



AL- Najah National University

Faculty of Engineering & Information Technology

Computer Engineering department

Graduation Project (66581)

## The Graduation Project Report

### TakeAway Taxi



Done By:

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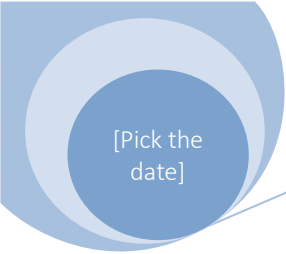
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2014/2015



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## **Acknowledgments**

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## ACRONYMS AND ABBREVIATIONS

- PHP PHP Hypertext preprocessor.
- SQL Structured Query Language.
- AVD Android Virtual Device.
- OSM Open Street Map.

## Abstract

TakeAway Taxi is a Mobile application that provide services to passengers and taxi drivers .The TakeAway Taxi connects between passengers and taxi drivers using GPS system and enable passengers to order a taxi with their Smartphone .The application show to passengers nearby taxies to his location .The project has two parts the first one is an application run on mobile device and the second is a server on MySQL server. The importance of this application is managing passengers' booking in quick and easy way with shortest time possible without any need for third party to do this work. This project also allows passengers to stay in control with this real-time mobile application by tracking their rides on the way to their locations and by notifying drivers that there exists a request. The main objectives of this project are showing the nearby taxies to user location on map and enable user to order a taxi and tracking the arrival of the taxi.

We will develop this application in order to work on mobile devices so we will mobile development language and for server part we will use PHP.

## **Chapter 1 : Introduction.**

### **1.1 Statement of the problem.**

Passengers used to wait for taxi in the pathway or hurrying on stairs when taxi reaches there location. Also the problem that an office must handle your request could take time to find nearest available taxi. For that reason we thought of new way to handle taxi requests avoiding these problems.

### **1.2 Objectives of the work.**

The main objective of this project is to make taxi services more practical than before. All you need is a smartphone and internet connection. With one click on the button you can order a taxi if you are a passenger. With another click you accept or decline requests if you are a driver. No third party to be added to control this work.

### **1.3 Scope of the work.**

This application is designed to be used on mobiles especially Android. Requests from passengers and responses from drivers are sent via network to the server to handle these orders.

## **1.4 Significance or importance of the work.**

The importance of this project comes from the importance of time. This application allows you to know the exact distance between you and the taxi. The thing that makes our project more efficient is that it provides the text to speech service for driver when it delivers a notification that there exists a request from passenger.

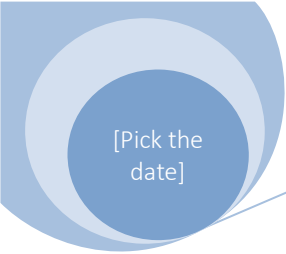
## **Chapter 2 : Constraints, Standards/ Codes and Earlier course work.**

### **2.1 Constraints.**

Unfortunately Wi-Fi services in our country is not very good so testing the application using mobile phones was not flexible. Also GPS is not good indoor and with poor internet services outdoors it was a problem to check the result from the application. So we depend mainly on AVD manager.

### **2.2 Standards/Codes.**

This project is built using Android programming language and PHP.



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### **2.3 Earlier coursework.**

Java , Database , Network, Wireless, Android course"Abdallaheid.net".

## **Chapter 3 : Literature Review.**

As we all know that this project is not the first. There are many taxi applications used worldwide such as easytaxi , Urban , TaxiForSure and Startup Taxi.



## Chapter 4 : Methodology.

### 4.1 Taxi booking system

Taxi booking system contains android application installed on mobile devices that run on Android OS. This application is for both drivers and passengers where each one enters the side that specified for him. There also the server that handles requests from android application and responds to the requests. The figure below shows the main structure of the project.

