

CarHub has a variety of functions. These functions include the ability to display nearby car parks' availability. In addition, images of traffic conditions and traffic images of major roads will be displayed to drivers for ease of navigation.

Additional features webpage can support

Points that can distinguish from others

Main functionalities of products and who are the expected users

Demonstrate all features

- Introduce the map interface

When the user enters the map, there will be a one-time pop-out message to remind them to be safe on the roads.

The web page will request for the user location. If the user provides the location, the web page will zoom in on the user location and provide the nearby carpark information.

- Carpark information

The circle with numbers represent a carpark. (Explain what the colours and number of the car park represents. Mention the if the map is zoomed out, the carpark will be clustered)

Good Software engineering concepts and designs

1. Containerization: Allows standardization of development and production environments. Setup is automatically handled by Docker

Application server is platform independent

2. Isolation from the host system

Limits impact of any security issues

3. SOLID principles

- Single responsibility (single use cases & whole app)
- Extensibility?
- Reusability

Other developers can utilise a portion of our code and still implement a different code based on it.

If any part of our code is wrong, we can debug that file specifically without any further changes to other parts of the code.

This support/envisioned further upgrades.

Traceability:

- Carpark use case
- Relevant class diagram
- Sequence diagram(Insert picture of sequence diagram)
- Demo Carpark use case
- testing performed for Carpark use case
 - Test when user provides location
 - Test if user dont provide location
- explain design choices in terms of user/carpark location handling

Script:

Introduction:

Wei Hong

Welcome to CLONS5. Our group consists of Jaryl, Lin xiang, Justin, Joel, and myself Wei Hong.

We are going to present on our application CarHub.

CarHub is specifically targeted at drivers, having various functions to bring convenience to them. These functions will be mentioned later on.

Our application CarHub is driven by government APIs and it can be accessed through browser application, and also on both phones and PCs.

Cut

As shown, this is what our application looks like.

Once you enter the application, a pop up message will appear. It outlines a brief description of what will be provided by our application. In addition, there is a safety message to remind you of the safety precautions to look out for. The user may select the “never show again” option to disable pop out in the future.

***click “never show again” option**

The application will also request for user permission to access their location. This is to allow our application to serve the user better as it will zoom in and centre the application according to the user’s location.

If the user does not grant the permission, our application will display everything that is on the map without zooming in on the user’s location.

We will now proceed with the application when the user does not or is not able to provide his or her location.

Jaryl

First off, let's begin with the carpark functionality.

This is one of our main functionalities which we decided to implement early on in the planning phase. Our program will provide the user with real-time carpark locations and availability.

turn on carpark

As you can see right now, without location services, the program displays data on all of the public car parks in Singapore.

Let's say I want to go to Parkway Parade to enjoy dinner with your friends.

zoom in on Parkway

However, I know that the roads around Parkway Parade are notorious for congested traffic and lack of parking space.

Therefore, before I leave for Parkway Parade, I can use the application to check for available car parks nearby the mall.

I can see that these car parks are full, so naturally, I would not consider parking there. Instead, I'd look for an available car park such as this one, and plan my route accordingly. This gives me a general idea of where I can park my vehicle when I arrive in the vicinity.

Knowing this, I would drive to the available car parks near Parkway Parade. But then, it would take me time to drive there, and by the time I arrive, it would be possible that the car park would already be full. So how can we check this? This is where our location tracking comes in.

-cut-

show refreshed page with "wants to know your location"

click on ok

ok, so now i have enabled location services, we can show you how this will be helpful when on the road.

Right now, i am currently in the NTU campus, so this is where my location pointer will point to.

While driving, it is common for drivers to prop the phone up beside the steering wheel for gps tracking and other services.

Now if i were to be driving towards parkway parade, because my phone has GPS services, the pointer will be able to track my location as i drive towards parkway parade.

Press G

We have implemented a script to mimic this.

As such, i would be able to instantly know which carpark are available and which carpark are full, all without having to interact with the application while driving. This makes it convenient and more importantly, safe, for myself and my passengers when on the road.

=cut=

Another of our key functionalities is to show users road incidents. These come in many forms, such as road works, accidents, or lane closures.

turn on alerts

close carparks

These are updated in real time, as you can see on the map interface. Since there will always be a lot of road works, we've separated them from other types of road incidents such as accidents or breakdowns.

We also have pop up notifications for new road incidents which happen in real time.

fake popup (A)

Like so. Lets take a look at what has happened.

When the user clicks on the popup, it will direct them to the location where the traffic incident has occurred.

So now we know that there is an incident here. What if we want to know if the traffic here has been affected by the road incident, and whether we should avoid this road? Our next functionality, which are traffic camera images, cover just that.

enable cam

So you can see once we enable traffic camera images, we have camera icons which we can click, which will open up an image of the road. This gives us an idea of how congested the road is. As you can see, the road is pretty (clear/congested) right now, which means if i wanted to use this road i (would not/would) have to take a detour.

First off, lets begin with the carparks functionality.

This is one of our main functionality which provides you with carpark locations and the availability of carparks lots.

Scenario:

Lets say you want to go to parkway parade to enjoy dinner with your friends. However, parkway parade is notorious for congested traffic and lack of parking space.

Therefore, before you leave for parkway parade, you would probably check the application to see if there are any available lots in carparks nearby.

This would provide you with a general idea of where to park your vehicle when you arrive in the vicinity.

Knowing this, we would drive to the available carparks near parkway parade. But then, during the time you drive to the ideal carpark, it would be possible that the carpark would suddenly be full. So how do we check it?

This is where our location tracking comes in.

While you are driving, it is common to prop the phone beside the driving wheel for gps and other services. Because the phone has GPS services, it is able to track your progress. As a result, when you are driving, you can instantly know which carparks are available and which carparks are full.

ALERT

Another one of our key functionality is to show users traffic road incidents. There are various road incidents such as roadworks, traffic accidents, or lane closure. These are updated in real time, as you can see on the map interface.

Since there will always be a lot of road works, we've separated them from other types of road incidents such as road accidents or breakdowns.

(Click on road works)

(Click on alerts)

(Fake alerts)

As you can see, an alert has pop up, let's take a look at what happened. When user click on the pop up, it will direct them to the area where the traffic incident happened.

CAMERA IMAGES

One more functionality our application provides is for users to view traffic conditions. You can see the flow of traffic from the image and decide on your ideal route to your destination.

CLICK ON TRAFFIC CAMERA*. *DESCRIBE THE TRAFFIC FLOW

Lin Xiang

ERP GANTRY

Lastly, our application provides you information about the ERP gantries in Singapore.

For example, imagine you are on the way to town. On the way there, there are several paths with different ERP gantries.

From our map interface, we can view whether the ERP gantries are on and at what rates the particular ERP gantry is charging.

During this COVID situation, most ERP gantries are not on, represented by the faded grey ERP icons on the map. To demonstrate whether an ERP gantry is on and how the ERP icon changes, we implemented a code to show the changes to the ERP gantry.***PRESS T*** When an ERP gantry is on, the icon will turn blue as shown. If we click on the BLUE ERP gantry, it will display the respective rates with the current rates highlighted in green.

With all these features, we believe that our application will benefit drivers to navigate efficiently to their destination. Furthermore, even if the driver is busy, their passengers can help them navigate too.

That is all for our CarHub application and we hope it helps you too.