Car Rental DBMS

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Today's Agenda

01	Overview
02	Conceptual Data Model
03	Logical Data Model
04	External Data Model
05	Power Apps Layout
06	Q&A

Quick BackGround



Our Goal

Build a car rental app for users to return their rental car easier.

Overview

Entities

Customer, Car, Order, Insurance, Payment, Review, Location

Stakeholders

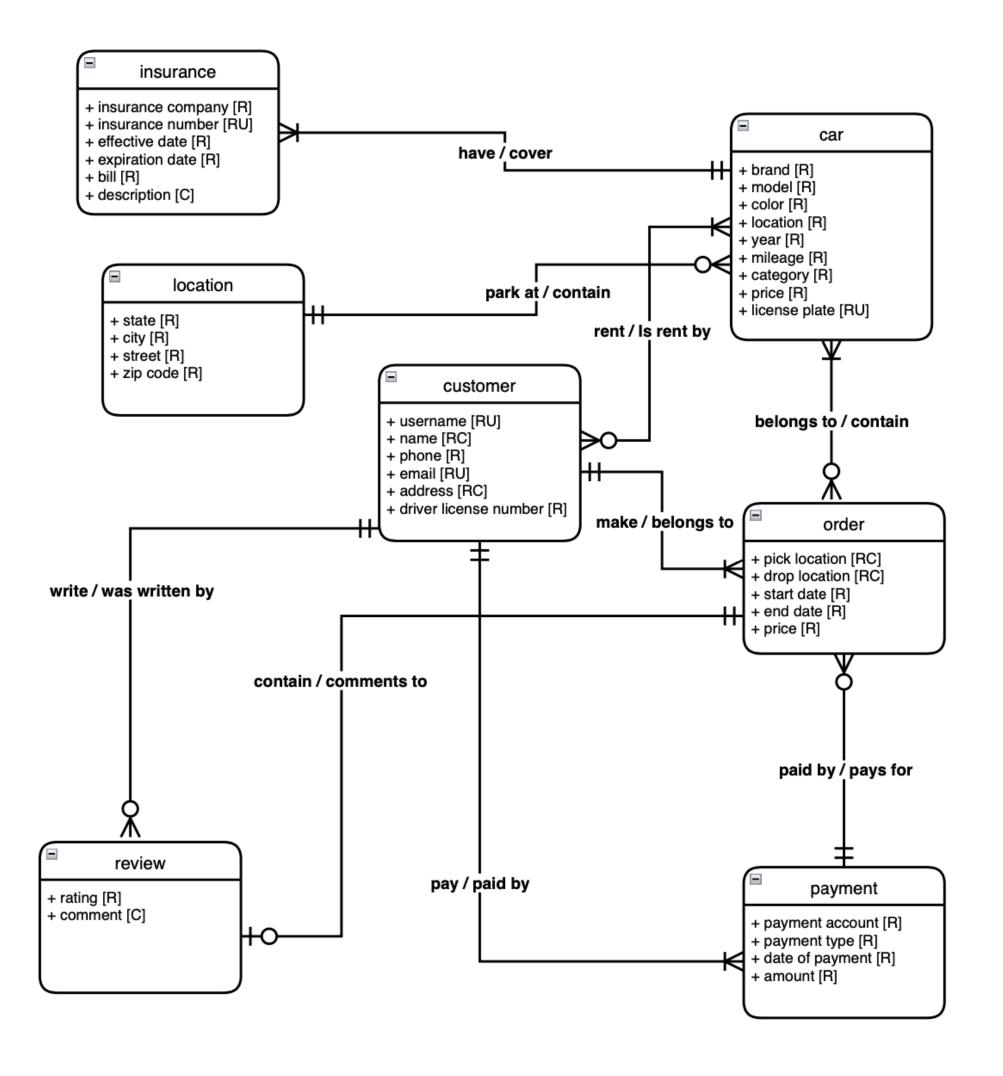
Customers & Managers



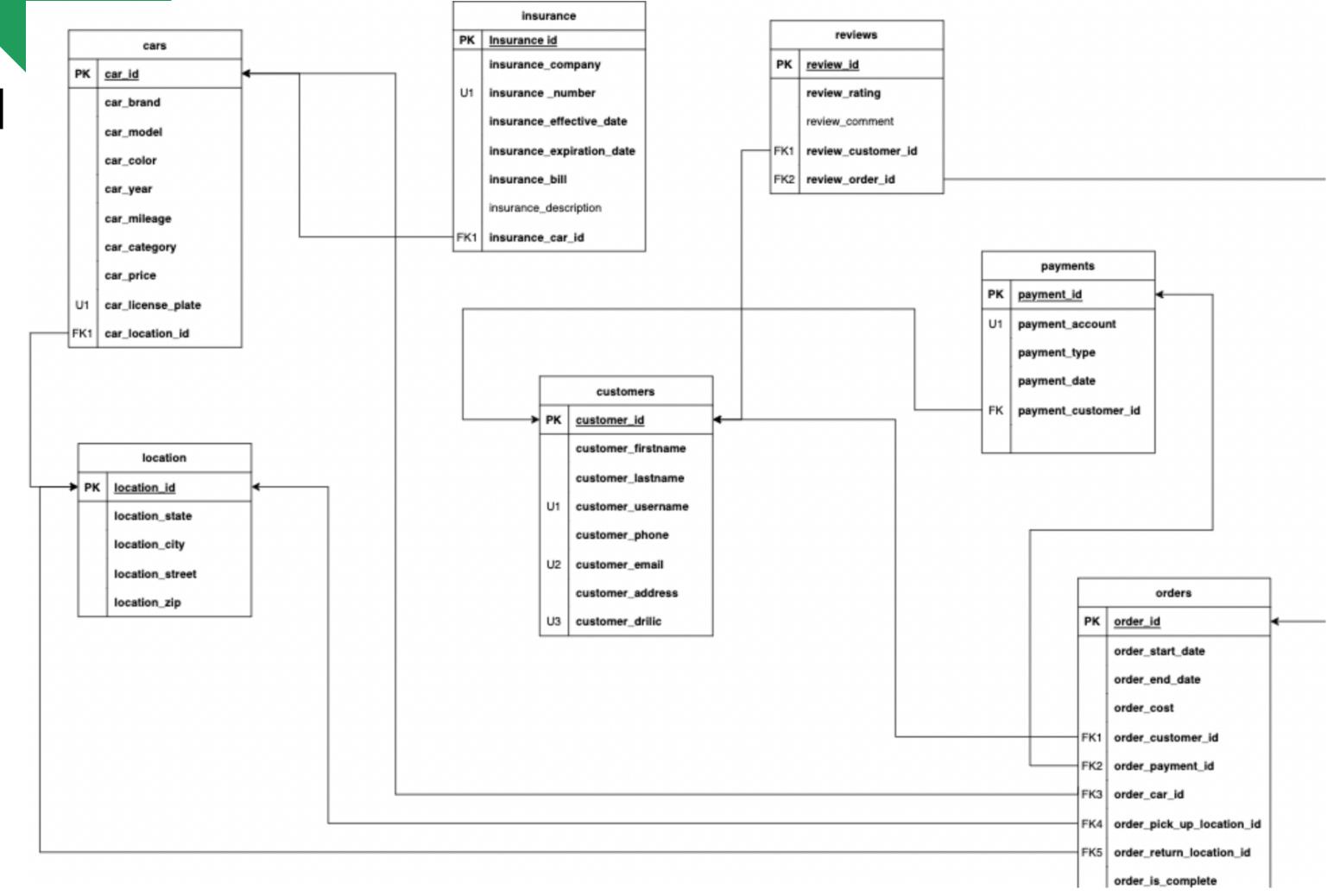
Conceptual Data Model

	Entitie	s and Attribut	es	Relationships						
Entity	Attribute	Props	Descripion	Relationship	Entity	Rule	Min	Max	Entity	
<u>customer</u>	username	RU	customer's username	customer-car	<u>customer</u>	rent	1	М	<u>car</u>	
	name	RC	customer's name		<u>car</u>	is rent by	0	М	<u>customer</u>	
	phone	M	customer's phone							
	email	RU	customer's email	customer-order	<u>customer</u>	make	1	М	<u>order</u>	
	address	RC	customer's address		<u>order</u>	belong to	1	1	customer	
	driving license number	R	customer's driving license number							
<u>Car</u>	brand	R	car's brand	customer-payment	customer	pay	1	М	<u>payment</u>	
	model	R	car's model		payment	paid by	1	1	<u>customer</u>	
	color	R	car's color							
	location	R	car's current location	customer-review	customer	wirte	0	М	<u>review</u>	
	year	R	car's production year		<u>review</u>	was written by	1	1	<u>customer</u>	
	mileage	R	the mileage of the car							
	category	R	the category of car	car-order	<u>car</u>	belongs to	0	М	<u>order</u>	
	price	R	the price of car per day		<u>order</u>	conatin	1	М	car	
	license plates	RU	Car's license plate							
