

Ensuring Environment Sustainability in Sri Lanka

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ABSTRACT

Today, pollution is occurring on enormous and distinctive scale all around the globe. Today's pollution is plenary related to all the sectors as human and animal populations including life-styles, economic production, modern technology, cultivations and many other factors. Environment pollution is a wide expanded problem and it is likely to influence the health of human population as well. Human activities directly or indirectly affect the environment adversely. Domestic sewage and run off from agricultural fields, laden with pesticides and fertilizers, pollute water bodies. These are only a few examples which show how human activities pollute the environment. The most suitable solution for this pollution is a website which contributing knowledge for stop the pollution. The main reason for this is today, the new generation searching better ways to solve the droughts is the Internet. The people could easily encourage to stop the pollution through a website. The new generation used to technology and obey the instructions entangled with technology. Proper design has become a critical element needed to engage website and mobile application users. The design elements mentioned most frequently in the reviewed literature were navigation, graphical representation, organization, content utility, purpose, simplicity, and readability.

Keyword: *Environment pollution, location, research, solution,*

1. INTRODUCTION

Ensuring Environment Sustainability is one of the major goals of UN Environment, to be fulfilled by the end of 2030 in World [1]. For a magnificent surrounding, the cleanliness of environment is more crucial. Currently, Sri Lanka is facing a major challenge with keeping environmental pollution in check due to various factors. Sri Lankan government having lack of facilities to implement proper waste management processes. Garbage is one of the main problems in Sri Lanka as well as in most of other countries. There are many reasons which effecting for the environment pollution, but human interaction mainly causes for this pollution and there are many ways to minimize the pollution by contributing human presence[2]. In this busy world, people are neglecting to travel everywhere and find the polluted areas to clean because it's wasting time and money. There are many people who would like to join with these community care service, but they couldn't find the exact location and what equipment should choose and bring for this cleaning process. There are some organizations which providing their service to clean these polluted areas like Red Cross Organization. Developmental activities such as construction, transportation and manufacturing not only deplete the natural resources but also produce large amount of wastes that leads to pollution of air, water, soil, and oceans; global warming and acid rains[4]. Untreated or improperly treated waste is a major cause of pollution of rivers and environmental degradation causing ill health and loss of crop productivity[3]. Environmental pollution is one the greatest challenges that the world is facing today. It began since industrial revolution, increasing day by day and causing irreparable damage to Mother Earth. Environmental pollution has its own causes, effects and solutions. Looking into these will help you identify the causes and what steps you can take to mitigate those effects. Broadly, environmental pollution consists of six basic types of pollution, i.e. air, water, land, soil, noise, and light[2].

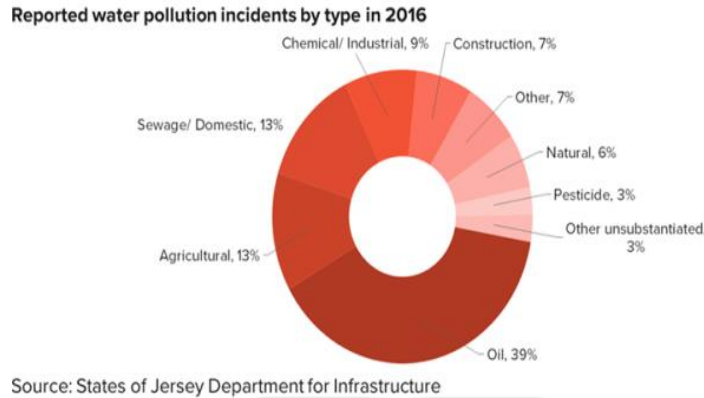


Fig-1: water pollution

In this case, EESSL which stand for “Ensuring Environment Sustainability in Sri Lanka”, provides very valuable service to them and those who like to clean the environment and make the environment impress. With uploading the pictures, the user capable to give the location of polluted area. The special feature of this proposed website is, it provides details about the pollution types, pollution minimizing ways and allow to find the nearest Urban Council contact details to inform the situation. And the unique feature of the website is showing the location of polluted area and user allow to see the photographs of the area and if someone would like to share the current status of polluted area with others, the user can use Facebook and Email. The EESSL is providing more opportunity to the people who would willing to participate on environment cleaning service and for the organizations which traveling all around the Sri Lanka to clean the environment. Due to that the others can view the photographs to realize how many members, what equipment should use to the cleaning process and the location. With help of this, the Facebook users who like to participate for this community service of cleaning, could join by proposed website and make the cleaning process enjoyable. This website giving the best opportunity to the users to join for social works and the organizations to organize the cleaning campaigns and it’s a great opportunity to them to easy organization of these campaigns. By implementing this EESSL, the cleanliness of environment can be enhanced and make peoples’ thoughts and interest to keep the environment clean.

Proposed system will have following features:

- User could search the locations and view the locations
- User could join the ranking system or Reputation point system for more encouragement of social works
- The web site showing nearest Urban Council contact details and user could search for those.
- Environment Polluted area pictures and location can be upload by anyone who logged in to the website.
- Share those uploaded pictures with Facebook and Email. So that others could join for the cleaning processes and they could arrange cleaning camping easily.
- User could add the comments and every user could view those.

2. METHODOLOGY

2.1 Overview to Project

Project plan is a crucial turning point to render a consummate output. With the consolidative unlimited observations and implementations, the final outcome or the end product could be earned successively. With an appropriate plan, there is no harshness to accomplish or reach the intentions and objectives of project during the allocated time period. As the most vital stage artifacts are planning. It should mention when doing a project, planning of artifacts is the blueprint and the whole project depends and develops parallel to that. It’s important to plan the artifacts confidently, so that it gives the ability to maintain a restful onward project.

2.2 Work Breakdown

Tasks of the project that compatible to its work category were separated accordingly to make assistant in better controlling and managing of project. These tasks are visualized to a work breakdown structure to give a clearer

penetrate. According to Project Management advices (2011) it is mentioned that Work Breakdown Structure (WBS) assists to recognize the accurate methods which required to successive completion of project as desired meanwhile WBS contributes vast effective accession to resolve the duration that essential for it. It certifies that, there are no any task is forgotten or left behind. According to WBS, a Gantt chart was made as an aid in regulating the time duration.

