A GEOGRAPHICAL INFORMATION SYSTEM FOR E-WASTE FACILITY LOCATOR

A PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND TECHNOLOGY

KARPAGAM COLLEGE OF ENGINEERING

COIMBATORE – 641 032

ANNA UNIVERSITY: CHENNAI 600 025

MAY 2024

KARPAGAM COLLEGE OF ENGINEERING

COIMBATORE – 641 032

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report **"A GEOGRAPHICAL INFORMATION SYSTEM FOR E-WASTE FACILITY LOCATOR"** is the bonafide work of **Naveena M (717822S134),Sehnaaz IT(717822S146), Sowmiya K (717822S153)**, who carried out the project work under my supervision.

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Signature of the Internal Examiner with date

Signature of External Examiner with date

DECLARATION

We hereby declare that this Project report entitled "**A GEOGRAPHICAL INFORMATION SYSTEM FOR E-WASTE FACILITY LOCATOR**" submitted by us for the degree of **B.E in Computer Science and Technology at Karpagam College of Engineering**, **Coimbatore** is the record of original work done by us under the guidance and supervision of **Ms. K. SAKTHI PRIYA, M.Tech.,** at the Department of Computer Science and Technology, Karpagam College of Engineering, Coimbatore – 641032 and has not formed the basis for the award of any degree, or diploma or titles in this institution or any other Institution of higher learning.

Date :

Place : Coimbatore

Name and Signature of the Candidate(s)

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ABSTRACT

The proliferation of electronic devices has led to a corresponding surge in E-waste, posing significant environmental and health challenges worldwide. Effective management of E-waste necessitates efficient collection and recycling mechanisms. This Project presents the development and implementation of the EWFL, utilizing GIS technology to optimize the process of E-waste disposal and recycling.

The EWFL system integrates spatial data of E-waste collection centers, and recycling facilities, into a unified platform accessible through website. The outlines the conceptual framework, design, and implementation of the E-WASTE FACILITY LOCATOR, minimize environmental impacts, and promote sustainable resource utilization. In E-WASTE FACILITY LOCATOR, leveraging GIS technology. The system aims to streamline E-waste management by providing a centralized platform for locating and accessing E-waste recycling facilities

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LIST OF ABBREVIATION

EWFL	E-Waste Facility Locator
GIS	Geographical Information System
GUI	Graphical User Interface
DFD	Structure Query Language
UML	Unified Modeling Language
API	Application Programming Interface

CHAPTER 1

INTRODUCTION

In today's digital age, electronic devices are an integral part of our daily lives. From smartphones and laptops to televisions and kitchen appliances, these devices enhance our productivity and convenience. However, with the rapid pace of technological advancement, electronic waste, or E-waste, has become one of the fastest-growing waste streams globally.

E-waste includes electronic devices like phones, computers, and televisions. These items often contain harmful materials that can damage the environment if not disposed in the proper way. To help people and organizations manage E-waste safely, we have developed the EWFL. The E-Waste Facility Locator is a tool designed to help people find places where people can recycle or dispose of their old electronics

1.1 PROBLEM INDENTIFICATION

The proliferation of electronic devices worldwide has led to a corresponding increase in E-waste, presenting significant environmental and health challenges. Improper disposal of E-waste contributes to pollution, resource depletion, and public health risks due to hazardous materials contained in electronic devices. Despite growing awareness of these issues, individuals and organizations often struggle to locate convenient and responsible means of disposing of their E-waste. Current methods for finding E-waste facilities are often fragmented, unreliable, or lacking in geographic coverage, hindering efforts to promote proper E-waste management practices.

1.2 NEED FOR PROPOSED SYSTEM

The proposed system for an E-waste facility locator would be a digital platform, likely a website or mobile application, designed to help users easily find nearby facilities where they can dispose of their electronic waste responsibly.

User Interface

The system should have a user-friendly interface that is easy to navigate. It should be accessible via both desktop and mobile devices to cater to a wide range of users.

Location-Based Search

Users should be able to search for e-waste facilities based on their location. This could be done by entering their address, pin code, or enabling geolocation services. The system should provide a list of nearby facilities along with their distances from the user's location.

Search and filter module

It facilitates the search and filtering functionalities within the E-waste facility locator system, allowing users to find relevant facilities based on their location preferences

Visualization and User Interface Module

Develop a user-friendly interface for visualizing the geolocated points on maps or satellite imagery. Incorporate interactive features such as zooming, panning, etc.. for enhanced spatial analysis.

1.2.1 ENHANCED PRIVACY AND SECURITY FOR GEOLOCATION

Anonymous Location Tracking

Implement a system where user locations are anonymized or generalized before being stored or transmitted. This prevents the direct association of specific individuals with their precise locations.

Minimal Data Collection

Collect only the necessary geolocation data required for the functioning of the facility locator. Avoid gathering additional personal information that is not essential for the service.

Data Minimization

Store geolocation data for the shortest time necessary to provide the service effectively. Implement automatic data deletion policies to regularly purge outdated location records.

1.2.2 USER-FRIENDLY EXPERIENCE

For creating the user friendly interface some main considerations are needed they are

- Intuitive Interface
- Filtering Options
- Visual Maps
- Feedback Mechanism
- Contact Information

CHAPTER 2

SYSTEM SPECIFICATION

2.1 HARDWARE SPECIFICATION

- PROCESSOR : INTEL CORE I5
- RAM : 8GB
- STORAGE : 256GB SSD
- NETWORK : GIGABIT ETHERNET

2.2 SOFTWARE SPECIFICATION

- FRONTEND : HTML, CSS, JAVASCRIPT
- OPERATING SYSTEM : WINDOWS11
- TOOLS : VISUAL STUDIO CODE

CHAPTER 3

LITERATURE REVIEW

A comprehensive literature review of E-waste facility locators reveals a growing emphasis on developing user-friendly platforms that facilitate the responsible disposal of electronic waste. Studies highlight the importance of intuitive interfaces, mobile compatibility, and geolocation services in enhancing user experience. Additionally, research emphasizes the significance of privacy and security measures to protect user data, alongside the need for efficient filtering options and visual maps for streamlined facility searches. Furthermore, accessibility features and feedback mechanisms emerge as crucial components for ensuring inclusivity and continuous improvement. Overall, the literature underscores the necessity of leveraging technology to create accessible, secure, and efficient E-waste facility locators that encourage sustainable management practices.

