GeoMapReport and analysis management system for city council

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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SESI PENGAJIAN: DATABASE MANAGMENT

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GeoMapReport and analysis management system for city council

MUNIB YONES QALIB YUSUF

This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Database Management)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2015

DECLARATION

I hereby declare that this project report entitled

GeoMapReport and analysis management system for city council

Is has written by me and is my own effort and no part has been plagiarized without citations.

STUDENT : _____ Date: 18/08/16

(MUNIB YOUNES QALIB YUSUF)

SUPERVISOR : _____ Date: 18 Ogos 2016

(ASSOC.PROF. Norhaziah Md Salleh)

DEDICATION

To my beloved parents and supervisor Madam. Norhaziah Md. Salleh.
And to the fellowship friends of BITD, especially Ammar alshamery and janapriya who gives co-operation and knowledge sharing in completing this project.
Thank you so much.

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ABSTRACT

GeoMapReport is a Web-based application that presents online reporting, generate Issue status report. The new system will be able for City council to manage the issues in a more effective way. SDLC methodology that has been used in this project development is Prototyping.IT has developed using Pup and oracle 11g.

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LIST OF ABBREVIATIONS

Geo	**Geographic**
R	**Radius**
DFD	**Data Flow Diagram**
ERD	**Entity Relationship Diagram**
SDLC	**System Development Life Cycle**

LIST OF ATTACHMENTS

CHAPTER I

INTRODUCTION

1.1 Project Background

Nowadays, with Urbanization and Inflation, population creates a lot of issues and complaints such as discarded trash, burned lighting, broken tiles on sidewalks, illegal advertising boards, etc. that are coming from the citizen every day that will overlap and give an unwanted view and unhealthy environment to live, and this will occur if the detecting and solving processes were slow.

Currently, the main problems of the usual flow work area redundancy of the complaints cannot be detected and trace. It brings the duplication data for the complaints. The redundancy of the complaint will occur confuses about the status of the complaint among the staff and the communication with development department

E-Complaint Management System is a web-based application that enables residents to report their local problems; the application can be access through the web browser. The tool is center on a web-based map that displays all user submitted issues. Users may add comments, suggest solutions for improving the environment of their neighborhood, and pictures and they can be informed about the solving stage of the reported problem

1.2 Problem statements

The problems that have been identified in the current system are:

i. **There is a lack for the current services with the speed of communication with the citizen to receive reports and complaints, no real time reporting.**

ii. **Non-standard design for information classification:**

The staff needs to classify the data before they start to record the data in the logbook.

The format for the data classification is not important for them; at least, they can understand what the complainants write onto the complaints form. However, the problem that occurs when the analysis needs to do, there is no classification or standard data, which can be categorized, or grouping to develop a query. Each year the report has to send to the highest management's director to correspond and to analyze the overall complaints. The reports need to have the details of the statistics reports, which reports according to the category of complaints, complaints according to months and quarter of the months. The problems occur when they want to classify the data.

iii. **Redundancy of the complaints:**

In the manual stream work, the local government into the logbook, which incorporates the data required, for example, the Native name, area, and the date reported, will record each present grievance. There are not furnishing with the particular database, which encourages the staff to enter the complainant's points of interest straightforwardly to the database provided. Since that, the redundancy of the complaints cannot be trace easier. The staff has to check one by one, list by list and records by records to sure that there are no redundancy or duplication data of the complaints. The officers also cannot classify the latest settle complaints done by Development Unit, if that so the timing to getting the record are quite slow and complicated. The officers have to wait for the reply from the Development Unit, which clarifies that the complaints are totally settled.

iv. **Difficult to update the status of the issues.**

Due to lots of issues, we tend to face many problems when to want to update the status of the issues. The staff cannot know the total number of the issues

1.3 Objective

The most important thing of developing GeoMapReport is enhanced and makes the current system looks more much better, There the next aims:

i. **Facilitate the city citizens to do their complaints and report.**

The project is hoped to facilitate the city citizens to send their complaints without any specified period.

ii. **Improve the efficiency of staff to be more alert and attend to the Complaints did by the citizens.**

In the present flow work, there is no alert system, which helps the officers to be Alert with each status of the complaints. The government staff has to check Constantly, the currently and the updated information about the status of the complaints, so that the project is hoped to bring the new facility for The staff to be more alert and prepared for the status of the complaints.

iii. **To ensure that data can be stored electronically and to ease the data Retrieval and categorized in a proper way.**

The project is hoped to facilitate the officers from both departments to catch the Information needed in the safe electronic storage, which helps them to catch data Faster and smartly. The staff can view the data needed and view that is more efficient.

1.4 Scope

The scope is having been done to improve this system the project has two main scopes that system and user scope, and it described both of them in next sections

1.4.1 User Scope

User scope is who will be used and interacted with the system. There are sort kinds of the users that are Head of the city council as administrator, departments staff, city citizens.

Administrator (Head of the city council)

- Ability to Access and display the staff data.
- Ability to Access and display citizen’s data.
- Ability to Access create issue status report.
- Ability to Access and display issues details.

ii. Staff

- Ability to Access and to do reporting.
- Ability to Access and manage issue and status.

iii. City citizens.

- Make compliments with GPS coordinate's and images.
- Have privileges to do voting for issues.

1.4.2 System Scope

System scope means is the field of the system's modules, and covered three modules, that is Online Reporting Module, Issue Status Module and issue report Module.

i. Online Reporting Module

This module is for citizens make issue or complaints and show it on the map. The staff will check the issues doing by the citizens periodically.

ii. Issue Status Module

This module is only for staff and administrator. It will allow the staff or administrator to update the information on the issue

iii. Issue Report Module

This module allows the administrator to generate a report showing the information about all the issues with the status and if it solves or not.

1.5 Project significance

This project has two significances that very importance to facilitate the local government (Municipality) and Unit of development Department in order to give them a neat environment of works of complaints sending by the city citizen. The first significance is for fast updating in order to facilitate the officers to be alert in every complaints status. Fast updating also important to facilitate the officers to retrieve the information about the complaints details either it had been settled or not. Updated data sharing between Municipality Department and Unit Development Department mean both this department can review the same updated data about the complaints and having the chance to making a study to the problems to avoid and not fall into the same issue again. The second significance is the project will give the best way for citizens to deliver their complaints easily without any specified period.

1.6 Expected output

In this system, every module can start up with what they expect of output. The purpose of this method is to alter all method that occurs inside the system that's current made . so many approaches that are projected to confirm the modern tech can facilitate so as to beat the previous problem.

To solve the matter that occurred on user's aspect, GPS coordinate's and images uploading was more appropriate to use. the aim of this half is to make sure the users can have a lot of specific details and more accouter. this method features a report feature which will enable workers to get a report showing the knowledge about all the users United Nations agency have according. additionally, that, this module also permits the administrator to get a report showing the data concerning all the issues.

1.7 Conclusion

In conclusion, we are in 21's Century, there is a big change that is happening and takes palace including Municipality Service so, it been recommended to solve and find solutions for problems that's happened in the current system although to improve Municipality Service

CHAPTER II

PROJECT METHODOLOGY AND PLANNING

2.1 Introduction

This chapter will explain on database development methodology and database analysis for Reporting and Complaints Management System.

This system is an automated system that is used to manage citizen information and its administration, information of online Reporting and solving this issue steps. It is meant to provide the citizens with information in real-time to make their task more interesting and less stressing.

2.2 Project methodology Objective

For any software, Project methodology is necessary to make improvement for it .and it's important to settle on the reasonable advancement lifecycle strategy to the current undertaking as a result of all option actions area unit got from the method (Perks, 2003As Alok Kumar Pandey (2010) mention in his book,

to make any project successful is by choosing the correct SDLC methodology, that is taking by all manners to manage a project it's mean that many of the models are having common in some points in the lifecycle, the wanted software that's to be tasted. Radically, the covered phases that're appeared on each model are requirements, design, coding, testing, and installation, operation and maintenance.

Now, we are implementing the waterfall model, the aim of choosing this model it has a chance to get back to earlier staged if there are problems appears, It's a 6 phase model. Which are Requirement analysis, system design, implementation, testing, development, and maintenance. To start the next stage, you have the previous stage. Accordingly, as my methodology to develop the system I determined to pick up The Waterfall Model based on Database Development Life Cycle (DBLC).

2.3 Project Schedule and Milestones

To abandon and clear steering Project schedule and milestones are a very important, For a developer to perform their job supported special date. it will easy to them in managing their job and finish the project on exact time.

Project Gantt chart and schedule are shown in details in Table 2.1 and Table 2.2.

No	*Activity*	*Week*														
		1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1.	Discussion project title with a supervisor. Proposed suitable title to supervisor															
2.	Submit Proposal															
3.	Proposal Presentation															
4.	Proposal correction and improvement															
5.	Chapter 1															
6.	Chapter 2															
7.	Chapter 3															
8.	Chapter 3 Demonstration Chapter 4															
9.	Chapter 4 Demonstration															
10.	Demonstration															
11.	Project Demonstration															
12.	Final Report Presentation															

Table 2.1: Project Gantt chart

Week	Date		Activity
	15 -19 February	-	Submit Proposal
1	22 – 26 February	-	Proposal Presentation and Discussion
2	29 February – 4 March	-	Correction and improvement proposal
		-	Chapter 1
3	7 – 11 March	-	Chapter 1
4	14 – 18 March	-	Chapter 1
		-	Chapter 2
5	21 – 25 March	-	Chapter 2
6	28 March – 01 April	-	Chapter 2
		-	Chapter 3
7	4– 8 April	-	Chapter 3
		-	Chapter 4
8	11 – 15 April		MID-SEM BREAK
9	18 – 22 April	-	Chapter 3 Demonstration
		-	Chapter 4
10	25 – 29 April	-	Demonstration
		-	Chapter 4
11	02 – 06 May	-	Demonstration
12	09 – 13 May	-	Project Demonstration
13	16– 20 May	-	Project Demonstration
14	23 – 27 May	-	Project Demonstration
15	30 May – 03 Jun	-	Final Report Presentation

Table 2.2: Project Schedule

2.4 Conclusion

In conclusion, this chapter has been discussed clearly, the methodology that will be used in the development of GeoMapReport system. Facts and findings section can be a reference which contains several existed online reporting systems that can be guided to the developer to build the system for city council and enhance some application in it such as online reporting for citizens and analysis for issues. The Chosen methodology can also assist the developer to complete the work supported SDLC and its Prototyping model. The schedule and milestones for the project it will offer a good guide for a developer to manage their work and build on exact giving time.

The following Chapter III will covers analysis of the system.

CHAPTER III

ANALYSIS

3.1 Introduction

In this chapter, it will discuss analysis process in GeoMapReport system. When the developed system will exist, there is analysis for the current system besides the new one and it's very important to make sure that the proposed system is fulfilled the old system weaknesses. For check analysis, first, the issue will be explained in a good way and will use the flow diagram as a guide to show the points out the system flow. requirements analysis can be used as cover the topic regarding date is a demand that is that the information the system input and output and also the data that the system should collect privately. this will be shown as a Data Dictionary.

The Data Flow Diagram (DFD) for the functional requirement, will be managed to show data between external entities that have been a change of and processes and among data stores and processes. all interfaces between the component indicated The DFD will represent the system in terms of its component pieces, (DeMarco 1978). Nonfunctional requirements then will show a report for how the system will going to delivers its expected functions. In addition, there is three subs requirement what is software, hardware, and network requirements validation.

3. 2 Problem analysis

Issue analysis can be characterized as dismembering and altogether concentrating on the issue with the goal to see how the issue arose and how it developed to its present extents (Visser, 2004). An analysis study had been carried out to analyze the facts that been collect from the present system to comprehend the requirements for GeoMapReport. Beside The analysis, the study covers the business process and problem analysis. In brief, the system it has been developed to solve the problem analysis

According to my observation, I have found that the local city council is facing problems

, luck to handle and respond to citizens' complaints and suggestion beside they having difficulties to detect and trace the location for the issue with accuracy with appropriate categorization, on the other side when the citizen want to contact with city council they have to go for city council building and report directly manually somehow many of them will not give enough details about the issue or the suggestion. Other than that, the manual paper-based system is lacking efficient for an administrator to catch and analysis the issues and suggestions and giving them time to solve them.

3. 3 The proposed improvements/solutions

A solution has been proposed which is GeoMapReport. The reporting System is developed to enhance this system. this technique allows directors to manage Issue's info, department info, suggestions/issues progress details and also allows admin and staffs to respond to citizens.

3. 4 Requirement analysis of the to-be system

Requirements are descriptions of the services that a software should offer and also the constraints below that it should operate. Requirements can be either functional or non-functional requirements.

Earlier before determine the appropriate requirements for a given system, one wants to have a clear perception of the kind of system that will be developed. The basic process of requirements analysis is divided into three steps, which understand the current system, identifying improvements to the current system and developing requirements for the to-be system.

