Sales Reminder and Tracker Mobile Application

BY

LEE HAN JIE

A REPORT

SUBMITTED TO

Universiti Tunku Abdul Rahman

in partial fulfillment of the requirements

for the degree of

BACHELOR OF COMPUTER SCIENCE (HONS)

Faculty of Information and Communication Technology

(Perak Campus)

April 2017

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DECLARATION OF ORIGINALITY

I declare that this report entitled "METHODOLOGY, CONCEPT, AND DESIGN OF MOBILE APPLICATION USING GPS TECHNOLOGY AND GOOGLE MAPS APIs" is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

Signature	:	
Name	:	
Date	:	

ACKNOWLEDGEMENTS

I would like to express my sincere thanks and appreciation to my supervisor Mr, Tan Teik Boon who guided me throughout this project. Mr. Tan Teik Boon has given me a precious opportunity to engage in mobile application field. This will be a very good opportunity for me to gain experience in this field which strengthen my skill which is useful for my future in IT field. A million thanks to you.

ABSTRACT

Nowadays, there are a lot of works which require employee to travel to get the job done. Thus, a fair claiming of subsidy by the employee is an important issue. A mobile application is developed with the help of Google Maps API and Global Positioning System technology aiming to calculate the total distance travelled by the user by recording the route has been travelled by the user as an evidence when they request for subsidy from their company. This mobile application will able to generate an electronic-claiming form which include total distance travelled and route travelled recorded data for user to send to company database. This is a good way that companies can keep track of their employees and also employees able to prove that they are doing their job. Furthermore, location-based reminder function is provided by this mobile application. Users able to set some reminders on a target location and the reminders will only be triggered when user's physically close to that particular target location instead of triggered by time. This is a useful function for those traveler who able to set reminder when they pass by some area when they are travelling. Generally, this is a useful mobile application for company's traveler.

TABLE OF CONTENTS

TITLE	i	
DECLARATION OF ORIGINALITY		
ACKNOWLEDGEMENTS		
ABSTRACT	iv	
TABLE OF CONTENTS	v-vii	
LIST OF FIGURES	viii-x	
LIST OF TABLES	xi	
LIST OF ABBREVIATIONS	xii	
CHAPTER 1 INTRODUCTION	1-7	
 1-1 Motivation and Problem Statement 1-2 Project Scope 1-3 Project Objectives 1-4 Impact, Significance and Contribution 1-5 Achievement Highlight 1-6 Background Information 1-7 Report Organization 	1-2 3 3-4 5 5 6 7	
CHAPTER 2 LITERATURE REVIEW	8-11	
2-1 Literature Review	8-10	
2-2 Critical Remarks of Previous Works	11	
CHAPTER 3 SYSTEM DESIGN	12-26	
3-1 System Architecture	12	
3-2 System Flow Diagram	13	
3-3 Use Case Diagram	14-20	
3-3-1 Use Case Description		
3-4 Sequence Diagram	21	

Bachelor of Computer Science (Hons) Faculty of Information and Communication Technology (Perak Campus)

Page v

3-5 Classes and Method	22-25
3-5-1 Update Physical Location of User	22
3-5-2 Calculate Distance Travelled	23
3-5-3 Drawing Route Travelled	24
3-5-4 Reminder Function	25
3-6 Database	25
3-7 Software Used	26
3-8 Hardware Used	26
CHAPTER 4 PROPSED METHOD/APPROACH	27-32
4-1 Methodologies and General Work Procedures	27-28
4-2 System Requirement	29-
4-2-1 User Specification	29
4-2-2 Functional Requirement	30
4-2-3 Non-functional Requirement	30
4-3 Tool Required	31
4-4 System Performance Definition	31
4-5 Verification Plans	31
4-6 Implementation Issues and Challenges	32
CHAPTER 5 IMPLEMENTATION AND TESTING	33-55
5-1 Implementation	33-43
5-1-1 Graphic User Interface	33-43
5-2 Testing	44-55
5-2-1 Testing on LogIn Page	44
5-2-2 Testing on Tracking Module	45
5-2-3 Testing on Electronic-claiming Form Module	46

Faculty of Information and Communication Technology (Perak Campus)

	5-2-4 Testing on Viewing Route Travelled Feature	47
	5-2-5 Testing on Set Reminder	48-49
	5-2-6 Testing on Remove Reminder	50
	5-2-7 Testing on Check Claiming Form Status	51-52
	5-2-8 Testing on Add Employee and	
	Remove Employee	53-54
	5-2-9 Testing on Changing Password	55
CHAPT	ER 6 CONCLUSION	56-59
	6-1 Project Review	56
	6-2 Discussion	57
	6-3 Highlight of Novelties and Contribution	57
	6-4 Future Work	58
	6-5 Conclusion	59
BIBLIO	GRAPHY	60
APPENI	DIX	61-70
В	IWEEKLY REPORT	61-71
POSTER	R	72
PLAGIA	ARISM CHECK RESULT	73-75

LIST OF FIGURES

Figure Number	Title	Page
Figure 2-1-F1	Diagram of the proposed location-based	
	personal task reminder application	8
Figure 2-1-F2	Flow chart for establishing personal meaningful loc	ation 9
Figure 2-1-F3	Use Case Diagram for application	10
Figure 3-1-F1	System Architecture	12
Figure 3-2-F1	System Flow Diagram of Sales Reminder and	
	Tracker Mobile Application	13
Figure 3-3-F1	Use Case Diagram of Sales Reminder and	
	Tracker Mobile Application	14
Figure 3-4-F1	Sequence Diagram of Sales Reminder and	
	Tracker Mobile Application	21
Figure 3-5-1-F1	Snippet on Update Physical Location of User(1)	22
Figure 3-5-1-F2	Snippet on Update Physical Location of User(2)	22
Figure 3-5-2-F1	Method to calculate Distance Travelled	23
Figure 3-5-3-F1	Method on Drawing Route Travelled	24
Figure 4-1-F1	Evolutionary Prototyping Model	27
Figure 5-1-1-F1	UI of LogIn Page	33
Figure 5-1-1-F2	UI of Employee Centre	34
Figure 5-1-1-F3	UI of Map Page(1)	35
Figure 5-1-1-F4	UI of Map Page(2)	35
Figure 5-1-1-F5	UI of Check Claiming Form Status Page	36
Figure 5-1-1-F6	UI of Set Reminder Page(1)	37
Figure 5-1-1-F7	UI of Set Reminder Page(2)	37

Bachelor of Computer Science (Hons) Faculty of Information and Communication Technology (Perak Campus)

Figure 5-1-1-F8	UI of Remove Reminder Page	38
Figure 5-1-1-F9	UI of Admin Centre Page	39
Figure 5-1-1-F10	UI of Add Employee Page	40
Figure 5-1-1-F11	UI of Remove Employee	41
Figure 5-1-1-F12	UI of Claiming Form Wall(1)	42
Figure 5-1-1-F13	UI of Claiming Form Wall(2)	42
Figure 5-1-1-F14	UI of Change Password	43
Figure 5-2-1-F1	Testing on LogIn Page(1)	44
Figure 5-2-1-F2	Testing on Login Page(2)	44
Figure 5-2-2-F1	Testing on Tracking Module(1)	45
Figure 5-2-2-F2	Testing on Tracking Module(2)	45
Figure 5-2-3-F1	Testing on Claiming Form Module(1)	46
Figure 5-2-3-F2	Testing on Claiming Form Module(2)	46
Figure 5-2-4-F1	Testing on View Route Travelled(1)	47
Figure 5-2-4-F2	Testing on View Route Travelled(2)	47
Figure 5-2-5-F1	Testing on Set Reminder(1)	48
Figure 5-2-5-F2	Testing on Set Reminder(2)	48
Figure 5-2-5-F3	Testing on Set Reminder(3)	49
Figure 5-2-5-F4	Testing on Set Reminder(4)	49
Figure 5-2-6-F1	Testing on Remove Reminder(1)	50
Figure 5-2-6-F2	Testing on Remove Reminder(2)	50
Figure 5-2-7-F1	Testing on Check Claiming Form Status(1)	51
Figure 5-2-7-F2	Testing on Check Claiming Form Status(2)	51
Figure 5-2-7-F3	Testing on Check Claiming Form Status(3)	52
Figure 5-2-7-F4	Testing on Check Claiming Form Status(4)	52
Figure 5-2-8-F1	Testing on Add Employee(1)	53
Figure 5-2-8-F2	Testing on Add Employee(2)	53

