Path Apps for Box of Ramadhan

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ARTICLE INFO	ABSTRACT
	Map helps to track targeted location but still unable to find actual destination of rural area due to unclear addresses. This problem also faced by owner and members of the Box of Ramadhan when they need to give delivery services to underprivileged people cause low efficiency of service provided. Thus, this project is conducted to design and develop an application called Path Apps for Box of Ramadhan for Android device user to solve problems of reach destination and get related information to reduce overall time spending. Unified Modelling Language diagram used to show the relationship and interaction among all classes. The proposed system is categories into two different interfaces as admin interface and user interface. The application consists of few modules such as login and registration, user list, profile, current location, route, multiple markers and address list and chat modules. Time management, route planning and inventory will be under control by user according to program schedule. This contribute to high efficiency of work.

1. Introduction

"Map is a symbolic depiction emphasizing relationships between elements of some space, such as objects, regions, or themes" [1]. These maps give a wide range of understanding of location and characteristics of an area [2]. Many electronic maps have been widely used in many ways in human's life to track targeted location. For example, route planning, traffic management system, place searching and so on. In this fast-paced modern life, it required high efficient productivity and short timing to complete tasks such as delivery services. Thus, people always need the navigation function of the map to find the path to the destination.

However, there still got problems on mapping a place if no address or unclear address to be type in search box. User unable to search for that location through map tools, it only be searched from nearest road and characteristics of the house being given. As a result, everything will be delay

regardless of the problem of time or service. In fact, the charity for delivery service during month of Ramadhan by participants of Box of Ramadhan had faced this kind of problem. The addresses get

from the recipients are mostly stated in number of pillar even the name of village is stated as their address. This make participants hard to find their locations. The level of efficiency for the service delivered drops due to late delivering service even late assistance are given. To provide higher delivery service and high-quality assistance delivery   service to those who need it, an android-based map application called Path Apps for Box of Ramadhan is specially designed and developed to provide information of related address and reach destinations through the path provided in order to reduce time spending. After that, this application will be functionality of the mobile application on reaching the need of the owner an members of Box of Ramadhan.

Three existing similar application are compared with the   proposed application, such as GeoMapTool, GPS Logger for Android and Navmii GPS World (Navfree) are compared with Path Apps for Box of Ramadhan. GeoMapTool is a OpenStreetMap (OSM) for editing the map. Tool for users to draw and tag Point of Interest (POIs), lines, area and polygon.". User can edit the map and add on notes quickly using mobile device anywhere and anytime, even able to upload the change make to OSM Server right away [3]. GPS Logger is a free android-based mapping application that uses GPS to log user current coordinates at specified interval to GPS format files on Secure Digital Card (SD card). User able to view the location in Google Earth or Goole Map, OpenStreetMap tracking, tracking friends and family and so on with computer [4]. This application will show the   current geolocation in latitude and longitude with speed on current time and direction even altitude. Navmii GPS World is best known with GPS navigation and traffic app [5]. Navmii is available for online and offline map without an internet connection after downloading selected country map. Navmii able to have real-time traffic and road information through GPS. Automatic and fast rerouting features enable user to have real time road condition to destination. Moreover, Share My Trip feature allow user to share their route with friends and family.

Path Apps for Box of Ramadhan is an online Android   application that require user to register and login using the   registered account while admin just need to login the system using set account. Admin able to manage all the registered member account. Path Apps for Box of Ramadhan supported with Google Maps to have real-time tracking from current location to destination, provide current location to user and display all the recipients' location on map. This application also allow communication among users. The software used to develop the proposed application is Ionic. Ionic is used as front-end framework for designing the interface of the application and the technologies language used is JavaScript, HTML and CSS.

2.   Implementation

Use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system [6]. Within the diagram, actors, system and goals will be used to   represent the user, sequence of actions and the final result respectively. Figure 1 shows the use