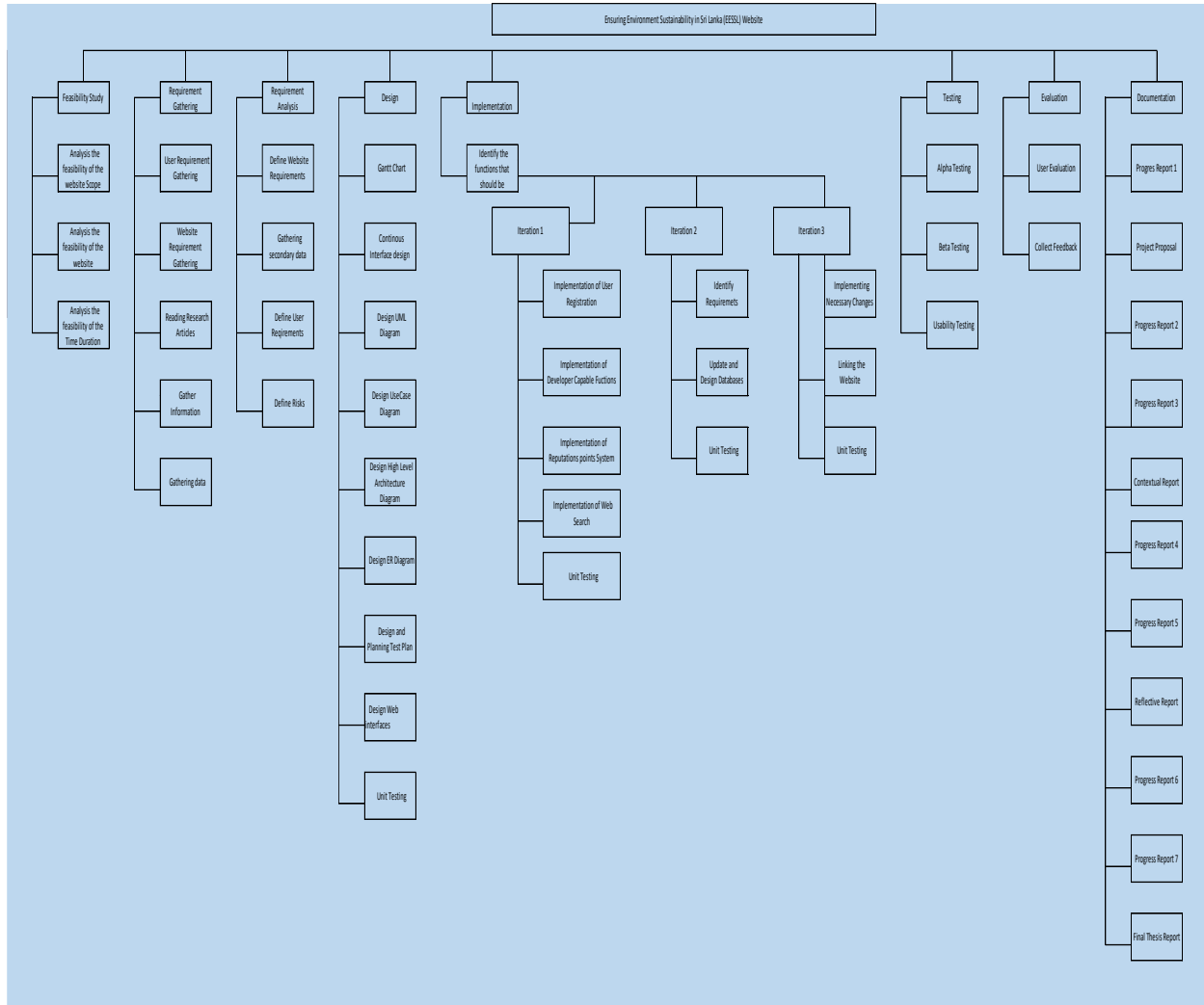


Fig- 2: Work Breakdown structure

The Gantt chart that was with regard to the WBS is given below as the Figure 3. The actual time spent on tasks varied in some instances than what was planned. Therefore the actual Gantt chart is also provided in the as the Figure 4 and an explanation is provided under the Section 3.2 on why this variation occurred.

2.3 Project Gantt chart

The Gantt chart is the most vital lay out to show the systematic and regular working sequence during the allocated time duration. A Gantt chart giving the comfort view to operational tasks and facility to complete the tasks with allowing productive supervisor conversations. The milestones of the Gantt chart are vital tasks to be accomplished during project. Below figures give a concise view to the worth of starting the tasks on date and task end dates of the project. Gantt chart gives summary about development of the project during allocated time.

