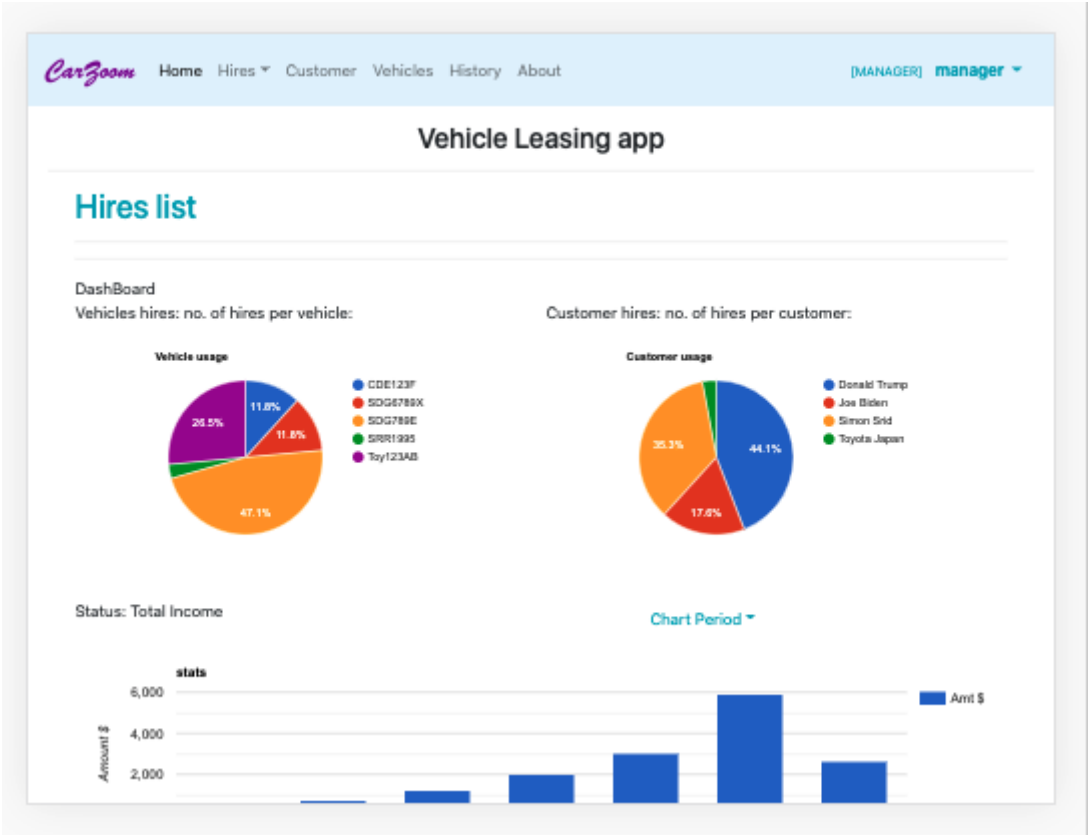

CarZoom
Home
Hires
Customer
Vehicles
Employees
History
About
[USER, ADMIN, MANAGER] ntuc
Config page
Customer State
Create New Customer State
ID
Name
1
Cat A
2
Cat B
3
Cat C
Vehicles Status
Create New Vehicles Status
ID
Name
Active
1
Available
true
2
Hired
false
3
Maintenance
false

