



Batu Pahat Car Workshops Finder

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Abstract—Batu Pahat Car Workshops Finder is an application for driver to find the nearest car workshops with the current location and can get GPS navigation to the selected car workshop. The proposed application is because lots of car breakdown problem are appearing among the car, this problem become worst when driver is at some unfamiliar place. Therefore, Batu Pahat Car Workshops Finder is an application for user to solve the problem. The application helps user to repair their car while travelling and suddenly the car breakdown and they did not find any car service or repair station nearby. With this application, it will show the available car workshops nearby at user's current location along with their contact number.

Keywords — GPS, Workshops, Application

I. INTRODUCTION

The Global Positioning System (GPS) is a global navigation satellite system that provides location and time information in all weather conditions, anywhere on or near the Earth. GPS is extremely easy to navigate as it tells you to the direction for each turns you take or you have to take to reach to your destination. It also helps to search the nearby restaurants, hotels and gas stations and is very useful for a new place.

In details, GPS is a passive, satellite based, radio wave ranging system. The GPS satellite nominal constellation consists of 24 spacecraft in nearly circular, half-synchronous

orbits. The satellites are distributed among six orbital planes that are inclined at 55 degrees and separated by 60 degrees ascending node increments. Each plane contains four satellites whose nominal phasing within each plane has been selected to minimize the impact of a single satellite failure [1].

The big advantages that GPS has over celestial navigation techniques used by ancient marines is its availability. Stars are only visible on clear nights, whereas GPS satellite signals are available 24 hours a day, in any weather. That is mean your GPS receiver will work anywhere in the world at any time of day. Instant, highly accurate position information at the touch of a button [2].

The proposed idea is to create a new platform of real-time locating and tracking tool which is known as Batu Pahat Car Workshops Finder. It is an Android-platform application that is designed to locate nearby car workshops using mobile phones with GPS. The proposed application will also display the details of the car workshops to let user contact with the selected car workshops. Besides locating, user can drive to the selected car workshops by using the navigation function provided in this application.

Some existing finder android applications in the market are having the equivalent function and features as Batu Pahat Car Workshops Finder. Three of existing finder android application are chosen to compare in this project. They are i-Car Repair [3], BitKar [4] and Every Place Finder [5]. All of those three existing application have same function, which is there all have function to detect nearest car workshops. Besides, they also have function to list out the car workshops

nearby in the area, except of the i-Car Repair application. For i-Car Repair and BitKar application, both of them does not display the details of car workshops while the Every Place Finder and Batu Pahat Car Workshops Finder have it. In addition, i-Car Repair, BitKar and Every Place Finder all of them do not have function of giving GPS navigation from current location to selected car workshops while Batu Pahat Car Workshops Finder have it. For the area focus of the application, only Batu Pahat Car Workshops Finder is focus on Batu Pahat and the others are focus on the world. Furthermore, the maps are showing on the three application but not on the Every Place Finder application

Batu Pahat Car Workshops Finder is developed and designed to help driver and passenger to search and contact to the car workshops at Batu Pahat. Currently, driver always faced with the problem of finding the car workshops when going to a new place. They do not know where was the nearest car workshop and the contact of the nearest car workshop. Therefore, the car's problem cannot solve in the shortest time immediately when car breaks down. With this application, user can search to the nearest car workshops at Batu Pahat from their current location. Besides that, the contact number of the car workshop also will display in the details when click into the car workshop. So, user can get the contact number and have a call to the car workshop to get help.

The software application used for developing Batu Pahat Car Workshops Finder is Android Studio. The programming Language used in Android Studio is Java Programming Language and firebase is used for database.