<u>Order</u>	pick_location	RC	the city of pick-up the car	car-insurance	car	have	1	М	insurance	
	drop_location	RC	the city of drop the car		insurance	cover	1	1	car	
	start_date	R	the start date of rental							
	end_date	R	the end date of rental	order-payment	order	paid by	1	1	payment	
	price	R	the price of order		payment	pays for	0	М	order	
insurance	insurance company	R	insurance company							
	insurance number	RU	insurance id number	order-review	order	contain	0	1	review	
	effective date	R	the start date of insurance		review	comments to	1	1	order	
	expiration date	R	the expiration date of insurance							
	bill	R	the price of insurance	car- location	car	park at	1	1	location	
	description	С	description about insurance		location	contain	0	М	car	
payment	payment account	R	the account of payment							
	payment type	R	the payment type							
	Date of payment	R	payment date							
	Amount	R	total payment							
review	rating	R	the rating from customers(0-10)							
	comment	С	the comments from customers							
location	state	R	the state of parking spot							
	city	R	the city of parking spot							
	street	R	the address of parking spot							
	zip code	R	the zip code of parking spot							

E-R Diagrams



Logical Data Model







Customer

As a customer, I can sign in or join in the platform so I can start rent a car.



drop procedure if exists p_upsert_customer

GO

create procedure p_upsert_customer(

GCustomer firstname varchar(50)

The procedure p_upsert_customer firstname varchar(50)

Yaping

Goustomer firstname varchar(50)

Wang

Goustomer_username varchar(50)

ashley74747