Based on what has been mention previously in problem analysis, the requirements required in GeoMapReport are classified into functional, non-functional and technical requirements that compromise software and hardware requirements

3. 4.1 Functional Requirement (Process Model)

To define the inside working of the software we use functional requirements that're technical details like how the system is working .data manipulation and functions, and to describe how is the data flow using a specific functionality

GeoMapReport depends on few modules which are described as below:

REQUIREMENTS	DESCRIPTION
1. Login	- A user such as Citizens,Admin,Staff and should login before using the system. They will use their unique E-mail and Password to login. The E-mail and password are earlier stored in the database.
2. Reporting form.	- Citizens using the form to insert issue/suggestions details and uploading the image for that issue/suggestion
3. Issue view.	- Citizens can view others issues and vote for it.
4. Issue details.	- Admin and staff can update issues and their status progress and responds to citizens.
5. Registration of Staffs/citizens	- Admin can add, update, delete of the staffs/citizens information. - Staff only can view and update their personal profile only.
6. Citizen profile	- A citizen can update his information and view on his own issues that has been reported.
7. Report of issue	- Staff can make a report when the issue is completed and insert a brief description.

Table 3.1: Functional Requirement for GeoMapReport.

3.4.1.1 CONTEXT DIAGRAM

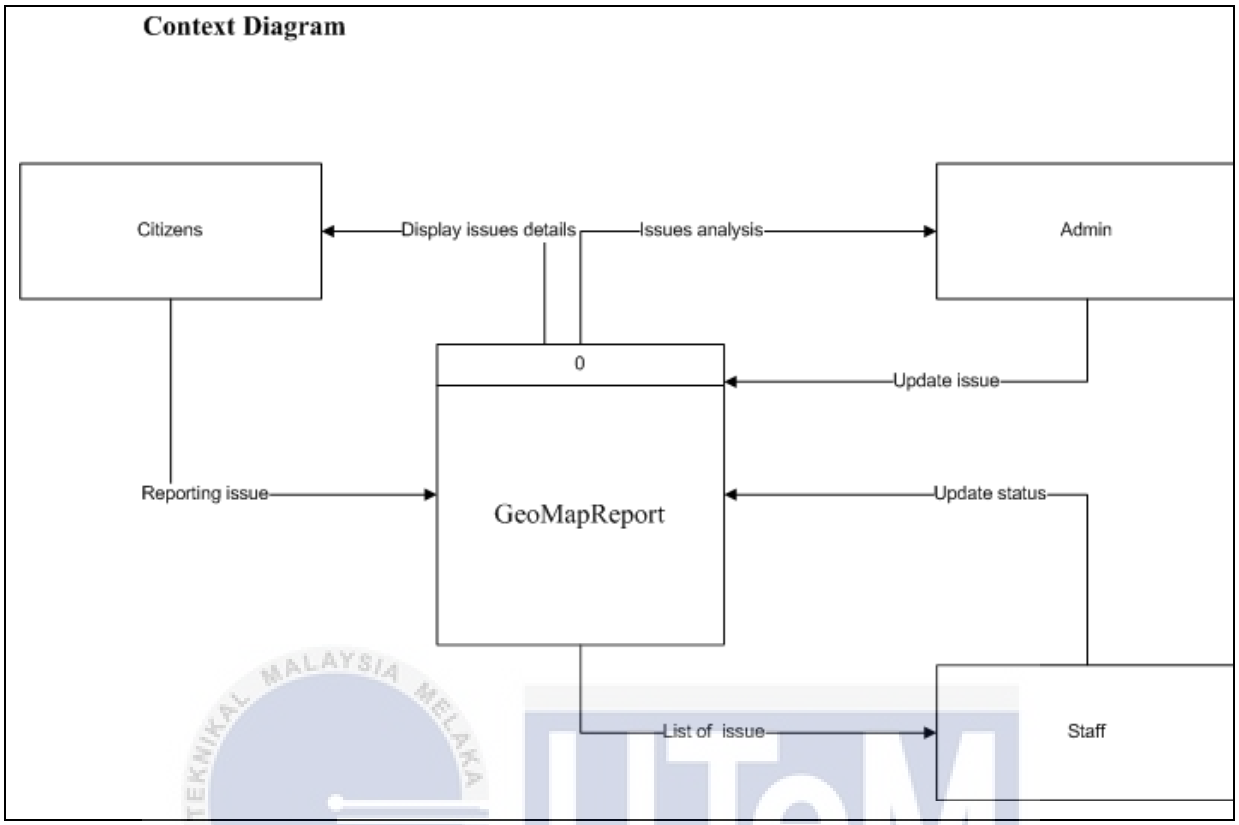


Figure 3.1: Context Diagram for GeoMapReport

Figure 3.1 its describe the context diagram for GeoMapReport. This context diagram is used to make sure that the flow of a new system that will be developed will become understandable. There are three actors that will initiate this system which are Citizen, Admin, and Staff. Each actor is needed to present a task to be performed by the system and the system will make a process then will give them the outputs.

3.4.1.2 DATA FLOW DIAGRAM (DFD) LEVEL-0

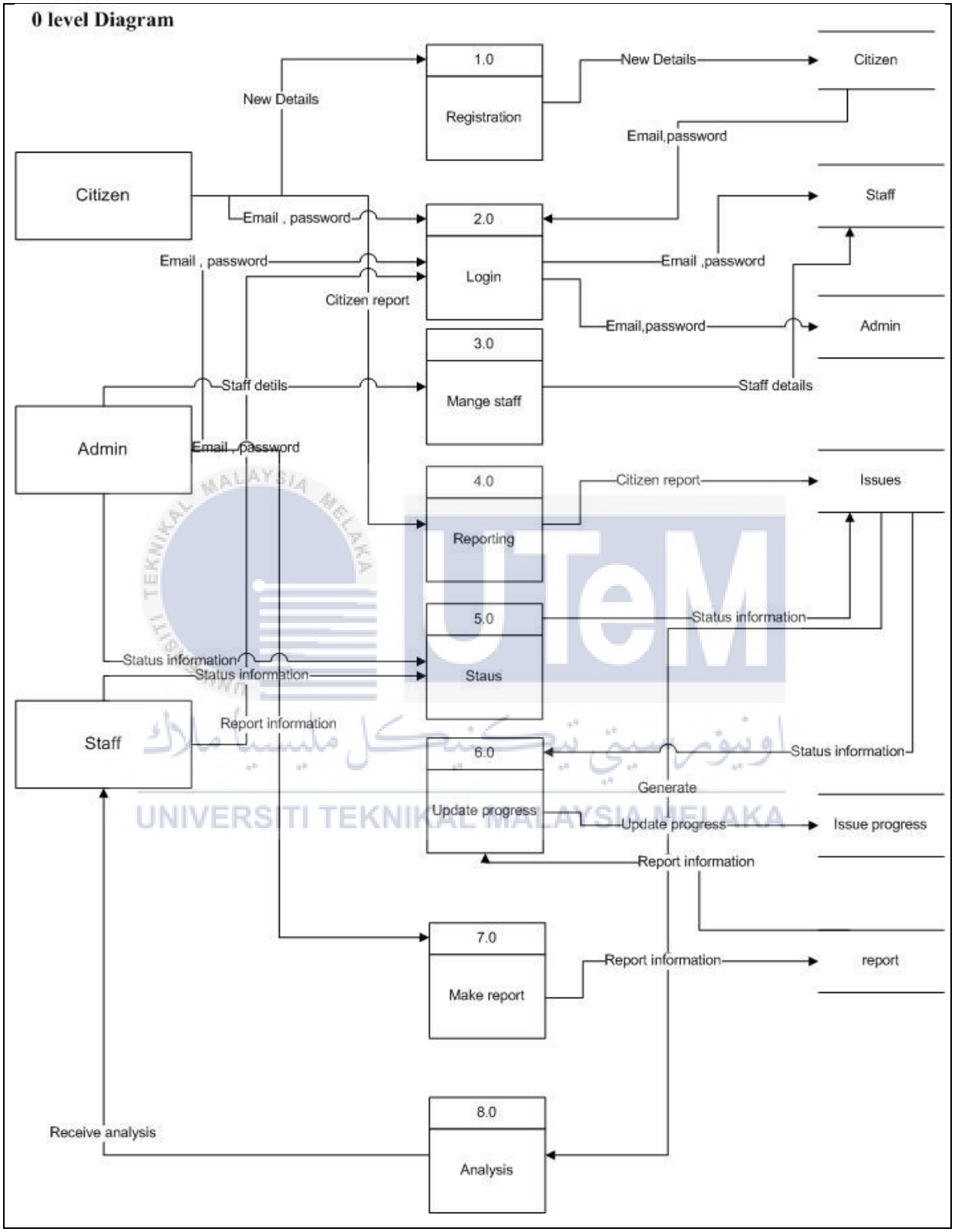


Figure 3.2: Data Flow Diagram Level 0 for GeoMapReport

Figure 3.2 shows the data flow diagram (DFD) at level 0 for GeoMapReport. There are three actors will perform tasks which are Admin, Citizen, and Staff. There are eight processes involved which are reporting, login, registration, staff management, status, make a report, update progress, and Analysis.

3. 4.2 Non-functional Requirement

Non-functional prerequisites are defined how the system will act ought to act and it is a requirement for the system conduct. The qualities of the system called to Non-functional requirements, system qualities are properties or characteristics of the system that its who will interact with it will care about and hence will affect their level of fulfillment with the system (Malan, 2001). Non-functional requirements necessities determine all the rest of the prerequisites not secured by the useful prerequisites. The non-functional requirement for GeoMapReport is as shown in Table 3.2.

Requirements Category	Non-functional Type (Process/Data)	Example
Accuracy	Process	All required field must be entered.
Availability	Process	The system can be accessed 24 hours in a day and 7 days per week including weekends
Concurrency	Process	Up to 100+ users may be using "GeoMapReport" at once.
Error-handling	Process	The popup message or notice will appear for any required field not filled or invalid data entered
Performance	Process	System responses should be not more than 5 second for all system process.
Reliability	Process	GeoMapReport will be available to Citizens 24 hours

Table 3.2: Non-functional requirement

3. 4. 3 Other Requirements

Others requirement portray support of utilization for programming, equipment and system prerequisites that will be utilized as a part of this system improvement.

3. 4. 3.1 Software Requirement

The whole system contains two sets that are client and server software requirements

Table 3.3 shows the description each of software used in this system development.

Server	
Software	**Description**
PHP	PHP is one of the programming languages. It used to handle the information from and to the server with dynamic data.
Oracle 11g express edition	It is a software product whose primary function is to store and retrieve data as requested by other software applications, be it those on the same computer or those running on another computer across a network (including the Internet).
SQL developer	Its graphical user interface, Oracle SQL Developer allows database users and administrators to do their database tasks in fewer clicks and keystrokes
Apache	Is a Web server software. Apache is an open source software available for free. It runs on 67% of all web servers in the world. It is fast, reliable
Microsoft Windows 10	Operating system as a platform for DBMS and system development installed on it.
Google Chrome	Google Chrome used as a web browser to preview the website. It is recommended for the user to using the latest version of it. However, Google Chrome, it will automatically update its version.
Microsoft Office 360	Microsoft Office Word 360 for document writing
Sublime 3	Sublime 3 is an advanced text editor for code, markup, and prose.
Client	
Software	**Description**
Microsoft Windows OS	Windows operating system whether 32-bit or 64-bit Windows 7 or Higher
Google Chrome	Web browser to access and preview the system

Table 3.3: Software requirement

3. 4. 3.2 Hardware Requirement

There are minimum requirements that are used in the hardware requirements that can satisfy and fit the client and server needs, in this days, possibly this hardware for client and server is reliable than the minimum requirements. it's in the Table3.4 are shown below.

Hardware	Description	Server	Client
Hard disk	The hard disk is main storage in a computer where all the Software installed on it.	Minimum 100 GB free disk space	Minimum 300 MB free disk space
Memory (RAM)	Memory is defined as Random Access Memory (RAM) Provides space for the computer to read and Write data to be accessed by the CPU (central processing unit) or processor.	Minimum requirement of memory required is 2 GB, though 8 GB is recommended.	Minimum 512 MB of memory, though 1 GB is recommend
Processor	The processor is the electronic component which is act as „brain" for of a computer. The higher the processing speed is much better.	Minimum 2.27 GHz quad core speed of CPU processor	Minimum 1.3 GHz Dual core speed of CPU processor

Table 3.4: Hardware requirement

3.5 Conclusion

In conclusion with respect to for this part clarifies about the investigation that spreads issue examination for the present system, information, functional, non-functional requirement, and others requirement. since that, the problem analysis for the present system is already analyzed and based on that we can improve and build a new system that prepared with new data requirement that data must store in the database Functional requirement is refer to how the system will retrieve,record retrieve and manipulate data, although, non-functional requirement it about the performs and how that happened in the new system .Another requirement includes other two sections that are software and hardware requirements .The defenses of use each of them in this framework are nitty gritty clarify in this section.