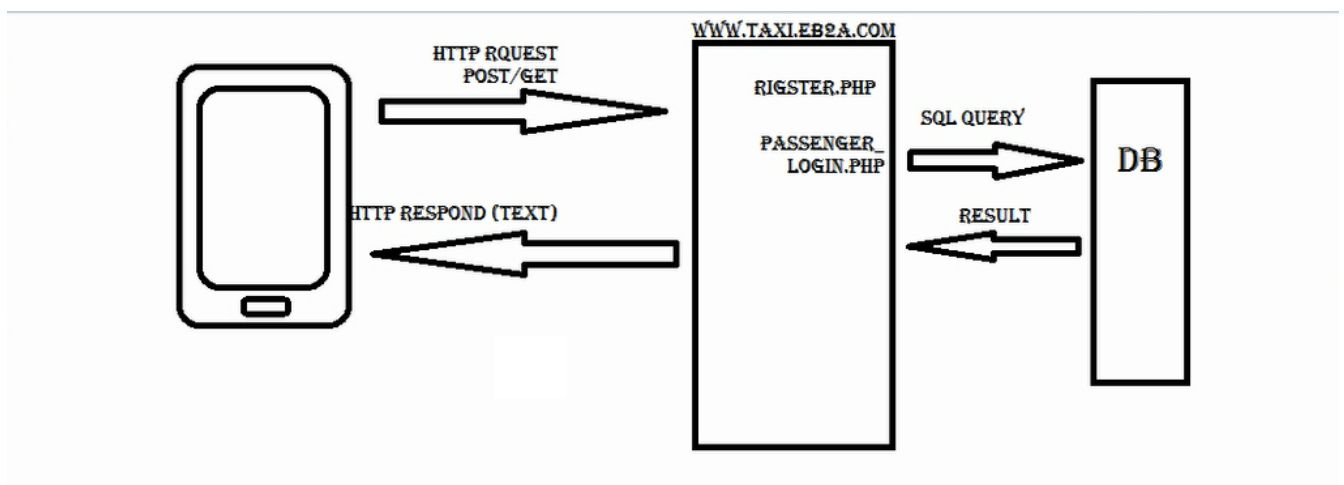


Figure 1 Main Structure of the Project

#### 4.1.1 Passenger Side Application.

The passenger side shows the map where he/she resides and all registered taxis nearby as shown in figure 2. First the passenger should click detect location button to get his GPS coordinates. Taxis that appear on the map are filtered according to their fare from passenger. We choose the nearest five drivers. Taxis that are shown in the map are colored according to their state, if the taxi is free and available it will be in yellow otherwise the taxi will be colored with black and cannot be clicked. Also the passenger could choose his favorite driver from favorite list he has. Then passenger clicks on free drivers to book his ride if possible. Later on the passenger will be alerted if driver has accepted his ride or not as in figure 7. Our application allows passengers to ride now or book to ride later within seven days with specific time and date for the ride. Also the order could be cancelled later if the client does not want to take it. These figures below could explain more about the project.

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Figure 2 Map Screen for Passenger



Figure 3 order screen appears when passenger clicks on a free taxi

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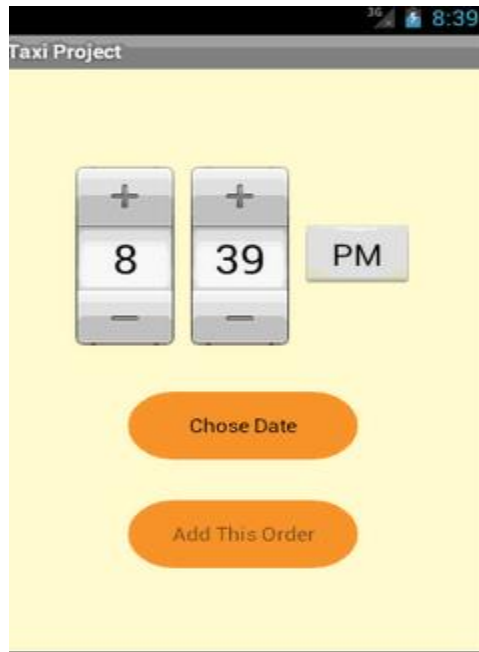