GROUSTOMER description of the pupsert customer_email varchar(50)

The procedure p_upsert_customer varchar(50)

Applies the procedure p_upsert_customer varchar(50)

The procedure p_upsert_customer varchar(50

create procedure p_upsert_customer(
 @customer_firstname varchar(50),
 @customer_lastname varchar(50),
 @customer_username VARCHAR(50),
 @customer_phone varchar(50),
 @customer_email varchar(50),
 @customer_address varchar(50),
 @customer_drilic varchar(50))

∨ customer drilie ywa380@syr.edu 150 Hnery street, Syracus... 2 Zhiyu jerry27364 3156409303 zlinhh19@syr.edu 746754983 919 e genesse street, Syr... kk808 3155678990 Kevin zkuang34@syr.edu 122156780 300 University Avenue, Sy... hd7233 2608987334 hans25@gmail.com 234 marry street, Brookly... ben0810 3428847564 Eric Tien eric0000 4532887364 ericyaa@gmail.com 333 wass street, Brooklyn... David david888 9368734637 334564578 david666@gmail.com 666 hey street, Brooklyn,... joey Chou joey778 3189135340 301 University Avenue, Sy...

else BEGIN
declare @id int
set @id = (select max(customer_id)+1 from customers)
insert into customers(customer_firstname, customer_lastname, customer_username, customer_phone, customer_email, customer_address, customer_drilic)
 values(@customer_firstname, @customer_lastname, @customer_username, @customer_phone, @customer_email, @customer_address, @customer_drilic)
END
END

select * from customers
exec p upsert customer @cust

exec p_upsert_customer @customer_firstname='joey', @customer_lastname='Chou', @customer_username='joey778', @customer_email='joey01@syr.edu', @customer_phone='3189 select * from customers