case of Path Apps for Box of Ramadhan application. The proposed system consists of seven modules such as login and registration, user list, profile, current location, route, markers and address list and chat modules. User interface contribute of login and registration module, profile module, current location module, route module, markers and address list module and chat module while admin interface contribute of two modules that are login and registration module and user list module. Figure 2 and 3 show the interfaces of Path Apps for Box of Ramadhan. Figure 2 shows the profile interface after new user registered and log into the system. Figure 3 shows route interface of the main features for the system for user to have a path from user current location to selected address from the dropdown list.
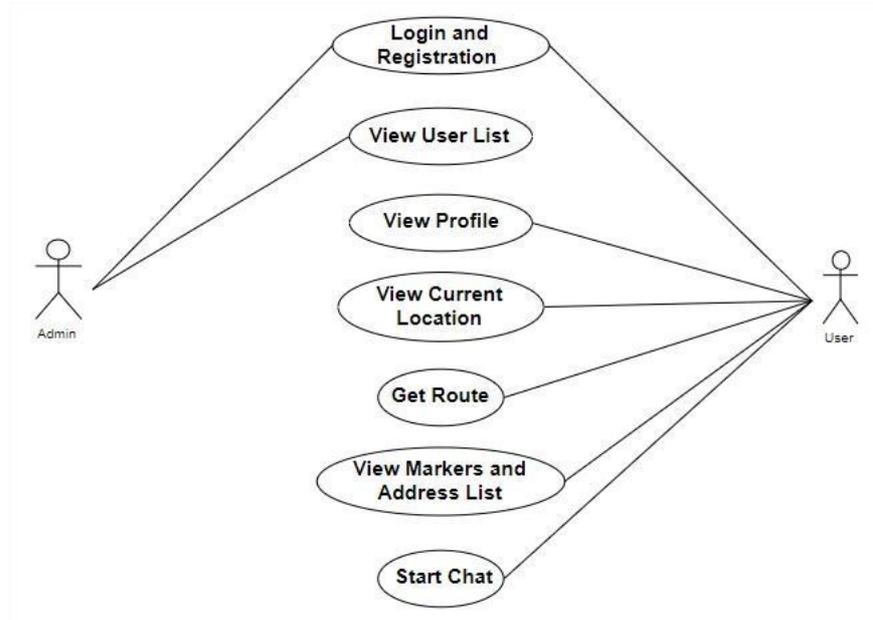

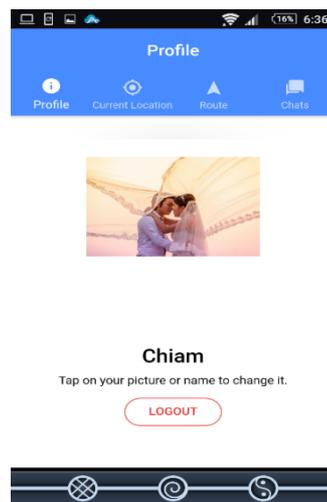Figure 1: Use Case of Path Apps for Box of Ramadhan

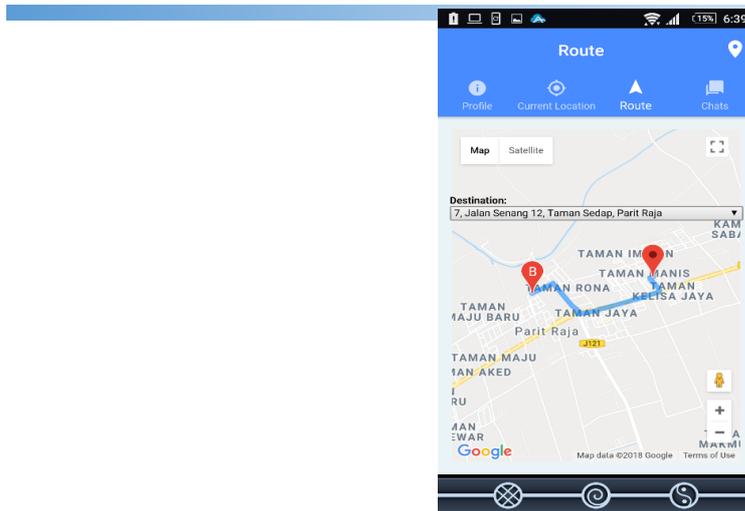Figure 2: Profile Interface of Path Apps for Box of Ramadhan

Figure 3: Route Interface of Path Apps for Box of Ramadhan

3.   Results and Discussions

During the process of developing the application, real data of addresses for those underprivileged people are collected for   charity Box or Ramadhan (BOX). 26 addresses out of 85 addresses of recipients are collected and sort out to put in a table as shown as table 1 below.

System testing is a black box testing technique performed to evaluate the complete system the system's compliance against specified requirements [7]. Administrative panel functionality and user functionality will be carry out during this phase. For both testing will include functional and non-functional testing.   Functional testing will test on the functions that required by client within the system while non-functional testing will test on usability testing. Usability testing required corporation from targeted user to see how easy to use the system. All testing results are recorded and shown in table form. "Test Case acts as the   starting point for the test execution, and after applying a set of input values, the application has a definitive outcome and leaves the system at some end point or also known as execution postcondition" [8]. Thus, test case is executed to verify the functionality of the proposed system with the requirements stated. During test case execution, the results observed in actual result will be given Pass or Fail status. For administrative panel

testing, modules that will tested during this testing will included login and user list module. The result is shown in the table 2 below. Out of 5 test cases, all of the testing pass show that the administrative panel interface has meet the requirement stated early. While, user testing will test based on modules such as login and registration, profile, current location, route, markers, address list and chat module. The result is summarized in the tables 3 below. All 16 test cases have a pass result show that the system built is fulfil the requirement for user. Usability testing will focus on satisfaction of targeted users on built system. This testing helps developer to understand more about the system and get opinion from user to improve existing system. Figure 4 shows the histogram of result usability testing from users. There are 30 users get to try on the system built.   Mostly of the users satisfactory on the system.