Figure 4 ride later order

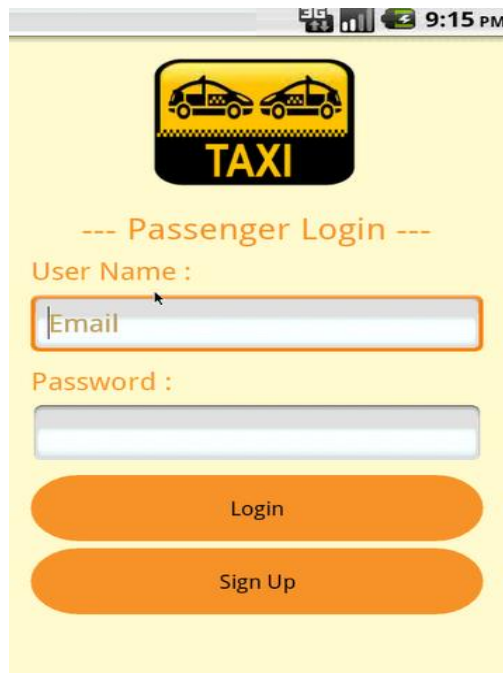


Figure 5 passenger log in screen

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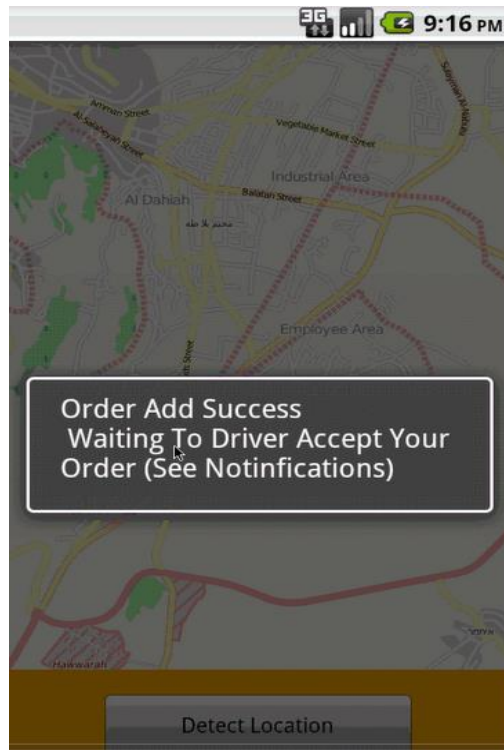


Figure 6 notification that order is sent successfully



Figure 7 order acceptance notification on passenger side

#### 4.1.2 Driver Side Application.

As we explained in the previous section the passenger will send his request and waits for driver to accept his order. On the other hand we have the driver that has the right to accept or decline the request. This methodology does not need third party application or manager to control and handle the request between passenger and driver. It is done automatically on the server side. When the driver logs in, notifications of orders that has been sent to him appear and the driver either accept or decline the orders. To make this operation more easy for the driver we added a feature which is text to speech using tts Android class. This feature converts the text or the notification that appears to the driver to speech when the notification arrives the driver. As soon as the driver accepts a request, its color on the map will be changed to black to indicate that this driver is busy now. Also a new page appears to the driver with passenger information and map appears on it the passenger location. When the passenger arrives his destination the driver clicks on free button to return free and available for other users and the icon for that taxi on the map is converted to yellow within 90 seconds. The driver also can cancel the period order by clicking a button shown in the screen of the map that shows the location of the passenger. This button automatically sends SMS message to the passenger mobile number that his ride have been canceled.

