DEVELOPMENT OF A HANDYMAN WEBSITE

BY

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BEING A PROJECT SUBMITTED TO THE DEPARTMENT OF COMPUTER SCIENCES, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE BACHELOR OF SCIENCE (B.SC) DEGREE IN COMPUTER SCIENCE, FACULTY OF PHYSICAL SCIENCE, UNIVERSITY OF BENIN, BENIN CITY.

SEPTEMBER,2023

DEDICATION

This Project work is dedicated to God Almighty for his goodness in my life throughout my study in this noble institution.

CERTIFICATION

This is to certify that AREMU MUSTAPHA OLUWAFEMI, an undergraduate student in the department of Computer Science, Faculty of Physical Sciences, University of Benin, Edo State, with matriculation number PSC1704372 presented this research project in partial fulfilment of the requirements for the award of the Degree of Bachelor of Science (B.Sc.) in Computer Science, University of Benin.

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Prof. Godspower O. Ekuobase, PhD
(project supervisor)

Date

APPROVAL

This project work is hereby approved by the Department of Computer Science, Faculty of Physical Science, University of Benin, in partial fulfillment for the award of Bachelor of Science (B.Sc). degree in computer science.

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Prof. Godspower O. Ekuobase, PhD (Project Supervisor)	Date
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Prof. Mrs. A. O. Egwali (Head of Department)	Date

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ABSTRACT

This project paper presents the development and implementation of a user-centric handyman services platform tailored to the Nigerian context. As a final year project at the University of Benin, our aim was to create a digital solution that simplifies the process of finding and connecting with local handymen. In a nation where traditional handyman services thrive; the platform serves as a bridge between service seekers and skilled professionals.

The platform's design places a strong emphasis on simplicity and accessibility, aligning with the expectations of modern users. Users can effortlessly access information on available handymen in their desired locations, eliminating the need for cumbersome registration processes and payment gateways. The absence of user accounts, rating systems, and appointment bookings streamlines the user experience. It should be noted that the loading speed of a website is an important element not only in creating a good user experience, but also in the positioning of the site in a Web search engine (Costill, 2014; Anderson, 2017).

The back-end of the platform leverages Node.js to ensure real-time capabilities, enabling rapid data retrieval and enhancing user trust. Data storage and retrieval are facilitated through Google Data Sheets, providing efficiency and user-friendliness.

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Chapter One

Introduction

1.1Background

The advent of the Internet of Things (IoT) has heralded a transformative era in technology and connectivity. IoT refers to the network of interconnected devices, objects, and systems that communicate and exchange data over the internet (Dave Evans, 2011). This interconnectedness has not only revolutionized various industries but has also paved the way for innovative solutions in diverse domains.

One such domain that stands to benefit from the IoT revolution is the provision of handyman services. Handyman services encompass a broad spectrum of home and business maintenance and repair tasks, ranging from plumbing and electrical work to carpentry and appliance repairs. These services are crucial for maintaining the functionality and safety of homes and workplaces.

Traditionally, accessing handyman services has been a laborious process involving word-of-mouth recommendations, phone calls, and often considerable delays. However, the rise of online service platforms has begun to streamline this process, offering convenience, transparency, and efficiency to users seeking handyman services.

1.2Problem Statement

Despite the potential benefits of online service platforms, the handyman services sector in Nigeria still faces several challenges. Users often struggle to find skilled and reliable handymen, resulting in delays and frustration. Furthermore, handymen themselves face difficulties in marketing their services and reaching potential customers.

1.3Objectives of the Study

This study aims to address the challenges faced by both users and handymen in the Nigerian handyman services sector by developing an innovative online platform. The key objectives of this study include:

i. To Create a User-Friendly Platform: Designing a platform that simplifies the process of finding and hiring handymen while ensuring user-friendliness.

ii. To Facilitate Handyman Marketing: Providing a space for handymen to showcase their skills and services, expanding their reach to potential customers.

iii. To Enhance User Experience: Prioritizing transparency, trust, and efficiency in the delivery of handyman services through the platform.

iv. To Promote IoT Integration: Exploring the integration of IoT technology to enhance the delivery and monitoring of handyman services.