Chapter IV will define the design of the system

CHAPTER IV

DESIGN

4.1 Introduction

In this chapter, there will be an explanation about the design of the system development in general for the system and their flow. the developer can design the system after gathering all information that comes from analysis phase previously, after that it's about the interface and his design, like how it should look and how the user interacts with it that has variety of levels from login until the report.

It will cover on this topic the system architecture. basically, it's how a system will communicate and interact beside the user and hardware etc.

Then for conceptual and logical design, the process of generating a complete data model of the database is called a Database design the logical haves everything required in logical and physical design options and physical storage parameters needed to generate a design in a Data Definition Language (DDL) in this logical data model is carries all the required physical and logical design alternatives besides physical storage parameters that required creating a design in DDL, and it used to create DB, The (ERD) its conceptual design that makes a good idea of the system how will be easier to understand cause it the demonstration Also that the the states of the framework are expressed plainly with the assistance of the Business Principle. The Information Word reference of the Entity Relationship Diagram (ERD) is given in this report as well. Information Word reference contains every one of the properties in substances with its arrangement and sort and the essential key of the element likewise expressed in the Information Dictionary as well. Information Definition Dialect (DDL) is delivered taking into account the applied and intelligent configuration of the database.

4.2 System Architecture

The system architecture is adopted to define the general idea for a design and describe the overall design and the arrangement of a computer network or system as innovation have extended to incorporate an extensive variety of physical gadgets, a strategy is required to sort out and associate these things together in a durable way. The term is additionally used to depict complex PC programming apparatuses that incorporate different modules.

The main components in any system architecture, there are four central of them that processing power, storage, connectivity, and user experience The many-sided quality of the system fluctuates generally and is reliant upon client needs, business necessities, financing, and asset accessibility. Note that framework engineering must be adaptable and ready to address changing issues rapidly. A structure that is excessively unbending won't be able, making it impossible to contribute new programming or equipment.

The architecture of GeoMapReport is adopting three-tier architecture which consists of a client tier, middle tier, and database tier. This system is adopting Three tier architecture that has three levels of functions which are a client, middle, and database tier. Three-tier architectures are a system that formed into three main parts, which is assigned to many places or levels in the network, the client tier is what is user interact with directly using web browser to enter it than middle tier that app server allowed to the user contact to database server and edit or save or retrieve on his data.

The three-tier architecture is shown in Figure 4.1.

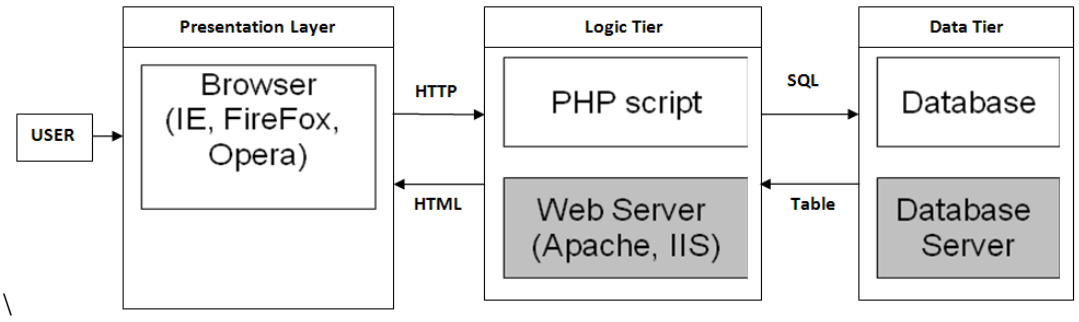


Figure 4.1: Three-tier architecture of the system

4.3 Database Design

Let's now talk about database design and it divided into two type that is logical, conceptual design it creating a completed information model of database

4.3.1 Conceptual Design

in a phase of conceptual, it used to create a complex arrangement which describes the real world things that are always practical method can do, the applied model must encapsulate an unmistakable comprehension of the business and its utilitarian areas. The calculated configuration must be programming and equipment autonomous so that the framework can be set up inside any equipment and programming stage picked later

i) entity-relationship design

is a theoretically reasonable representation of organized information. Element relationship displaying is a relational diagram database demonstrating the technique regularly a relational database and its necessity in a top-down style. Utilized as a part of programming designing to deliver a sort of theoretical information model (or semantic information model) of a framework. Figure 4.20 contain the ERD

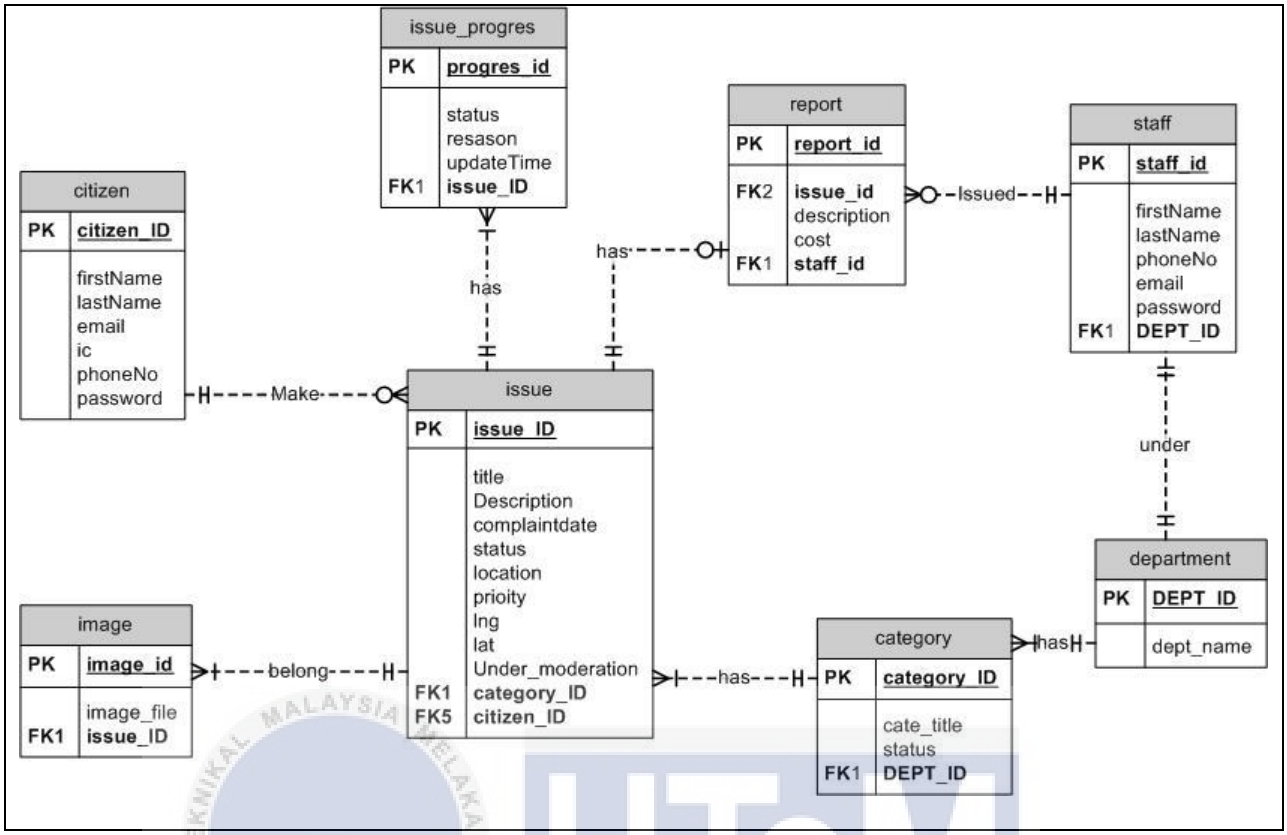


Figure 4.2: Entity relationship diagram

ii) **Business Rules**

All of **Citizen** makes zero or many **Issue.**

All of **Issue** is reported by one or many **Citizen.**

All of **Issue is** having one or many **Image.**

All of **image** is belonging to Exactly One **Issue.**

All of **Category** Is having one or more **issue.**

All of **Issue** is containing by one **Category.**

All of **Staff is** issued zero or many **Report.**

All of **Issue has** zero or one **Report.**

All of **Staff is** under one **Department.**

All of **Department** have one or many **Staff.**

All of **Category** managed by one **Department.**

All of **Department** managing one or more **Category**.

4.3.2 Logical Design

it can organize the information into an intelligent structure by using Logical database design will which allows being stored into tables which store information in lines and segment. Consistent configuration is the representation the capacity of framework determination to satisfy client necessities.

The data dictionary appears in Table 4.1 until Table 4.8.

Attribute Name	Data Type	Length	Constraint	FK Reference Table
Citizen id	VARCHAR2	8	PK	
First name	Varchar2	10		
Last name	Varchar2	10		
IC	Varchar2	12		
Phone number	Varchar2	12		
Password	Varchar2	16	Check	

Table 4.1: Table Citizens Data Dictionary

Attribute Name	Data Type	Length	Constraint	FK Reference Table
Department id	VARCHAR2	8	PK	
Department name	Varchar2	20		

Table 4.2: Table Department Data Dictionary

Attribute Name	Data Type	Length	Constraint	FK Reference Table
Staff id	VARCHAR2	8	PK	
First name	Varchar2	10		
Last name	Varchar2	10		
Phone number	Varchar2	12		
Password	Varchar2	16		
Department id	Varchar2	8	FK	**Department**

Table 4.3: Table Staff Data Dictionary

Attribute Name	Data Type	Length	Constraint	FK Reference Table
Category id	VARCHAR2	8	PK	
Category name	Varchar2	20		
Department id	Varchar2	8	FK	Department

Table 4.4: Table Category Data Dictionary

Attribute Name	Data Type	Length	Constraint	FK Reference Table
Issue id	VARCHAR2	8	PK	
Title	Varchar2	20		
Description	Varchar2	250		
Complaint Date	Date			
Status	Varchar2	16		
Prioity	Varchar2	10		
Location	Varchar2	100		
Lat	Number	10,6		
Lng	Number	10,6		
Under moderation	Varchar2	3		
Citizen ID	Varchar2	8	FK	Citizen
Category id	Varchar2	8	FK	Category

Table 4.5: Table Issue Data Dictionary

Attribute Name	Data Type	Length	Constraint	FK Reference Table
Report id	VARCHAR2	8	PK	
Description	Varchar2	500		
cost	Number	10		
Issue id	Varchar2	8	FK	Issue
Staff id	Varchar2	8	Fk	Staff

Table 4.6: Table Report Data Dictionary

Attribute Name	Data Type	Length	Constraint		FK Reference Table
image id	VARCHAR2	8	PK		
Image file	BLOB				
Issue id	Varchar2	8	FK		Issue

Table 4.7: Table Image Data Dictionary

Attribute Name	Data Type	Length	Constraint	FK Reference Table
Progres id	VARCHAR2	8	PK	
Progres name	Varchar2	25		
reson	Varchar2	50		
Update date	Date			
Issue id	Varchar2	8	FK	Issue

Table 4.8: Table Issue Progress Data Dictionary

4.3.3 Physical Database Design

Meanwhile, physical design, DBMS software file comes from the logical database design, it will use DDL to make the database and their objects and it will produce the user's view will provide to advise access to a specific piece of one or more database.

4.3.3 1 Data Definition Language (DDL)

when we want to crate and alter and manipulate the data and the object like schemas, tables, views, sequences and indexes inside the database we used The DDL make this changes, there is command is used by the DBA while he set up the and departure from phases of databases objects. DDL is code that will generate and compiles to prove the output and is also recognized as a computer language for defining data structures.

Figure 4.23 until Figure 4.30 query to create the tables in database.