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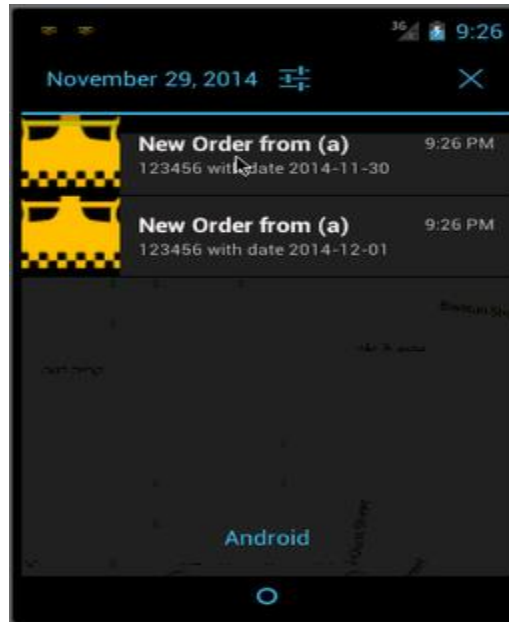


Figure 8 Driver Notification

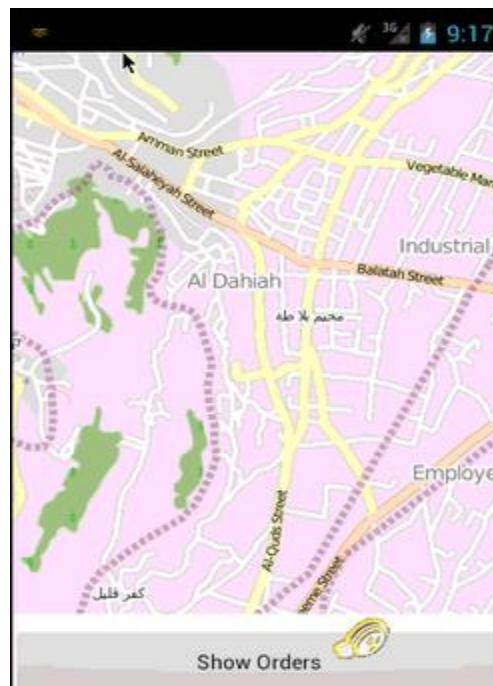


Figure 9 orders map on driver application

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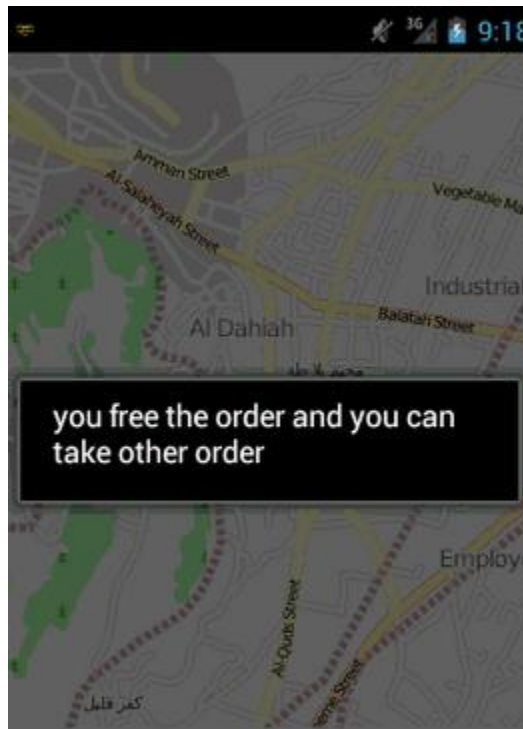


Figure 10 the driver after press free button when the ride is done



#### 4.1.1 Server Side.

In this application we use a free hosting server eb2a not a local server. In the server side the server handles requests from Passenger Application through SendRequest method that establishes Http URL Connection and get the parameters from application, which contains GPS coordinate (Latitude and Longitude) and save the order in the data base with a unique number then send booking notification request to driver. If the driver accepts booking then the server will send order confirmation to the passenger application to allow the passenger to tracking the driver. The functionality is explained in figure 1 section 4.1.