Customer

As a customer, I can check the availability of the car so I can choose my dream car and get the cost of my car rental plan.



```
drop PROCEDURE if exists p_check_avail
go
create procedure [dbo].[p_check_avail](
@start datetime,@end datetime)
as begin
select distinct car_id from cars left join orders ON cars.car_id=orders.order_car_id
where orders.order_end_date > @start and orders.order_is_complete = 0
union
select distinct car_id from cars left join orders ON cars.car_id=orders.order_car_id
where orders.order_is_complete = 1
                                       exec p_check_avail @start='2020/09/07', @end='2020/09/10'
end
                                                          car_id 🗸
drop PROCEDURE if exists p_calcul
```

drop PROCEDURE if exists p_calcul
go
create procedure [dbo].[p_calcul](
 @start datetime,@end datetime,@car_id int)
as begin
select car_price*(datediff(DAY,@start,@end)) from cars where car_id=@car_id end

exec p_calcul @start='2020/09/07',@end='2020/09/10',@car_id=5

	(No column name)	~
1	300.00	



Customer

As a customer, I can rate for the car I rented after I finished my rental and I can write the comments for the car.



end catch

END

```
drop procedure if exists p_ratings
GO
create procedure p_ratings(
  @order int,
  @rating int,
  @comment varchar(500)
  as BEGIN
begin TRY
 begin transaction
  insert into reviews(review_order_id, review_rating, review_comment) VALUES
  (@order, @rating, @comment)
commit
                          exec p_ratings @customer='1', @order='9', @rating='6', @comment='pretty good
end TRY
                          select* from reviews
begin CATCH
print 'ROLLBACK'
                             Everything is rime and ct...
ROLLBACK
                                                  Perfect car and services,...
                                                  Great car but the price a...
                                                  the car is pretty new and...
                                       10
THROW
                                                  Great car, good experience
```

10

Great car, great people! ...

pretty good

1



For Manager

As a manager I can insert cars' information and update the car's detail.

```
drop PROCEDURE if exists p_insert_car
 qo
 create procedure [dbo].[p_insert_car](
@car_brand varchar(20),
                                                                                                               select * from cars
@car_model varchar(20),
                                                                                                               EXEC p_update_car @car_id='4', @car_brand='Toyota',@car_model='camry',@car_color='white',@car_year='2015',@car_mileage='8500',@car_category='standard',@car_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_price='150',@car_license_pricense_price='150',@car_license_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricense_pricens
                                                                                                               select*from cars
@car_color varchar(20),
@car_year varchar(20),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2
                                                                                                                                                                Toyota
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@car_mileage int,
@car_category varchar(20),
@car_price money,
@car_license_plate varchar(50),
@car_location_id int)
                                                                                                                                                                                                                                                                                            2015
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                                                                                                                                                                                                           camry
 as begin
 insert cars(car_brand,car_model,car_color,car_year,car_mileage,car_category,car_price,car_license_plate,car_location_id) values (@car_brand,
```

@car_model,@car_color,@car_year,@car_mileage,@car_category,@car_price,@car_license_plate,@car_location_id)

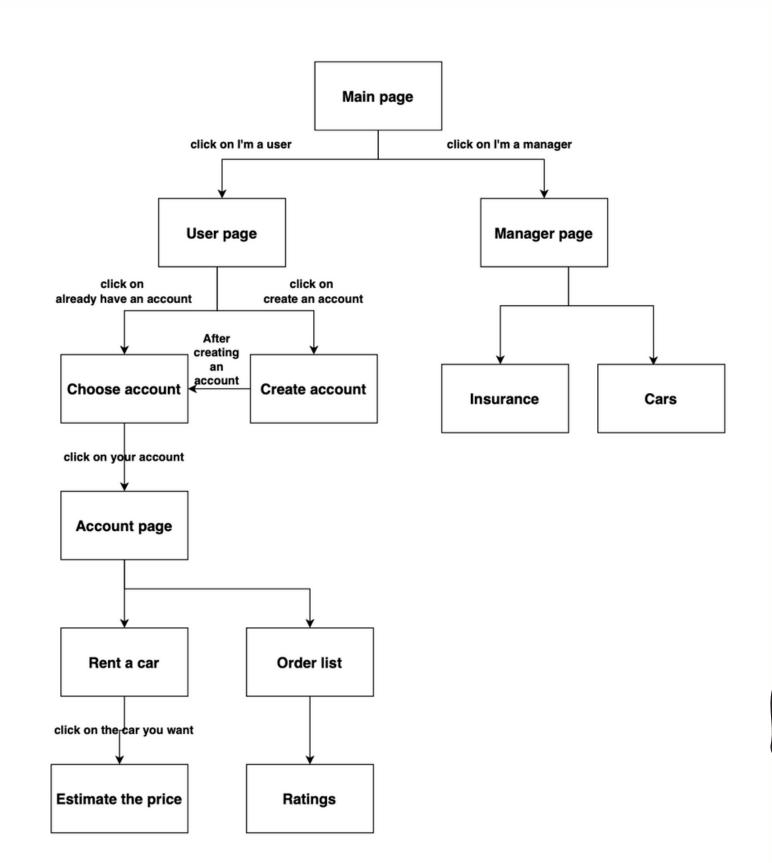
As a manager, I can review the insurance history to make sure the car has effective insurance.