3.1 TECHNOLOGIES USED IN E-WASTE FACILITY LOCATORS

3.1.1 Geographic Information Systems

GIS technology is widely used to map and analyze spatial data for E-waste facility locators. GIS allows for the visualization of facility locations and the assessment of their accessibility to the population.

Study Example: A study by Hu et al. (2019) utilized GIS to map E-waste collection points and optimize the locations based on population density and accessibility.

3.1.2 Web-Based Platforms

Many E-waste facility locators are implemented as web-based platforms, making it easy for users to find nearby facilities.

Study Example: An app developed by Park and Lee (2020) provided real-time information on E-waste disposal sites, including navigation features to guide users to the nearest facility.

3.2 METHODOLOGIES FOR DEVELOPING E-WASTE FACILITY LOCATOR

3.2.1 Spatial Analysis and Optimization

Researchers use spatial analysis techniques to determine the optimal locations for E-waste facilities. This involves considering factors such as population density, urbanization levels, and existing infrastructure.

Study Example: A study by Kumar et al. (2018) employed multi-criteria decision analysis (MCDA) to identify suitable sites for new E-waste collection centers in urban areas.

3.2.2 User-Centric Design

Designing locators with a user-centric approach ensures they are intuitive and meet the needs of diverse users, including the general public and businesses.

Study Example: A user experience study by Chen et al. (2021) emphasized the importance of simple interfaces and clear information in E-waste locator apps to increase user engagement.

3.3 CHALLENGES IN E-WASTE FACILITY LOCATION

3.3.1 Data Availability and Quality

One major challenge is the availability and accuracy of data on existing E-waste facilities and the generation of E-waste.

Study Example: Williams and Li (2017) highlighted the difficulty in obtaining comprehensive data, which can hinder effective facility planning and locator accuracy.

3.3.2 Public Awareness and Participation

Another challenge is ensuring public awareness and participation in E-waste recycling programs.

Study Example: The study by Zhang et al. (2018) found that public awareness campaigns significantly improved the use of EWFL .

CHAPTER 4

PROJECT OVERVIEW

The EWFL is a comprehensive system designed to assist users in identifying and locating nearby electronic waste disposal and recycling facilities. This project aims to enhance E-waste management by providing a user-friendly platform that encourages proper disposal and recycling of electronic products, thereby minimizing environmental impact and promoting sustainable practices.

4.1 KEY OBJECTIVES

- **User Accessibility:** Develop an intuitive, easy-to-use platform accessible via web and mobile applications.
- **Accurate Information:** Provide up-to-date information on E-waste facilities, including location, hours of operation, accepted materials, and contact details.
- **Public Awareness:** Increase public awareness about the importance of proper E-waste disposal and available recycling options.
- **Data Analytics**: Utilize data analytics to optimize the location and distribution of E-waste facilities based on user demand and environmental needs.
- **Sustainability:** Contribute to environmental sustainability by reducing improper E-waste disposal and enhancing recycling efforts.

4.2 KEY FEATURES

4.2.1 GIS Integration

GIS technology is central to EWFL, enabling the mapping and spatial analysis of E-waste facilities. GIS allows for the visualization of facility locations, enhancing user experience by providing interactive maps.

Functionalities

- Facility Mapping
- Proximity Search
- Route Optimization

4.2.2 Search Functionality

Robust search capabilities are essential for users to quickly find relevant E-waste facilities based on various criteria.

Functionalities

- Keyword Search: Enable users to search using keywords related to the type of E-waste
- Filter Options: Offer filters such as facility type accepted materials, and operational status.
- Advanced Search: Include advanced search options like service availability and special handling services.

4.2.3 User Account Management

User accounts allow for personalized experiences and tracking of individual E-waste disposal activities.

Functionalities

- Account Creation and Login: Enable users to create accounts and log in using secure authentication methods.
- Personalized Dashboard: Provide a dashboard where users can track their disposal history, upcoming drop-offs, and feedback submissions.

4.2.4 User Feedback System

A user feedback system enhances the quality of service by incorporating user experiences and ratings into the platform.

Functionalities

- Rating System
- Reviews and Comments
- Feedback Analytics

CHAPTER 5
MODULE DESCRIPTION

5.1 USER INTERFACE MODULE

The UI module is responsible for all aspects of user interaction with the EWFL platform. It ensures a seamless and intuitive experience for users accessing the web.

Key Components

- Web Interface: Designed using HTML, CSS, and JavaScript to provide a responsive and accessible layout.
- Search and Filter Tools: Enables users to search for facilities based on location, type of E-waste, and other criteria.
- Interactive Map: Integrates with GIS to display facility locations and relevant geographic data.

5.2 GIS AND MAPPING MODULE

This module leverages Geographic Information System (GIS) technology to provide spatial analysis and mapping capabilities.

Key Components

- Facility Mapping: Visualizes E-waste facility locations on an interactive map.
- Route Optimization: Calculates and displays optimal routes to E-waste facilities

5.3 SEARCH AND FILTER MODULE

It facilitates the search and filtering functionalities within the E-waste facility locator system, allowing users to find relevant facilities based on their location preferences.

5.4 FEEDBACK AND REVIEW MODULE

This module allows users to provide feedback and reviews on the E-waste facilities they visit, enhancing service quality through community input.

Key Components

- Rating System: Users can rate facilities based on their experience.
- Review Submission: Users can write and submit detailed reviews.
- Feedback Analytics: Analyzes user feedback to identify trends and areas for improvement.