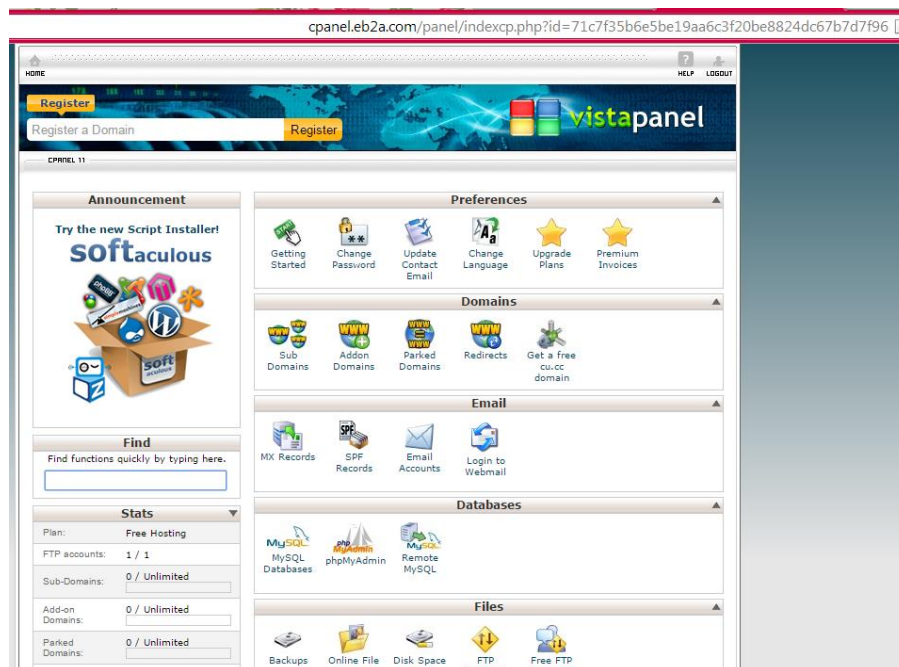


Figure 11 server home page

## 4.2 Taxi tracking system

TakeAway taxi allows its users to track the taxi on its way to them. But this tracking is activated every 90 seconds using a timer. Why 30 seconds? Because activating every second or 10 seconds make overhead on the program because every second you create a thread as we use Asynchronous Task. Tracking system is using GPS to catch the location of the driver as for passenger. Next section describes some details about GPS.

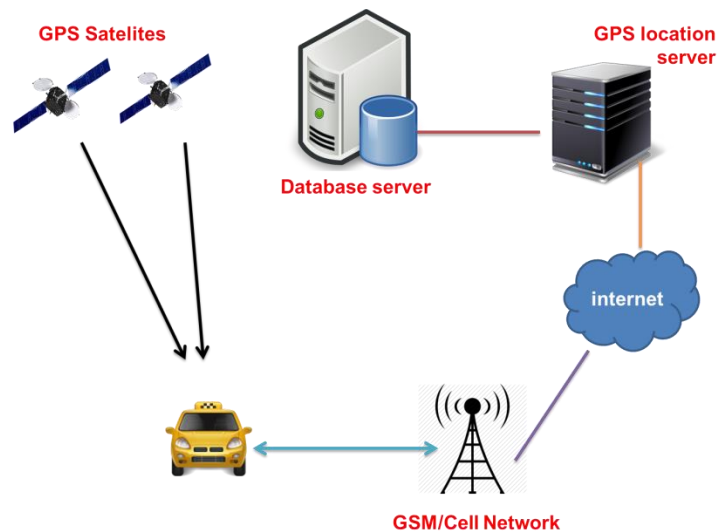


Figure 12 Tracking system life cycle

### 4.2.1 GPS.

Functions for GPS.

❖ **changeMapLook.**

This method used when detect location from gps change the map location to new location.

❖ **getLocationFromGPS.**

This function uses LocationListener to keep tracking the location of the client and call a function to draw a marker in the location that has been detected.

❖ **getDriversLocations.**

This function sends the driver's location to the server using HttpURLConnection. And get the location using getLon and getLat functions.

❖ **getLatitude.**

This function returns the Latitude of the Last Known Location in device.

❖ **getLongitude.**

This function returns the Longitude of the Last Known Location in device.