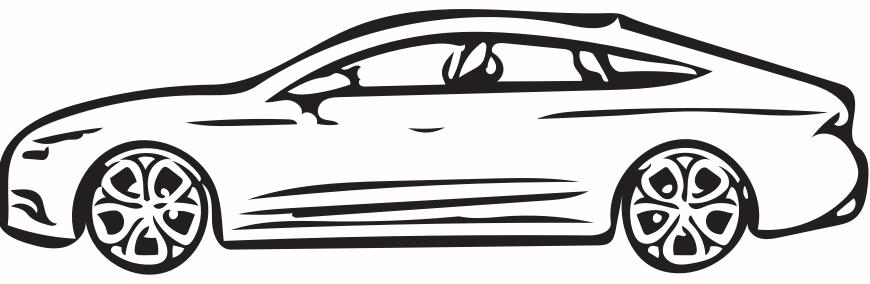
```
drop function if exists f_car_insurance
G0
create function f_car_insurance(@car_license_plate varchar(50))
returns TABLE AS
return(
    select * from cars
        join insurances on insurance_car_id=car_id
        WHERE car_license_plate=@car_license_plate)
G0
select * FROM f_car_insurance('2345SU')
```



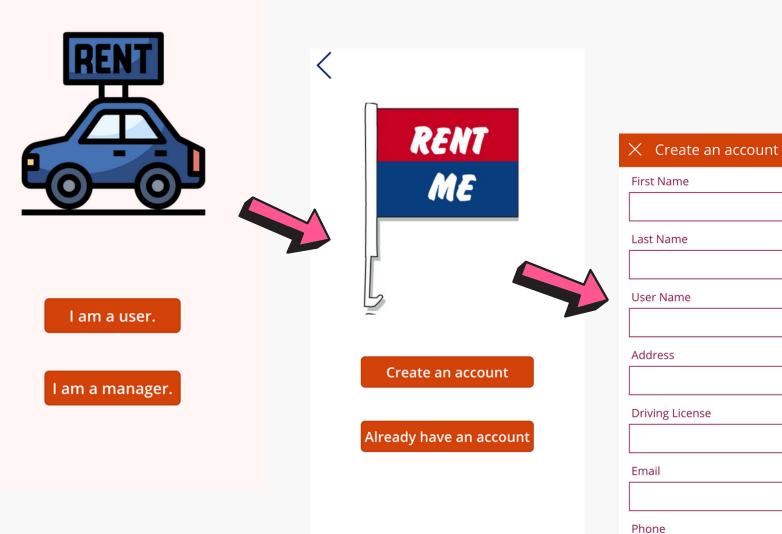
license_plate ✓	car_location_id	insurance_id 🗸	insurance_company ~	insurance_number	<pre> ✓ insurance_effective_date ✓</pre>	insurance_expiration_date	insurance_bill \	✓ ins
5SU	1	1	Allstate	12345678910	2021-09-01 00:00:00.000	2022-09-30 00:00:00.000	790.00	nu