II. IMPLEMENTATION

Figure 1 illustrates the flowchart diagram of the Batu Pahat Car Workshops Finder. There are two main functions included in the application which are Car Repair and Car parts activity. In the menu, there are two options provided for users and users can choose the options they need. Firstly, is the Car Repair option. Users can view the list of all the car workshops in Batu Pahat and the car workshops are listed in query with the distance from current location. For the Car Parts option, user can search car workshops according to the parts of car, which are Air-Conditioning, Battery, Car Cushion, Car Electrical, Exhaust Pipe, Radiator and Tyres. The selected car parts option will then go to the list view of car workshops with only display the car workshops with the service of particular car parts.

Other than that, from the list of car workshops, user can view the details of the car workshop. The name, address and contact of the car workshop will show in the Details view page. Lastly, in the Details view page, user can call to the car workshop and view the location in maps. User also can get navigate to the car workshop in the maps view which will direct user to Google Maps.

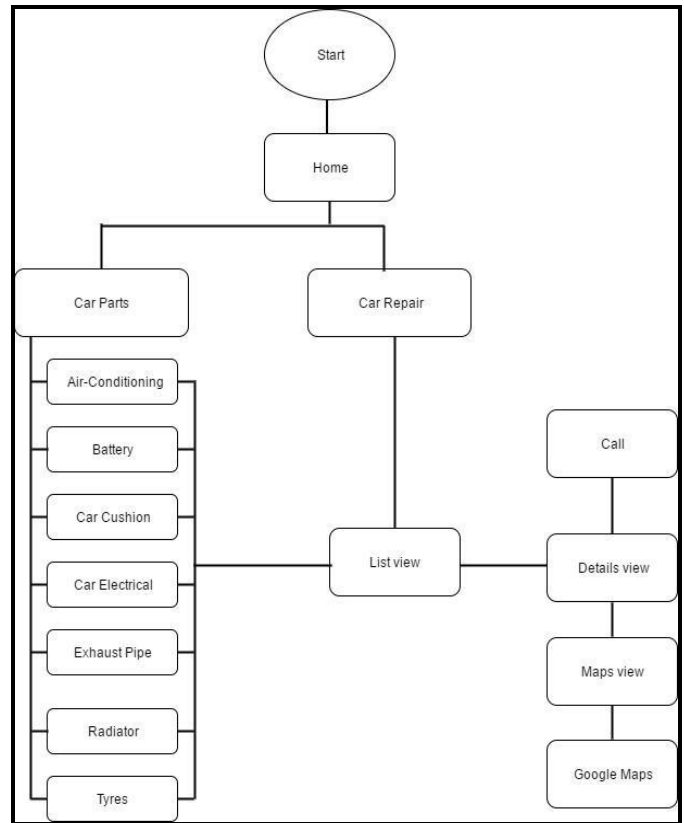


Fig. 1. Flowchart of Batu Pahat Car Workshops Finder

Figure 2 shows the user interface for the List view page. The List view page shows by the list of car workshops which are focus on Batu Pahat. The car workshops are listed in query with the distance from current location. Besides, the List view page will go to the Details view page when select the car workshop in need.



Fig. 2. Flowchart of Batu Pahat Car Workshops Finder

Figure 3 shows the user interface for the Details view page. At this page, user can view the car workshops name, contact of the car workshop and the address of the car workshop. After that, user can click the address and can get navigate from current location to the car workshop.

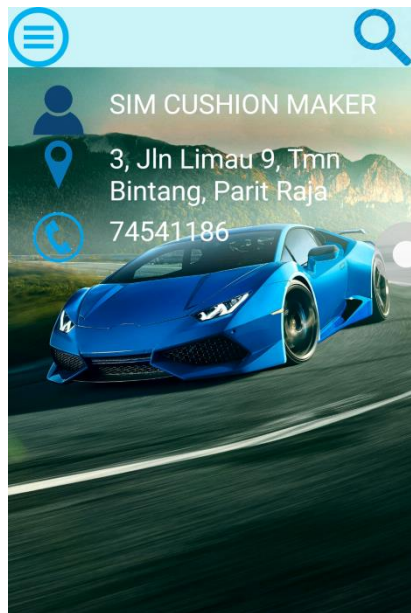


Fig. 3. Details view page of Batu Pahat Car Workshops Finder

Figure 4 shows the user interface for the Maps view page. At this page, user can view the car workshops name on the map. After that, user can click the car workshop name then the screen will direct to Google Maps and can get navigate from current location to the car workshop.