### 4.2.2 Osmdroid API.

In this project we need to include a map as the content view of their main activity. Android comes with inbuilt map functionality via Google Maps; however to use Google Maps you need to obtain an API key so we are going to use an alternative map provider which is “osmdroid”. OSMDroid is a (almost) full/free replacement for Android's MapView (v1 API) class. It also includes a modular tile provider system with support for numerous online and offline tile sources and overlay support with built-in overlays for plotting icons, tracking location, and drawing shapes.

Osmdroid is a third-party open source library which allows you to display maps from the “OpenStreetMap” project. In using osmdroid, you will also need to add external libraries “osmdroid-android-3.0.5.jar” to an Android project. And we need to include the “SLF4J” library.

To use this map in project we should define object from MapView class and add this object to activity. This object have some, method to setting the map such `setMultiTouchControls()` which is allow user to control the map such navigation and zoom and change the center of map, but if we need to control the map in java code we can define MapController object and references it to the MapView Control by use `getcontrol()` method.

In MapControl object we can set the zoom of map by “setZoom()” method, and we can use setCenter() method to set the center of the map in specific location by pass GPS coordinate to this method.

If we need to add some marker in map we should be use the “OverlayItem” class to add default marker but if we need to modify then we need to overwrite this class and use ResourceProxyImpl to set the bitmap of marker.

## 4.3 Database.

### 4.3.1 MySQL database

MySQL is a relational database management system (RDBMS) and is the world's most popular open source database and is a popular choice of database for use in web applications.

### 4.3.2 Tables.

- Driver Table.

Used to keep the driver's information such as name, password, mobile number, status if he is busy or not, driver's GPS location coordinates and the taxi office that the driver belongs to.

- Passenger Table.

This table contains passenger information as name, email, password, phone number and GPS coordinates.

- Orders Table.

For sure we need this table to save orders that are "ride now" from passenger. This table stores both passenger's and driver's Ids, the time for the order, the distance between passenger and driver and the status of the order (accepted, declined or not yet responded).

- Orders\_period Table.

For orders that are "ride later" we have this table same as orders table but saves the date and time separately and does not save distance between passenger and driver.

الجدول	التعليق	صنوف	نوع	Collation	الحجم	الحمل الزائد
driver	السيارات	السيارات	MyISAM	latin1_swedish_ci	2.3 كيلوبايت	20 بايت
orders	السيارات	السيارات	MyISAM	latin1_swedish_ci	2.3 كيلوبايت	208 بايت
orders_period	السيارات	السيارات	MyISAM	latin1_swedish_ci	2.1 كيلوبايت	-
Passenger	السيارات	السيارات	MyISAM	latin1_swedish_ci	4.4 كيلوبايت	-
4 جدول (مجموع)	المجموع		MyISAM	latin1_swedish_ci	11.1 كيلوبايت	228 بايت

Figure 13 tables of the project

## **Chapter 5 : Results and Analysis.**

After very hard work we came out with TakeAway Taxi project. The project maintains the taxi orders in easy way and give some features to both the driver and passenger as favorite list.

## **Chapter 6 : Discussion**

We expect the project to be usable across wide variety of users. The application that we came up with is user friendly. It is also convenient as we don't need third party to handle requests.



## **Chapter 7 : Conclusions and Recommendation.**

Our project is providing a service to passenger for booking taxi with low cost by using free application that run on any mobile has GPS module, internet connection and android system. It also provide tracking service for taxi office with low cost using GPS and internet connection by GPRS or 3G which these available on any mobile, without any hardware required to attached to the taxi car.

## References.

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- McGraw-Hill Android A Programmers Guide, Jerome DiMarzio, 2008.
- Android Programming Tutorials, Mark L. Murphy, 2009.
- <http://www.openstreetmap.org/>.
- <https://code.google.com/p/osmdroid/>.
- <http://cpanel.eb2a.com/>
- <http://abdullaheid.net/>

## **DISCLAIMER**

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