1. Create tables

The table is an area to store relational data in Database, it has column and rows every row have a part of information that is should be another or unique from the other one

```
1- CREATE TABLE citizen
2- ( citizen_id varchar2(8) NOT NULL primary key,
3-   firstName varchar2(10),
4-   lastName varchar2(10),
5-   email varchar2(20),
6-   ic varchar2(12),
7-   phoneNo varchar2(12),
8-   password varchar2(15)CONSTRAINT citz_pass_limit_min check (password>8),
9- CONSTRAINT citizenIc_unique UNIQUE (ic)  ,
10- CONSTRAINT emailCitzi_unique UNIQUE (email)
11- );
```

Figure 4.3: Create table Citizen

```
1- create table department (
2- dept_id varchar2(8) primary key,
3- dept_name varchar2(20) not null
4- )
```

Figure 4.4: Create table Department

```
1- create table staff(
2- staff_id varchar2(5) not null primary key,
3- s_firstName  varchar2(10),
4- s_lastName varchar2(10),
5- s_phoneNo varchar2(12),
6- s_email varchar2(20) not null ,
7- password varchar2(15) CONSTRAINT sta_pass_limit_min check (password>8),
8- dept_id  varchar2(5),
9-   FOREIGN KEY (dept_id) REFERENCES department(dept_id),
10-  CONSTRAINT emailStaff_unique UNIQUE (s_email)
11- );
```

Figure 4.5: Create table Staff

```
1- create table category (
2- category_id varchar2(8) primary key,
3- category_name varchar2(20) not null,
4- dept_id varchar2(8) ,
5-   FOREIGN KEY (dept_id) REFERENCES department(dept_id),
6- );
```

Figure 4.6: Create table Category

```
1-  CREATE TABLE issue(
2-    issue_id varchar2(8) primary key,
3-    title varchar2(20),
4-    Description varchar2(250),
5-    complaintDate date default sysdate,
6-    status varchar2(10) Default 'Submited ',
7-    prioity varchar2(10),
8-    citizen_id varchar2(8),
9-    location varchar2(100),
10-   category_id varchar2(8),
11-   Lat number(10,6),
12-   Lng number(10.6),
13-   under_m varchar2(3),
14-   FOREIGN KEY (citizen_id) REFERENCES citizen(citizen_id),
15-   FOREIGN KEY (category_id) REFERENCES category(category_id)
16- );
```

Figure 4.7: Create table Issue

```
1-  create table image(
2-            image_id varchar2(8) primary key,
3-            blob_issuimage blob,
4-            issue_id varchar2(8),
5-      foreign key(issue_id)references issue(issue_id)
6-  )
```

Figure 4.8: Create table Image

```
1-  create TABLE issueprogres (
2-  progres_id varchar2(8) not null primary key,
3-  progres_name varchar2(25),
4-  reason VARCHAR2(50) ,
5-  updatedate date DEFAULT SYSDATE,
6-  issue_id varchar2(8),
7-  FOREIGN key(issue_id) REFERENCES issue(issue_id)
8-  )
```

Figure 4.9: Create table Issue progres

```
1-  create table report(
2-  report_id varchar2(8) primary key,
3-  issue_id varchar2(8),
4-  description varchar2(500),
5-  cost number(10) CONSTRAINT fix_cost_min
6-  CHECK (cost > 0),
7-  staff_id varchar2(5),
8-  foreign key(staff_id)references staff(staff_id),
9-   foreign key(issue_id)references issue(issue_id)
10- )
```

Figure 4.10: Create table Location

4.5 Graphical User Interface (GUI) Design

The user interface is what the user see and understand and interact with it. The client can utilize the interface which depicts a screen that incorporates a catch to click, a content field to be fill, list box to make it information simple to be pick and this is to guarantee the client simple to achieve, recuperate or spare the information into the database. A well-disposed UI which implies it is anything but difficult to utilize and keep away from impedance to the client is a decent UI plan.

4.5.1 Navigation Design

meanwhile, we can define Navigation design as how the user will move around the pages of the entire system using the navigation buttons and hyperlinks where the user's press on URL any page after that software taking it to the page that user wants', the navigation should design in the proper way to avoid any page mixing.

Figure 4.2 shows the GeoMapReport design.

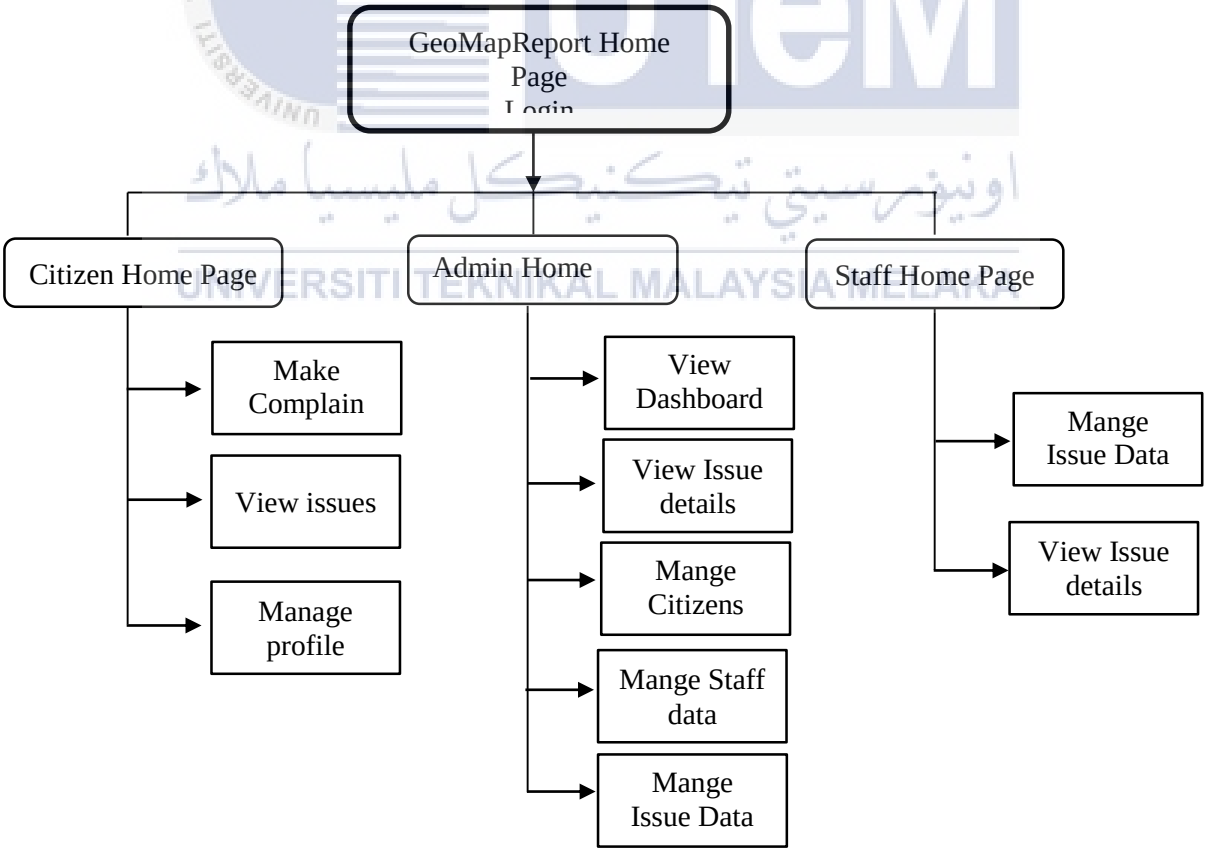


Figure 4.1: Navigation design for GeoMapReport

4.5.2 Input Design

in input design, the configuration is an outline of sorts of information that will be at a UI. for instance, of an information like content and numbers and significantly more. A large portion of them are so critical to make the information are approving and redressed to be put away into database Information outline for this system is shown in Tables below

Figure 4.2: Login Interface for GeoMapReport

Table 4.1: Input Design for Login Interface

Input	Field Type	Data Type	Validation
Email	Text Feild	Varchar	Required field
Password	Text Feild	Varchar	Required field

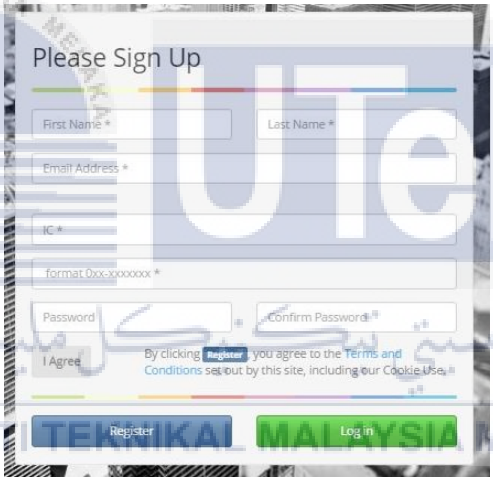


Figure 4.3 Registration interface

Table 4.2: Input Design for registration Interface

Input	Field Type	Data Type	Validation
First Name	Text Feild	Varchar	Required field
Last Name	Text Feild	Varchar	Required field
Email	Text Feild	Varchar	Required field
IC	Text Feild	Number	Required field
Phone no	Text Feild	Varchar	Required field
Password	Text Feild	Varchar	Required field

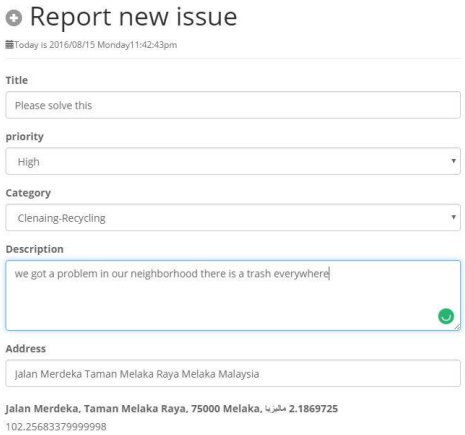


Figure 4.3 Issue report Interface

Table 4.3 Input Design for issue Report Interface

Input	Field Type	Data Type	Validation
Title	Text Feild	Varchar	Required field
Priorty	Text Feild	Varchar	Required field
Category	Droup down	Varchar	Required field
Description	Text Feild	Varchar	Required field
Address	Text Feild	Varchar	Required field
Image	File	Binary	Required field

Figure 4.3 issue status interface

Table 4.4 Input Design for Issue status

Input	Field Type	Data Type	Validation
Status	Lable	Varchar	Required field
Reson	Text Feild	Varchar	Required field

Figure 4.4 issue analysis interface

Table 4.5 Input design for Issue analysis interface

Input	Field Type	Data Type	Validation
Start date	date	Date	Required field
End date	date	Date	Required field

4.5.3 Output Design

This section defines the output design or form in the system where users will view the information. The output design also produces what the users to see from the system. The output is the outcome of what the user entered.

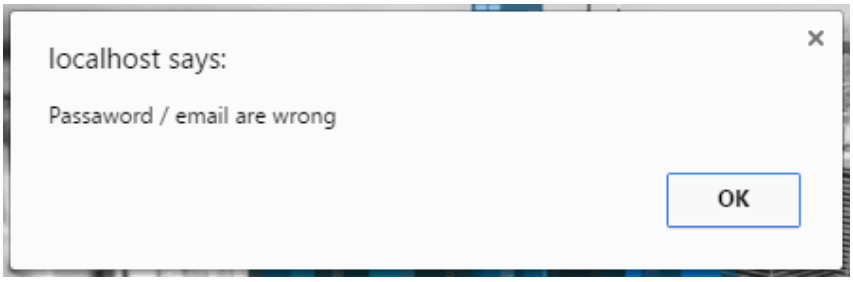


Figure 4.5 Popup alert for invalid username or password

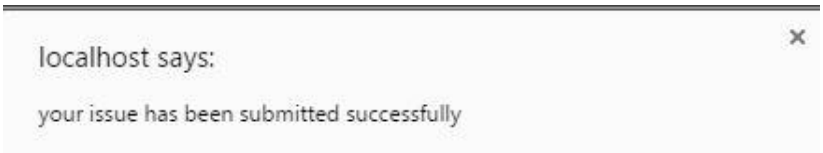


Figure 4.6 Popup Conformation for issue submitting

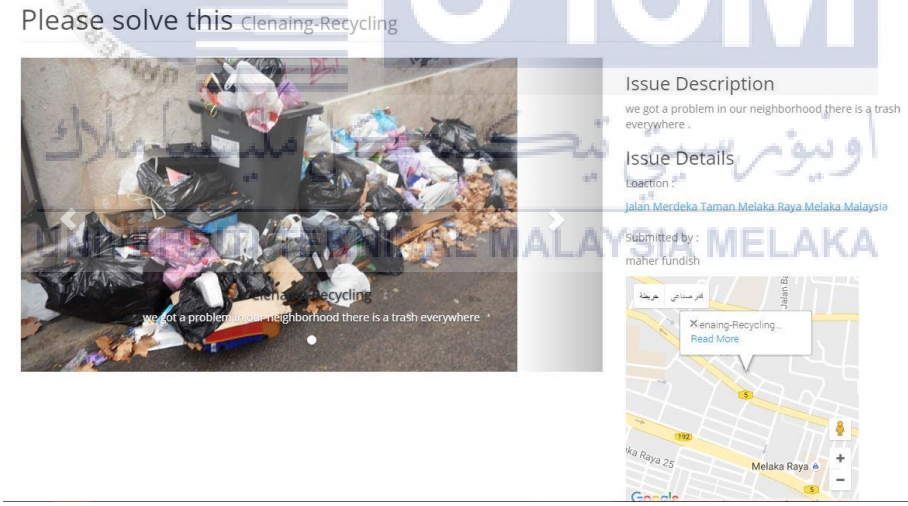


Figure 4.7 view issue details

Table 4.6 Output Design for Issue output

Input	Field Type	Data Type	Validation
Title	Text Feild	Varchar	Not Null
Priorty	Text Feild	Varchar	Not Null
Category	Droup down	Varchar	Not Null
Description	Text Feild	Varchar	Not Null
Address	Text Feild	Varchar	Not Null
Image	File	Binary	Not Null