Fig. 4. Maps view page of Batu Pahat Car Workshops Finder



Fig. 5. User interface for Admin add workshops page

Figure 5 shows the Admin interface for the application when admin open the Add workshops page. All the details of the car workshops must be insert in order to add the car workshop. The details required to insert include image of car workshop, name of car workshop, address of car workshop, latitude and longitude of car workshop, contact of car workshop and category of car workshop.

TABLE 1. Unit Test Plan for User

Test Case	Expected Output	Actual Output
User starts the application.	User will be able to view the two option (Car Repair, Car Parts) on the home page.	Success
User clicks “Car Repair”.	User will be able to view the list of car workshops.	Success
User clicks “Car Parts”.	User will be able to view the list car parts and click on it.	Success
User clicks the workshop on the List view page.	User will be able to view the details of the selected car workshop.	Success
User clicks the Call button on the Details view page.	User will be able to call to the clicked contact number.	Success
User clicks the Address button on the Details view page.	User will able to view the car workshop on Maps view page.	Success
User clicks the car workshop name on the Maps view page.	User will able to direct to the Google Maps application.	Success

Table 1 shows the unit test plan for user. The purpose of unit testing for user is to ensure the Batu Pahat Car Workshops acquires the needs and its functionality. Every module for the user is tested to make sure there is no error happen in system.

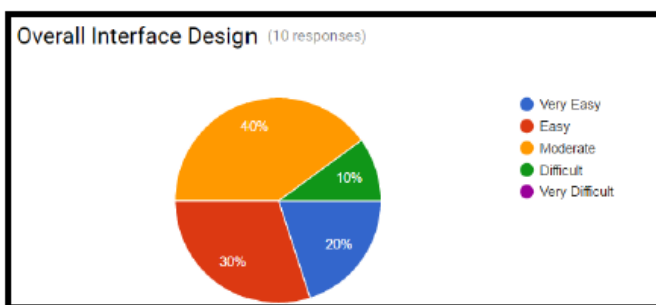


Fig. 6 Overall interface evaluation graph

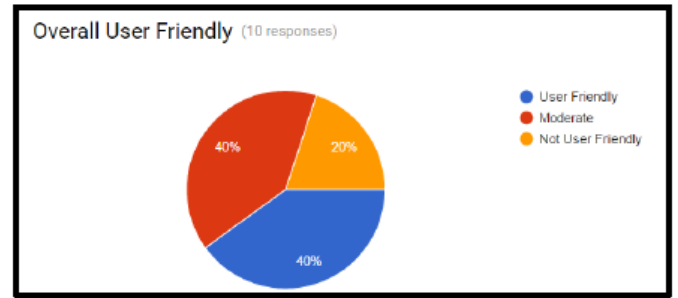


Fig. 7 Overall user friendly evaluation graph

User acceptance testing was tested on 10 users. The testers are students from UTHM who have driver license. Questionnaires were given out to these students about the interface design and the level of user friendly of this system. Figures 6 shows the results of user interface acceptance testing and Figure 7 shows the result of user friendly acceptance testing. From the result, 5 users agree that the interface was easy to use and 4 users agree that it is moderate. However, there has 1 user disagree with that and said the interface was difficult to use. On the other hand, 8 users are agreed with that the application are moderate and user friendly. While there are 2 users mention that the application are not user friendly.

III. CONCLUSION

As a conclusion, the application is used to help user find the nearest car workshops in Batu Pahat in order to solve the car breakdown problem. From the result testing, most of the function of the application are functioning well and there still need some improvement to the development of the functionality on GPS navigation. This system could be enhanced by referring to many other system and applications available such as [6-11].

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