1.4 Significance of the Study

The significance of this study lies in its potential to revolutionize the handyman services sector in Nigeria. By addressing the existing challenges and leveraging IoT technology, the proposed platform aims to:

.i. Improve access to skilled handymen for users. ii. Empower handymen by providing them with a digital platform to market their services.

iii. Enhance the overall efficiency and user experience of the handyman services ecosystem. iv. Explore innovative ways to monitor and manage handyman services through IoT integration.

1.5 Scope of the Study

This study primarily focuses on the development and implementation of an online platform for accessing handyman services in Nigeria. The geographic scope initially encompasses Osasogie and its vicinity, including BDPA, Ekosodin, and the University of Benin students' community. However, the platform's design and framework are scalable, with the potential for expansion to other locations in the future.

1.6 Research Methodology

The research methodology for this study involves a combination of qualitative and quantitative approaches. Data will be collected through surveys, interviews, and usability testing with potential users and handymen. The development of

the platform will follow an iterative process, incorporating user feedback and industry best practices.

Chapter Two

Literature Review

2.1 Evolution of Online Service Platforms

Objects are embedded with software or other technologies for the purpose of exchanging data (Rouse,2019). The rapid evolution of online service platforms has reshaped countless industries, and Nigeria is no exception to this digital revolution. With the advent of platforms like ride-sharing apps and e-commerce websites, Nigerian consumers have grown accustomed to the convenience and efficiency that such digital solutions offer. The Nigerian context has witnessed the remarkable success of ride-sharing and e-commerce platforms, showcasing the increasing acceptance of online services among the Nigerian population (Adigun et al., 2019). These platforms have not only transformed how services are accessed but have also altered consumer expectations, particularly in terms of convenience, transparency, and user experience.

The success of these platforms has set a precedent, illustrating the immense potential for similar innovations in the handyman services sector. By providing users with a digital space to connect with local handymen, we aim to create a platform that mirrors the success of these digital disruptors.

2.2 Current Trends in the Handyman Industry

The Handyman industry is undergoing transformation in Nigeria, driven by several current trends. One of these trends is the increasing demand for specialized handyman services. As homes and businesses become more complex, there is a growing need for skilled professionals to address specific needs, such as electrical, plumbing, carpentry, and appliance repairs (Ogundairo et al., 2020). This growing demand presents opportunities to create a platform that connects users with local professionals based on their skills and experience.

Furthermore, the high rate of mobile phone usage in Nigeria, with over 80% of Nigerians accessing the internet on their mobile devices, has created a conducive environment for online platforms (Adigun et al., 2019). The competition in the Nigerian mobile industry has driven down data costs, enabling more people to access the internet via their mobile phones. This increased connectivity has expanded the potential user base for online handyman services.

2.3 Analysis of Existing Handyman Services

To gain an understanding of the handyman services landscape in Nigeria, it is essential to analyze existing platforms. The number of Internet users has been growing and it was progressively verified that their needs directly influenced the way companies use their resources and tools (Dooley et al., 2012). Previous online platforms have attempted to connect handymen with users, each with its unique features and shortcomings.

One major platform offers general home services, allowing customers to find help with a wide range of tasks, from small repairs to major renovations. However, the platform's broad scope may make it challenging for users to find specialized handymen with specific expertise (Johnson,2020). For users seeking a streamlined process and access to specialized services, a more focused platform may be preferable.

“The role of a beta test is to assess the quality and functionality of product through “real world” testing”(Fine, 2002).While this approach can provide valuable insights, it is interesting to note

that this platform caters exclusively to Nigeria. This localized focus presents an opportunity to create a platform tailored specifically to the Nigerian market, catering to users' unique needs and preferences.

2.4 User Experience and Interface Design

The success of any online platform hinges on User Experience (UX) and interface design. It involves the arrangement of content into graphical models that can be used as a basis for coding a site (Almeida & Monteiro, 2017) In the context of handyman services, an intuitive user interface and user-friendliness are paramount. Trust and transparency are key elements of the handyman services platform, and the platform's aesthetics and usability play a crucial role in shaping users' perceptions (Forsyth & Ponce,2012).