Figure 4.8 view Issue status in timeline interface

Table 4.7 Output Design for issue status

Input	Field Type	Data Type	Validation
Status	Text Field	Varchar	Not Null

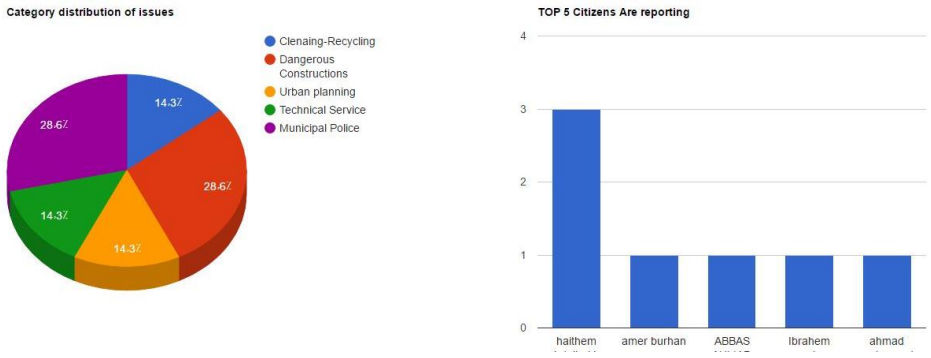


Figure 4.9 view issue analysis

4.6 Conclusion

In conclusion, the main object of design is to figure out a better solution to problems that comes from the documents requirements from analysis we can say that the design phase is the first way to find solutions, the outcome for this level is designed files that look similar to raw materials to build anything the arrangement and is utilized later amid execution, testing, and support.

CHAPTER V

IMPLEMENTATION

5.1 Introduction

In this chapter which is implementation we can define as an outcome and the result from the previous phase the design , this phase contains four main part and they are system development it means it's performance of everyday process The usage stage is trigger by the outline determination coming about because of the design stage. This stage will be separated into four primary areas which are software configuration environment setup, software development ,database implementation, programming arrangement and implementation status meanwhile, this phase, review all about the environment of the software starting from the setup that described by navigation diagram and DB and information storing function and example of DB connection will be showing .The execution stage is trigger by the outline determination coming about because of the configuration stage. The execution stage will be isolated into four fundamental segments which are programming advancement environment setup, database usage, programming arrangement and usage statusBesides that, the product design administration covers the design of the product to satisfy framework requirements. Software improvement environment setup, database usage, programming arrangement and execution status. Through this part, depictions about the product environment setup that represented utilizing the route chart and database usage about the information stacking procedure and test of database access will appear. Other than that, the product design administration covers about the setup of the product to satisfy system necessities

In the version control strategy is characterized by a system for controlling and dealing with the source code variant for any upgraded code done to the system and it is additionally same goes for database advancement. At long last, the execution status of the creating system has been completed.

5.2 Software Development Environment Setup

in this step from implementation phase as software development environment setup, to start we had to choose the suitable OS for the system and DBMS that will satisfy our requirements and users' needs we figure out that proper OS is to use Windows 10 Home fast and safe for the DBMS we picked up Oracle 10g, this project is linked to another computer as the client-server network because this a website application ,and it has two layers which are layer one contact with user and user interface , for the other layer is interaction the system with database and what does happen is that is the user will make a process and retrieve the information and manipulate it beside the permission configuration. The software improvement environment setup of GeoMapReport is utilizing a three-level design which comprises of a customer level, center level, and database level. For customer level, the client needs to utilize a web program to get to the framework. At that point, a center level which is application server let the client cooperate with the database server to recover or control the information with it. Each of the levels ought to cooperate in great condition to guarantee the system can run easily. Figure 5.1 shows the three-tier architecture structure.

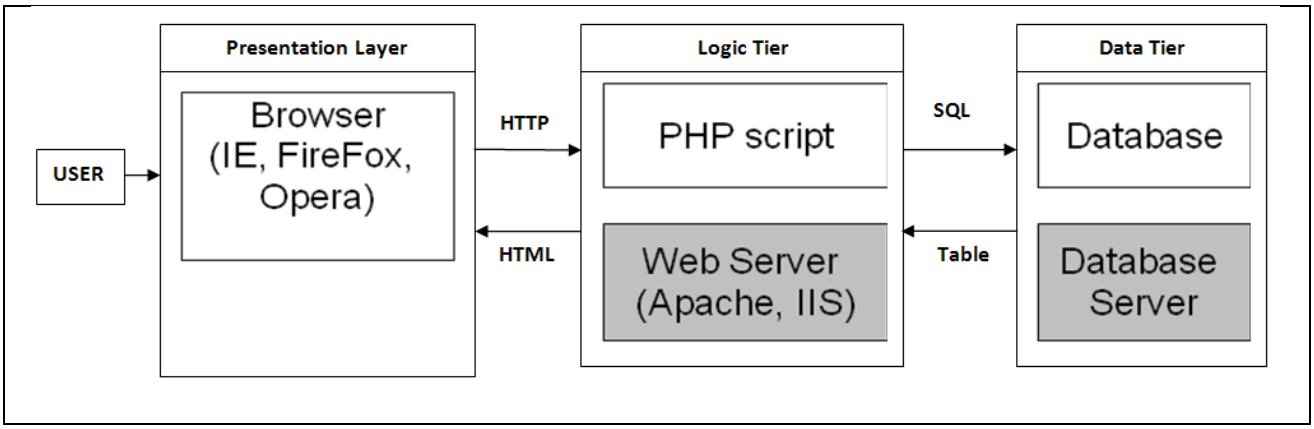


Figure 5.1 Software development environment setup for GeoMapReport

in the processes that happen in client/server counting procedures are separated between the client and the server. This relationship depends on a progression of solicitations and reactions. the customer is any PC on the system that solicitations administrations from another PC on the system (the server PC). The customer ought to have satisfactory authorization. To have the capacity to demand administrations and access the assets present on some other PC on the system. For this framework, the customer is Subjects, staffs, Neighborhood government overseer (Head of Office) in Government

5.2.1 Software Environment Setup

To start developing GeoMapReport, the developer must set up his computer which has wamp server and it's a window web development environment for Apache already setting up and for that acts as authoring tools for system design. For the database, Oracle 11g are used because it is compatible with Windows operating system besides it SQL Developer software and it's incorporated improvement environment that disentangles the advancement and administration of Prophet Database. The undertaking ought to be situated in the root file which is auto created directly set up wamp server and it will act as a webserver.

5.2.2 Database Environment Setup

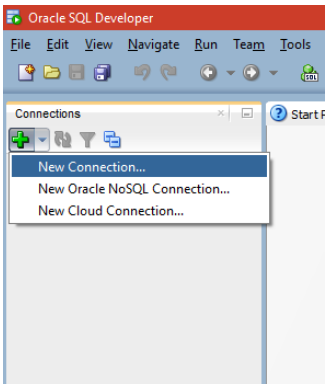
while the DB is being set up, the programmer should configure it to connect to the DB and gave some privileges and DBA permissions to reach the DB.

5.2.2.1 Configure Database Connection

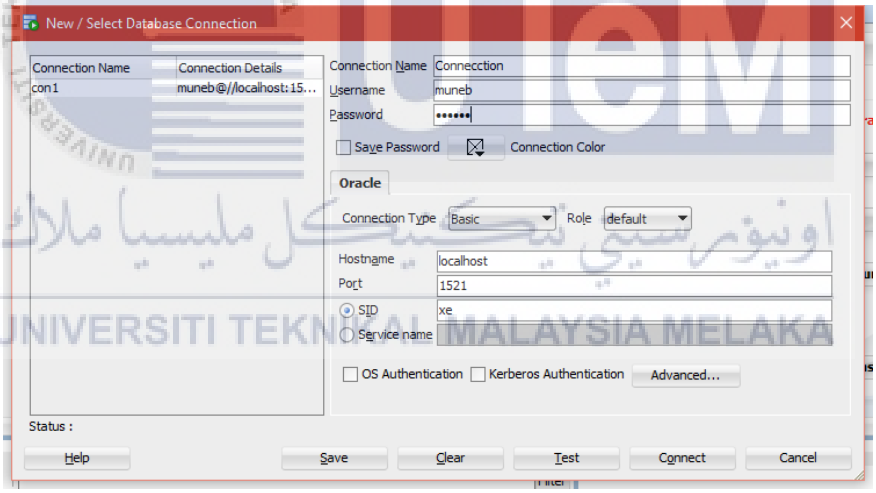
Database connection should be done to ensure the project is connected with database.

Step to create a database connection in Oracle SQL developer: -

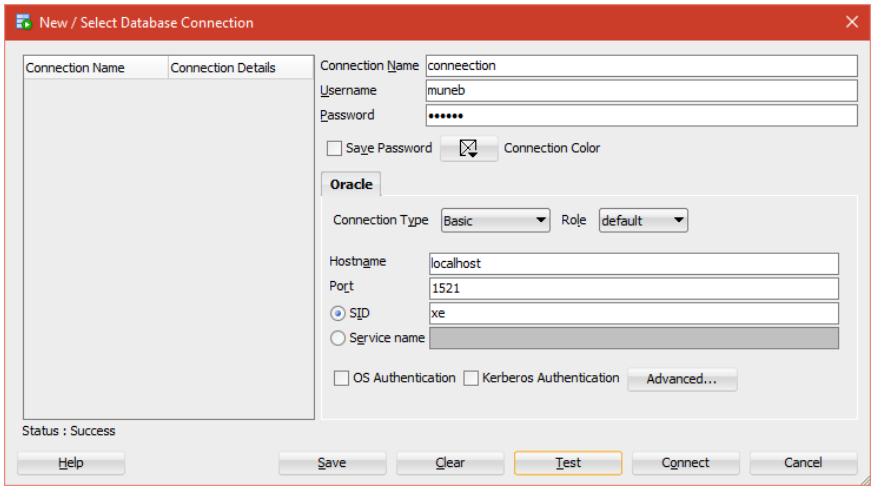
1) In Oracle SQL developer, go to connections and find a Data Connections and click on new connection.



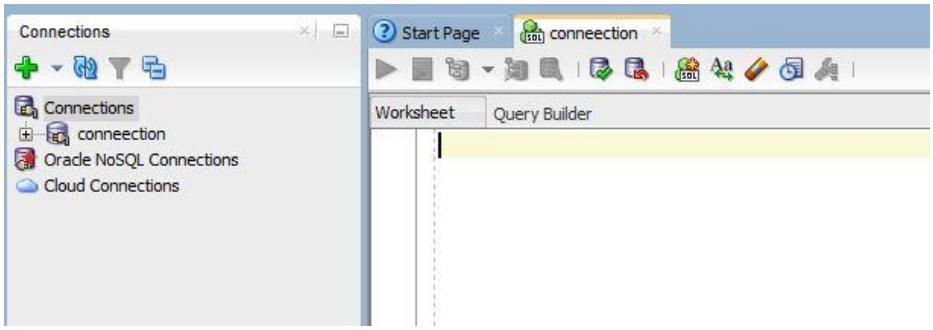
2) Fill the fields by connection name and database username and password than Hostname with port number and the SID.



3) Click Test Connection and then press connect.



4) Finally, click OK and database connection had been created successfully.