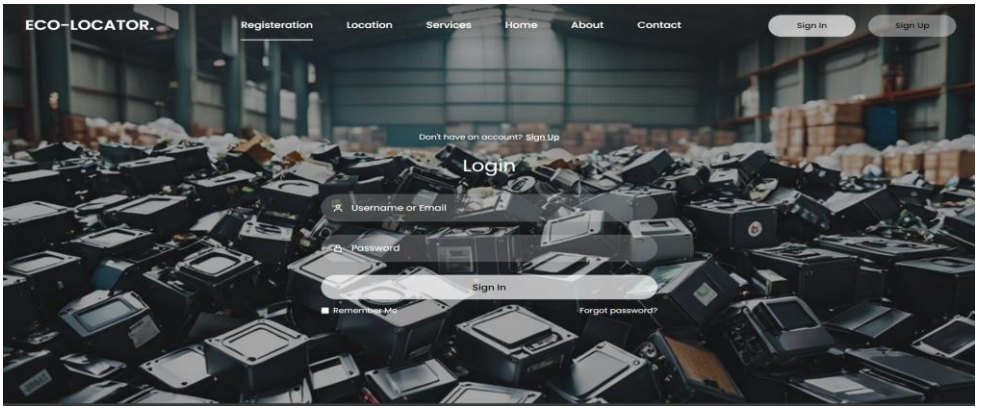
CHAPTER 6

SYSTEM DESIGN

6.1 DFC DIAGRAM

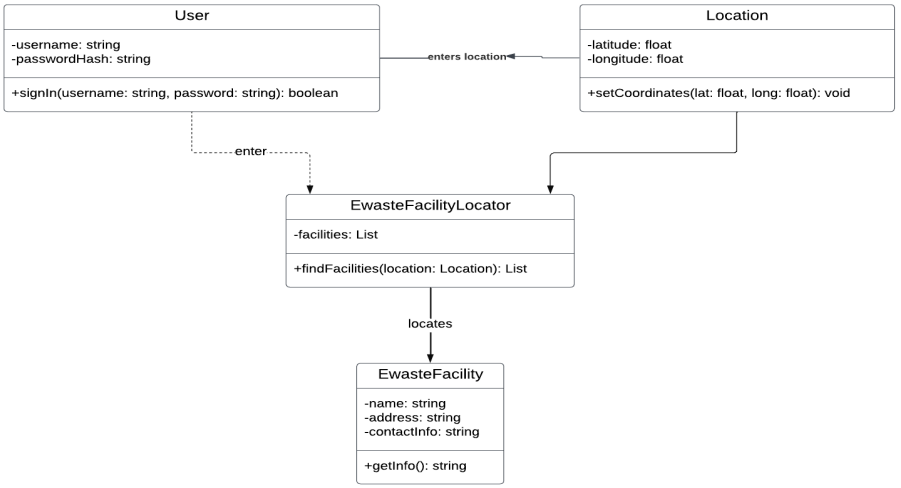
6.1 DFD DIAGRAM OF EWFL

6.2 USER INTERFACE DESIGN



6.2 USER INTERFACE DESIGN

6.3 UML DIAGRAM



6.3 UML DIAGRAM

CHAPTER 7

SYSTEM TESTING

7.1 UNIT TESTING

7.1.1 USER INTERFACE TESTING

For the User Interface module, unit tests focus on ensuring that all UI components render correctly and that user interactions are handled appropriately.

Search Bar Rendering

- Test Case: Ensure the search bar is rendered on the homepage.
- Expected Result: The search bar is visible and correctly placed on the homepage.

Search Button Click

- Test Case: Verify clicking the "Search" button triggers the search function.
- Expected Result: The search results are displayed based on the user’s query.

Pin Code Validation

- Test Case: Validate that entering a pin code displays the location.
- Expected Result: The location is shown when the pin code is entered.

7.1.2 GIS AND MAPPING TESTING

Unit tests for the GIS and Mapping module ensure the map and geographic data render accurately. Tests include verifying that the map initializes at the correct location and that facility markers are placed correctly.

Map Rendering

Initial Map Load

- Test Case: Verify the map initializes at the correct default location.
- Expected Result: The map loads with the correct default geographic view.

Marker Placement

Facility Markers

- Test Case: Ensure facility markers are placed accurately on the map.

Route Optimization

- Test Case: Verify that the route optimization feature provides accurate directions.
- Expected Result: The route provided is optimal and accurate.

7.1.3 REAL-TIME UPDATE TESTING

Unit tests for the Real-Time Update module ensure that updates to facility statuses, such as operational hours, are processed and displayed correctly.

Operational Hours Update

- Test Case: Verify that updating a facility's operational hours in the backend reflects on the client side.
- Expected Result: The updated hours are visible to users.

7.1.4 FEEDBACK AND REVIEW TESTING

Unit tests for the Feedback and Review module ensure that users can submit reviews and that these reviews are displayed correctly.

Feedback Submission

Submit Review

- Test Case: Verify that users can submit reviews for a facility.
- Expected Result: The review is saved and displayed under the facility.

Feedback Display

Review Visibility

- Test Case: Ensure submitted feedback is displayed correctly.
- Expected Result: Reviews are visible and correctly formatted.

7.2 WHITE BOX TESTING

White box testing, also known as clear box testing or transparent testing, involves testing the internal structures, logic, and code of the application. This type of testing is essential for ensuring that the code is efficient, secure, and functioning as intended.

This process starts with the UI module, where tests verify the rendering and interaction of UI components, such as the search bar and search button.

In the GIS and Mapping module, tests focus on map rendering, marker placement, and proximity search functionality. These tests ensure that maps initialize correctly, facility markers are accurately placed, and searches for facilities within a specified radius yield precise results..

For the Real-Time Update module, tests ensure that updates to facility statuses, such as operational hours and capacity changes, are processed and reflected in real-time on the client side.

In the Feedback and Review module, tests ensure that user-submitted reviews are correctly saved and displayed.

7.3 BLACK BOX TESTING

Black box testing for the EWFL focuses on verifying the functionality of the application from an end-user perspective, without examining the internal structures or code. This approach ensures that all components of the system meet the specified requirements and function correctly.

For the UI module, tests verify that all visible components, such as the search bar and search button, function correctly. These tests ensure that when users enter a query and click search, the relevant e-waste facilities are displayed accurately.