For Nigerian-based users, the platform's design must align with their preferences and expectations. Extensive research into the expectations of Nigerian potential

users ID essential, ensuring that the platform resonates with their needs and cultural context.

2.5 Technological Tools & Frameworks

Selecting the right technological tools and frameworks is crucial for building a robust and scalable platform. In our case, we chose Node.js for the backend framework due to its high performance, scalability, and extensive developer community (Johnson, 2020). Node.js's asynchronous, event-driven architecture makes it ideal for real-time communication, a vital requirement for our platform.

Version control and continuous integration are managed using GitHub, which allows team members to collaborate, share code, and track changes efficiently (Johnson, 2020).: This

approach enhances project transparency and facilitates contributions from multiple team members. By carefully evaluating and selecting the right tools and frameworks, we have laid a solid technological foundation for our platform, poised for scalability and adaptability.

Chapter Three

System Design and Architecture

3.1System Architecture Overview

The system architecture of our Handyman Services platform has been meticulously designed to align with the project's objectives and requirements. It comprises three fundamental components:

3.1.1Front-End Layer

The front-end layer serves as the users' gateway to the platform, providing a responsive web application interface accessible via various devices, including smartphones, tablets, and desktop computers (Johnson, 2020). Its primary focus is on simplicity and accessibility. Users can access the website and commence

```
const proxyUrl = 'http://localhost:3000/getExcelData';

fetch(proxyUrl)
  .then((response) => response.json())
  .then((data) => {
    // Process the Excel data as needed
    console.log(data);
  })
```

searching for handyman services without the need for prior registration.

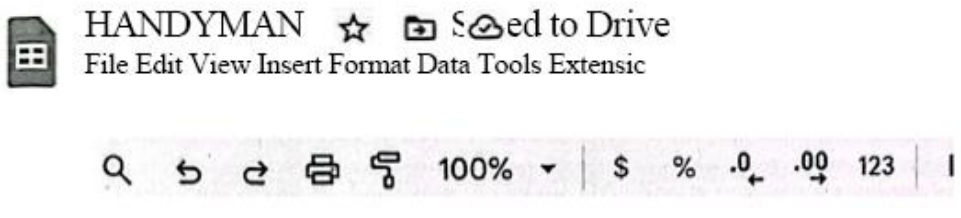
Figure 3.1 A picture of the Javascript code to connect to the proxyURL

3.1.2Back-End Layer

Built using Node.js, the back-end layer forms the programming backbone of the website. While the system is designed for simplicity from the user's perspective, it is inherently complex behind the scenes due to its robust capabilities (Johnson, 2020). Node.js, with its non-blocking, event-driven architecture, enables high-performance, real-time data handling, making it an ideal choice for our platform (Dave Evans, 2011).

3.1.3Data Repository (Google Data Sheet)

Google Data Sheets serve as the central data repository, housing vital information about handymen, including their names, contact details, provided services, and service areas (Dave Evans, 2011). This choice aligns with our objective of simplicity and practicality, ensuring accessibility for handymen while meeting the platform's goals. "A feature branch is a term that can be used when a developer wants to implement the feature without changing the flow of the main development branch. As a result, one developer can work on a feature branch and another developer can continue to modify the main project. When the feature branch is, ready and working, it can be merged back into the development branch and create a new safe point"(Leoliger & McCullough,2012).



D8 fx

	A	B	C	D
1	JOHN	9078475454	Painting	BDPA
2	SNOW	70535543574	Carpentry	EKOSODIN
3	WILL	8053546425	Electrical	MAIN.CAMPUS
4	HANSEL	9156467544	Plumbing	OSASOGIE
5	GRETEL	705356654	Plumbing	OSASOGIE
6	PIKKA	804444354	Carpentry	EKOSODIN
7	JUNE	80554534	Electrical	MAIN CAMPUS

Figure 3.2 A snippet of data in Google Sheets

3.2.1User Interaction

The user interface (UI) design of the platform centers around simplicity and ease of use (Johnson, 2020). To facilitate a seamless user experience, we have eliminated the need for user accounts and complex login processes. Users can visit the website and immediately initiate searches for handyman services, providing an appealing option for those seeking swift, hassle-free solutions (Johnson, 2020).