Bachelor of Computer Science (Hons) Faculty of Information and Communication Technology (Perak Campus)

- Figure 5-2-8-F3Testing on Remove Employee(1)54Figure 5-2-8-F4Testing on Remove Employee(2)54Figure 5-2-9-F1Testing on Chang Password(1)55
- Figure 5-2-9-F2Testing on Change Password(2)55

LIST OF TABLES

Table Number	Title	Page
Table 3-3-1-T1	Use Case Description of Check Claiming Form Status	14
Table 3-3-1-T2	Use Case Description of Set Reminder	15
Table 3-3-1-T3	Use Case Description of Remove Reminder	15
Table 3-3-1-T4	Use Case Description of Start Calculating Distance	
	And Tracking Route Travelled	16
Table 3-3-1-T5	Use Case Description of Stop Calculating Distance	
	And Tracking Route Travelled	16
Table 3-3-1-T6	Use Case Description of Send Electronic-claiming	
	Form to Database	17
Table 3-3-1-T7	Use Case Description of Change Password	17
Table 3-3-1-T8	Use Case Description of LogIn	18
Table 3-3-1-T9	Use Case Description of LogOut	18
Table 3-3-1-T10	Use Case Description of Add Employee	19
Table 3-3-1-T11	Use Case Description of Remove Employee	20
Table 3-3-1-T12	Use Case Description of View Claiming Form	20
Table 4-2-2-T1	Functional Requirement of Sales Reminder and	
	Tracker Mobile Application	30
Table 4-2-4-T1	Non-functional Requirement of Sales Reminder	
	And Tracker Mobile Application	30

LIST OF ABBREVIATIONS

Abbreviation	Meaning
GPS	Global Positioning System
WLAN	Wireless Local Area Network
SMS	Short Messaging SystemAPI

1-1 Motivation and Problem Statement

In this century, there are a lot of works especially related to business require employee to travel to get the job done. Some of the example of the tasks can be meeting clients, delivering products, taking products from producer and so on. Normally, the company will provide subsidy for the traveler. However, there are a few problems that normally meet by the company and the staffs.

Company is not able to verify the actual travelling of the staff is one of the problem. In a fair manner, the actual distance of travelling by the staffs should be calculated in order for the staffs to claim fair amount of subsidy. It is not fair for a staff if the location he travelled is the longest distance among all the travelers but getting the same amount of subsidy compare to others. Hence, the best scenario will be the actual distance travelled by every staffs are calculated respectively and able to show to the employer by the employee. In the other hand, the calculated distance travelled can also be a proof for those staffs who really travel to far place to accomplish their tasks.

Besides, company is not able to track the actual work related activities. There is still exist of problem even though the distance travelled by every staffs can be calculated which is the company not able to track the path that travelled by the staffs. The staffs might start the recording of distance and just travel to any place they like to make sure the distance travelled calculated is logic to claim for the subsidy. In addition, during travelling, the staffs might turn to others place to do their personal affairs and the distance travelled by the staffs in that particular path is calculated too. This is not fair for the company because the longer the distance travelled by the staff, the higher the amount of subsidy have to pay by the company to the employee. Hence, if the company able to track the path that travelled by the staffs, it is a way to protect the company and also a way to proof the employee that they are really doing their job for the company. Furthermore, no automation of the claims filling up of form is a problem meet by the employee. Normally, the procedure for the staffs to apply for subsidy is to fill up a form and pass to the management. It is actually very inconvenient for the staffs who always need to travel and always need to fill up the form in order to get the subsidy. Hence, if there is a more convenient way to solve this issue, this will be a good news for the employees.

Lastly, staffs always face difficulty when they trying to recall all the tasks should be done in every place when they reach. Normally, staffs might have different tasks to do in different places. So if there is a way which can help to remind them what to do when they reach different places definitely can help the staff a lot.

1-2 Project Scope

The project is focus on develop a system which can help to solve the issue about the amount of subsidy should be given by the company to the traveler. The system able to calculate the total distance travelled by the employee and also able to record the route travelled by the employee for each journey. Furthermore, the system able to generate a filled electronic claiming form which include employee's details, total distance travelled and recorded route travelled by the employee during travelling and send to the database for claiming purpose. This is a good idea that to ensure no cheating from the employees to the company and also consider a proof from the staff for the journey they have gone through. From another perspective, it creates a win-win situation for the company and also the staffs.

1-3 Project Objectives

1. Develop a system which able to calculate the total distance travelled by the staff

The system able to calculate the total distance have been travelled by the staff when they start departing to do their job and until they reach back to their company. Once this system is successfully developed, the staffs able to prove how long the distance they have been travelled for every journey to their employer.

2. Develop a system which able to trace the route travelled by the staff

The system able to record down the route the staffs have been travelled instead of only calculate the total distance have been travelled. It is convenient for the company to check whether their employees get cheat or not by checking the route that have been travelled. The system able to display out a map which the route used by the staffs will be highlighted. By looking on the map, the company definitely know whether the staffs have reach the place which distributed by company or not.

3. Develop a system which able to generate claiming form and send to company database

After a whole day journey by the staffs, the system able to generate a filled electronic-claiming form and send to company database for claiming purpose. The electronic-claiming form sent consist of some necessary information such as staff's details, calculated total distance travelled and recorded route travelled by staff. Company can easily check that whether the staff was really been the target destination or not by referring to the route used by the staff.

4. Develop a system which able to set location-based reminder

There will be a lot of different tasks for the staffs to do in every different place. Usually, the staffs will not able to memorize all the tasks. Although the staffs can record the task in a notebook, it is not effective for them because they always need to check it. The best way is a system which can set a reminder and the system will only be triggered and remind the staffs when their physical location is getting closer to the target location.

1-4 Impact, Significance and Contribution

This system is developed to make sure there is no unfair situation between employer and employee. With the help of this system, every traveler of company able to prove that how long is the distance they travelled for company in order to get the reasonable subsidy from company whereas in employer's perspective, they able to identify whether their employees are not cheating on them. Due to the route travelled by the employee will be recorded, this help company to avoid cheated by the employee who actually travelled to other private place to do their personal stuff during working hour but requesting for not reasonable subsidy. This actually help company to save unnecessary spending. Besides, this system able to generate electronic claiming form for user to send to company database through online, it helps to increase the efficiency. Besides, the location-based reminder function provided in this system is useful for those always have to travel because the reminder will only be triggered when the physical location of the user getting closer to target location. It help to improve the efficiency of the traveler when they reach every destination or pass by any location where they set as target because reminder will automatically been triggered when the user reach any destination and they can easily recall some important information.