For the GIS and Mapping module, black box tests validate that the map displays correctly, facility markers are accurately placed, and proximity searches yield correct results. These tests check that when a user searches for facilities within a certain radius, the map and list accurately reflect those within the specified distance.

The Real-Time Update module is tested to ensure that updates to facility statuses, such as operational hours or capacity changes, are correctly displayed on the client side.

The Feedback and Review module is tested to ensure that users can submit reviews and that these reviews are displayed correctly.

CHAPTER 8

IMPLEMENTATION

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<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-
scale=1.0">
   <link href='https://unpkg.com/boxicons@2.1.4/css/boxicons.min.css'
rel='stylesheet'>
   <link rel="stylesheet" href="about.css">
   <title>About</title>
</head>
<body>

 <div class="wrapper">
   <nav class="nav">
      <div class="nav-logo">
         <p>ECO-LOCATOR. </p>
      </div>
      <div class="nav-menu" id="navMenu">
         <ul>
            <li><a href="new login.html" class="link">Home</a></li>
            <li><a href="locator.html" class="link">Location</a></li>
            <li><a href="services.html" class="link">Services</a></li>
            <li><a href="about.html" class="link active">About</a></li>
            <li><a href="contact.html" class="link">Contact</a></li>
            <li><a href="information.html" class="link">Contact</a></li>
         </ul>
      </div>
   </nav>

   <main>
      <section class="about-section">
         <div class="container">

            <h1>About E-waste Facility Locator</h1>
            <p>Our mission is to promote environmental sustainability by
```

providing users with easy access to information about nearby e-waste recycling facilities. We believe in the importance of properly disposing of electronic devices to minimize their impact on the environment.

Objectives:

Electronic waste, or e-waste, refers to all items of electrical and electronic equipment (EEE) and its parts that have been discarded by its owner as waste without the intent of re-use. An e-waste management system will be aimed at preventing the generation of e-waste, reducing the quantity generated, reusing e-waste, recycling, and disposal. The project aims to provide an interface that will web-enable the public to locate the nearest collection center registered by the MPCB. It will have an input data collection form and using the zip code/municipality the center in that area will be shown as output. A feedback from the public can also be obtained for improvement

At E-waste Facility Locator, we strive to:

Facilitate the proper disposal and recycling of electronic waste

Educate individuals and businesses about the importance of e-waste recycling

Promote environmentally-friendly practices in the disposal of electronic devices

Thank you for joining us in our efforts to create a cleaner and healthier planet for future generations.

<footer>

 © 2024 E-waste Facility Locator. All rights reserved.

</footer>

</section>

</main>

</body>

</html>

CHAPTER 9
CONCLUSION

The EWFL project aims to provide a comprehensive, user-friendly platform for locating E-waste disposal and recycling facilities. Through detailed testing processes, including both white box and black box testing, the EWFL ensures reliability, accuracy, and security across all modules. The UI and GIS functionalities are meticulously tested to provide an intuitive and accurate mapping experience, while the backend and database modules guarantee seamless data handling and integration. Real-time updates keep users informed about facility statuses, and the user management module secures user data and manages access rights effectively. Feedback mechanisms, educational resources, and data analytics further enrich the user experience, providing valuable insights and promoting responsible E-waste disposal. The rigorous testing approach ensures that the EWFL platform not only meets but exceeds user expectations, fostering a sustainable environment by making E-waste disposal more accessible and efficient.The platform’s robustness and comprehensive features position it as a critical tool in the global effort to manage E-waste responsibly and sustainably. As the platform continues to evolve, it will incorporate more advanced features and reach a broader audience, further solidifying its role as an indispensable tool in global E-waste management efforts.

CHAPTR 10

FUTURE ENHANCEMENT

As the EWFL continues to develop and improve, several future enhancements can be implemented to further increase its functionality, user experience, and impact on environmental sustainability. Expanding the search and filtering capabilities to include more specific criteria such as types of E-waste, facility certifications, and additional services offered (e.g., pickup services, data destruction) can provide users with more tailored results.

Developing a dedicated mobile app for both iOS and Android platforms can improve accessibility and convenience for users, allowing them to locate E-waste facilities on the go and receive real-time notifications. Collaborating with electronics manufacturers and retailers to include e-waste facility information directly in their product packaging or customer support can raise awareness and increase the usage of the platform. Implementing features that allow users to track their e-waste disposal history and environmental impact can provide a sense of accomplishment and encourage continued use. Generating personalized reports on the positive environmental impact of their actions can motivate users to keep participating in sustainable practices.

CHAPTER 11

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CHAPTER 12

APPENDICES

----------LOGIN PAGE----------

```
<!DOCTYPE html>
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<head>
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   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <link href='https://unpkg.com/boxicons@2.1.4/css/boxicons.min.css' rel='stylesheet'>
   <link rel="stylesheet" href="new.css">
   <title>ECO-LOCATOR Login & Registration</title>
</head>
<body>
<div class="wrapper">
   <nav class="nav">
      <div class="nav-logo">
         <p>ECO-LOCATOR. </p>
      </div>
      <div class="nav-menu" id="navMenu">
         <ul>
            <li><a href="new login.html" class="link active">Home</a></li>
            <li><a href="locator.html" class="link">Location</a></li>
            <li><a href="services.html" class="link">Services</a></li>
            <li><a href="about.html" class="link">About</a></li>
            <li><a href="contact.html" class="link">Contact</a></li>
            <li><a href="information.html" class="link">Information</a></li>
         </ul>
      </div>
      <div class="nav-button">
         <button class="btn white-btn" id="loginBtn" onclick="login()">Sign In</button>
         <button class="btn" id="registerBtn" onclick="register()">Sign Up</button>
      </div>
      <div class="nav-menu-btn">
         <i class="bx bx-menu" onclick="myMenuFunction()"></i>
      </div>
```