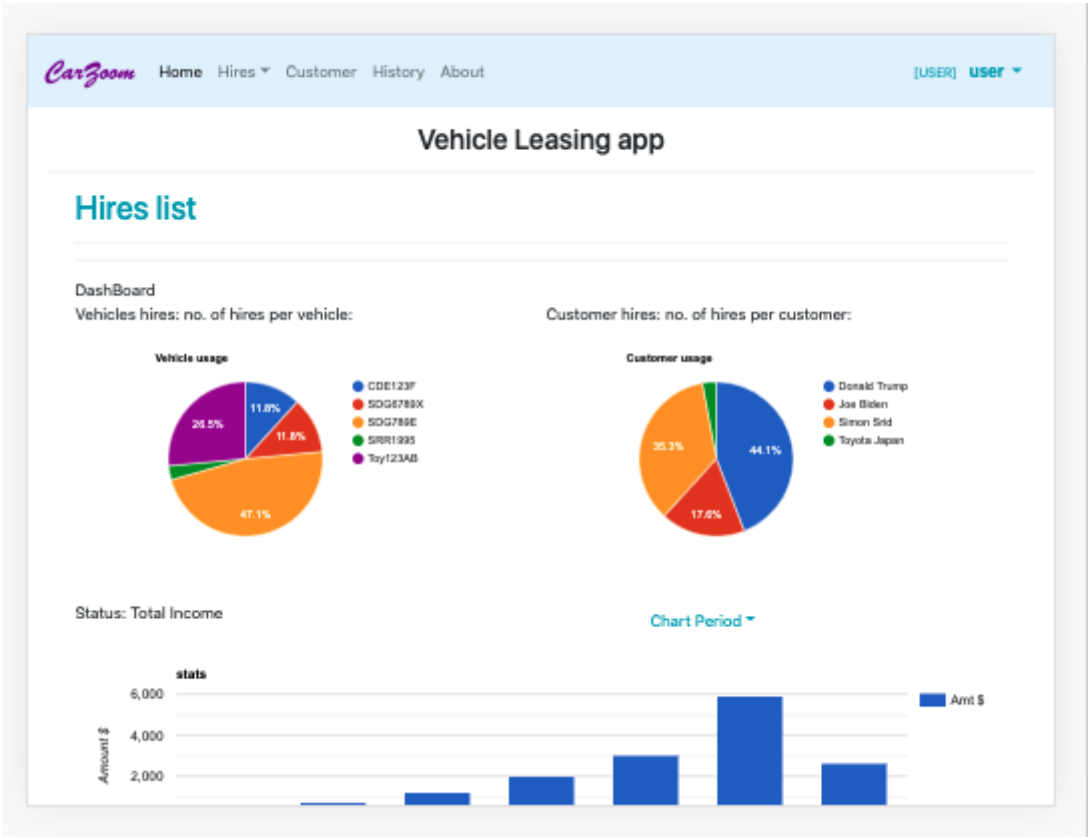
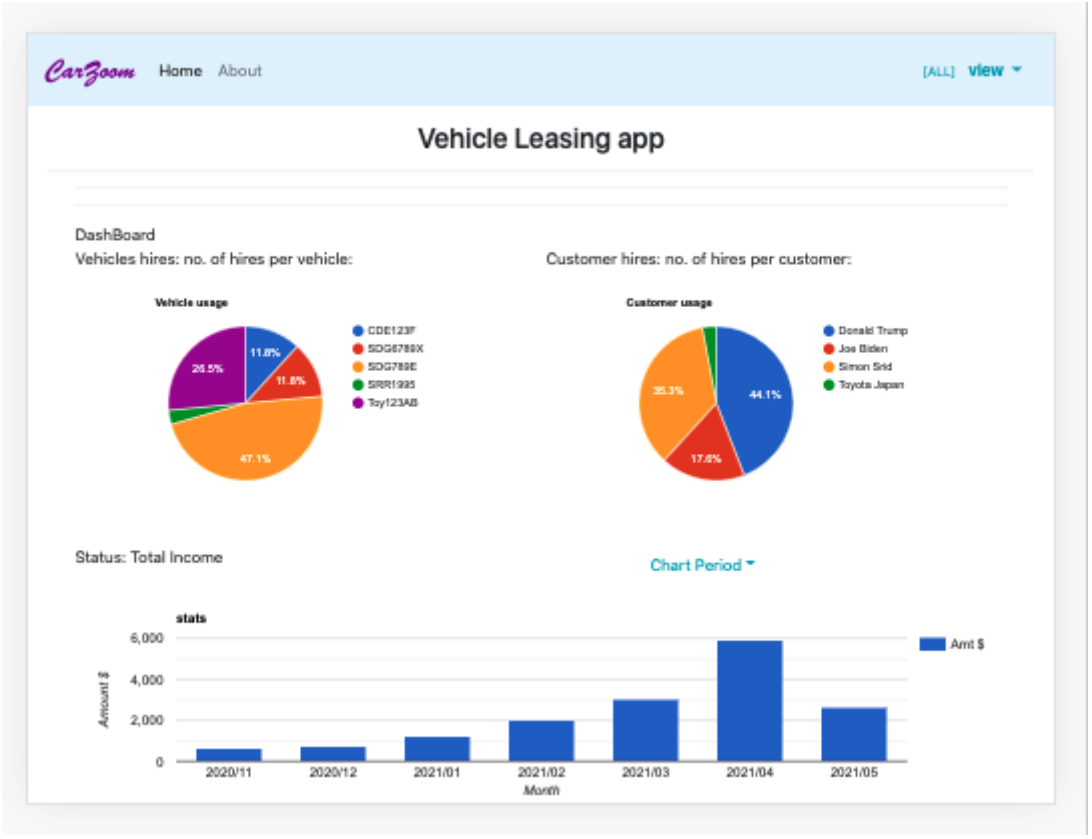
- Role Admin



- Role Manager



- Role User



- Role All