1-5 Achievement Highlight

The implemented system able to calculate total distance travelled by the traveler of company. Besides, the route travelled by the employee is able to be recorded and view by the administrator. Furthermore, the system able to automatically generate electronic-claiming form for the user to send to the company database instead of the user has to manually fill the claiming form manually. Lastly, this system allow user to set location-based reminder which the reminder will only triggered when the physical location of the user is getting closer to the targeted location instead of triggered base on time.

1-6 Background Information

This system is implemented with the help of Google Map Application Program Interface (API) and Global Positioning System technology (GPS). Google Maps is actually a desktop web mapping service developed by Google. It allow user to view the whole world map in different types of map views such as roadmap view, satellite view, hybrid view, terrain view and etc. There are a lot of information which can be viewed through Google Maps such as country name, state name, road name, name of building and etc by adjusting the zoom level of the camera in Google Maps. In the other hand, Global Positioning System is used in order to get the current physical location of the user.

Besides, there are a lot of features provided by Google Maps such as find route between different location, view current traffic condition, navigation, estimation of arrival time and etc. By using the APIs provided by Google Maps, a lot of features provided by Google Maps can be used to develop a quality mobile application. By joining the GPS technology with Google Maps APIs, the current physical location can be view in Google Map.

Due to the current physical location can be detected in Google Map, the distance travelled by the user and the route used by the user can be calculated and recorded easily. In conclusion, with the help of GPS and Google Maps APIs, there are a lot of useful functions we can develop depend on what we need.

1-7 Report Organization

This report consist of sis chapters. Chapter 1 will be introduction which discuss the motivation and problem statement, project scope, project objectives, "Impact, significance and contribution", Ahcievement Highlight and Background Information. Chapter 2 will be Literature Review which discuss on previous work and also highlight and compare proposed study with previous work. Chapter 3 will be System Design which will be discuss on system architecture, system flow diagram, use case diagram, use case description, sequence diagram, classes and method used in project , database, software used and hardware used. Chapter 4 will be Proposed Method which discuss on methodologies, system requirement, tool required, system performance definition, verification plans and implementation issues and challenges. Chapter 5 will be Implementation and Testing which discuss on graphic user interface and test items. Chapter 6 will be Conclusion which do a summarization on project review, discussion, future work and conclusion.

Chapter 2: Literature Review

2-1 Literature Review

1. Location-based personal task reminder for mobile users

It was developed by Chi-Yi Lin and Ming-Tze Hung. The personal task reminder will only triggered according to the physical location of the user without affected by time. Global Positioning System (GPS) technology and WLAN technology is used by the application in order to sense the physical location of the user. The reason of adding WLAN technology instead of only using GPS technology is because GPS technology uses line of sight to satellites which mean it is not able to sense indoor object or any object which is in a circumstances that line of sight is obscured. At the same time, the add-in of WLAN technology help to solve the blind spots of GPS location sensing.

Google Maps is used as the user interface of this application. This system allow user to point at a specific location on the Google Maps to set it as a target of location to set reminder. By using the features provided by Google Maps APIs, it able to sense the physical location of user is approaching to that particular target location which set before and hence the reminders will be triggered.







Figure 2-1-F2 Flow chart for establishing personal meaningful location

2. Android Mobile Application For Tracking Your Time And Distance Travelled

This project was developed by Sudhir Pandiri in 2012. The purpose of this project be developed is to help user to manage time more efficiently. This mobile application will able to record the total time spent by the user in different location and also the distance has travelled by the users to and from their desired locations. It was implemented in JAVA language and developed using Android API's.

By using feature provided by Google Maps APIs, users have to save their favorite location when they first visit a particular place for the first time. When the next time users visit again, the tracking will start automatically and the time spent of that particular visitation will be determined. In addition, the distance travelled by the users to that particular favorite location will be calculated as well in kilometer in order for the users to manage as well. Charts can be viewed by the users



Figure 2-1-F3 Use Case Diagram for application

2-2 Critical Remarks of Previous Works

The remarks I will make is Android Mobile Application for Tracking Your Time and Distance Travelled. The strength of this system is that it will automatically start to track the time spent when the user reach a particular favorite location instead of manually triggered by the user. It is quite convenient for the users when they visit every locations they like and just check the summarized collected data ay anytime. However, when the user leave his favorite location and revisit again, the time spent at that particular location will be calculated separately instead of adding up together. Hence, if the user visit a location four times, four data will be recorded and showed in the summarized list.

There is a similarity of this project compare to my system is that we are using the APIs provided by Google Maps to calculate the distance travelled. Besides, both of our system contain similar feature which is to perform some task when the distance of user is getting closer to the targeted location. However, both the system using different way to implement that feature. Sales Reminder and Tracking Mobile Application will keep determining the current distance between user and targeted location repeatedly and the system will perform specific task when the calculated distance is shorter than a specific distance. However, for "Android Mobile Application for Tracking Your Time and Distance", the system will set a geofence which is actually a radius of circumference on the targeted location, and the specific task will be performed when the user is detected enter the circumstances.

Chapter 3: System Design

3-1 System Architecture



Figure 3-1-F1: System Architecture

Figure 3-1-F1 shows the system architecture of this project. The mobile application will send data request to the server and the server will retrieve data from the database and send response data back to the mobile application. Besides, the mobile application uses GPS technology in order to get the physical location of the user and store the data into database.

3-2 System Flow Diagram



Figure 3-2-F1: System Flow Diagram of Sales Reminder and Tracker Mobile Application

3-3 Use Case Diagram



Figure 3-3-F1: Use Case Diagram of Sales Reminder and Tracker Mobile Application

3-3-1 Use Case Description

Use Case	Check Claiming Form Status			
Purpose	To allo	To allow user to check claiming form approval status		
Actor	Emplo	Employee		
Trigger	When user click on "Check Claiming Form Status" button.			
Precondition	User should have login.			
Scenario Name	Step Action			
Main Flow	1	User click on "Check Claiming Form Status" button.		
	2	All the claiming form approval status will be shown.		
Alternate Flow	None			

Table 3-3-1-T1: Use Case Description of Check Claiming Form Status

Use Case	Set Reminder		
Purpose	To allow user to set location-based reminder.		
Actor	Employee		
Trigger	User cl	ick on "Set Reminder" button.	
Precondition	User sh	nould have login.	
Scenario Name	Step Action		
Main Flow	1	User click on "Set Reminder" button.	
	2	User tap on a point on a screen as target location.	
	3	User click on "Set Reminder" button.	
	4 User enter preferred name for the location and reminder		
	message.		
	5	User press "Set" button.	
	6	User Press "Ok".	
Alternate Flow –	2.1	User enter location name in search function.	
Another way of	2.2	Back to main flow step 3.	
search location			

Table 3-3-1-T2: Use Case Description of Set Reminder

Use Case	Remove Reminder		
Purpose	To allo	To allow user to remove reminder set previously.	
Actor	Emplo	yee	
Trigger	User click on "Remove Reminder" button.		
Precondition	User should have login.		
Scenario Name	Step Action		
Main Flow	1	User click on "Remove Reminder" button.	
	2	User click on a particular reminder.	
	3	User click "Yes".	
Alternate Flow –	None		

Table 3-3-1-T3: Use Case Description of Remove Reminder

Use Case	Start Calculating Distance and Tracking Route Travelled.		
Purpose	To allow the user to triggered the function to calculate distance and record route travelled by the user		
Actor	Employee		
Trigger	User click on "Start" button.		
Precondition	User should have entered Map Page.		
Scenario Name	Step	Action	
Main Flow	1	User click on "Start" button.	
	2	User click on "Yes" button.	
Alternate Flow	None.		