5.3 Database Implementation

Database implementation will cover about the database accessing using SQL query through the development of GeoMapReport. There are a few codes should be used to access the data from database that shown in Figure 5.2 until Figure 5.4.

i. Select Statement

This query is to show all data in Issues table

```
Select * from issue;
```

Figure 5.2: Select Statement.

ii. Where clause

This query is to show ISSUE_ID, title of issue, Category id and Description For Issues with Priority Normal.

```
Select  issue_id ,title ,category_id, description  from issue where priority
=”Normal”;
```

Figure 5.3: WHERE clause.

i. **ORDER BY clause**

- This query is to show title of book from BookTitle table and the output will be sorted based on book category.

```
1- SELECT i.issue_id, i.TITLE, i.location, i.DESCRIPTION, i.COMPLAINTDATE,
2- i.STATUS,
3- i.PRIOITY,
4- c.category_name,
5- i.lat,
6- i.lng
7- from  issue i, citizen z , category c
8- WHERE
9- i.citizen_id = z.citizen_id and i.category_id = c.category_id  order by
   i.COMPLAINTDATE;
```

Figure 5.4 order by clause

ii. Aggregation Clause

```
- select count(i.CITIZEN_ID)numbers,c.firstname ||' '|| c.LASTNAME as
  name
- from ISSUE i,CITIZEN c
- where
-    c.CITIZEN_ID = i.CITIZEN_ID      AND
-    i.COMPLAINTDATE  >= TO_DATE(2016/07/01, 'yyyy/mm/dd') AND
-    i.COMPLAINTDATE  <= TO_DATE(2016/07/31, 'yyyy/mm/dd') AND
-    rownum <= 6
-     GROUP by c.firstname,c.LASTNAME ;
```

Figure 5.5 Aggregation clause

5.3.2 implementation of stored procedures and triggers

- **Stored procedures**

i) Stored procedure for insert

```
- CREATE OR REPLACE PROCEDURE INSERTstatus (
- p_status_name IN STATUS.STATUS_NAME%TYPE,
- p_issue_id IN STATUS.ISSUE_ID%TYPE,
- p_reason  IN  STATUS.REASON%TYPE )
- IS
- BEGIN
- INSERT INTO status (STATUS_NAME,ISSUE_ID,reason)
- VALUES (p_status_name, p_issue_id, p_reason);
- COMMIT;
- END;
- /
```

Figure 5.6 Stored procedure for insert

ii) Stored procedure for update

```
- CREATE OR REPLACE PROCEDURE UPDATEstaff (
- p_staff_id IN STAFF.STAFF_ID%type,
- p_s_firstname IN STAFF.S_FIRSTNAME%TYPE,
- p_s_lastName IN STAFF.S_LASTNAME%TYPE,
- p_s_phoneno IN STAFF.S_PHONENO%TYPE,
- P_s_email  IN  STAFF.S_EMAIL%TYPE,
- P_password IN STAFF.PASSWORD%TYPE,
- p_dept_id IN STAFF.DEPT_ID%TYPE,
- p_position IN STAFF.POSITION%TYPE
- )
- IS
- BEGIN
- UPDATE staff SET S_FIRSTNAME=p_s_firstname,
- S_LASTNAME=p_s_lastName,
- S_PHONENO=p_s_phoneno,
- S_EMAIL=P_s_email,
- PASSWORD=P_password,
- DEPT_ID = p_dept_id,
- POSITION=p_position
- WHERE STAFF_ID = p_staff_id;
- COMMIT;
- END;
- /
```

Figure 5.7 Stored procedure for update

iii) Stored procedure for delete

```
- CREATE OR REPLACE PROCEDURE DELETEcitizen (
- P_IC IN citizen.ic%TYPE,)
- IS
- BEGIN
- DELETE FROM citizen WHERE ic=P_IC;
- END;
- /
```

Figure 5.8 Stored procedure for delete

- **Triggers**

i) Trigger before insert

```
- create or replace trigger staffID_trig
- before insert on staff
- for each row
- declare
- pk_staff varchar2(8);
- begin
- if (:new.staff_id is null)then
- select stafID_seq.nextval
- into (pk_staff)
- from dual;
- end if;
- if pk_staff < 10 then :new.staff_id := 'STA'||'00'||pk_staff;
- elsif pk_staff < 100 then :new.staff_id := 'STA'||'0'||pk_staff;
- elsif pk_staff < 1000 then :new.staff_id := 'STA'||pk_staff;
- end if;
- end;
- /
```

Figure 5.9 Trigger before insert

ii) Trigger after insert

```
- create or replace trigger backup_citizen
- after insert on citizen
- for each row
- begin
- insert into citizen_bk values(
- :new.CITIZEN_ID,
- :new.firstName ,
- :new.lastName ,
- :new.email ,
- :new.ic ,
- :new.phoneNo);
- END  backup_citizen;
- /
```

Figure 5.10 Trigger after insert

iii) Trigger after update

```
- create or replace trigger updatebackup_citizen
- after update on citizen
- for each row
- begin
- delete from citizen_bk where citizen_id=:old.citizen_id;
- insert into citizen_bk values(
- :new.CITIZEN_ID,
- :new.firstName ,
- :new.lastName ,
- :new.email ,
- :new.ic ,
- :new.phoneNo);
- end updatebackup_citizen;
- /
```

Figure 5.11 Trigger after update

iv) Trigger before insert

```
- create or replace trigger ststusID_trg
- before insert on status
- for each row
- declare
- pk_stats varchar2(8);
- begin
- if (:new.status_id is null)then
- select staus_seq.nextval
- into (pk_stats)
- from dual;
- end if;
- if pk_stats < 10 then :new.status_id := 'STA'||'00'||pk_stats;
- elsif pk_stats < 100 then :new.status_id := 'STA'||'0'||pk_stats;
- elsif pk_stats < 1000 then :new.status_id := 'STA'||pk_stats;
- end if;
- end;
- /
```

Figure 5.12 Trigger before insert

v) Trigger after delete

```
- create or replace trigger Deletebackup_citizen
- after delete on citizen
- for each row
- begin
- delete from citizen_bk where citizen_id=:old.citizen_id;
- end Deletebackup_citizen;
- /
```

Figure 5.9 Trigger after update

5.4 Conclusion

In conclusion, it’s very important is to implement all phases. Meanwhile, in this phase, it discussed the implementation of the project it includes project developing and environment set up, DB implementation and software configuration management. For instance, in programming improvement setup that included the way toward making a database association, there is no real way to skip or retry one of those strides. Yet, in the event that one or more strides are skipped, subsequently, the database is not effectively associated. This will bring about collect challenges when utilizing the database. Some more, the database won't keep running in a legitimately way. The database access is incorporated into database usage stage. It is utilized to clarify how and where questions are utilized and yield of each inquiry, the execution status portrays the advancement of the undertaking improvement. All these can give engineer clear vision about their system keeping in mind the end goal to satisfy system necessity to meets client fulfillment while utilizing it.

CHAPTER VI

TESTING

6.1 Introduction

Testing is the last stage in this anticipates improvement cycle. It is key to performing programming testing so as to accept and confirm the product. The object is to survey the capacity of a technique and settling on a decision on that it meets the whole essentials. The justification of testing is to search out any bugs of the procedure and the designer can troubleshoot it. In light of the fact that this methodology progress using Prototyping mannequin, the looking at stage will likewise be executed for every whole system module.

An extra part of the arrangement to be examined in this section is test arrangement which is spreads about test foundation, test environment, and sweep plan. At that point filter, the methodology will cover about courses of checks. For output outline, it comprises of trial depiction and sweeps information. Last however now not minimum, the investigation results and examination regardless of whether the procedure output is the successor fizzled and the delight of the individual while utilizing this methodology will probably be connected

6.2 Test Plan

The test plan is about how one can plan the experiment. It's described on three essential

matters. First is ready who will likely be involved in the experiment, 2nd is about what atmosphere will have to be setup with a purpose to participate in the experiment and the scan in regards to the period of time to execute the test.

6.2.1 Test Organization

A test group is a group of humans that their mission is to do the checking out events for the period of the checking out approach. They came from quite a lot of background, Attributes, and know-how science expertise to supply one-of-a-kind thought that will be useful information for method testing result. The important information requires method force, weak spot, constraint, and entry for one-of-a-kind stage for the system admin (Project Supervisor) and users (Citizens/staffs). The system will be tested by System programmer, system Supervisor and Citizens with staffs.

Table 6.1: List of the user and their responsibility of test organization

Tester ID	Title/Post	Responsibilities
Tester 1	System Developer	Involve in developing, documenting, managing and testing the system. System Developer ensures that the system will run smoothly based on requirement before delivered to the end user.
Tester 2	Project Supervisor	Act as an end user for GeoMapReport system as administrator of the system. Test the system module and give their feedback. Their feedback can be as guide to enhance the system
Tester 3	Citizens/Staffs	Act as an end user for students/staff that making the book process. Test the system module and give their feedback. Their feedback can be as a guide to enhance the system.

6.2.2 Test Environment

To have the ability to put in execute testing, right innovations that met nature are required. An experimenting with an environment is a setup of programming and equipment on which Testing staff is going to play out the experimenting with on GeoMapReport system. It's made from every one of the stipulations, examples, and impacts encompassing and influencing the experimenting with of programming. The climate incorporates the organization's approaches, test systems, test apparatuses, the strategy for setting up and bettering test techniques on a par with any test labs created for the reason of experimenting with programming and more than one

running situations

The opposite environments that regarded to make use of and will probably be discussed in this section are an application, process application, and system hardware. That is to figure out whether GeoMapReport will also be adaptable to run on a further platform of hardware and software.

6.2.2.1 Environment Setup

The configuration manager is to Environment setup the program for the GeoMapReport to ensure the system can run efficaciously. Environment setup is to design and deal with the stage for the GeoMapReport to guarantee the framework can run solidly.

Table 6.2 shows the application workspace for GeoMapReport

Table 6.2: Environment Setup Specification

Environment Specification	Description
Operating System	Windows 10 Home
Processor	Intel Core i5 2.40 GHz
Random Access Memory (RAM)	4.00 GB
Database	Oracle 11g

6.2.2.2 Software Application

Application utility describes the entire contents or utility inside the GeoMapReport. Table 6.3 shows all the application which is applicable in this system.

Table 6.3GeoMapReport application environment

System application	1. System Login 2. Add, update, delete and search for each module 3. Online Reporting 4. Issue Status Report 5. Overdue Report

6.2.2.3 System Software

System programming comprises of devices that have been actualized in the GeoMapReport
Table 6.4 shows all the software that involved in this system development.

Table 6.4: System software1

System Software	1. Windows 10 Home 2. Oracle 11g 3. Wampserver 4. SQL Developer 5. Sublime Text 3

6.2.2.4 System Hardware

Will system equipment be the equipment that is used in this System improvement.

Table 6.5: System hardware tools

System Hardware
1. Personal computer with hard disk, RAM, Processor, monitor and keyboard installed on it.

.

6.2.3 Test Schedule

this is integral to a reason to satisfy the necessity For test schedule. The test plan intention is to characterize when and through whom experimenting with changes will most likely be performed. The mastery assembled for the physical make-up of the test arrangement is utilized as a part of a mix with the conceivable asset pool to inspect the analysis motivation. The plan will give a model to the designer to do the experimenting with on certain time precisely along the length of test improvement. The point of confinement, a cycle will be distributed in a system with how principal and what advantage for every last module trying to be appeared.

Table 6.6: Test schedule for GeoMapReport

Module/Component	Activity	Duration
System Login	Test system integration, testing and user recognition	5 day/10 times
Issue submitting	Test system integration, testing and user recognition	10/30 times
Issue report	Test system integration, testing and user recognition	10/30 times
Issue Analysis	Test system integration, testing and user recognition	7 day/ 45 times
Searching	Test system integration, testing and user recognition	3 days/10 times
Admin/Staff side	Test system integration, testing and user recognition	3 days/10 times

6.3 Test Strategy

Test methodology perceives the general way to deal with testing, perceive what levels of testing to be utilized and the procedures, strategies, and devices to be utilized. Test methodology is finished by developing the nature of test in a given time limitation and to guarantee that the test incorporates all module and can perceive the mistake by the best possible test strategy.

Making process is the amazingly profitable thing in this anticipate. Because of this, a discovery testing has been picked because of the capacity of this kind of methodology that can find the blunder of the usefulness of the undertaking of the underlying state. Sooner than trial cases and sweep methods created to analyze a system , general investigation, and examination technique will be characterized. The reason for existing is to get accord intentionally and goals from partners (designer, analyzers and end clients). This is essential to oversee desires from the earliest starting point to ensure that the engineer is doing the precise thing for their system improvement. There are two arrangements of test techniques which are:

i. **Black-Box Testing**

This testing system sees at what are the likely inputs for an application and what the gathered returns are that ought to show up from every info. This testing strategy is reasonable for the end client that is a director (Head of Division) ,staff and citizens were both utilized the system with collaboration among them and system GUI. it's not essential to tell them what is happening inside the framework capacities to prepare the info and yield.

ii. **White-Box Testing**

This testing approach looks underneath the spreads and into the subsystem of an application. This Testing approach is good for procedure Engineer since they can see what inside the product of the framework is happen when they utilized the framework. This will help them to settle the system for any bugs happened.

Also that, the Top-down process of the test also has been selecting as the project has been developed by means of dividing the module that can be carried out independently (most of the module). This is when you consider that, with the aid of this test strategy, all the module and sub-module will also be experiment concurrently after the code is been written up.