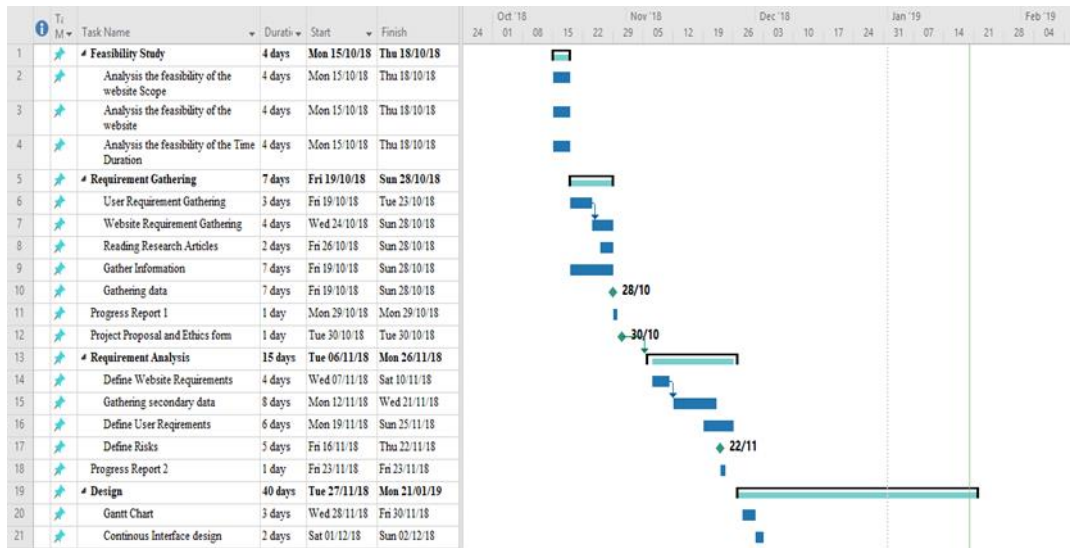


Fig-3: Gantt chart I

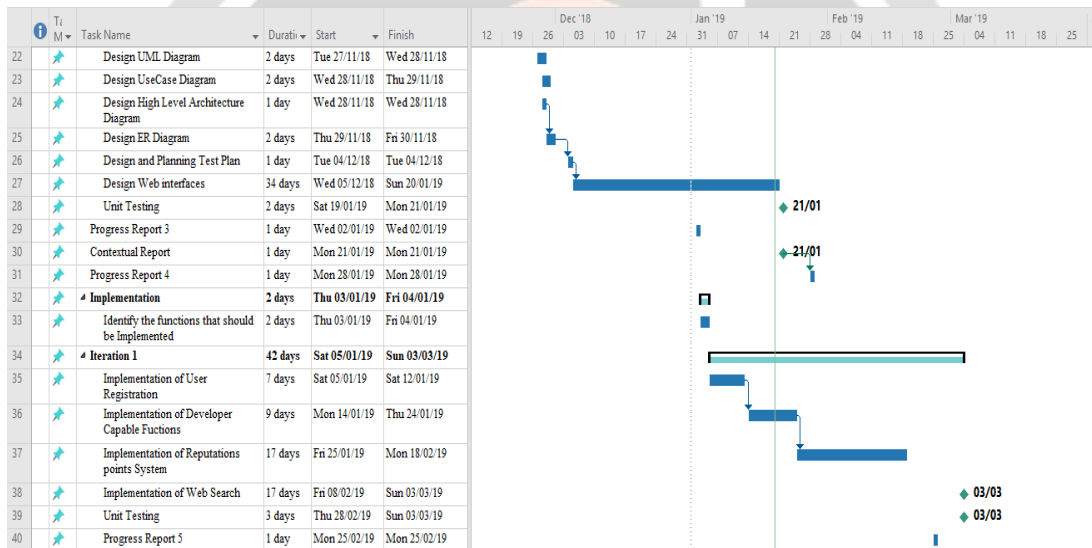


Fig-4: Gantt chart II

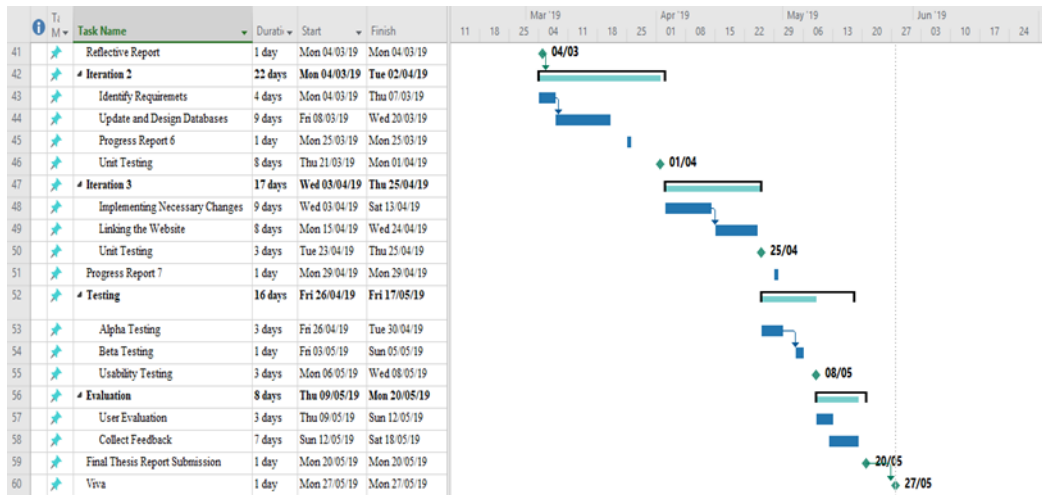


Fig-5: Gantt chart III

2.4 Use Case Diagram

The following figure is the use case diagram according to the project. As in this figure, the main functions associative with this website are adding cases, adding photos, adding pictures and join for Reputation point or ranking system.