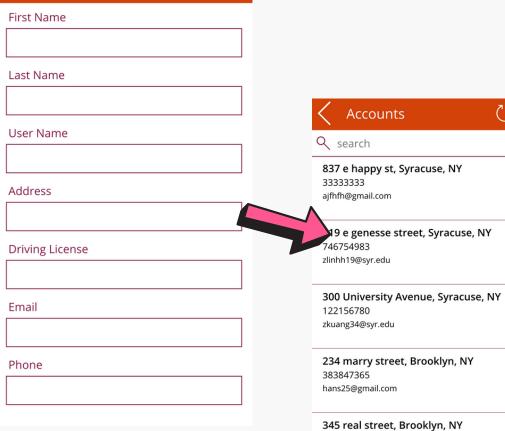
Power Apps Layout





User Screen

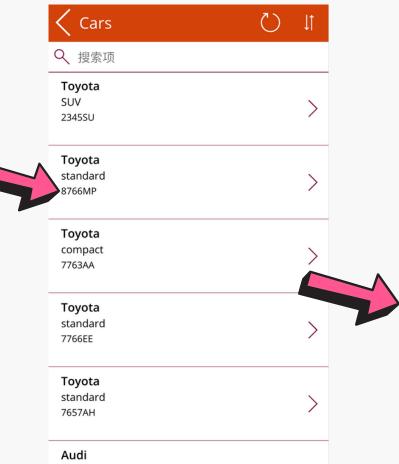




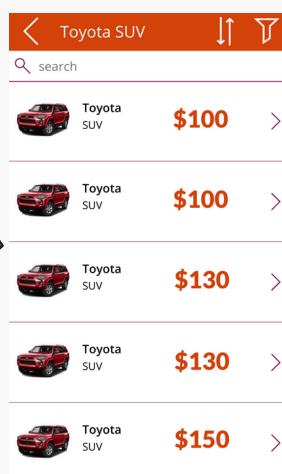
ben0810@gmail.com

485938475 ericyaa@gmail.com

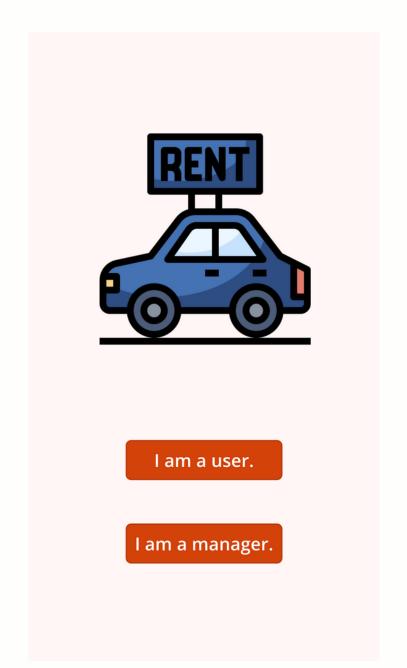
333 wass street, Brooklyn, NY



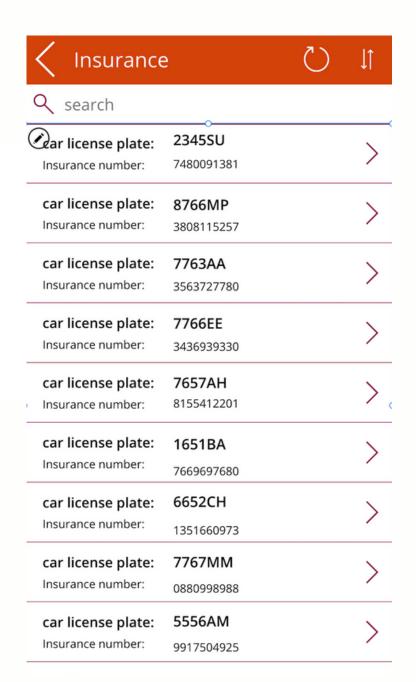
coupe 1651BA



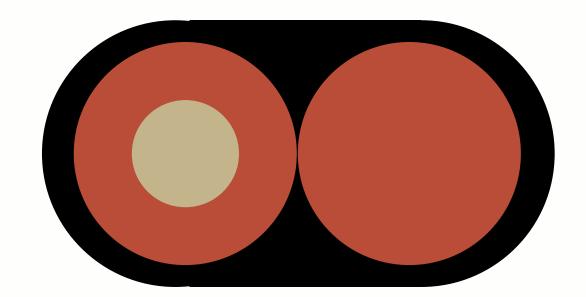
Manager Screen







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Toyota SUV 2345SU		>
Toyota standard 8766MP		>
Toyota compact 7763AA		>
Toyota standard 7766EE		>
Toyota standard 7657AH		>
Audi coupe 1651BA		>



Thank you!