6.3.1 Classes of Test

Types of test are separation into security testing, error handling of, yield accuracy test and client acknowledgment test.

i. Security Test

Quality, dependability and security of the methodology are verging on adjusted for the most part. With the dynamic advance and force of the security, framework security issues are turning out to be significantly more serious. The reason for insurance experimenting with is to set up any defects that will prompt the security infringement and to see any powerlessness risk to the system

ii. Error Handling

The possibility of mistake handle of test is to make the system recognize and handle just the right inputs for that it's appearing for message for any wrong information contribution from the client additionally to guarantee the client comprehend what is the wrong info he has entered or the missed required field

iii. Output Correctness Test

This test is designed by walking into the appropriate specification. It is often possible to make the order of the events correspond to the series of statements in the specification for the part under test.

iv. User Acceptance Test

The aim is to ensure the system is user-friendly to the user of the system that is an administrator, staff, and city citizens. The graphical user interface must be suitable to the user since there will be variety of IT knowledge level amongst them

6.4 Test Design

Test design will cover on two things. the first one is about test description and the second is about test data. Test description includes the activities that needed and it is will be documented for identifying the best data process. It will define the test cases and suspected the result, until, for test data, it will cover about user acceptance. Both of these things are determined by the situation that explains in the Data Flow Diagram.

6.4.1 Test Description

Test description includes the designed and documented that applied to establish the test case and expected the effect. A test case is a documented set of the information input and running condition required to run an experiment item for the predictable influence Table 6.7 to Table 6.10 shows the test cases and expected the result for each one of the system modules/components.

Table 6.7: Login Module

Test case ID	Description	Excepted output	Actual Result
Test_GMR_101	Invalid User email/ Invalid Password	'Invalid email or Password' the message will appear	OK
Test_GMR_102	User email blank/ Password blank	'Fields are required' the message will appear	OK
Test_GMR_103	Availed User email and password	A value is required' the message will appear	OK

Table 6.8: Issue Submitting Module

Test case ID	Description	Excepted output	Actual Result
Test_GMR_201	All fields blank	'field x is required' the message will appear for each field.	OK
Test_GMR_203	All fields with Valid input	Successfully Submit the information of Issue	OK

Table 6.9: Issue Analysis Module

Test case ID	Description	Excepted output	Actual Result
Test_GMR_301	Valid input at the Date range	Successfully view the Analysis of Issue	OK

.

Table 6.10: Admin side Module (add data of staff)

Test case ID	Description	Excepted output	Actual Result
Test_GMR_401	All fields blank	'A value is required' the message will appear for each field.	OK
Test_GMR_402	Valid input at the field	Data is added into the database	OK

6.4.2 Test Data

test a software is having a purpose, some information is coming into to trying out lots of the aspects. a notably identified information that is utilized in the test is often called scan knowledge. Some test data is used to verify the anticipated effect suggestive of to declare program conduct to invalid input knowledge.

Table 6.11: Test Data for Login

Column	**TD_GMR_101**	**TD_ GMR _102**	**TD_ GMR _13**
Test Case ID	**Test_ GMR _101**	**Test_ GMR _102**	**Test_ GMR _103**
User Email	Muneb@yahoo.com		Muneby@gmail.com
Password	12345678		2425236
Result	Login failed. User Email and Password do not match with database	Login failed. User Email and Password is required to access the system.	User login successfully.

Table 6.12: Test Data for Issue *S*ubmitting

Column	**TD_GMR_201**	**TD_ GMR _202**
Test Case ID	**Test_ GMR _201**	**Test_ GMR _202**
Title		broken signs
Category		Urban planning
Description		someone broke the ads signs in the main road, find who did that .
Address		Jalan Kolej Yayasan Saad Melaka Malaysia
Image	No image	There is image
Result	‘field x is required’	Submitting successful.

Table 6.13: Test Data for Issue Analysis

Column	**TD_GMR_301**
Test Case ID	**Test_ GMR _301**
Date range	1/07/2016 – 31/07/2016
Result	All Report analysis of issues will display

Table 6.14 Admin side Module (add data of staff)

Column	**TD_GMR_401**	**TD_ GMR _402**
Test Case ID	**Test_ GMR _401**	**Test_ GMR _402**
First Name		Ammar
Last Name		Abdullah
Phone no		0167832838
Email		ammar@gmail.com
Result	'field x is required'	Adding successful.

6.5 Test Result and Analysis

GeoMapReport test result and assessment are the inputs to test the system and the anticipated yields from these inputs if the system works totally. The achievement and the disappointment when making utilization of the accurate data for testing will likewise be an

appropriate part to gauge the system regardless of whether the technique can work solidly or cravings to be consistent for resulting testing aside from the shopper persuaded with the system.

Module/Component: Login		**Result**		
Test Case ID	**Test Data ID**	**Description**	**OK**	**Failed**
Test_GMR_101	TD_GMR_101	User ID and Password not exist	√	
Test_GMR_102	TD_GMR_102	User ID and Password field blank.	√	
Test_GMR_103	TD_GMR_102	Valid User ID and Password.	√	

Module/Component: Issue Submitting		**Result**		
Test Case ID	**Test Data ID**	**Description**	**OK**	**Failed**
Test_GMR_201	TD_GMR_201	Title of issue does not exist	√	
Test_GMR_202	TD_GMR_202	Valid word of title	√	

Module/Component: Issue Submitting		**Result**		
Test Case ID	**Test Data ID**	**Description**	**OK**	**Failed**
Test_GMR_201	TD_GMR_201	Title of issue does not exist	√	
Test_GMR_202	TD_GMR_202	Valid word of title	√	

Module/Component: Issue Analysis		Result		
Test Case ID	**Test Data ID**	**Description**	**OK**	**Failed**
Test_GMR_301	TD_GMR_301	Valid Date range	√	

Module/Component: Admin side		Result		
Test Case ID	**Test Data ID**	**Description**	**OK**	**Failed**
Test_GMR_401	TD_GMR_401	email of issue does not exist	√	
Test_GMR_402	TD_GMR_402	Valid email	√	

6.6 Conclusion

Meanwhile, in this chapter has discussed on how the testing phase has been completed in this project. It included from the planning until the result of the test. The used of the test is to discover the errors and malfunction that happened in this project. Everything starting from the result and description of the test has been discovered and documented as a proof of the exactness during developing this project. The test will ensure the quality of the product of the system. Although, user approval test also ensures that the system is developed according to user requirement. Like this type of system develops to create a better UI and easy system.

The following Chapter VII it will cover last phase of GeoMapReport

CHAPTER VII

CONCLUSION

7.1 Observation on Weaknesses and Strengths

GeoMapReport system is effectively created by utilizing PHP and Database Oracle 11g to store database. It is an online system that contains highlights controlling and dealing with the City council process. From the keep, an eye on the system, City committee simple to deal with the information of the Issues by utilizing the electronic system. A shortcoming, and quality of this system have been recognized. In the other hand, The information put away in a database open to oversee, get to and oversee. They can use the system to make the reporting besides the analysis and Citizens also can make a complaint of an issue. The City council also can check the issue data and update it.

The system also creates Issue status report where the administrator can update the information on the issue simply. Besides that, the administrator also can see the statistic of how many issues of each Category. However, GeoMapReport still has some weaknesses in it. The most viable weakness of this system is the data of the issues location will be not that accurate During the reporting process when the user enters the address via Google maps API it will give him the full address but is not that accurate to the correct point that is an issue happened. Beside that the images need to through over a process while uploading to the database to decrease the size and scaling the resolution to makes the images unified with size and easy to browse and better performance.

7.2 Propositions for Improvement

The system needs to improve for better performance. Firstly, the location of an issue needs to be more accurate by using GPS coordinate rather than address coordinate over more it needs to have a mobile app to facilitate to take pictures directly It can make the user easier in order to make a compliment. While the need to send notifications the user using his email to keep up to date with his compliment, this is web application project hence the security of the system

must be always in the upper level to prevent hackers. The password of the system needs to set in a specific format.

7.3 Contribution

It has been developed The system to contributed to the city council as their source in the term to develop and make an improvement to this project. This system gave a hand to the local citizens to make compliments 24/7 in anytime. This system also helps The departments to update the data on the issue with a view the who made it make a better solution in a fast way and better way.

7.4 Conclusion

Lastly to conclude this chapter, the system did and covered and the objective, scope but still need a many more of improvement to accomplish the missions. to make the GeoMapReport really a system that can be utilized by way of all degree of the user and meets the target appropriately. GeoMapReport will support every now and then to satisfy the business requirement and comply with the growth of science.

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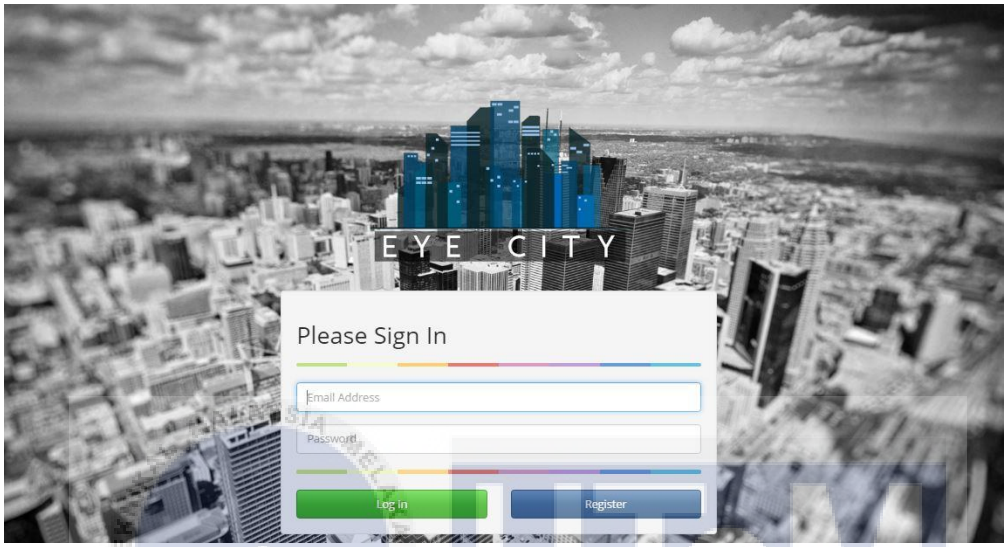
APPENDIX A

(User Manual)

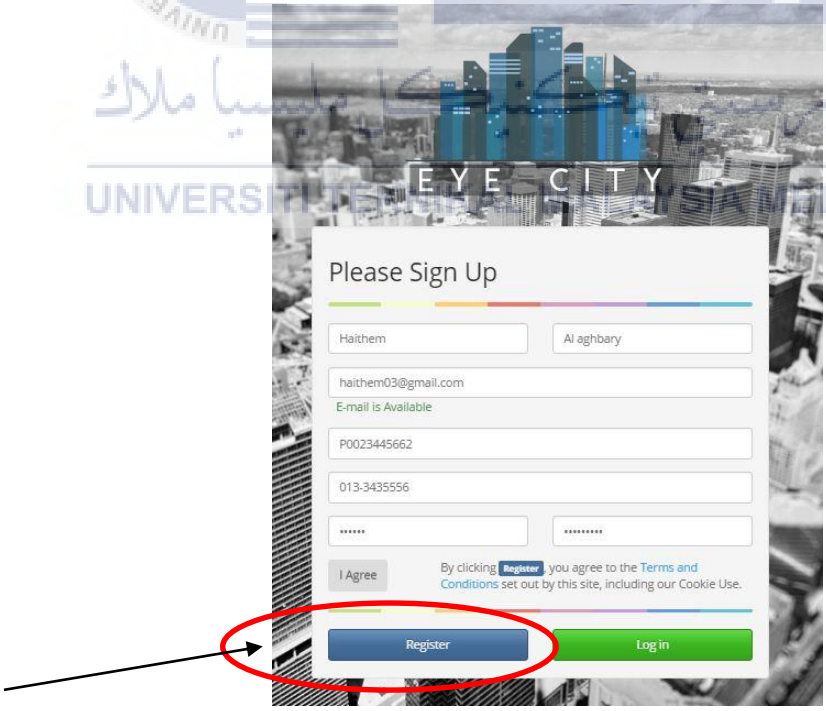
User Manual for GeoMapReport for Citizen:

1. Home Page it's login page

   Use the email and password to login and if you don't have click register.