Table 3-3-1-T4: Use Case Description of Start Calculating Distance and Tracking Route Travelled

Use Case	Stop C	alculating Distance and Tracking Route Travelled.
Purpose	To allow user stop the system from continuing calculating distance	
	and red	cording route travelled by the user.
Actor	Employee	
Trigger	User click on "Stop" button.	
Precondition	User should have click "Start" button in Map Page.	
Scenario Name	Step	Action
Main Flow	1	User click on "Stop" button.
	2	User click on "Yes" button.
Alternate Flow	None.	

Table 3-3-1-T5: Use Case Description of Stop Calculating Distance and Tracking Route Travelled

Use Case	Send Electronic-claiming Form to Company Database.	
Purpose	To allow user to send the generated electronic-claiming form to	
	company database.	
Actor	Employee	
Trigger	User click on "Save To Database" button.	
Precondition	User should have pressed "Stop" button in Map Page.	
Scenario Name	Step	Action
Main Flow	1	User click on "Save To Database" button.
Alternate Flow	None	

Table 3-3-1-T6: Use Case Description of Send Electronic Form To Database

Use Case	Change Password	
Purpose	To allow the user to change their password of login.	
Actor	Employee, Administrator	
Trigger	User click on "Change Password" button.	
Precondition	User should have login.	
Scenario Name	Step	Action
Main Flow	1	User click on "Change Password" button.
	2	User enter current password.
	3	User enter new password.
	4	User re-enter new password.
	5	User press on "Submit" button.
Alternate Flow –	2.1	User enter wrong current password.
enter wrong	2.2	Back to Main Flow 2.
password		
Alternate Flow –	4.1	User re-enter wrong new password.
wrong re-enter	4.2	Back to Main Flow 3.
password		
Table 3-3-1-T7: Use Case Description of Change Password		

Use Case	LogIn		
Purpose	To allow the user to login to the system.		
Actor	Employee, Administrator		
Trigger	User click on "LogIn" button.		
Precondition	User enter valid id and password.		
Scenario Name	Step Action		
Main Flow	1	User enter ID.	
	2	User enter password.	
	3	User press on "LogIn" button.	
Alternate Flow –	1.1	User enter invalid id.	
invalid id	1.2	Back to Main Flow 1.	
Alternate Flow-	2.1	User enter invalid password.	
invalid password	2.2	Back to Main Flow 1.	

Table 3-3-1-T8: Use Case Description of LogIn

Use Case	LogOut		
Purpose	To allow the user to logout from the system.		
Actor	Employee, Administrator		
Trigger	User click on "LogOut" button.		
Precondition	User should have login.		
Scenario Name	Step	Action	
Main Flow	1	User click on "LogOut" button.	
	2	User click on "Yes" button.	
Alternate Flow	None		

Table 3-3-1-T9: Use Case Description of LogOut

Use Case	Add Employee	
Purpose	To allow the user to add new employee to the company database.	
Actor	Administrator	
Trigger	User click on "Add Employee" button.	
Precondition	User should have login.	
Scenario Name	Step	Action
Main Flow	1	User Click on "Add Employee" button.
	2	User fill in id.
	3	User fill in Name.
	4	User fill password.
	5.	User re-enter password.
	6	User fill in email address.
	7	User fill in Admin Status
	8	User click on "Submit" button.
	9	User click on "Yes" button.
Alternate Flow –	2.1	User enter existed id.
existed id	2.2	Back to Main Flow 2.
Alternate Flow-	5.1	User re-enter not similar password.
re-enter invalid	5.2	Back to Main Flow 4.
password		
Alternate Flow-	7.1	User enter invalid Status code.
invalid Status Code	7.2	Back to Main Flow 7.

Table 3-3-1-T10: Use Case Description of Add Employee

Use Case	Remove Employee		
Purpose	To allow the user to remove employee from company database.		
Actor	Administrator		
Trigger	User click on "Remove Employee" button.		
Precondition	User should have login.		
Scenario Name	Step	Action	
Main Flow	1	User Click on "Remove Employee" button.	
	2	User press on a particular employee in the list.	
	3	User click "Yes" button.	
Alternate Flow	None		

Table 3-3-1-T11: Use Case Description of Remove Employee

Use Case	View Cl	aiming Form	
Purpose	To allow the user to view the claiming form submitted by the		
	employee.		
Actor	Administrator		
Trigger	User click on "View Claiming Form" button.		
Precondition	User should have login.		
Scenario Name	Step	Action	
Main Flow	1	User Click on "View Claiming Form" button.	
	2	User press on a particular claiming form from the list.	
	3	User press on "Approve" button.	
	4	Back To Main Flow 2.	
Alternate Flow –	3.1.1	User press on "Disapprove" button.	
Approve			
Alternate Flow –	3.2.1	User press on "Check Route Travelled" button.	
View Route	3.2.2	User back to Claiming Form Wall.	
	3.2.3	Back To Main Flow 2.	
Table 3-3-1-T12: Use Case Description of View Claiming Form			

3-4 Sequence Diagram



Figure 3-4-F1: Sequence Diagram of Sales Reminder and Tracker Mobile Application

Chapter 3: System Design

3-5 Classes and Method

3-5-1 Update Physical Location of User

```
@Override
public void onLocationChanged (Location location) {
    handleNewLocation(location);
}
```

Figure 3-5-1-F1 Snippet on Update Physical Location of User(1)

```
private void handleNewLocation(Location location) {
    double currentLatitude = location.getLatitude();
    double currentLongitude = location.getLongitude();
    latLng = new LatLng(currentLatitude, currentLongitude);
    WarkerPoints.add(latLng);
}
```

Figure 3-5-1-F2 Snippet on Update Physical Location of User(2)

Figure 3-5-1-F1 and F2 is the method used in this project to keep track the current physical location of the user after the user has start the "Calculate Total Distance and Track Route Travelled" function. In this project, the time interval to update current physical location is set to 5 seconds. Hence, onLocationChanged() method is called every 5 seconds. Every time when onLocationChanged() is called, the current latitude and longitude of the user will be recorded and stored into an LatLng type ArrayList called "MarkerPoints".
3-5-2 Calculate Distance Travelled



Figure 3-5-2-F1 shows the code snippet on how to calculate the total distance travelled by the user after the user has stop the "Calculate Distance and Track Route Travelled" function. An ArrayList of storing LatLng type called "MarkerPoints" is use to store all the recorded Latitude and Longitude since user start the track function until end function. Finally, the total distance travelled is calculated by sum up all the distance between neighboring nodes.

3-5-3 Drawing Route Travelled

Figure 3-5-3-F1: Method on Drawing Route Travelled

Figure 3-5-3-F1 shows the method on drawing the route travelled by the user. The logic is actually same as how the total distance travelled is calculated. The line is drawn by joining all the nodes stored in the ArrayList called "MarkerPoints".

3-5-4 Reminder Function

User has to first set reminder first at first. During set reminder phase, when user target on a point in the maps shown by the system, the targeted location's latitude and longitude will be determined. After the user enter Preferred Location Name and Reminder Message, these data will be stored into database.

For Reminder Triggering phase, the system will keep on keep track the current distance between targeted locations and current physical location of the user when every time onLocationChanged() method is called. When the distance is less than 200 meters, an alert dialog box will be triggered and show the Preferred Location Name and the Reminder Message to the user.

3-6 Database

The database using for this mobile application is called "Company". There are only three tables in this database which are "employee", "location" and "recordedinfo". "employee" table is basically storing the information of the employee for the company which contain the attributes as follow: UserID, UserName, UserPassword, UserEmail and AdminStatus. AdminStatus attribute is to determine whether this employee is an Admin or a normal employee. Generally, when Admin try to add employee, then new record will be insert into this table and in the other hand, when Admin remove employee, then that particular record will be remove from this table.