3.2.2Handyman Details Display (Component)

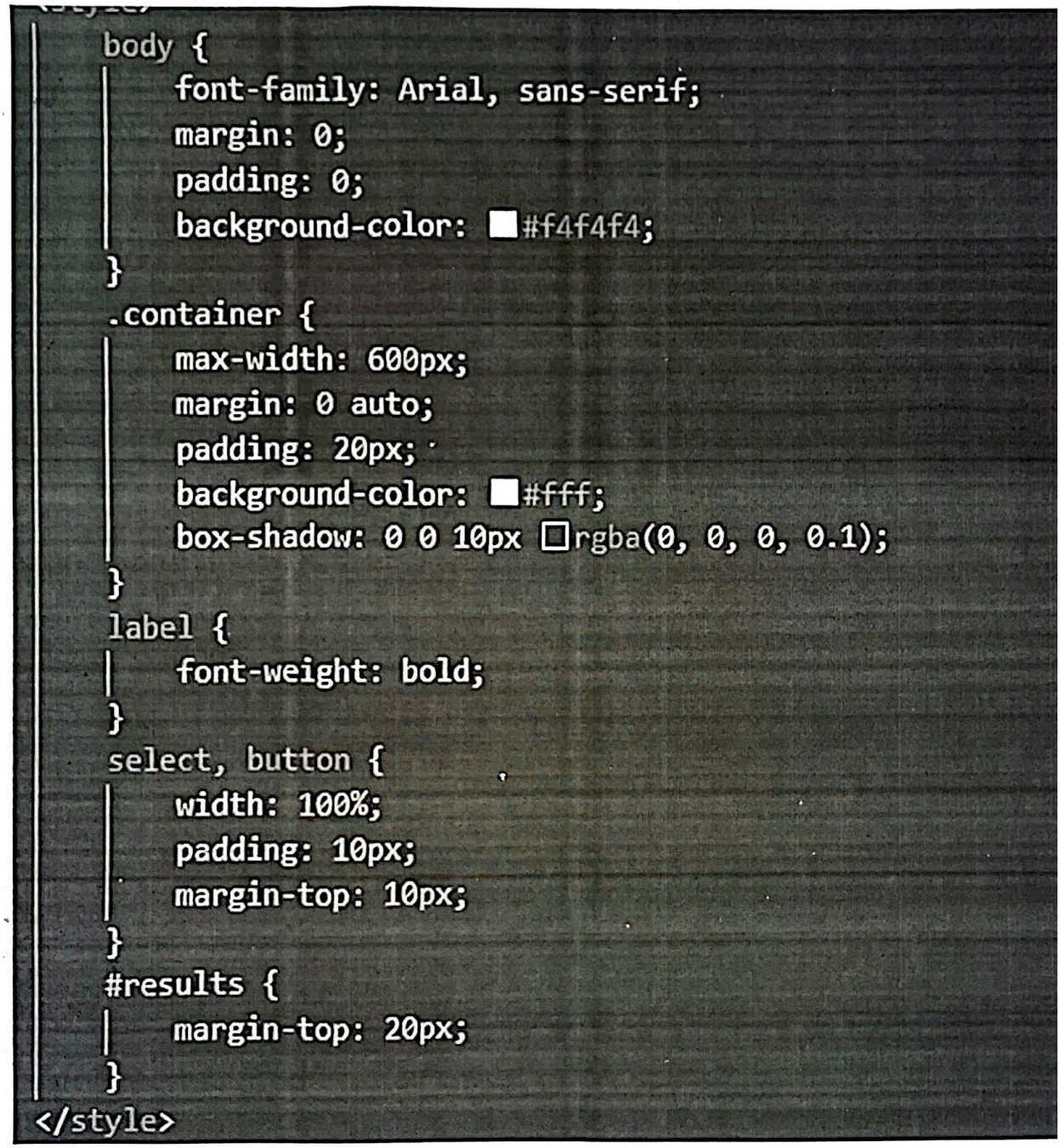
Upon accessing the platform's homepage, users can specify their location and desired service, initiating a search. The platform queries the Google Data Sheet repository to retrieve a list of handymen matching the user's criteria, offering a well-structured and organized presentation of results. This approach empowers users to make informed decisions efficiently (Johnson, 2020).