2. Fill the fields and it's all required then click on register

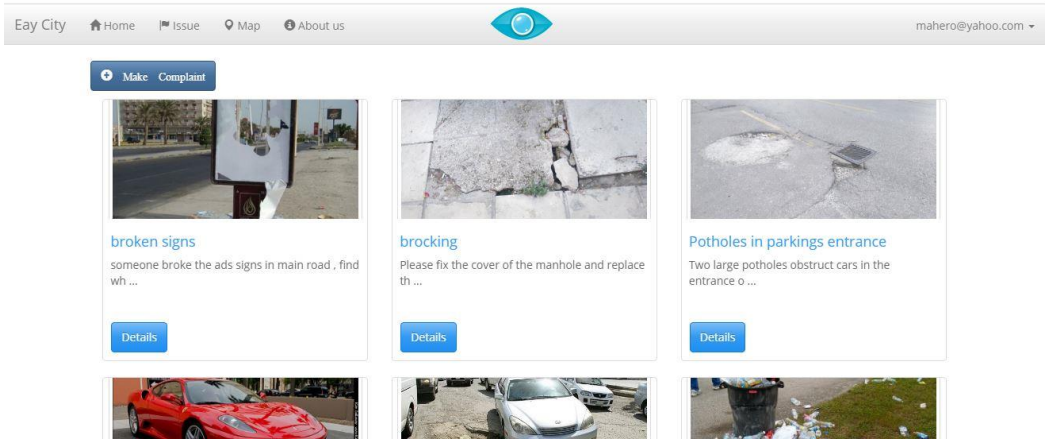


3. After that try to login using the info that used in registered before

4. Main page for Citizens users

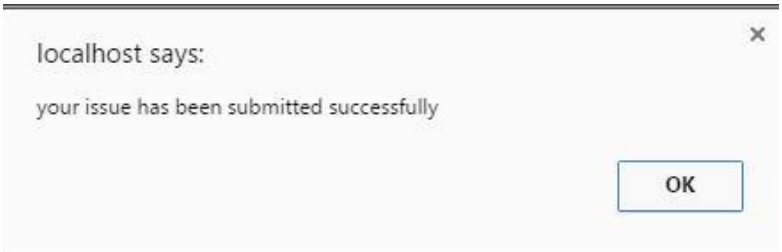
Click on issue to start make Complaint

5. Issues page that shows others citizens issue and to make one



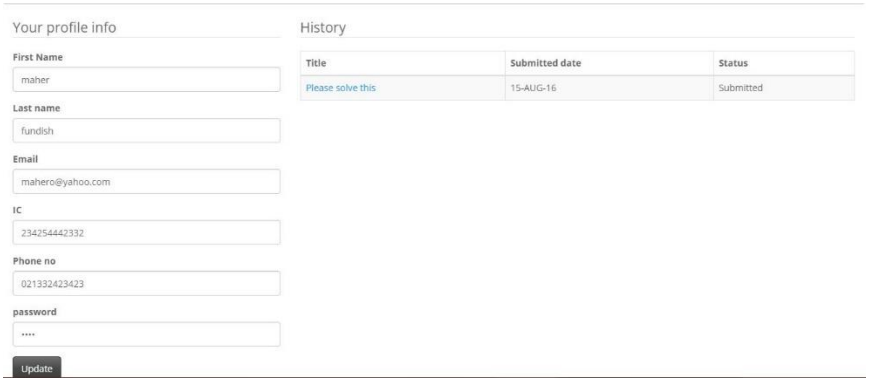
6. Filling all the fields with correct information and choosing an image click on submit

7. Successful massage will appear

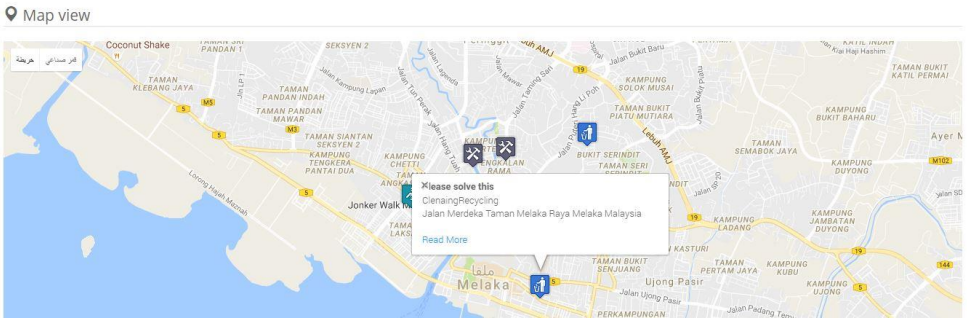


8. Issue detail Page

9. User profile page

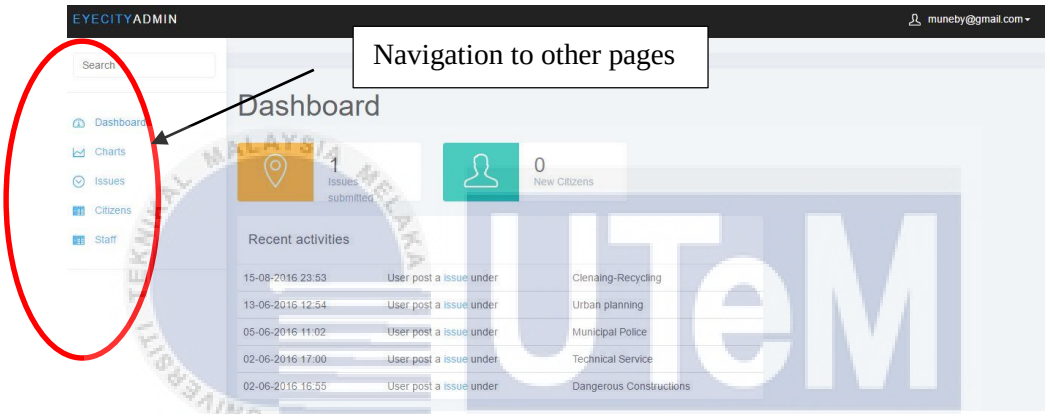


10. Issue Map view

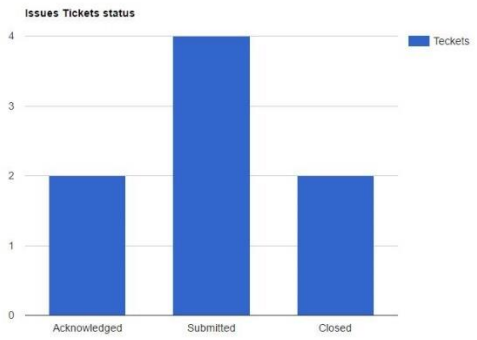


User manual for City Council Admin:

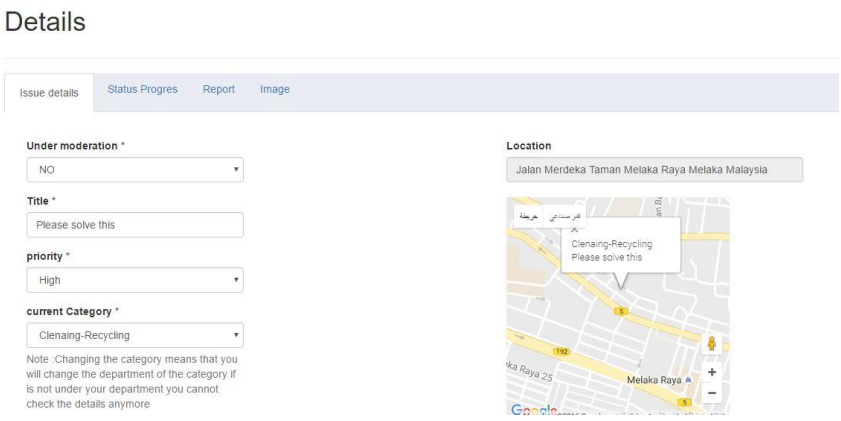
1. Main page for Admin and dashboard



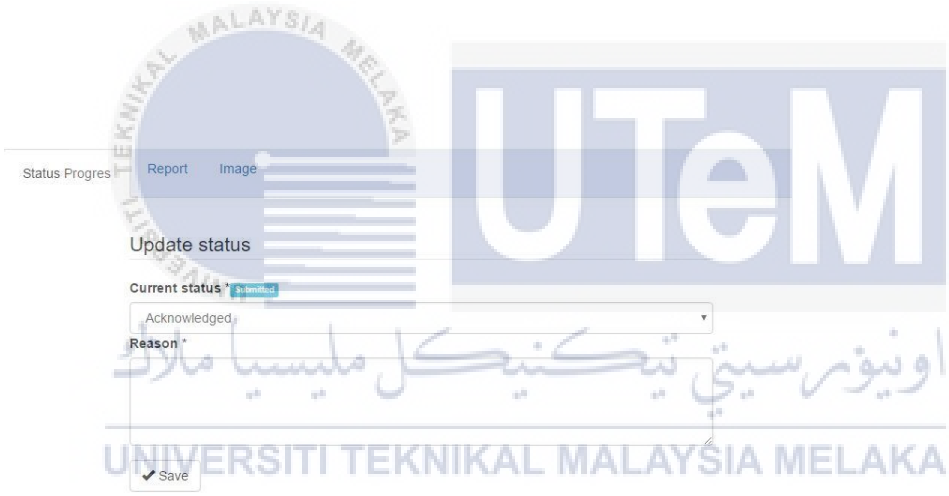
2. Ticket system page



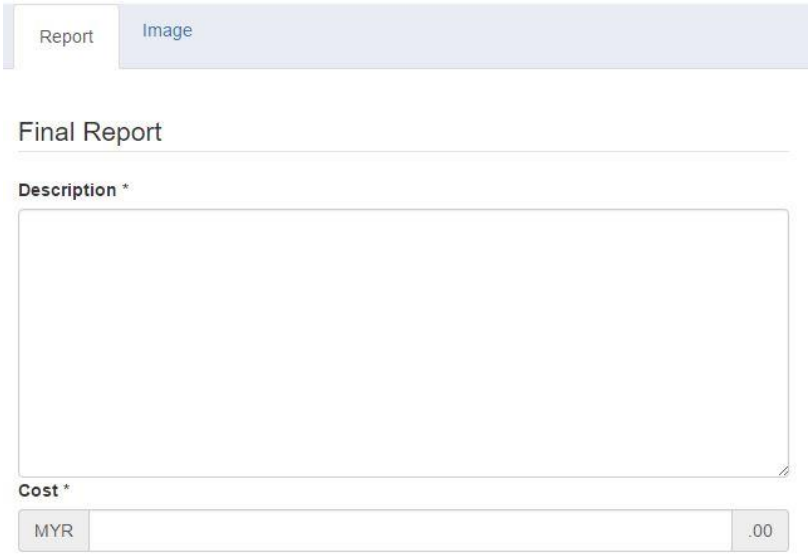
3. Issue details page



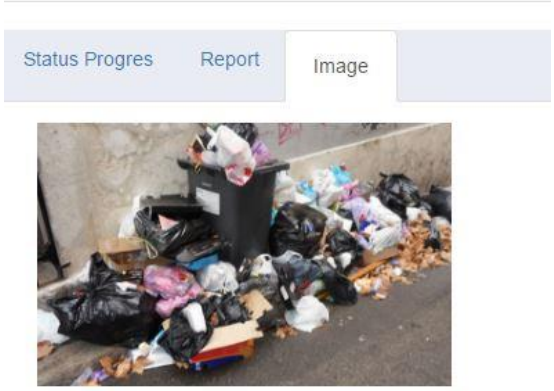
4. Issue statues report page

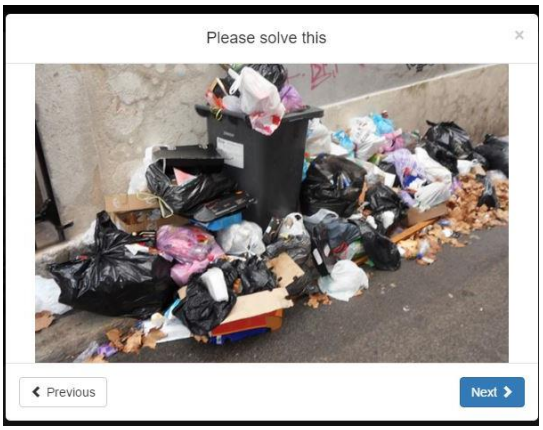


5. Issue Report page

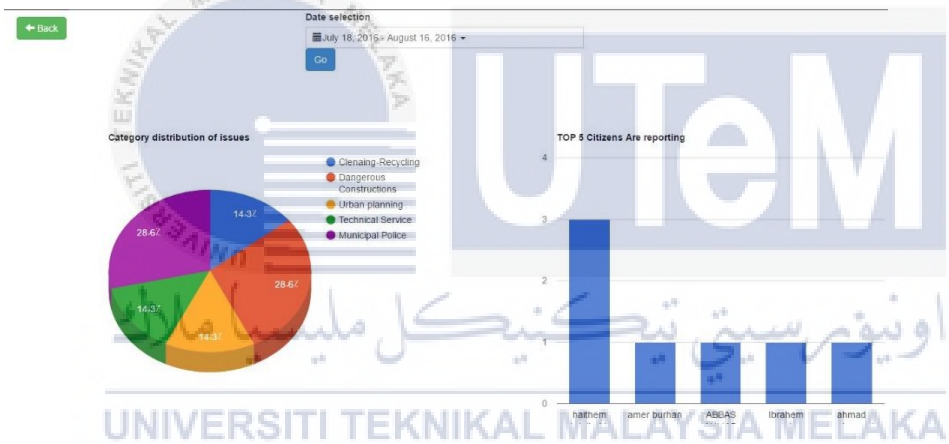


6. Issue image Gallery





7. Issue Analyses page



8. Citizen information mange page