Besides, "location" table consists of UserId, UserName and Location attributes. Basically, this table is for storing reminder purpose. Latitude and longitude of the targeted location and as well as the relevant data will be converted into String format and store into location attribute by referring on who is the user who set this reminder.

Lastly, "recordedinfo" table consists of UserId, UserName, Distance, Path, Date, RecordId, and Status attributes. Basically, the total distance traveled and route travelled by the user will be store into this table. Besides, latitude and longitude of the location that travelled by the user will be converted into String and stored into Path attribute. The reason why these data is stored into this table, is for retrieval by Administrator during viewing Claiming Form Wall.

3-7 Software Used

The software used to develop this Sales Reminder and Tracker Mobile Application is by using Android Studio. The mobile APK file will be installed and running in android platform. After the application is successfully be implemented, the application is exported as an android APK file for running in android platform.

3-8 Hardware Used

Below are the list of hardware involve in implementing this project.

- Lenovo S410p
 - > Operating System: Window 8.1
 - Processor: Intel(R) Core(TM) i5-4200U CPU @ 1.60Ghz 2.30GHz
 - ➢ Installed Memory: 8.0GB RAM
 - System Type: 64-bit Operating System
- Samsung Galaxy J7
 - Operating System: Android 6.0.1(Marshmallow)
 - Processor: Octa-core 1.6Ghz
 - ➢ Installed Memory: 2.0 GB RAM

Chapter 4: Proposed Method/Approach

4-1 Methodologies and General Work Procedures

Evolutionary prototyping model is used as the methodology for this project. The process of this model is shown as below.



Figure 4-1-F1: Evolutionary Prototyping Model

The evolutionary prototyping model will start at communication phase first. During this phase, I meet my supervisor to discuss about the title of my project. In addition, project background, problem statements, and objectives will be discussed as well. During this phase, the most important thing I need is to gain some ideas or knowledge which direct me to finish this project.

The next phase will be quick planning. I start to do some research about my topic. I try to find some research paper and any of other source in order to gain some knowledge and ideas of my project. In addition, during research, I try to find is there any existing solution or existing system which have some similarities compare to my project. The strengths and weaknesses of the existing system can be identified by me so that I can do some improvement. the existing system which related to my project. Beside, budget of the project will be estimated if necessary and a gantt chart is created to show the timeline for the progression to ensure my project is keeping up with the time I set.

After that will be modeling quick design phase. The initial prototype of the system will be developed. The very basic requirements are showcased and user interfaces are provided in this stage of model. In this phase, the features may have some differences compare to the actual software developed such as may not exactly work in the same manner. The aim of this phase is to provide similar look and feel as the final product development to the customer in the prototype developed by using the overall working environment around.

Next will be construction of prototype by referring to the design. In this phase, code is implemented using Java Language. Mostly, the initial code may contain a lot of problem which need to keep modify because it is just a rough work.

The last phase will be deployment, delivery and feedback phase. In this phase I will try to test the product that I have developed and also let my friend to test it by keep trying repeatedly use it to make sure it has no problem. In addition, feedback from my friends will be very meaningful and useful for me because from an outsider perception, they might see what I cannot see. Besides, I will also collect the opinion from my supervisor. All the opinion collected will be used for the next iteration.

In conclusion, the five phases will keep repeating until the product get the satisfaction of supervisor and my friends. And after that, I will try to enhance the product to make it more perfect such as more user friendly or attractive interface.

4-2 System Requirement

A few type of requirements are needed to gather in this phase. Those requirements include user requirements, functional requirements and non-functional requirements.

4-2-1 User Specification

Generally, user specification describes what users require from the system. User requirements are as below:

- The user interface for this mobile application should be user-friendly. User should know what to do by referring to what the application displayed.
- User must able to install this application into their mobile device.
- User must able to use this system with free of charge.
- Employee must able to view generated claiming form info before send to database.
- Employee must able to view claiming-form approval status.
- Employee must able to choose whether want to turn-on reminder alert feature for each travelling.
- Employee must able to remove the reminders set by them previously.
- User must able to change their login password.
- User must be able to login and logout from the system.
- Administrator must be able to add new employee into company database.
- Administrator must be able to remove employee from the company database.

4-2-2 Functional Requirement

Functional Requirement defines a function of a software system or its component. A function is described as a set of inputs, the behavior, and outputs.

Functional Requirement	Description
Calculate Total Distance Travelled	Total distance travelled by the employee
	during travelling must able to be calculated by
	this system.
Record Route Travelled	This system must able to record the route
	travelled by the employee when travelling.
Generate Electronic-claiming Form	This system must able to generate electronic-
	claiming form after each travelling by
	employee.
Set Location-based Reminder	Employee able to set location-based reminder
	on a preferred target location.
View Claiming Form	Administrator must able to view submitted
	electronic-claiming form by the employees.
View Route Travelled	Administrator must able to view the route
	travelled by the employee for each travelling.

Table 4-2-2-T1: Functional Requirement of Sales Reminder and Tracker Mobile Application

4-2-3 Non-functional Requirement

Non-functional Requirement	Description
Usability	The user interface of the system must be user-
	friendly and easy to use.
Reliability	The function provided in the system should
	always be functioning for the user.
System Respond	The respond time for the system should not
	more than 3 second for each action.
Table 1-2-1-T1. Non-functional Requirement of	Sales Reminder and Tracker Mobile Application

Table 4-2-4-T1: Non-functional Requirement of Sales Reminder and Tracker Mobile Application

4-3 Tool Required

- Android SDK 4.4 (KitKat) or above
- Java SE
- Android Studio

4-4 System Performance Definition

The location-based reminder function provided in this system is expected to be triggered when the physical location of the user is within 200 meters. Besides, the route travelled by the user will be recorded at the same time, red line will used to highlight the path used. Furthermore, the system is able to run in background which mean the user can use other function of the phone while the tracking of this system is running.

4-5 Verification Plans:

This system will be tested by having a real travel to check whether it is working as expectation or not. Calculated distance travelled will be identified whether it is logic or not and the route travelled by the user will be verified as well. Besides, location-based reminder will be tested so that it is working fine by approaching some pre-set target location.

4-6 Implementation Issues and Challenges

One of the problem might face when the system is recording during traveling is that GPS signal will be affected when the user is travelling under an indoor condition such as tunnel. The physical location of the user will not be able to detect when the car is travelling through a tunnel. Hence, the distance and route used will be estimated by using Google Maps APIs when there is a situation where the user pass through an area which physical location cannot be detected.

Chapter 5: Implementation and Testing

Chapter 5: Implementation and Testing

5-1 Implementation

5-1-1 Graphic User Interface

ê	🔋 📶 100% 🖹 11:15 p.m.
LogIn	
Enter your Id ar	nd Password.
Password:	
LOG	IN

Figure 5-1-1-F1: UI of LogIn Page

Initially, when the application is open, a login page will show to the user for user to enter ID and Password. User has to enter valid id and password in order to proceed.



Figure 5-1-1-F2: UI of Employee Centre

If the user is an employee, after he enter valid id and password. The system will link them to a page called Employee Centre. There are several functions provided to the employee in this page which are "Go To Map", "Check Claiming Form Status", "Set Reminder", "Remove Reminder", "Change Password". Each button will bring user proceed to respective page when it is pressed. Finally, "Log Out" function is provided in this page as well.