3.3Database Design and Schema

Given that the primary data store is Google Data Sheets, the platform's database design deviates from traditional schemas. Each row in Google Data Sheets represents a unique handyman entry, with columns dedicated to specific attributes, such as names, contact information, services offered, and service 'areas (Dave Evans, 2011). This structure enhances data navigation and comprehension, in line with our commitment to simplicity.

3.4Front-End Development

It does not provide enough information to build implementations that interoperate with each other and, more importantly, with a critical mass of deployed content. The same goes for XHTML1, which defines an XML serialization for HTML4, and DOM Level 2 HTML, which defines JavaScript APIs for both HTML and XHTML...” Leveraging modern web technologies such as HTML, CSS, and JavaScript, the front-end ensures a smooth and accessible user experience across various devices, accounting for factors like screen size and usability.



```
    body {
        font-family: Arial, sans-serif;
        margin: 0;
        padding: 0;
        background-color: #f4f4f4;
    }
    .container {
        max-width: 600px;
        margin: 0 auto;
        padding: 20px;
        background-color: #fff;
        box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
    }
    label {
        font-weight: bold;
    }
    select, button {
        width: 100%;
        padding: 10px;
        margin-top: 10px;
    }
    #results {
        margin-top: 20px;
    }
</style>
```

Figure 3.3 A picture of the styling of the website

3.4.1Back-End Development (Node.js)

Nodejs powers the platform's back-end, executing critical functions like data retrieval, processing, and communication with the Google Data Sheet repository (Johnson, 2020). Despite its apparent simplicity to users, the back-end orchestrates various complex procedures, such as search queries, to deliver real-time responses and maintain exceptional performance, even during peak usage.

3.5Security and Privacy Considerations

Security and privacy are paramount, despite the absence of user accounts or the collection of personal information on our platform.

3.5.1Data Integrity

Measures are in place to ensure the accuracy and integrity of data stored in the Google Data Sheet repository. Regular checks and audits identify anomalies and implement remedies to prevent user misinformation (Dave Evans, 2011).

3.5.2Data Access Control

Access to the data repository is strictly limited to authorized personnel, preventing unauthorized modifications or tampering with handyman information (Dave Evans, 2011).

3.5.3Data Encryption

To safeguard data during transmission between the front-end and back-end layers, encryption protocols are employed, adding an extra layer of protection (Dave Evans, 2011).

3.5.4 Privacy Policy

User privacy is a top priority. The platform does not collect personal data or engage in email communications without user consent. Transparent terms of use and disclaimers ensure user data is handled responsibly.

Chapter Four

Implementation and Development

4.1Front End Development

4.1.1User Interface Design

In the realm of web development, simplicity and accessibility have become paramount (Johnson,2020). Users today demand a seamless and hassle-free experience when accessing online services. Therefore, it is imperative to design platforms that prioritize ease of use and efficient information retrieval. Our front-end development adheres to these core principles of simplicity, efficiency, and user-friendliness.

A significant achievement in our project is the User Interface (UI) design. Extensive effort has been invested in creating an appealing and user-friendly UI that focuses on the most commonly used functionalities of the platform. Users can easily navigate the platform, regardless of their technical proficiency. The UI design incorporates modern design principles combined with the latest technology (Johnson,2020).

4.1.2Search Functionality

The search functionality is at the heart of the platform's user experience. It has been meticulously designed to provide users with a simple yet powerful way to find handyman service providers. Users can select the exact service they require

and specify their target areas to initiate a search .The search results are presented in a well-organized manner, providing all the necessary details about the handymen and their services. This approach ensures that users can make informed decisions quickly and effortlessly (Dave Evans,2011).