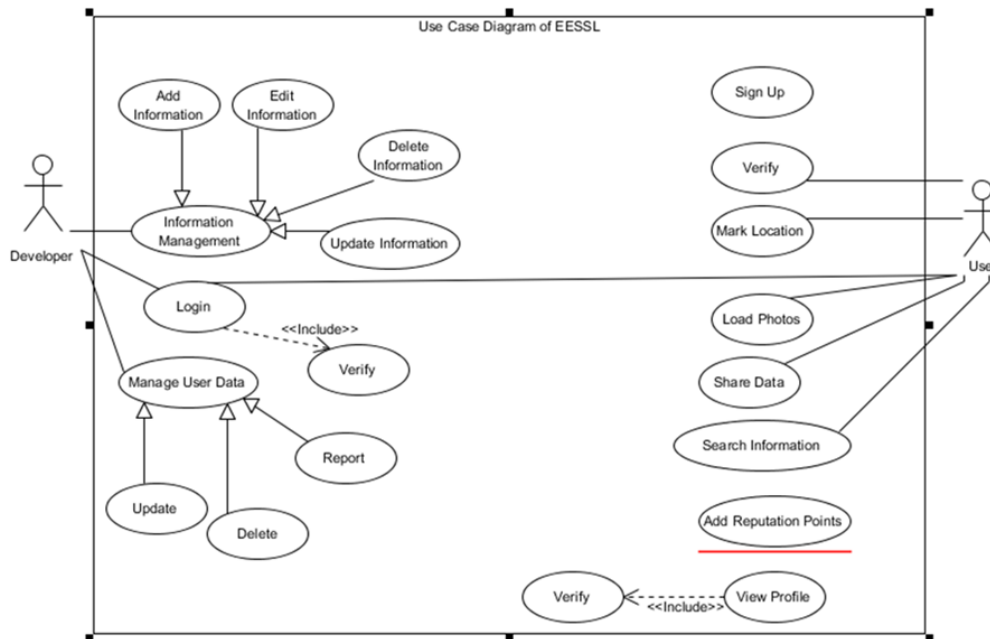


Fig-6: Use case Diagram

2.5 Class diagram

Class diagram which is parallel to present scenario

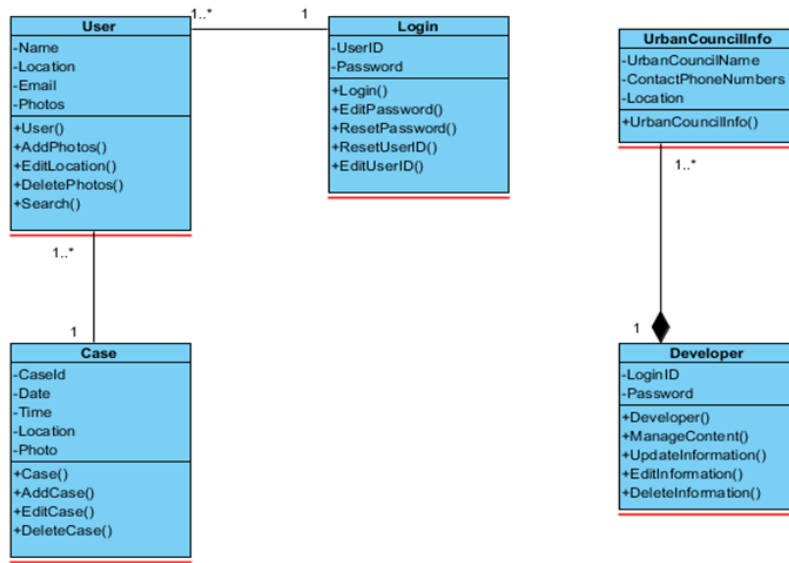


Fig-7: Class diagram

2.6 ER Diagram

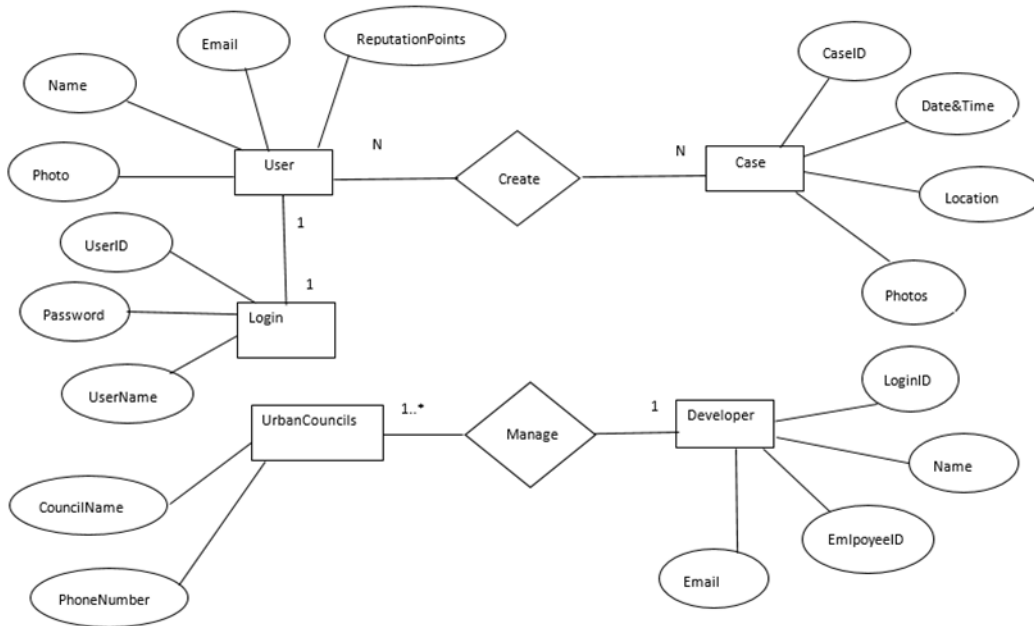


Fig-8: ER Diagram

2.7 High Level Architecture Diagram

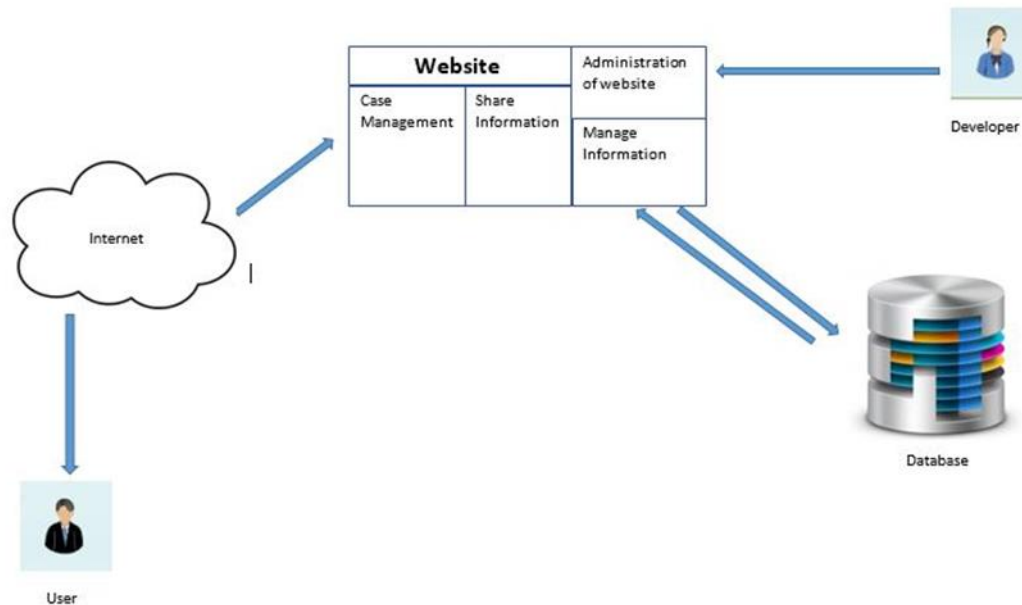


Fig-9: High Level Architecture Diagram

3. DEVELOPMENT

3.1 Technical Concerns

As with knowledge of CSS, HTML and Bootstrap as well as Java Script to the front-end development and java language is suitable for the back-end and development of functions. If it is so, in technological sector of research papers, it mentioned that the website development highly supportive using the PHP language more than Java. Ultimately its assured to development with PHP, which is simple and advanced as well as giving new experience and vast study about using a new language and about the language.

3.2 Used Technologies

For the implementation phase, many technologies were used as well as the software.

- **PHP**

PHP language was chosen to develop the website. PHP is using in most of the times as the scripting language. (W3schools.com, 2018) .It's due to the reason of easy development with HTML and easy and systematical codes. The distinctiveness in PHP is comfortable code segments when developing the system and as much as productive and easy management.

The whole server side of the system is developed using PhP. The most of the characteristics of PHP like handling the forms, work in the manner of CGI processor, the web page inclusions could make and accordance and runs on any Operating System and on any web browser.

- **DreamViwer**

DreamViwer is the IDE that used to for the development of the website. DreamViwer is more comfortable IDE which is contributing auto error recognition facility of the codes. The features like easy navigation for the keywords when coding ,error showing with the code lines and description and debugging while the tests carry on

- **Bootstrap**

It contains HTML as well as CSS and it works as a front-end framework which provides the basic template models or structures for typography, navigation bars in parallel or vertical, buttons, different types of forms, content tables and animations and some other parts by JavaScript plugins. Bootstrap helps to make the web pages of a website could be easy and attractive way.

- **XAMP server & My SQL**

XAMP was the development platform that helped to develop the website. XAMP server contains all requirements for uninterrupted and easy development which were installed to it automatically. All the settings of the server is controlled by WAMP server.

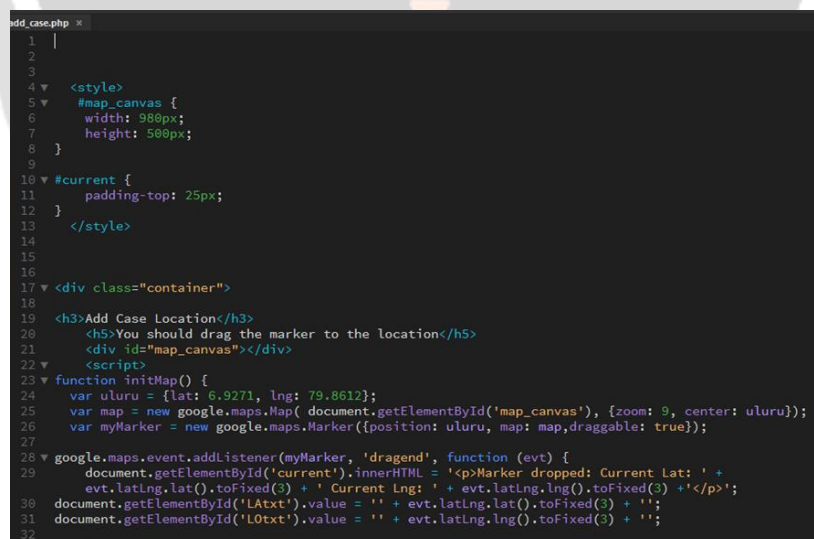
WAMP server controls basically the services like Apache, MySQL as well as MariaDB. Due to that reason MySQL is closed as the database of the website that allows to manage the website through PHP Myadmin software.

3.3 Development Approach

When using codeigniter, “controllers, views and routes” are the main three parts which connected to each other. Views folder represents the interfaces of the project, controllers represent the hierarchy of loading the contents of the project (as an example, loading header loading the content and loading the footer. There after the routes give the paths or what pages should pop up when clicking. Here the code segments of those above mentioned parts.

Even though all the users could visit for website, anyone could access the major functions of after registering and log in to the website. Here it provides the code segments in log in and registering of the system. As the first step, the developer consideration was about the implementation of main functions of the website. Elementary concepts of this phase are marking a location on a Google Map. For expanded and successive development, tutorials were used during entire development. The documentation Google Maps was more helpful to accomplish this desire. There were so many reusable precious helps were provided by tutorials. Here provided the code segment of making the Google Map allowing to see on website.

In here it shows how the Google location tracker takes the user marked location as a longitude and latitude and that mentioned data passes to the database.



```

add_case.php
1 |
2 |
3 |
4 | <style>
5 | #map_canvas {
6 | width: 980px;
7 | height: 580px;
8 | }
9 |
10 | #current {
11 | padding-top: 25px;
12 | }
13 | </style>
14 |
15 |
16 | <div class="container">
17 | <h3>Add Case Location</h3>
18 | <h5>You should drag the marker to the location</h5>
19 | <div id="map_canvas"></div>
20 | <script>
21 | function initMap() {
22 | var uluru = {lat: 6.9271, lng: 79.8612};
23 | var map = new google.maps.Map( document.getElementById('map_canvas'), {zoom: 9, center: uluru});
24 | var myMarker = new google.maps.Marker({position: uluru, map: map, draggable: true});
25 | google.maps.event.addListener(myMarker, 'dragend', function (evt) {
26 | document.getElementById('current').innerHTML = '<p>Marker dropped: Current Lat: ' +
27 | evt.latLng.lat().toFixed(3) + ' Current Lng: ' + evt.latLng.lng().toFixed(3) + '</p>';
28 | document.getElementById('LATxt').value = '' + evt.latLng.lat().toFixed(3) + '';
29 | document.getElementById('LOtxt').value = '' + evt.latLng.lng().toFixed(3) + '';
30 |
31 |
32 |