Chapter 5: Implementation and Testing







Figure 5-1-1-F4: UI of Map Page(2)

Figure 5-1-1-F3 and F4 show the Map Activity after the user click on "Go To Map" button in Employee Centre. This page is generally the main feature of the application. Generally, the features provided in this page will be start recording when the employee start click on "Start" button. After employee pressed on "Stop" button. Employee is allowed to view result which is the route travelled. Finally, employee can send the data to the company database by simple clicking on "Save To Database" button.



Figure 5-1-1-F5: UI of Check Claiming Form Status Page

Figure 5-1-1-F5 shows the Check Claiming Status Page when user click on "Check Claiming Form Status" button in Employee Centre. This page is generally show approval status for all the Claiming Form submitted by the user to the company. At this page, user able to check whether the claiming form is approved or not.



Figure 5-1-1-F6: UI of Set Reminder Page(1)

Figure 5-1-1-F7: UI of Set Reminder Page(2)

Figure 5-1-1-F6 and F7 shows the Set Reminder Page when the user click on "Set Reminder" button on Employee Centre. This page allow the user to set their location-based reminder. User is allow to enter name of the location in the text area provided for searching purpose or user can straight away tap on the screen to set a preferred point of target location. Figure 5-1-1-F7 shows the text area display out after user click on "Set Reminder" button. User should enter a preferred name of the targeted location and also message of the reminder. The data will be save into database after user click on "Set" button.



Figure 5-1-1-F8: UI of Remove Reminder Page

Figure 5-1-1-F8 shows the Remove Reminder Page after user clicking on "Remove Reminder" button in Employee Centre. This page will display out all the location-based reminder set by the user. In this page, user able to view the reminder has been set by them. At the same time, they are allow to remove a specific set reminder by pressing the list.



Figure 5-1-1-F9: UI of Admin Centre Page

If the user is an administrator, once the admin enter valid id and password, the system will navigate him to a page called "Admin Centre" as shown in Figure 5-1-1-F9. Several functions is provided in this page for admin to choose which are "Add Employee", "Remove Employee", "View Claiming Form" and "Change Password". Log out function is provided in this page for the administrator to log out as well. Every button will navigate the administrator to respective page when they are pressed.

9 . F é	오 🗟 📶 100% 🗎 8:13 p.m.	
AddEmployee		
Fill in all the informa	ition.	
Id:		
Password:		
Confirm-Password:		
Email:		
Admin Status		
SUBMIT		

Figure 5-1-1-F10: UI of Add Employee Page

Figure 5-1-1-F10 shows the Add Employee Page after administrator click on "Add Employee" button in Admin Centre. Necessary data is required to enter in order to create a new account for new employee.



Figure 5-1-1-F11: UI of Remove Employee

Figure 5-1-1-F12 shows the Remove Employee Page when the administrator click on "Remove Employee" button in Admin Centre. Administrator able to view all the current employee in this page. Besides, Administrator has the power to remove the employee from the company database in this page.

	🔗 🖬 F 🖄 🛛 🗘 🖗 🕄 🖓 🖉 🖓 🖉
Claiming Form Wall	Claiming Form Wall
Name: Alex	Name: Alex
ID: 10001	ID: 10001
Total Distance travel: 1.964km	Total Distance travel: 1.964km
Date: 31-03-2017	Date: 31-03-2017
Name: Rong	Name: Rong
ID: 10002	ID: 10002
Total Distance travel: 3.315km	Total Distance travel: 3.315km
Date: 31-03-2017	Date: 21-02-2017
Name: Siti ID: 10003 Total Distance travel: 8.176km Date: 31-03-2017	N Please choose the option.
Name: Siti	N
ID: 10003	ID DISAPPROVE
Total Distance travel: 0.003km	To
Date: 31-03-2017	Di Disapprove de pourse de
Name: Alex	N
ID: 10001	ID
Total Distance travel: 3.780km	Total Distance travel: 3.780km
Date: 07-04-2017	Date: 07-04-2017
Name: Alex	Name: Alex
ID: 10001	ID: 10001
Total Distance travel: 0.483km	Total Distance travel: 0.483km
Date: 13-04-2017	Date: 13-04-2017
Name: Alex	Name: Alex
ID: 10001	ID: 10001
Total Distance travel: 1.132km	Total Distance travel: 1.132km
Date: 13-04-2017	Date: 13-04-2017

Figure 5-1-1-F12:UI of Claiming Form Wall(1) Figure 5-1-1-F13:UI of Claiming Form Wall(2)

Figure 5-1-1-F12 and F13 show the View Claiming Form Page when the administrator click on "View Claiming Form" button in Admin Centre. Figure 5-1-1-F12 shows all the pending claiming form submitted by all the employees. Total distance travelled and the date is displayed as well. Besides, administrator is allowed given the option to choose as shown in Figure 5-1-1-F13.

- 2	♀ 🔋 📶 100% 🗎 2:44 a.m.	
Change Password		
Current Password:		
New Password:		
Re-Enter New Password:		
SUBMIT		

Figure 5-1-1-F14: UI of Change Password

Figure 5-1-1-F13 shows the Change Password Page which is provided for both employee and administrator by clicking "Change Password" button in Employee Centre and Admin Centre respectively. Employee and Administrator are allowed to change their password anytime.

Chapter 5: Implementation and Testing

5-2 Testing

5-2-1 Testing on LogIn Page

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Employee Centre	LogIn
GO TO MAP	Enter your Id and Password.
CHECK CLAIMING FORM STATUS	Password:
SET REMINDER	LOG IN
REMOVE REMINDER	
CHANGE PASSWORD	
LOG OUT	1 2 3 4 5 6 7 8 9 0
	q w e r t y u i o p
	asdfghjkl
Hi, Alex :)	You have entered invalid id or password ×
	Sym 🗱 🛛 English(UK) 🕨 . Done

Figure 5-2-1-F1: Testing on LogIn Page(1)

Figure 5-2-1-F2: Testing on LogIn Page(2)

In Figure 5-2-1-F1, I try to key in correct input and it successfully validate the Id and Password which entered by me. The system able to identify me as Alex. Besides, I purposely key in wrong input in login page, and the system successfully detect invalid input as shown as Figure 5-2-1-F2. Hence, the login page is working fine.







Figure 5-2-2-F1: Testing on Tracking Module(1)

Figure 5-2-2-F2: Testing on Tracking Module(2)

In this page, I try to go out for a ride and test for the system. I click on "Start" button and the system able to keep update my current physical location and finally it able to view the total distance that I have travelled and also display the route that I have travelled in red line which as shown in Figure 5-2-2-F1 and F2. This mean that the calculate distance, and route travelled module is working as expected.



5-2-3 Testing on Electronic-claiming Form Module



Figure 5-2-3-F1: Testing on Claiming Form Module(1)

Figure 5-2-3-F2: Testing on Claiming Form Module(2)

This phase is actually conducted immediately after testing on calculate distance and route travelled module. I try to send the generated electronic-claiming form to database and it pop up a Toast message say that it has been successfully added into database as shown is Figure 5-2-3-F1. After that, I go login as Administrator and go to check the Claiming Form Wall, and the claiming form is shown in the Claiming Form Wall as shown in Figure 5-2-3-F2. This is mean that the sending generated electronic-claiming form to database is working fine.

5-2-4 Testing on Viewing Route Travelled Feature



Figure 5-2-4-F1: Tesing on View Route Travelled(1)

Figure 5-2-4-F2: Testing on View Route Travelled(2)

This phase is actually conducted immediately after previous testing. I try to click on the claiming form showing in the Claiming Form Wall, and I press on "Check The Route Travelled" button as shown in Figure 5-2-4-F1. Figure 5-2-4-F2 shows the result display by the system. The route drawn is exactly the same as shown in 5-2-2-F2. Besides, the starting point will be represent by green color maker and end point is represent by red color marker with time of that current point attached. Hence, Viewing Route Travelled Module is working as expected.