```
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            <div class="top">
                <span>Don't have an account? <a href="#" onclick="login()">Sign Up</a></span>
                <header>Login</header>
            </div>
            <div class="input-box">
                <input type="text" class="input-field" placeholder="Username or Email">
                <i class="bx bx-user"></i>
            </div>
            <div class="input-box">
                <input type="password" class="input-field" placeholder="Password">
                <i class="bx bx-lock-alt"></i>
            </div>
            <div class="input-box">
                <input type="submit" class="submit" value="Sign In" onclick="redirectToHome()">
            </div>
            <div class="two-col">
                <div class="one">
                    <input type="checkbox" id="login-check">
                    <label for="login-check"> Remember Me</label>
                </div>
                <div class="two">
                    <label><a href="#">Forgot password?</a></label>
                </div>
            </div>
        </div>

        <div class="register-container" id="register">
            <div class="top">
                <span>Have an account? <a href="#" onclick="login()">Login</a></span>
                <header>Sign Up</header>
            </div>
            <div class="two-forms">
                <div class="input-box">
                    <input type="text" class="input-field" placeholder="Firstname">
```

```
                <i class="bx bx-user"></i>
            </div>
            <div class="input-box">
                <input type="text" class="input-field" placeholder="Lastname">
                <i class="bx bx-user"></i>
            </div>
        </div>
        <div class="input-box">
            <input type="text" class="input-field" placeholder="Email">
            <i class="bx bx-envelope"></i>
        </div>
        <div class="input-box">
            <input type="password" class="input-field" placeholder="Password">
            <i class="bx bx-lock-alt"></i>
        </div>
        <div class="input-box">
            <input type="submit" class="submit" value="Register">
        </div>
        <div class="two-col">
            <div class="one">
                <input type="checkbox" id="register-check">
                <label for="register-check"> Remember Me</label>
            </div>
            <div class="two">
                <label><a href="#">Terms & conditions</a></label>
            </div>
        </div>
    </div>
  </div>
</div>

<script>
  function myMenuFunction() {
    var i = document.getElementById("navMenu");
    if (i.className === "nav-menu") {
      i.className += " responsive";
    } else {
      i.className = "nav-menu";
    }
  }
```

```
    function login() {
        var x = document.getElementById("login");
        var y = document.getElementById("register");
        x.style.left = "4px";
        y.style.right = "-520px";
    }

    function register() {3
        var x = document.getElementById("login");
        var y = document.getElementById("register");
        x.style.left = "-510px";
        y.style.right = "5px";
    }

    function redirectToHome() {
        // Redirect to the home page (new login.html) after login button is clicked
        window.location.href = "home.html";
</script>

</body>
</html>
    }
```

----------HOME PAGE----------

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link href='https://unpkg.com/boxicons@2.1.4/css/boxicons.min.css' rel='stylesheet'>
    <link rel="stylesheet" href="additional.css">
    <link rel="stylesheet" href="home.css">
    <link rel="stylesheet" href="new.css">

    <title>ECO-LOCATOR Login & Registration</title>

</head>
```

```
<body>
<div class="wrapper">
  <nav class="nav">
    <div class="nav-logo">
      <p>ECO-LOCATOR. </p>
    </div>
    <div class="nav-menu" id="navMenu">
      <ul>
        <li><a href="new login.html" class="link active">Home</a></li>
        <li><a href="locator.html" class="link">Location</a></li>
        <li><a href="services.html" class="link">Services</a></li>
        <li><a href="about.html" class="link">About</a></li>
        <li><a href="contact.html" class="link">Contact</a></li>
        ``?<li><a href="information.html" class="link">Information</a></li>
      </ul>
    </div>
  </nav>
  <div class="home">
    <div class="main-text">
      <h1>WELCOME TO E-WASTE FACILITY LOCATOR</h1>
      <p>Find the nearest e-waste recycling facilities and disposal centers near you.</p>
      <button id="btn">Locate Now</button>
    </div>
  </div>


</div>
<script>
  // Add event listener to the button
  document.getElementById('btn').addEventListener('click', function() {
    // Redirect to locator.html when button is clicked
    window.location.href = 'locator.html';
  });
</script>
</body>
</html>
```

----------LOCATOR PAGE----------

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <link href='https://unpkg.com/boxicons@2.1.4/css/boxicons.min.css' rel='stylesheet'>
   <link rel="stylesheet" href="locator.css">
   <title>E-Waste Facility Locator</title>
</head>
<body>
   <div class="wrapper">
      <nav class="nav">
         <div class="nav-logo">
            <p>ECO-LOCATOR.</p>
         </div>
         <div class="nav-menu" id="navMenu">
            <ul>
               <li><a href="new login.html" class="link active">Home</a></li>
               <li><a href="locator.html" class="link">Location</a></li>
               <li><a href="services.html" class="link">Services</a></li>
               <li><a href="about.html" class="link">About</a></li>
               <li><a href="contact.html" class="link">Contact</a></li>
               <li><a href="information.html" class="link">Contact</a></li>

            </ul>
         </div>
      </nav>
      <div class="container">
         <h1>E-Waste Facility Locator</h1>
         <p id="instruction">Find your nearest e-waste facility by entering your location
below:</p>
         <div id="map-container">
            <iframe id="map"
src="https://www.google.com/maps/d/u/0/embed?mid=1RBAkL2_GfAdCeD2UZQ-
tc6cN7XX2JP4&ehbc=2E312F" width="100%" height="100%" allowfullscreen></iframe>
            <iframe id="map" src="https://locatestore.com/8-8z4m" width="100%"
height="100%" allowfullscreen></iframe>
```

```
        </div>
      </div>
    </div>

    <script src="script.js"></script>
  </body>
  </html>
```

----------SERVICE PAGE----------

```
  <!DOCTYPE html>
  <html lang="en">
   <head>
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Responsive Services Section</title>
    <!-- Font Awesome CDN-->
    <link
     rel="stylesheet"
     href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.0.0-beta3/css/all.min.css"
    />
    <!-- Google Font -->
    <link

  href="https://fonts.googleapis.com/css2?family=Poppins:wght@400;500;600&display=swap"
     rel="stylesheet"
    />
    <!-- Stylesheet -->
    <link rel="stylesheet" href="service.css" />
   </head>
   <body>
    <section>
     <div class="row">
      <h2 class="section-heading">Our Services</h2>
     </div>
     <div class="row">
      <div class="column">
       <div class="card">
        <div class="icon-wrapper">
         <i class="fas fa-hammer"></i>
```