```

Fig-10: Coding I

It should show the added locations to other users to confirm it as exact polluted location. This confirmation part was added to minimize of adding fake information and to reduce showing the fake information through the website. Following figure describe about that code segment.


```

case.php x Add_Case_M.php x Client_Poluted_locations.php x search.php x View_location_m.php x Client_New_cases_M.php x
1 <?php
2 defined('BASEPATH') OR exit('No direct script access allowed');
3
4 class Client_New_cases_M extends CI_Model {
5     public function get_New_Cases()
6     {
7
8         $this->db->select('case.*, location_img.img_name, rating.*');
9         $this->db->where('approve_status', 'Pending');
10        $this->db->where('client_Id !=', $this->session->userdata('UID'));
11        $this->db->join('location_img', 'case.id = location_img.case_Id', 'left');
12        $this->db->join('rating', 'case.client_Id = rating.user_Id', 'left');
13        $this->db->group_by('id');
14        $query = $this->db->get('case');
15        return $query->result();
16
17    }
18    public function check_approve()
19    {
20        $case_id = $_GET['id'];
21        $this->db->where('case_Id', $case_id);
22        $this->db->where('client_Id', $this->session->userdata('UID'));
23        $query = $this->db->get('case_approve');
24        return $query->num_rows();
25    }
26    public function approve()
27    {
28        $case_id = $_GET['id'];
29
30        $aprv_count = $this->approve_count($case_id);
31        $new_count = $aprv_count+1;
32        $this->insert_to_approve_table($case_id);
33        if ($aprv_count == 2) {

```

Fig-11: Coding II

Following is the ranking or Reputation point system of the website. Every logged user could join to this system. Ranking goes up when user adding more cases to the website. Ranking makes competition to add more cases by the users. And it makes enjoy and change than another existing website. Following figures explain about the ranking system of the website.

```

<?php
defined('BASEPATH') OR exit('No direct script access allowed');

class Add_Case_M extends CI_Model {
    public function save_case_data()
    {
        $lat = $this->input->post('LATxt');
        $lng = $this->input->post('LOTxt');
        $address = $this->getAddressByLatLng($lat,$lng);
        $data = array(
            'lng' => $lng,
            'lat' => $lat,
            'client_Id' => $this->session->userdata('UID'),
            'address' => $address,
            'approve_count' => '0',
            'approve_status' => 'Pending'
        );

        $this->db->insert('case', $data);
        $insert_id = $this->db->insert_id();
        $this->rate_client();
        return $insert_id;
    }

    public function getAddressByLatLng($lat,$lng)
    {
        if(!empty($lat) && !empty($lng)){
            //Send request and receive json data by address
            $geocodeFromLatLng =
            file_get_contents('http://maps.googleapis.com/maps/api/geocode/json?
            latlng=' . trim($lat) . ',' . trim($lng) . '&sensor=false&key=AIzaSyD0nPHR11ru20sf0weuQVvp_U4JFAe

```

Fig-12: Coding III

The MySQL was chosen as the database of the project due to light weight and help to efficient execute and compiles on so many number of operating systems.

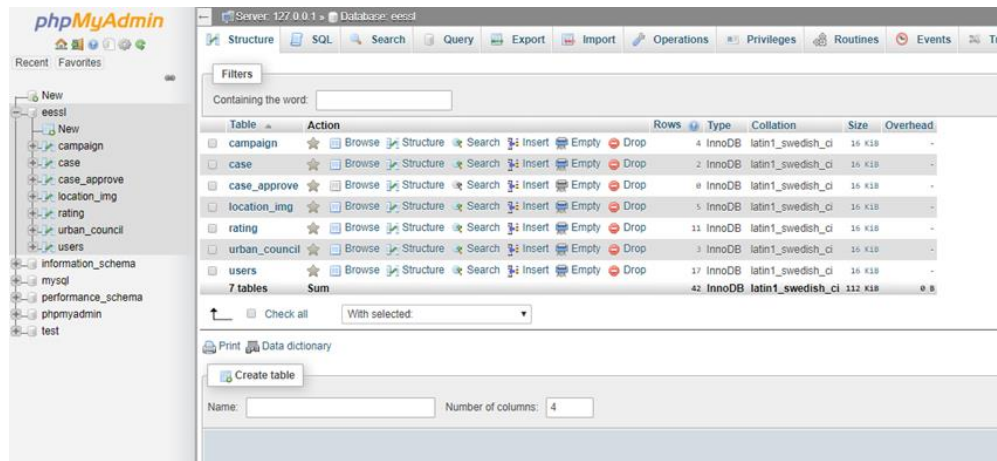


Fig-13: Database

3.3.1 Interfaces

When background of the project was recognized, inaugural development and designing was started in web pages. The animations of the web pages were added using java script and the buttons and the view of pictures, contents of the web pages were designed through the Bootstrap. As well as the Cascading Style Sheets used to do the styles of the WebPages.