5-2-5 Testing on Set Reminder





In this phase, I try to enter a location name in the search function and the system able to bring me to the respective location as shown in Figure 5-2-5-F1. Besides, I try to set a reminder at that particular location as shown in Figure 5-2-5-F2.



Figure 5-2-5-F3: Testing on Set Reminder(3)

Figure 5-2-5-F4: Testing on Set Reminder(4)

After the the reminder is set, I go to Remove Reminder Page, and the reminder that I was just set in shown in the list as shown in Figure 5-2-5-F3. After that, I try to conduct a test and the alert dialog message successfully display out to alert me when I'm getting closer to the target location as shown in Figure 5-2-5-F4. Hence, the Reminder Module is working as expected.

5-2-6 Testing on Remove Reminder



Figure 5-2-6-F1: Testing on Remove Reminder(1)

Figure 5-2-6-F2: Testing on Remove Reminder(2)

In this phase, I try to click on the reminder shown in the list and try to remove it as shown in Figure 5-2-6-F1. The system successfully remove the reminder as shown in Figure 5-2-6-F2. Hence, Remove Reminder Page is working as expected.

5-2-7 Testing on Check Claiming Form Status





Figure 5-2-7-F1: Testing on Check Claiming Form Status(1)

Figure 5-2-7-F2: Testing on Check Claiming Form Status(2)

In this phase, I first go to Check Claiming Form Status Page and check for current condition as shown in Figure 5-2-7-F1. In current condition, the Status of the claiming form is "Pending". After that, I login as administrator and go to the Claiming Form Wall and presee "Approve" button for that particular claiming form as shown in Figure 5-2-7-F2.

🗭 🗭 🖃 🎔 🖄 🔍 🖓 🕆 🖬 100% 🖹 11:18 p.m.	♀ ♀ ■ F ♀ 	♥ 🗿 ₄l 100% 🖿 11:19 p.m.
Claiming Form Wall	Check Claiming F	orm Status
	Date: 13-04-2017 Distance Travelled: Status: Approved	0.497km
Successfully approved.		

Figure 5-2-7-F3: Testing on Check Claiming Form Status(3)

Figure 5-2-7-F4: Testing on Check Claiming Form Status(4)

The system show me a Toast message which is "Successfully approved" as shown in Figure 5-2-7-F3. After that, I go login as user and went to Check Claiming Form Status, the claiming form status has already change from "Pending" to "Approved". Hence, Check Claiming Form Status is working as expected.

5-2-8 Testing on Add Employee and Remove Employee

🔗 🗭 🖬 🏲 🔗 🖄 🔍 👂 🗟 📶 100% 🛢 11:22 p.m.	ØØ □ F Ø ₫	♥ 🛜 ₊ ií 100% 🗎 11:22 p.m.
AddEmployee	Remove Employe	ee
Fill in all the information.	Employee ID: 1000 Name: Alex	1
Name Abu	Employee ID: 1000 Name: Rong	2
Password:	Employee ID: 1000 Name: Siti	3
Confirm-Password:	Employee ID: 1000 Name: Abu	4
Email: abu@gmail.com		
Admin Status 0		
SUBMIT		
Successfully added into database.		

Figure 5-2-8-F1: Testing on Add Employee(1)

In this phase, I first go into Add Employee Page and create a new account for a new employee as shown in Figure 5-2-8-F1. After that, I go to Remove Employee Page and the just created account is already shown in the Remove Employee list as shown in Figure 5-2-8-F2.





Figure 5-2-8-F4: Testing on Remove Employee(2)

After that, I try to remove the employee that I was just created just now as shown in Figure 5-2-8-

F3. After that, the employee is successfully remove from the list as shown in the Figure 5-2-8-F4.

Hence, the Add Employee and Remove Employee Module is working as expected.

5-2-9 Testing on Changing Password

🗭 🗭 🖃 🏲 🗭 🖄 🔍 🗣 🖗 🖗 🖓 🖗 🕼 100% 🖹 11:25 p.m.	∞ ∞ F ∞ ₫	오 🗟 📶 100% 🖿 11:26 p.m.
Change Password	Admin Centre	
Current Password:	A	DD EMPLOYEE
New Password: •	REM	NOVE EMPLOYEE
Re-Enter New Password: •	VIEW	/ CLAIMING FORM
SUBMIT	СНА	NGE PASSWORD
		LOG OUT
1 2 3 4 5 6 7 8 9 0		
q w e r t y u i o p		
asdfghjkl		
↑ z x c v b n m 🗠	Successf	ully change password :)
Sym 🏟 🛛 English(UK) 🕨 . Done		

Figure 5-2-9-F1: Testing on Change Password(1)

Figure 5-2-9-F2: Testing on Change Password(2)

In this phase, I'm trying to change my current password as shown in Figure 5-2-9-F1. After that the system show me a Toast message "Successfully change password" as shown in Figure 5-2-9-F2. Hence, the Change Password Module is working as expected.

Chapter 6: Conclusion

6-1 Project Review

This Sales Reminder and Tracker Mobile Application is aim to solve the claiming subsidy issue between employer and employee. Reasonable subsidy is always an issue faced by the employee when they trying to claim for. This application able to calculate the total distance travelled by the employee which can be used as a proof by the employee when claiming for reasonable subsidy. Besides, there exist another issue which is the company always not able to verify the actual route travelled by the employee. This is because the employee might travelled to other place for personal stuff and end with claiming for the whole journey subsidy which including the distance they travelled for personal stuff. This is guite unfair for the company to pay the unreasonable subsidy. Hence, this application which able to trace the route travelled by the staff during their journey help to solve this issue faced by the company. Furthermore, in a traditional manner, employee have to fill up claiming form manually and pass up to the management for claiming which this is very inconvenience for the staff to do so. Hence, this application which able to generate electronicclaiming form automatically help to reduce the load of the staff when claiming for subsidy. Lastly, this application provide location-based reminder feature to the user. User can set their reminder which base on the target location they preferred and the reminders will only be triggered when the user's physical location is getting closer to the target location. Generally, this application can help reduce a lot of inconvenience issues faced by the employer and employee in claiming subsidy topic.

6-2 Discussion

To be able to implement this application, I have to first have some technical knowledges on Android, Java, MySql and PHP. This is not easy to understand and master them in a short term. Good news is that there are many useful resources which can be found in the internet which is useful for me to gain more understanding to those technical knowledges. Meanwhile, the more knowledges I gained, the easier I am during the implementation of this mobile application. Therefore, we shall appreciate the advancement of internet nowadays which provide a lot of resources for us to take as a reference when doing a project. In conclusion, we must first do some research on the required knowledge needed for the project and try to at least get some basic understanding on them first before we start implementing our project. This is to make sure that we have a clear picture in our mind on what should we do in order to make the implementation can be done smoothly.

6-3 Highlight of Novelties and Contribution

There are a few major features provided by this application. This application able to calculate the total distance travel and at the same time record the route travelled by the user. It is good for the employee who travel for their company and it can be a proof for them on how long they have been travelled with evidence provided which is the recorded route travelled. Beside, this application able to generate electronic-claiming form for the employee to send to company database instead of the employee have to fill in claiming form manually. Lastly, this application provide location-based reminder feature for the user. Once a reminder is set on a target location, the reminder will be triggered only when the physical location of the user is getting closer to the target location.

6-4 Future Work

There are still a lot of improvements can be done to this application.