Table 1: Addresses of BOX

No	Latitude	Longitude	Electric Poles	Address
1	1.829028	103.119131	PDD 122	No 132, Kampung Parit Daun, Parit Raja
2	1.813226	103.125853	PDD 12	No 222, Kampung Parit Daun, Parit Raja
3	1.824631	103.123502	PBB 198/6	No 172, Lorong Daun Emas, Kampung Parit Daun, Parit Raja
4	1.835961	103.109886	LJK F6	Pos 17, Kampung Parit Lapis Sempadan, Parit Raja
5	1.835919	103.109963	LJK F6	Pos 17, Kampung Parit Lapis Sempadan, Parit Raja
6	1.825466	103.110583	PS 119	TL 56, Kampung Parit Sempadan Laut, Parit Raja
7	1.826086	103.045430	JKB 104	Pos 15 Lorong 7, Kpg Baru, Sri Gading 83300 Batu Pahat
8	1.850181	103.093929	PHK 11	Depan surau, Kg Parit Hj Kadir, 86400 Prt Raja
9	1.853954	103.091748	JKB 410	No 6 Lorong Usahasama, Pt Hj Kadir
10	1.822423	103.131936	PSD 30	91, Kampung Parit Surau Darat, Parit Rajat
11	1.816447	103.138512	PSD 63	Pos 165, Kampung Parit Surau Darat, Parit Raja
12	1.822392	103.131923	PSD 30	Kampung Parit Surau Darat, Parit Raja
13	1.825588	103.129922	PSD 15	Parit Surau Darat
14	1.828292	103.150005	PSD 45	Parit Simpang Sikon
15	1.827651	103.149029	PSD 43	Parit Simpang Sikon
16	1.832842	103.136710	PSD 8	Parit Simpang Sikon
17	1.830458	103.138139	PSD 15	Parit Simpang Sikon
18	1.878086	103.150693	PL 18	Kg Pt Semarang, Pt Raja, BP
19	1.867482	103.107535	JS2 2	7, Jalan Senang 12, Taman Sedap, Parit Raja
20	1.858586	103.107081	PJ 13/1	No 2, Lorong Hj. Abas, Kampung Parit Jambul
21	1.860167	103.107242	PJ 11	Rezab 1, Kampung Parit Jambul, Parit Raja
22	1.858448	103.106587	PJ 9/2	No 2, Lorong Hj. Hassan, Kampung Parit Jambul
23	1.829976	103.115457	PJ 43	No 53, Kampung Parit Jambul, Parit Raja

24	1.814103	103.118262	PBB 160	No B3, Jalan Parit Botak, Kampung Parit Daun, Parit Raja
25	1.8278158	103.095798	TL 30	Rezab 2, Prt Hj Rais
26	1.824631	103.1235012	PBL 32/3	Kampung Parit Baru, Parit Raja

Table 2: Testing on Administrative Panel Interface Functionality

Test Case	Expected Result	Actual Result
Admin clicks on login button	System request admin email and password	Pass
Admin successfully login	System redirect to admin panel	Pass
Admin click on logout button	System redirect to main page	Pass
Admin input user name in search box to search particular user	Filter out the input user for admin	Pass
Admin click on delete button	User is deleted from system and database	Pass
Test Case	Expected Result	Actual Result

Table 3: Testing on User Interface Functionality

Test Case	Expected result	Actual Result
User clicks on create a new account button	System redirect to login page after fill-in all the details from user	Pass
User clicks on login button	System request user registered email and password	Pass
User successfully login	System redirect to user interface	Pass
User click I forgot my password button	System redirect to reset password page	Pass
User click on profile picture	System allow user to upload picture from their photo gallery as profile picture	Pass
User click on profile name	System allow user to change their name	Pass