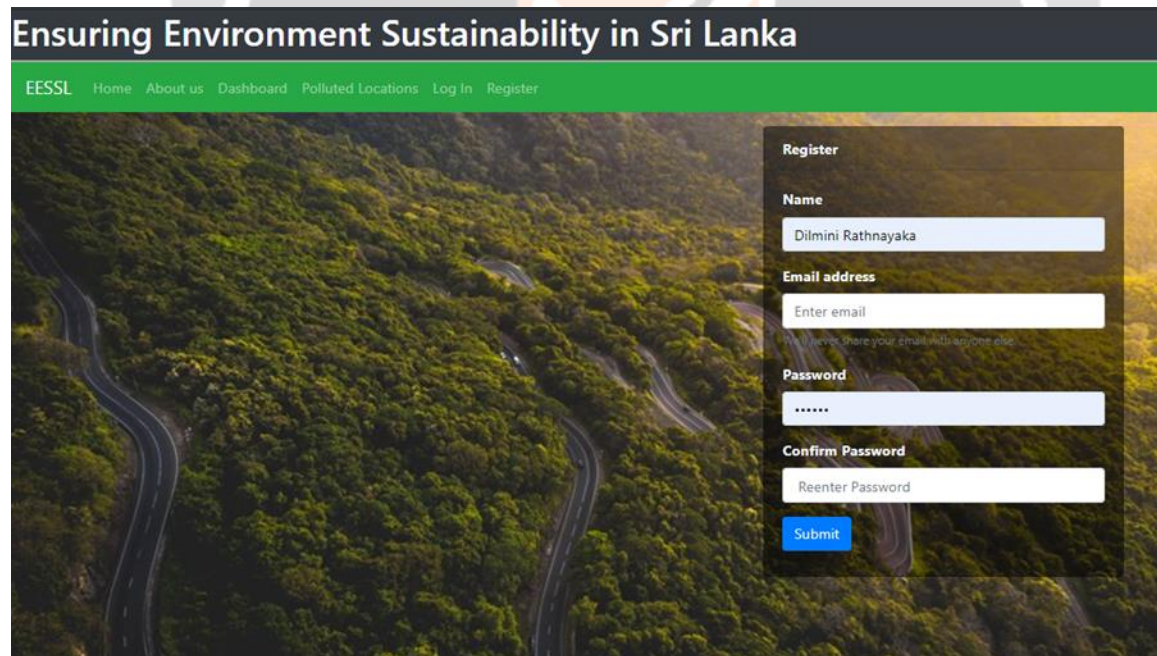


Fig-14: Registration



Fig-16: Dashboard

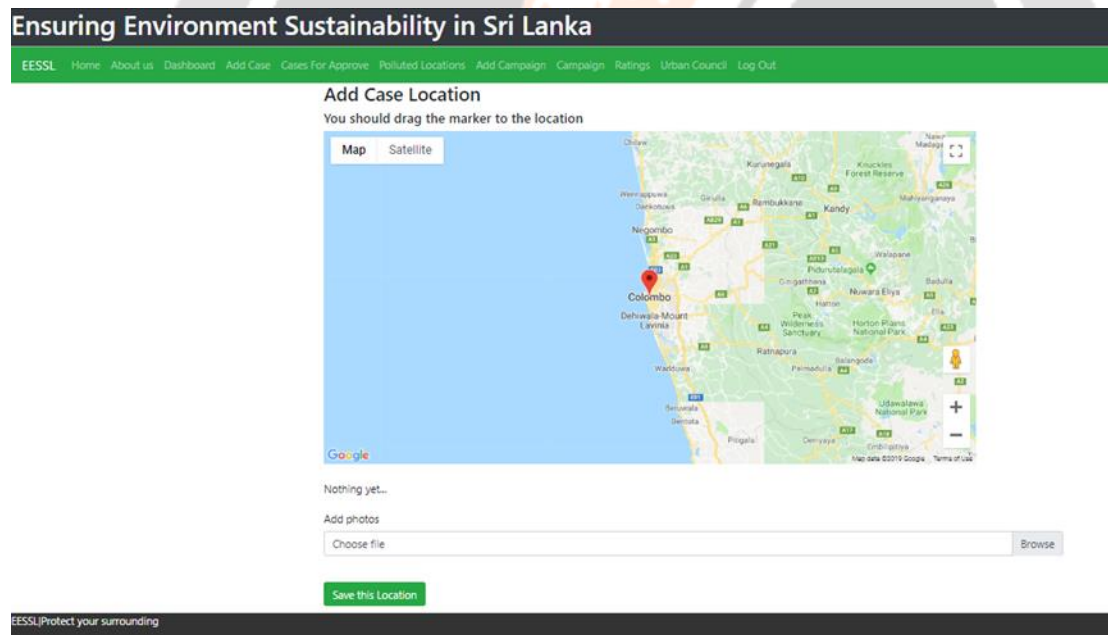


Fig-17: Add Case

| Urban Council | Contact Number |
|---------------|----------------|
| Ehellyagoda | 03672772727 |
| Balangoda | 0452280220 |
| Balanwela | 075990022 |

Fig-18: Urban Council

Fig-19: Case Approval

| | |
|----------|-----------------------|
| dilmini | Ratings Not Available |
| ravishan | Ratings Not Available |
| tharindu | Ratings Not Available |
| Pathum | Ratings Not Available |

Fig-20: Reputation Points System

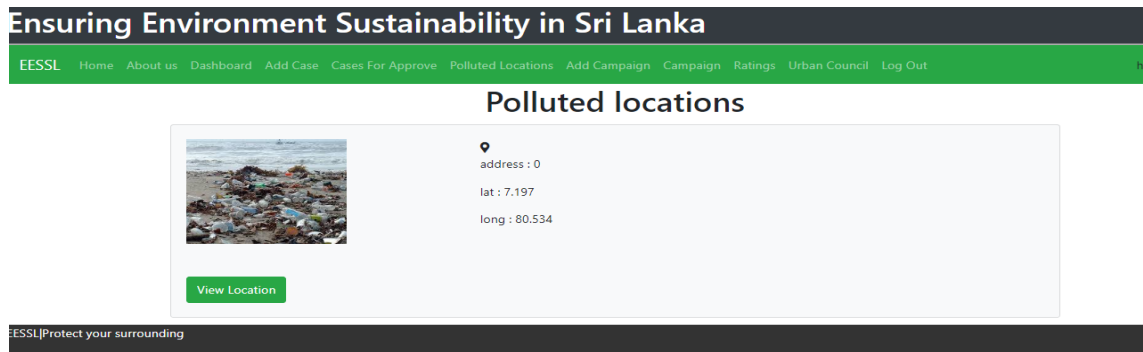


Fig 21: Polluted Locations



Fig- 22: Campaigns

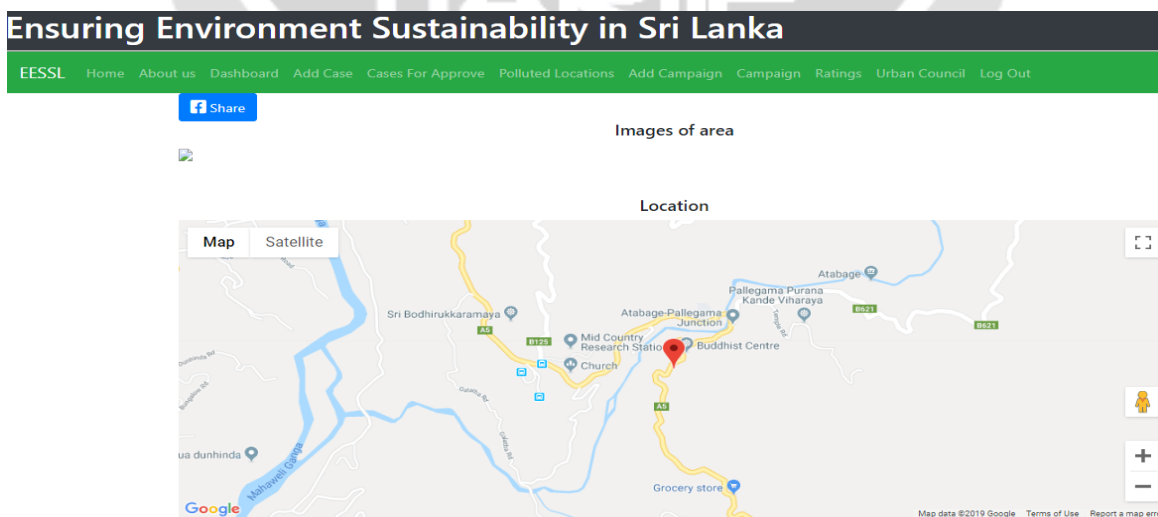


Fig - 23: Case Share

4. SYSTEM TESTING

Table 1 – Test Plan

| sequence | Section | Description |
|----------|--|--|
| 1 | User Interfaces | Testing the user Interfaces having the expected contents. The testing of the navigation from one web page to another web page within the website is include to this phase. |
| 2 | User Registration and Log | The functionality of User Registration and log in sessions of the website working without errors. |
| 3 | Location Marking function | Location marking facility on the provided Google map is tested. |
| 4 | Share the added photos and location through facebook | User ability of haring the uploaded pictures with facebook is tested. |
| 5 | Enter to Reputation point System function | After the Log in User allows to enter for the reputation point system for stimulate or motivate to add more locations. |
| 6 | Add the campaign location and share added details with facebook | Capability of user to mark the campaign locations and to share the added data through facebook |
| 7 | Data Retrieve from database function(Urban Council contact data) | User capable of find the closer Urban Council contact data |
| 8 | User Opinion | Tested the website consists of the expected outcome by the user experiences. |

As in the above test plan, test cases were created and testing was carried out. Followings are the test cases that established for the testing process.