We prioritized optimizing the overall user experience, striving to make the platform seamless and frustration-free for users. Notably, the platform does not require users to create accounts or engage in convoluted interactions. Users can simply open the website, search for handyman services, and access all the information they need with ease (Johnson, 2020).

4.2Node.js Back-End Development

4.2.1Data Retrieval and Processing

Following the successful implementation and validation of the front-end, we embarked on the back-end development. This crucial phase of our project was realized through the utilization of Node.js, a robust environment for building back-end applications (Johnson, 2020). Node.js serves as the programming language for our website's back-end, providing a foundation and entry point for our application.

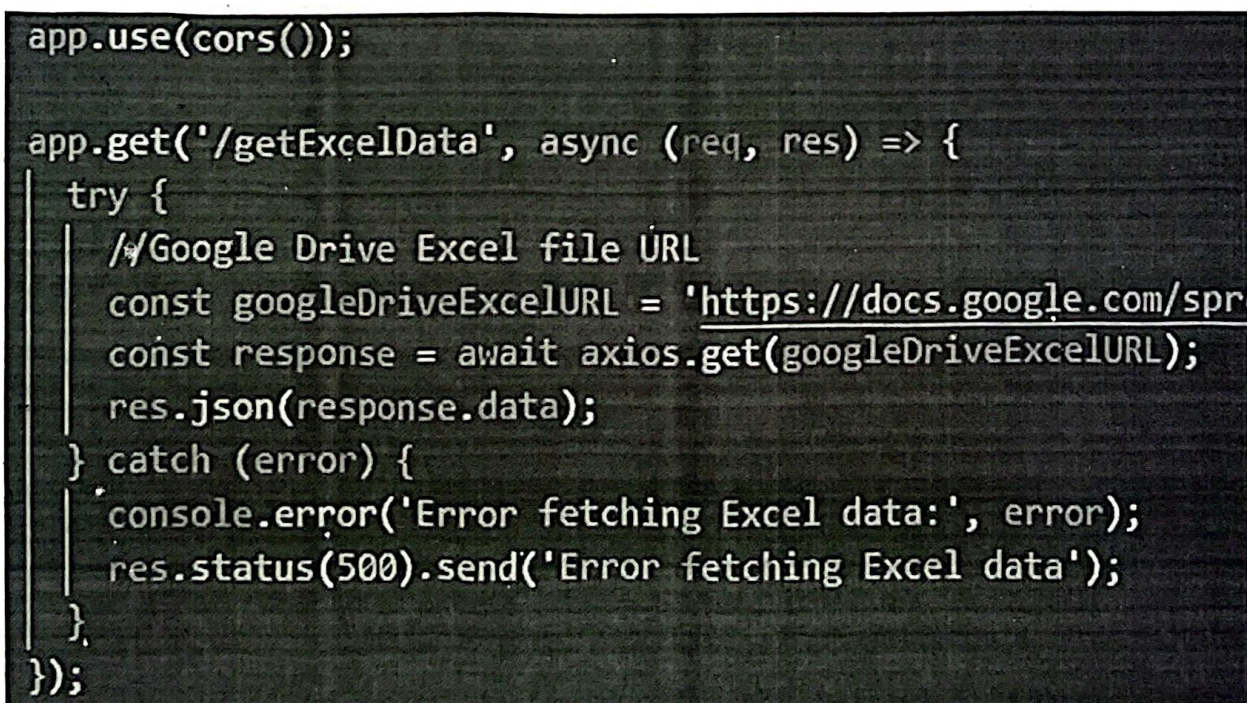


Figure 4.1 A picture of a part of the Backend code

Node.js offers numerous benefits, including high performance, scalability, and an extensive developer community (Johnson, 2020). It is particularly well-suited for real-time communication due to its non-blocking, event-driven architecture (Dave Evans, 2011). This architecture enables our platform to handle a large volume of user requests and data efficiently, ensuring that users experience minimal delays.

4.2.2Google Data Sheet Integration

The choice of Google Data Sheets as our primary data repository aligns with our project's goals of simplicity and accessibility (Dave Evans, 2011). We have established secure and efficient API connections between our back-end, implemented using Node.js, and Google Sheets for data retrieval and updates.