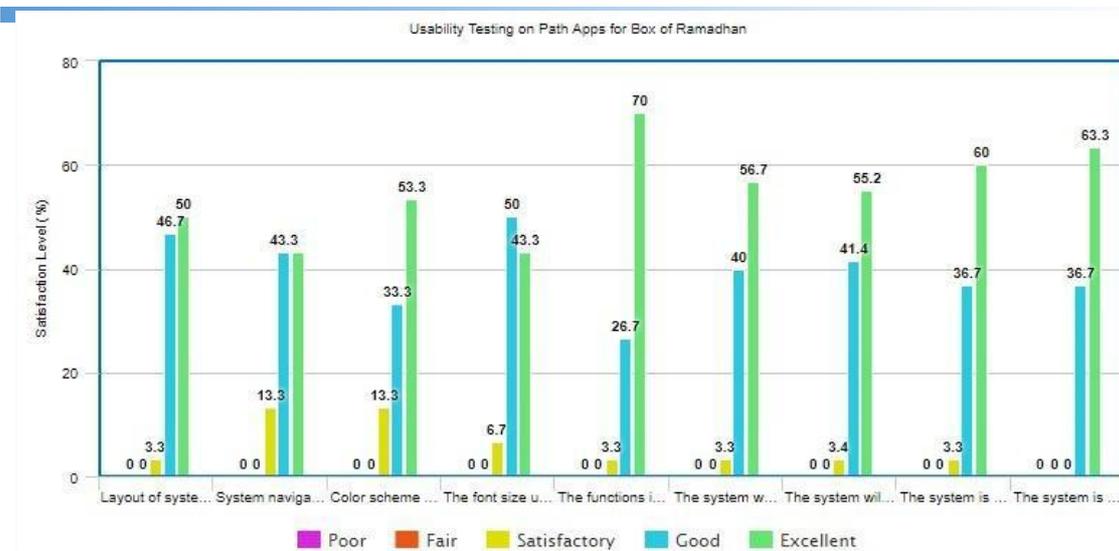|		
User click on logout button	System redirect to main page	Pass
User clicks on current location tab	System shows marker of current user's location	Pass
User click on start button	System enable real time tracking user current location	Pass
User click on stop button	System stop user from having real time tracking of user current location	Pass
User pick either one of the address in dropdown list	System show a path from current location to selected address	Pass
User clicks on pin icon at right top corner in route page	Multiple markers on map shown and scrollable information of all receiver.	Pass
User clicks on either one of the marker in markers page	Information of that particular receiver shown	Pass
User click on add button of person that sent request to current user	Request user become friend of current user	Pass
User click on one of the friends	User able start to chat with current user	Pass
User click on group created	User able to start conversation with other members	Pass
Test Case	Expected result	Actual Result
User clicks on create a new account button	System redirect to login page after fill-in all the details from user	Pass

Figure 4: Histogram of User Response

4.   Conclusion

Millions of maps are produced and used annually throughout the world by scientists, scholars, governments, and businesses to meet environmental, economic, political, and social needs [9]. Maps are important, and the future will see map data literally driving our vehicles while we use smart phones and mapping applications to ensure we get there quickly and safely [10]. Thus, the proposed application, Path apps for Box of Ramadhan is built to reach   destination more quickly and safely to target users.

In future, the rest 59 addresses needed for charity BOX will be collected and stored within the system. If the proposed application has high acceptance among target user, it may upgrade to more features embedded within the system such as voice navigation, road condition viewing and etc. These future works could move the application forward closer to fulfil the requirement of mostly users. Moving forward the application with higher technology and higher technique also is one of the future work should be considered. Future works and improvement will make the system more user friendly and have more high satisfaction toward the system.

References

1)   VideoWiki.   (n.d.).   Retrieved   October   3,   2017,   from https://www.videowikipedia.org/wiki/Map#cite_note-4.

2)   Inclusive Maps · FHP. (n.d.). Retrieved from https://fhp.incom.org/project/5830

3)   geoMapTool   for   Android   -   APK   Download.   (n.d.).   Retrieved   from https://apkpure.com/geomaptool/com.geothings.osmtools

4)   GPS   Logger   for   Android   -   Apps   on   Google   Play.   (n.d.).   Retrieved   from https://play.google.com/store/apps/details?id=com.mendhak.gpslogger&hl=en

5)   Navmii GPS USA: Offline Navigation and Traffic on the App Store. (n.d.). Retrieved from   https://itunes.apple.com/us/app/navmii-gps-usa-offline-navigation-and-traffic/id405922167?mt=8

6)   UML   Use Case   Diagram Tutorial.   (2018, May 31).   Retrieved from https://www.lucidchart.com/pages/uml-use-case-diagram

7)   Object-Oriented Systems Analysis and Design. (2017,   October 26). Retrieved   from http://www.w3computing.com/systemsanalysis/object-oriented-systems-analysis-design/

8)   Tutorials   Point.   (2018,   January   08).   Test   Case.   Retrieved from https://www.tutorialspoint.com/software_testing_dictionary/test_case.htm

9)   Value   of   Maps.   (n.d.).   Retrieved   from https://www.colorado.edu/geography/gcraft/notes/cartocom/cartocom.html

10)   Mani. (2017, November 30). The Importance of Digital and Paper Maps. Retrieved from http://imiamaps.org/importance-digital-paper-maps/