4.1 Test cases

Table 2 – Test Case 1

| | |
|-------------------|---|
| Test Case | User Registration |
| Explanation | Enter relevant Data to the fields including name, email address, password and password confirm in registration. |
| Testing method | Click on Submit button to Register. |
| Entered Data Type | Data entered only to name field, Email Address and password fields |
| Desired Results | Message pop up in Confirm password field as “Please Fill out this field” |
| Real Results | Results as expected |
| Condition | Pass |

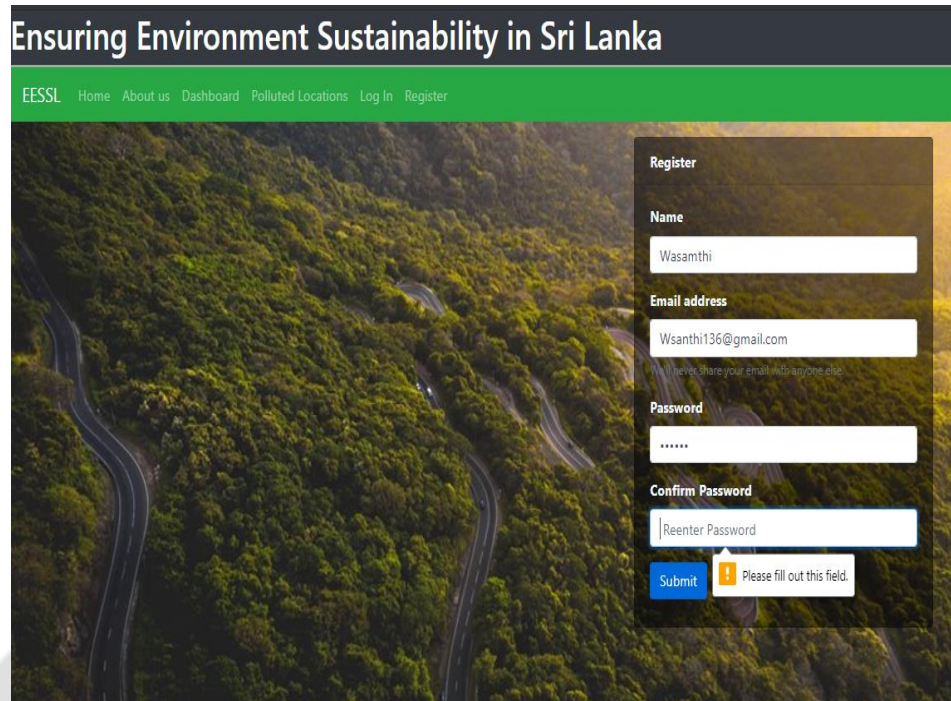


Fig-24: Test Case 1

Table 2 – Test Case 2

| | |
|-------------------|--|
| Test Case | User Login |
| Explanation | Enter the Email Address and Password for log in. |
| Testing method | Click on Log in button. |
| Entered Data Type | Data entered only to Email Address field |
| Desired Results | Message pop up in password field saying “Please Fill out this field” |
| Real Results | Results as expected |
| Condition | Pass |

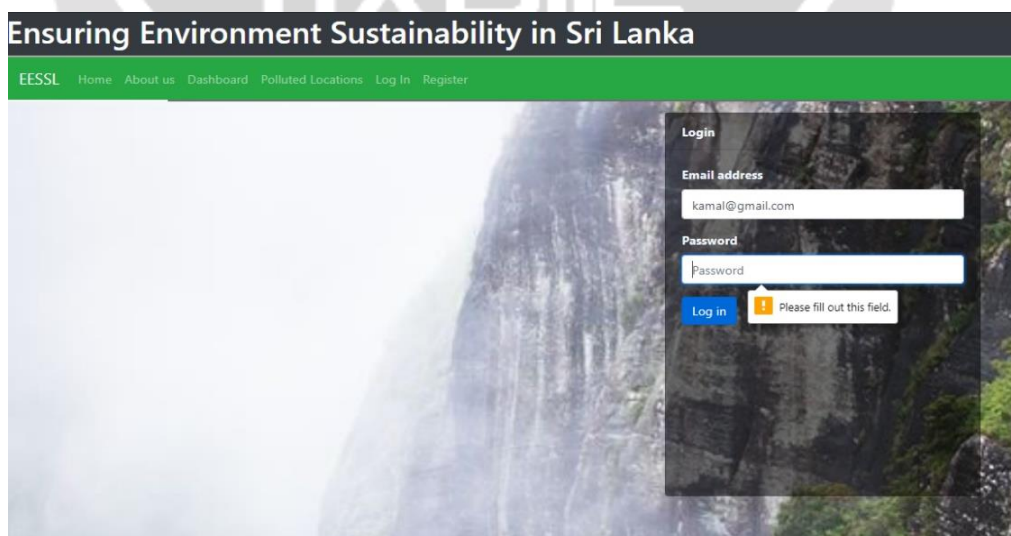


Fig-25: Test Case 2

Table 3 – Test Case 3

| | |
|-------------------|--|
| Test Case | Add a case 1 |
| Explanation | When it drags the marker to the user location it shows the longitude and latitude of the location, upload pictures of the location and save the location |
| Testing method | Click on Save button. |
| Entered Data Type | Only marked the location |
| Desired Results | Show a message in choose file field as “Please select one or more files” |
| Real Results | Results as expected |
| Condition | Pass |

Marker dropped: Current Lat: 7.014 Current Lng: 80.534

Add photos

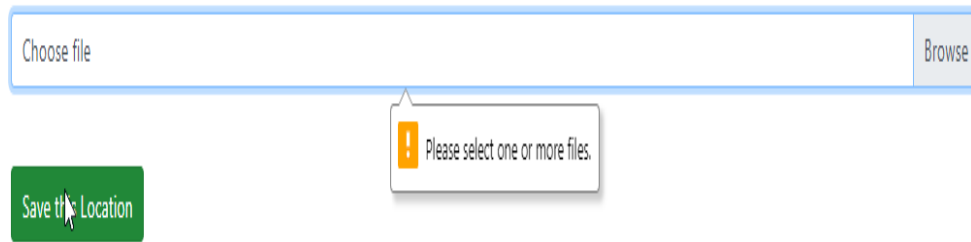


Fig-26: Test Case 3

Table 4 – Test Case 4

| | |
|-------------------|--|
| Test Case | Add a case 2 |
| Explanation | When it drags the marker to the user location it shows the longitude and latitude of the location, upload pictures of the location and save the location |
| Testing method | Click on Save button. |
| Entered Data Type | Marked the location with uploaded pictures |
| Desired Results | Refreshing the page |
| Real Results | Results as expected |
| Condition | Pass |

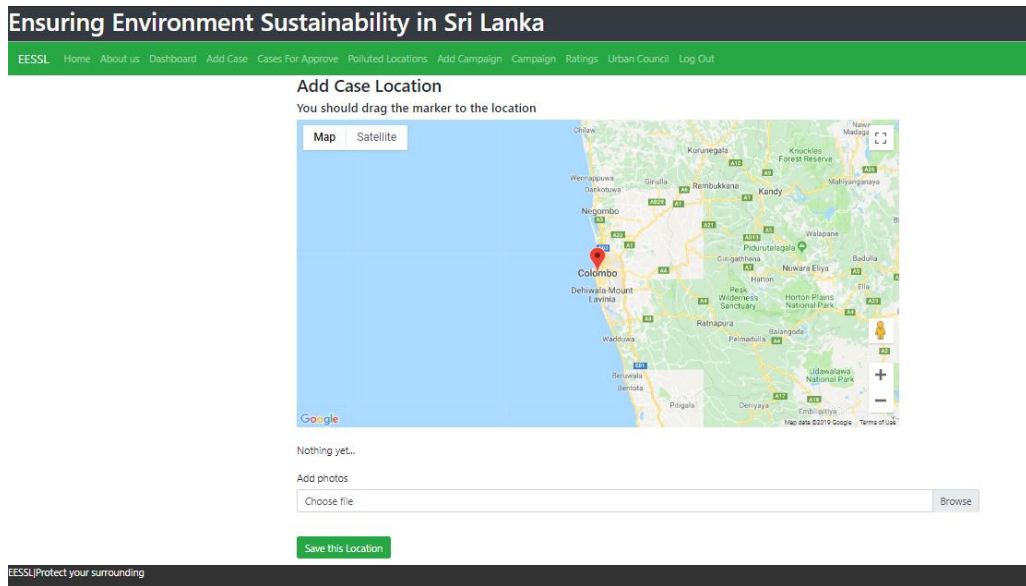


Fig-27: Test Case 4

Table 5 – Test Case 5

| | |
|-------------------|--|
| Test Case | Cases for Approve 1 |
| Explanation | View the location on the Google map and uploaded pictures of that case |
| Testing method | Click on View Location button. |
| Entered Data Type | Click |
| Desired Results | Show the Location on Google map and pictures of that case |
| Real Results | Results as expected |
| Condition | Pass |