• Route Navigation

This application can be improved by adding route navigation function into it. System can provide navigation function for the user to choose the target location and at the same time calculating total distance travelled and recording route travelled by the user as well. Besides, when the location-based reminder is triggered, the system should able to provide option for the user to choose whether navigation to the target reminder location is needed or not.

• Improvement of Reminder Function

The reminder function provided by the current application can only be set to a fix location only. However, this reminder function can actually be improved by targeting to a user instead of only targeting a fix location. The user can set a reminder to another user and the reminder will be triggered when the physical location of the user is getting closer to the location of the targeted user. This mean that the application should always keep updating the current location of the user and targeted user.

• Improvement of User Interface

As we know the mobile device nowadays have limited screen size, hence, a good design of user interface playing an important role to attract the user. The user interface of this application can be improved to more attractive and also more user friendly.
6-5 Conclusion

Through the process when conducting this project, there are a lot of knowledge that can be learned. I able to learn more technical knowledge and at the same time, I learnt the skill in doing documentation as well. Besides, through this project, gaining a lot of experience is a big advantage for me. After I have conducted this project, I have gained at least some basic understanding on the real flow starting from the beginning of a project until the end of the project. In conclusion, this project bring me a lot of benefits which I believe that all the knowledge I gained are useful for me in my future.

Bibliography

[1] Chi-Yi Lin & Ming-Tze Hung, (eds.) 2013, A location-based personal task reminder for mobile users, Available from: Personal and ubiquitous computing. [24 October 2012].

[2] Sudhir Pandiri 2012, 'Android Mobile Application For Tracking Your Time And Distance Travelled' Available from: Department of Computer Science California State University, Sacramento. [2012]

APPENDIX A: BIWEEKLY REPORT

(Project I / Project II)

Trimester, Year: Y3T3	Study week no.: 2	
Student Name & ID: Lee Han Jie 1404648		
Supervisor: Mr. Tan Teik Boon		
Project Title: Sales Reminder and Tracker Mobile Application		

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- 1) Successfully implement user interface for whole system
- 2) Successfully implement Login and Logout Module
- 3) Testing on Login and Logout Module
- 4) Successfully implement Distance Travelled Calculation Module
- 5) Testing on Distance Travelled Calculation Module
- 6) Update progress to supervisor

2. WORK TO BE DONE

- 1) Implements View Route Travelled Module.
- 2) Testing on View Route Travelled Module.
- 3) Implements Electronic-claiming Form Generation Module
- 4) Testing on Electronic-claiming Form Generation Module

- 1) Difficulty on getting very accurate physical location of the user when testing
- 2) Not easy to make UI to become more interesting

4. SELF EVALUATION OF THE PROGRESS

Fair

Supervisor's signature

(Project I / Project II)

Trimester, Year: Y3T3	Study week no.: 5	
Student Name & ID: Lee Han Jie 1404648		
Supervisor: Mr. Tan Teik Boon		
Project Title: Sales Reminder and Tracker Mobile Application		

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- 1) Successfully implements View Route Travelled Module.
- 2) Testing on View Route Travelled Module.
- 3) Successfully implements Electronic-claiming Form Generation Module
- 4) Testing on Electronic-claiming Form Generation Module
- 5) Update progress to supervisor

2. WORK TO BE DONE

- 1) Implements Location-based Reminder Module
- 2) Testing on Location-based Reminder Module
- 3) Implements on Administrator Module
- 4) Testing on Administrator Module
- 5) Implements on Employee Module
- 6) Testing on Employee Module

1) Difficulty on getting very accurate physical location of user when testing

4. SELF EVALUATION OF THE PROGRESS

Fair

Supervisor's signature

(Project I / Project II)

Trimester, Year: Y3T3	Study week no.: 7	
Student Name & ID: Lee Han Jie 1404648		
Supervisor: Mr. Tan Teik Boon		
Project Title: Sales Reminder and Tracker Mobile Application		

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- 1) Successfully implements Location-based Reminder Module.
- 2) Testing on Location-based Reminder Module.
- 3) Successfully implements Administrator Module.
- 4) Testing on Administrator Module.
- 5) Successfully implements Employee Module.
- 6) Testing on Employee Module.
- 7) Update progress to supervisor

2. WORK TO BE DONE

- 1) Complete implementation of the whole system
- 2) Testing on the whole system

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None

4. SELF EVALUATION OF THE PROGRESS

Fair

Supervisor's signature

(Project I / Project II)

Trimester, Year: Y3T3	Study week no.: 9	
Student Name & ID: Lee Han Jie 1404648		
Supervisor: Mr. Tan Teik Boon		
Project Title: Sales Reminder and Tracker Mobile Application		

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- 1) Completed implementation of the whole system
- 2) Testing on the whole system
- 3) Update progress to supervisor

2. WORK TO BE DONE

- 1) Documentation of the whole system
- 2) Poster Design
- 3) Presentation Slides

1) Difficulty on getting very accurate physical location of the user when testing

4. SELF EVALUATION OF THE PROGRESS

Fair

Supervisor's signature

(Project I / Project II)

Trimester, Year: Y3T3	Study week no.: 11	
Student Name & ID: Lee Han Jie 1404648		
Supervisor: Mr. Tan Teik Boon		
Project Title: Sales Reminder and Tracker	· Mobile Application	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- 1) Completed documentation of the whole system
- 2) Poster Design
- 3) Presentation Slides
- 4) Update progress to supervisor

2. WORK TO BE DONE

- 1) Pass up final report to supervisor
- 2) FYP presentation
- 3) Submit CD/DVD to FGO

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1) Take a lot of time to do the final report due to the formatting issue.

4. SELF EVALUATION OF THE PROGRESS

Fair

Supervisor's signature

Poster

Sales Reminder and Tracker Mobile Application

Introduction

In this era, a lot of jobs require employee to travel. A lot of unfair situation could be faced by the employee such as claiming not reasonable subsidy. However, company not able to determine total distance travelled by the employee and not able to identify the route has been travelled by the employee. This is quite unfair for those who actually travelled further but end up with getting the same amount of subsidy compare to others.

Discussion

With the help of this system, employee able to prove the distance that they have travelled for company. Besides, company can also prevent cheating from employee who claim for not reasonable subsidy by view the route travelled whether they really doing their duty or not.

Conclusion

In a nutshell, this system help to reduce the inconvenience which faced by the employee and employer. It helps to increase the efficiency among them.

Tracking



Reminder Triggered

Results



Methods Update User location

public void onLocationChanged (Location location) {
 double currentLatitude = location getLatitude ();
 double currentLongitude = location.getLongitude ();
 latLng = new LatLng (currentLatitude, currentLongitude);
 WarkerPoints.add(latLng);
}

Calculate Distance

Location. distanceBetween (MarkerPoints. get (a). latitude, MarkerPoints. get (a). longitude, MarkerPoints. get (a+1). latitude,

> WarkerPoints.get(a+1).longitude, distance):

totalDistance=totalDistance+distance[0]:

Draw Route Travelled

Reminder Function

Set Reminder

The system will record the latitude and longitude of the targeted location and save into database

Reminder Triggered

System will keep calculate distance between user and targeted location, and reminder will be triggered when distance calculated smaller than 200 meter.



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employee. In the also be a proof f accomplish their	e other hand, the calculated distance trav or those staffs who really travel to far pla tasks. Besides, company is not able to tr	elled can ace to ack the	6 < <u>ht</u>	1% match (Intern ttp://er.yuvayana.	net from 06-Apr-2017 <mark>org</mark>)	
actual work related though the distance in the second seco	ed activities. There is still exist of problem nce travelled by every staffs can be calcu	n even Ilated which	v 7 <	1% match (stude	nt papers from 21-Ap	or-2006)	

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