```
    </div>
    <h3>E-Waste Collection and Recycling</h3>
    <p>
      Provide information about e-waste collection points,
       drop-off locations, or recycling centers where users can dispose of their
       electronic devices responsibly.
    </p>
  </div>
</div>
<div class="column">
  <div class="card">
    <div class="icon-wrapper">
      <i class="fas fa-brush"></i>
    </div>
    <h3>Education and Awareness</h3>
    <p>
      Offer resources and educational materials on the importance of
      e-waste recycling, including articles, guides, and FAQs to
      help users understand the impact of electronic waste on the environment.
    </p>
  </div>
</div>
<div class="column">
  <div class="card">
    <div class="icon-wrapper">
      <i class="fas fa-wrench"></i>
    </div>
    <h3>Eco-Friendly Disposal Guidance</h3>
    <p>
      Offer guidance on how to dispose of e-waste in an
      environmentally friendly manner, including tips on proper recycling techniques and
       the importance of data destruction before disposal.
    </p>
  </div>
</div>
<div class="column">
  <div class="card">
    <div class="icon-wrapper">
      <i class="fas fa-truck-pickup"></i>
    </div>
```

```
          <h3>Data Destruction</h3>
          <p>
             Offer services for secure data destruction to ensure sensitive
              information stored on electronic
              devices is properly erased before recycling.

          </p>
        </div>
      </div>
      <div class="column">
        <div class="card">
          <div class="icon-wrapper">
            <i class="fas fa-broom"></i>
          </div>
          <h3>Electronics Reuse</h3>
          <p>
             Highlight facilities that refurbish and resell used electronics,
             promoting the reuse of functional devices to extend their lifespan.
          </p>
        </div>
      </div>
      <div class="column">
        <div class="card">
          <div class="icon-wrapper">
            <i class="fas fa-plug"></i>
          </div>
          <h3>Feedback and Support</h3>
          <p>
             Offer a platform for users to provide feedback,
             ask questions, or seek support regarding e-waste disposal,
             recycling options, or any other related concerns.
          </p>
        </div>
      </div>
    </div>
  </section>
 </body>
</html>
```

----------CONTACT PAGE----------

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Contact Form</title>
  <link rel="stylesheet" href="contact.css" />
  <script
   src="https://kit.fontawesome.com/64d58efce2.js"
   crossorigin="anonymous"
  ></script>
 </head>
 <body>

<div class="wrapper">
  <nav class="nav">
    <div class="nav-logo">
      <p>ECO-LOCATOR. </p>
    </div>
    <div class="nav-menu" id="navMenu">
      <ul>
        <li><a href="new login.html" class="link">Home</a></li>
        <li><a href="locator.html" class="link">Location</a></li>
        <li><a href="services.html" class="link">Services</a></li>
        <li><a href="about.html" class="link">About</a></li>
        <li><a href="contact.html" class="link active">Contact</a></li>
        <li><a href="information.html" class="link">Information</a></li>
      </ul>
    </div>
  </nav>
  <div class="container">
   <span class="big-circle"></span>
   <img src="image0_0 (2).jpg" class="square" alt="" />
   <div class="form">
    <div class="contact-info">
     <h3 class="title">Let's get in touch</h3>
     <p class="text">
```

```
Feel free to reach out to us with any questions, feedback,
or suggestions. We're here to help you navigate the journey towards responsible e-waste disposal!
</p>

<div class="info">
 <div class="information">
  <img src="image0_0 (2).jpg" class="icon" alt="" />


  <p>Karpagam College Of Engineeering , Coimbatore, TamilNadu</p>
 </div>
 <div class="information">
  <img src="img/email.png" class="icon" alt="" />
  <p>ecolocator@gmail.com</p>
 </div>
 <div class="information">
  <img src="img/phone.png" class="icon" alt="" />
  <p>123-456-789</p>
 </div>
</div>

<div class="social-media">
 <p>Connect with us :</p>
 <div class="social-icons">
  <a href="#">
   <i class="fab fa-facebook-f"></i>
  </a>
  <a href="#">
   <i class="fab fa-twitter"></i>
  </a>
  <a href="#">
   <i class="fab fa-instagram"></i>
  </a>
  <a href="#">
   <i class="fab fa-linkedin-in"></i>
  </a>
 </div>
</div>
</div>
```

```
      <div class="contact-form">
        <span class="circle one"></span>
        <span class="circle two"></span>

        <form action="new login.html" autocomplete="off">
          <h3 class="title">Contact us</h3>
          <div class="input-container">
            <input type="text" name="name" class="input" />
            <label for="">Username</label>
            <span>Username</span>
          </div>
          <div class="input-container">
            <input type="email" name="email" class="input" />
            <label for="">Email</label>
            <span>Email</span>
          </div>
          <div class="input-container">
            <input type="tel" name="phone" class="input" />
            <label for="">Phone</label>
            <span>Phone</span>
          </div>
          <div class="input-container textarea">
            <textarea name="message" class="input"></textarea>
            <label for="">Message</label>
            <span>Message</span>
          </div>
          <input type="submit" value="Send" class="btn" />
        </form>
      </div>
    </div>
  </div>

  <script src="conttact.js"></script>
 </body>
</html>
```