Fig-28: Test Case 5

Table 6– Test Case 6

| | |
|-------------------|--|
| Test Case | Polluted Areas 1 |
| Explanation | Show the polluted areas to the users. |
| Testing method | Click on View Location button. |
| Entered Data Type | Click |
| Desired Results | Share the location details and pictures that uploaded for that case through facebook |
| Real Results | Results as expected |
| Condition | Pass |



Fig-29: Test Case 6

Table 7– Test Case 7

| | |
|-------------------|---|
| Test Case | Add Campaign 2 |
| Explanation | Show the campaign locations by address and date to others |
| Testing method | Click on Save this Location button. |
| Entered Data Type | Only drag the location without giving data to date field |
| Desired Results | Pop up message as “Please fill out this field” |
| Real Results | Results as expected |
| Condition | Pass |



Fig-30: Test Case 7

Table 8– Test Case 8

| | |
|-------------------|---|
| Test Case | Urban Council |
| Explanation | Show the urban council contact number when it search by the city name |
| Testing method | Typing the urban council name on given field |
| Entered Data Type | Name of Urban Council |
| Desired Results | Pop up message the phone number |
| Real Results | Results as expected |
| Condition | Pass |

| Urban Council | Contact Number |
|---------------|----------------|
| Eheliyagoda | 03672772727 |
| Balangoda | 0452280220 |
| Balanwela | 075990022 |

Fig-31: Test Case 8

5. EVALUATION

The internet has made it possible for anyone to publish web pages. Most websites have not undergone a review process for inclusion in a collection, whereas the resources in the Library's subscription databases have. For these reasons, you should closely evaluate any Internet resources you find to ensure they contain balanced, factual information. Reliable internet resources may include peer reviewed journal articles, government reports, conference papers, industry and professional standards, scientific papers, news reports, and quick facts and figures.(Ncu.libguides.com, 2019)

However, keep in mind that just because a website is well presented does not mean that it contains accurate information. Here are some criteria you can look for in Internet resources to determine whether or not they are reliable sources of information. By addressing the questions below, you can reasonably determine if an Internet resource is a reliable source of information.(Ncu.libguides.com, 2019)

5.1 Evaluation Techniques

Mainly, testing was carried according to the white box testing since it is better to concern about functionality of the website including the source. Testing part was done basically according to a test plan and with the test cases which were parallel to the test plan. The test plan was elementary to recognize that the basic requirements were accomplished as it expected.

It also depicts that development of just the functions of the website is not enough for a productive output. The website must be user friendly and it should achieve the user expectations. Therefore, the evaluation of the website by the actual users and within the actual environment or community is vital. The test parts mostly done by my staff members which is a University staff.(Sabaragamuwa University). It's due to the reason that, it could explain my

desire easily to do the testing very well. Staff members of Sabaragamuwa University agreed to widen their aid to evaluate the website. Their opinions were vastly effective due to that they were really happy with the service that providing by this website to the society and the new idea of the website which is differ from the other websites.

The testing was carried out when a user register in to the website it provides the facility to log in. When a user logged in to the website it showing the dashboard of the website which consists of pending marked Polluted locations, as Added polluted locations by any other user and write about the function of website. That logged user could approve those locations as exact polluted places and after three confirmations the website shows that marked location as exact polluted location. Users could join for the Reputation point system of the website and after adding of 10 location by each user with confirmation of each added location by three different users, that user capable of reputation points. That user could join to the 5th level of Reputation point system. This system was added basically to motivate the users and make competition among them.

During the development process, supervisor of this project gave the comments and ideas to enhance the website progress and to rise the usability of this website regularly. He advised about some other features and functions that could implement to create a fruitful product. It was able to recognize the requirements of this website were achieved by implementation of test cases and the vast progress by the testing the website on real environment.

A feedback phase was carried out by providing a questionnaire to the users who helped with the testing phase

The table below consists of the summary of that feedback that collected from one of the users.

Table 9 – Feedback Summary

| Function or feature | Very Good | Good | Average | Bad |
|---|-----------|------|---------|-----|
| Visit and view web pages of the website | | | ✓ | |
| Content Accordance | | | ✓ | |
| Interfaces | | ✓ | | |
| Navigation of website | | | ✓ | |
| Registration | | ✓ | | |
| Log in | | ✓ | | |
| Dashboard of showing status | ✓ | | | |
| Add Case with location and Photos | ✓ | | | |
| Hare added pictures and details through Facebook | ✓ | | | |
| Approve added cases | ✓ | | | |
| View of Polluted areas after confirmation of added cases by three logged in users | | ✓ | | |
| Add Campaigns with date and location | ✓ | | | |
| View added campaigns | | | ✓ | |
| Reputation point system | ✓ | | | |
| Log out | | | ✓ | |

Followings are the comments that gained by three different users.

Table 10 – Comments from users

| Name | Designation | Comment |
|------------------------|---|--|
| Ms. PGI Dias | Research Assistant, Sabaragamuwa University | The idea of the website is very good and it's a different thing than usual websites. It's better to add more features like links to the urban council websites, other organizations etc. |
| Mr. Anuradha Dharshana | Research Assistant, Sabaragamuwa University | Ver good and service providing website. Keep it up the good work and do the modernizations as much as you could. |
| Mr. Ravindu Devinda | Project Assistant, Sabaragamuwa University | Vastly helpful website and take the steps to make attractive outer appearance. Functions of the website are really valuable. |

6. CONCLUSIONS

The functions and appearance of the “Ensuring Environment Sustainability of Sri Lanka” website was vastly discussed during this final thesis report. It consists more main phases and implementation and development procedure of the website is highly described in this report. After doing an analyzing and evaluation about the website, it could be concluded that the total successfulness of the website is about 80%. At the beginning there were 5 objectives set and they all were achieved by the end of the project. Currently the system has made the quotation generating process easier. It will be more beneficial once the system users get used to work with it.

From the evaluation phase, it discovered few vital requirements and functions which were unable to fulfill due to the deficit of time. It can mention as:

1. Marking a location on Google map sending the longitude and latitude values to the database.
2. Retrieve the provided Longitude and Latitude values for an Address
3. Let the users to Mark the Locations and as well as Campaigns
4. Sharing function of the pictures provided by other users through Facebook
5. Functionality of Reputation Points system
6. Function of confirmation of the Location by three different logged in users

6.1 Limitations

Although the proposed system capable to achieve 80% of success there were some limitations till the end. This phase describes about those.

Since this website runs with huge amount of data and the phase of “data mining” was a modern field of study. It took a considerable time period to about studying data mining while going through its uses. Due to that reason, tough time schedules provided the risk of losing some important items.

Although the website was designed to implement only five main tables in the database, it had to add some two more tables for productive and advanced development including maintenance of the website. With mentioning that factor the table names were changed as it needed to easy and errorless development.

The development of certain web pages became really doubtful due to the Google won't provide Google Map API keys for free and if it is so the key is getting expired within 30 days. Therefore, it had to pay for the key even during the development period.

It should mainly include when preparing the documentations, it is hard to mention the citations correctly even though the references were cited by “cite this for me” website using Harvard styles. Even if the references added and mentioned in the documents by text citation and bibliography citation they are showing as copy pasted without any responsibility.

6.2 Future Work

As the future works it decided to uplift the accuracy of the website by giving more contact details of Urban Councils, adding more security to the user login part and when marking locations on Google Map.

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BIOGRAPHIES (Not Essential)

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