SAMPLE OUTPUT

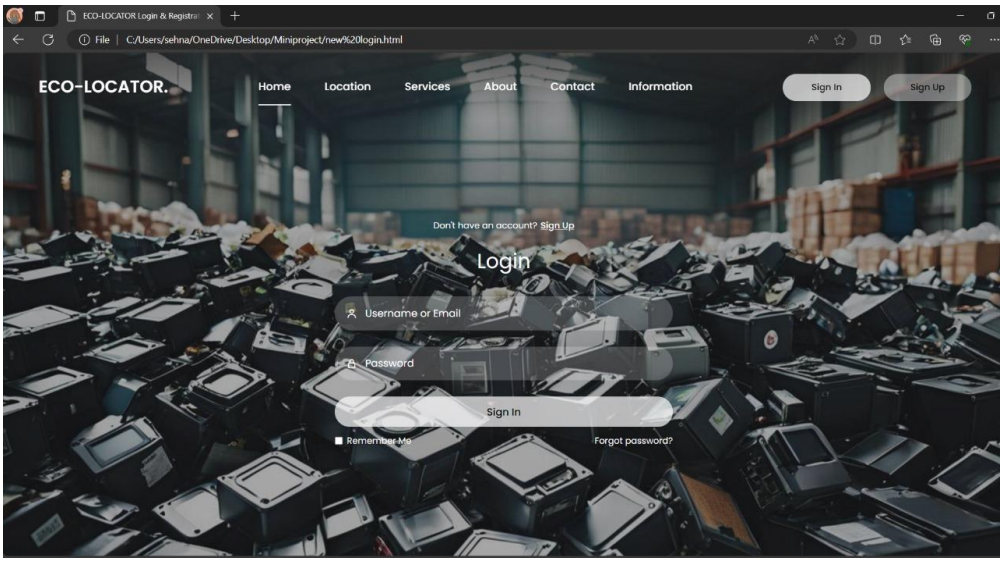

Fig 12.1 Login Page

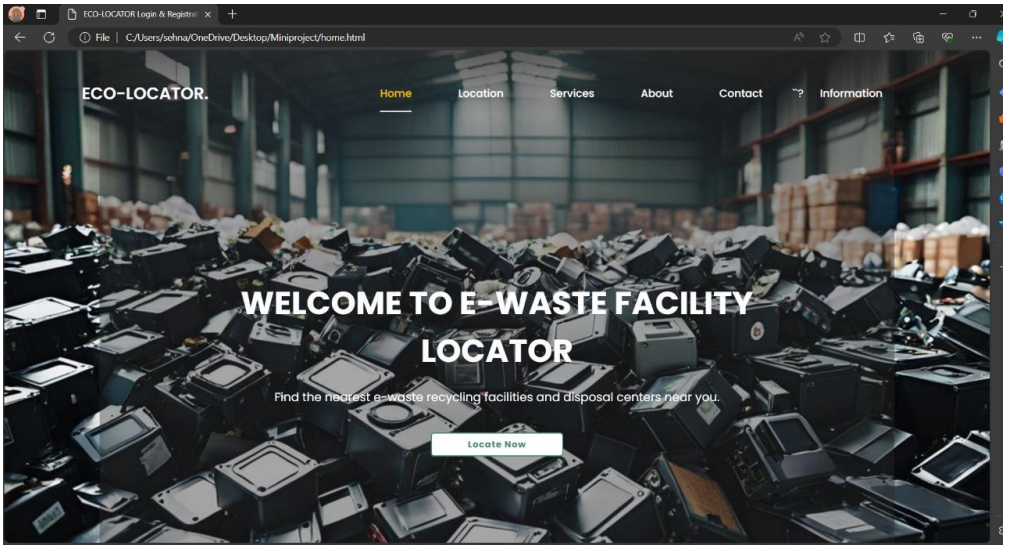

Fig 12.2 Home Page

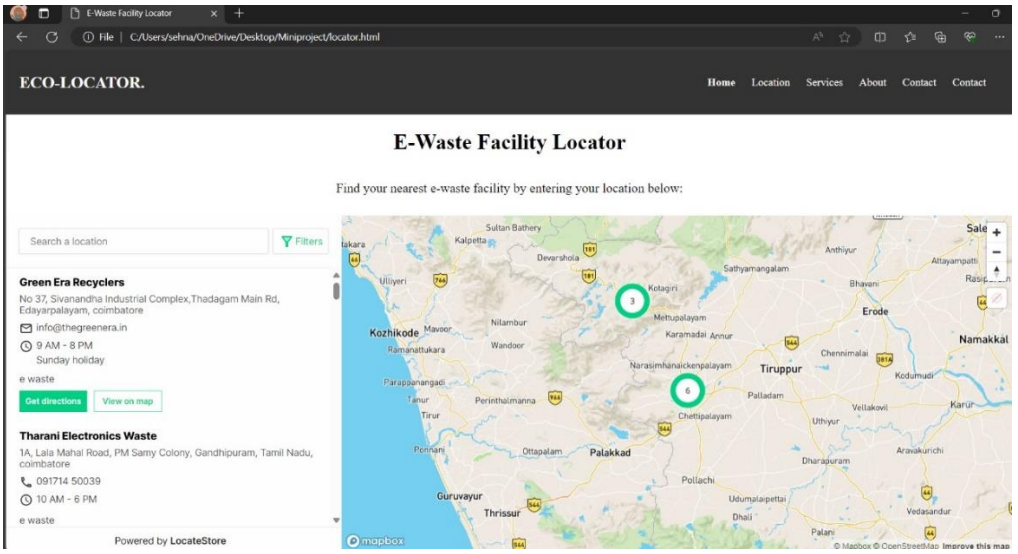

Fig 12.3 Locator Page

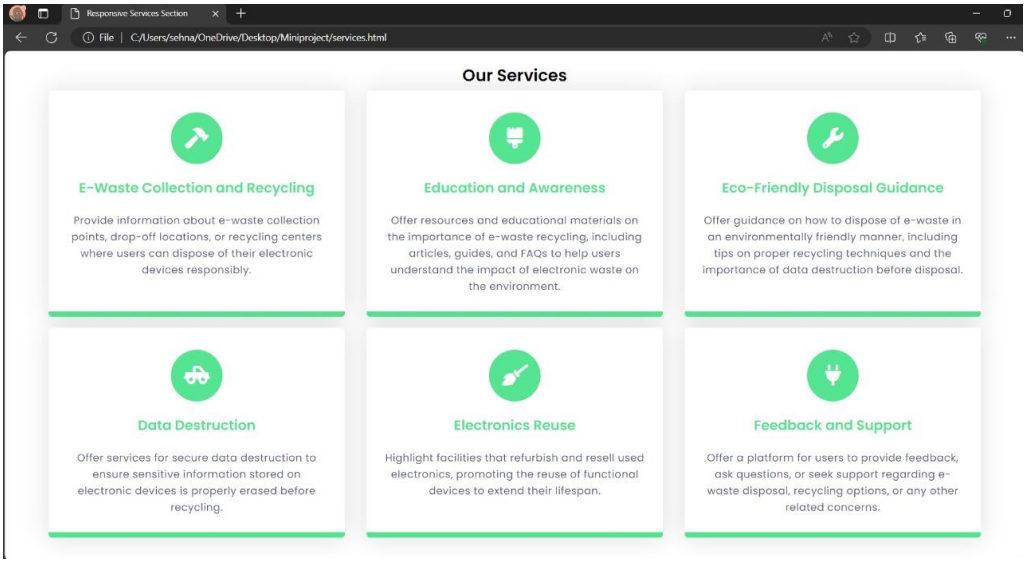

Fig 12.4 Service Page

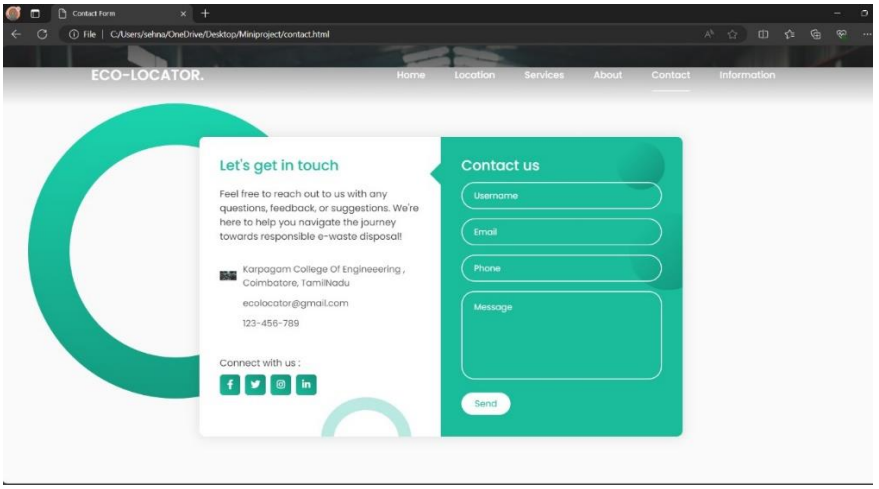

Fig 12.5 Contact Page

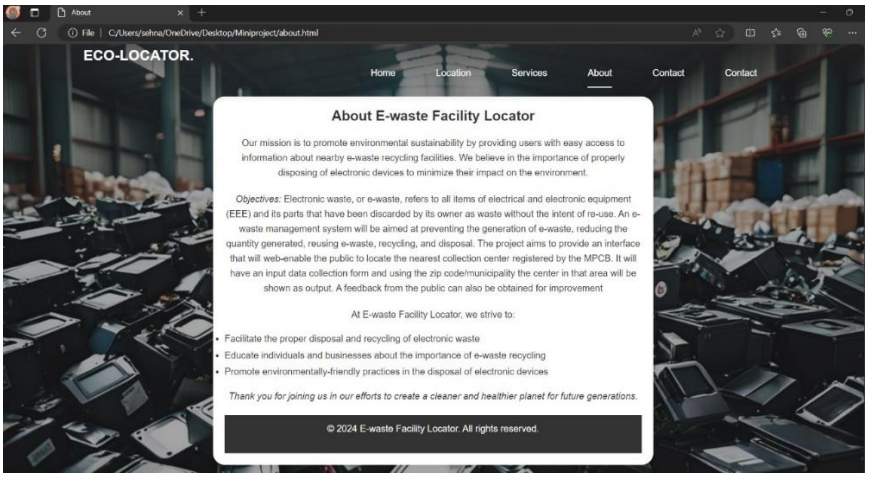

Fig 12.6 About Page

Fig 12.7 Information Page

ANNEXURE – I

CONFERENCE CERTIFICATES

NAVEENA M (717822S134)

SRI SAI REC SRI SAI RANGANATHAN ENGINEERING COLLEGE
Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai
ACCREDITED WITH GRADE B++ NAAC

Proudly Presents

International Conference on Innovation in Intelligence and Informatics

ICI$_3$'2k24

CERTIFICATE

This is to certify that Dr. / Prof. / Mr. / Mrs. / Ms. Naveena. M *of* Karpagam college of Engineering *has presented a paper titled* A Geographical information system based Facility location for E-waste *in the International Conference on Innovation in Intelligence and Informatics (ICI$_3$ '2k24) held on* 20.04.2024 *at Sri Sai Ranganathan Engineering College, Coimbatore.*

PRINCIPAL

CHAIRMAN

SEHNAAZ I T (717822S146)

SRI SAI REC SRI SAI RANGANATHAN ENGINEERING COLLEGE

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

ACCREDITED WITH A+ GRADE B++ NAAC

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ICI$_3$'2k24

CERTIFICATE

This is to certify that Dr. / Prof. / Mr. / Mrs. / Ms. Sehnaaz . I.T *of* Karpagam College of Engineering. *has presented a paper titled* A Geographical Information System based Facility location approach for E-Waste *in the International Conference on Innovation in Intelligence and Informatics (ICI$_3$ '2k24) held on* _____ *at Sri Sai Ranganathan Engineering College, Coimbatore.*

PRINCIPAL

CHAIRMAN

SOWMIYA K (717822S153)

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International Conference on Innovation in Intelligence and Informatics

ICI$_3$'2k24

CERTIFICATE

This is to certify that Dr. / Prof. / Mr. / Mrs. / Ms. Sowmiya.K *of* Karpagam college of Engineering *has presented a paper titled* A Geographical Information system based Facility locator *in the International Conference on Innovation in Intelligence and Informatics (ICI$_3$ '2k24) held on* 20.04.2024 *at Sri Sai Ranganathan Engineering College, Coimbatore.*

PRINCIPAL

CHAIRMAN