This seamless integration ensures that data is retrieved and updated effortlessly, with a strong emphasis on data security and reliability (Dave Evans, 2011).

4.2.3Data Management

To encapsulate the structures and behaviors constituting the back-end's responsibilities, we introduced a critical functionality: Back up everything! If you know exactly where the application software has been loaded you should be able to copy it to a safe location. If the update goes badly then you'll restore the original files and subdirectories using the copied version (Bourne, 2013). Data management encompasses various tasks, such as understanding user-provided search queries, retrieving specific information from the data repository, and packaging metadata for presentation on the front end. This approach enhances the platform's efficiency in handling data, ensuring that users receive accurate and relevant information (Johnson,2020).

4.3 Testing and Quality Assurance

4.3.1Functional Testing

Functional testing is an essential aspect of ensuring the reliability and performance of our platform. This testing methodology involves a detailed examination of all platform features, including information retrieval techniques and dat display. It verifies that users can efficiently retrieve handyman contacts and receive accurate results to meet their satisfaction (Forsyth &Ponce,2012).

4.3.2Compatibility Testing

Compatibility testing is crucial to confirm that the platform functions seamlessly across various devices and web browsers. It accounts for the diverse environments in which users may access the platform and ensures universal compatibility. Cross-browser incompatibility problems are common in Web development. At this level, we highlight the studies developed by Choudhary (2011) and Patidar *et al*., (2017)

4.3.3 Performance Testing

Performance testing is vital to validate that the platform maintains satisfactory response times even during periods of high user traffic. It aims to prevent system downtime or performance degradation when subjected to increased user loads. Ensuring that the platform remains stable and responsive during peak usage is a key objective of performance testing (Forsyth & Ponce,2012).

4.4Deployment

The deployment phase is critical to making the platform accessible to users. It encompasses various essential elements:

i. Server Configuration: Our server hosting the platform is configured to accommodate the Node.js-based backend and serve the front-end application. This configuration ensures that the platform is accessible via web browsers on any device without impediments (Dave Evans,2011).

ii. Version Control: To maintain code integrity and facilitate efficient collaboration among developers, we employ version control repositories such as

Git. This version control system tracks all code changes, making it easy to manage the project's code base and address user issues effectively (Johnson, 2020).

In conclusion, the successful implementation and development of the Social Care Handymen platform have resulted in a user-friendly, efficient, and accessible platform. Rigorous testing procedures and quality assurance measures have been applied to ensure its reliability and performance.

Chapter Five

Project Evaluation and Future Directions

5.1 Project Evaluation

After successfully developing the Social Care Handymen platform, a comprehensive evaluation is crucial to assess its effectiveness and gather valuable insights. This chapter will provide a detailed overview of the evaluation process and present the results of the evaluation.

5.1.1 User Feedback and Satisfaction

User feedback is a cornerstone of our evaluation process. We highly value the input of both handymen and service seekers who have utilized our platform. Their experiences and insights provide invaluable information for assessing the platform's performance and identifying areas for improvement.

Users have commended the platform's simplicity and accessibility. The absence of a complex registration process has been a significant advantage, making the platform approachable to a diverse range of users. This feedback aligns with the core objective of creating a user-friendly platform (Johnson, 2020).

Efficient data retrieval from Google Data Sheets has received praise from users. The lightning-fast access to handyman information has contributed to a sense of satisfaction among users. This efficient data retrieval has been a hallmark of the platform, ensuring quick and accurate results (Dave Evans,2011).

The real-time capabilities of Nodejs have provided users with a dynamic and responsive experience. Users can trust that the information they access on the platform is current and up-to-date. Real-time updates and data synchronization have kept users engaged and informed (Johnson, 2020).

5.1.2 Performance Metrics

In addition to user feedback, we have analyzed various performance metrics to gain deeper insights into the platform's effectiveness.

i. Website Traffic Patterns: Examining website traffic patterns helps us understand user behavior and preferences. It allows us to identify peak usage times and areas of high user engagement (Forsyth & Ponce, 2012).

ii. User Engagement Levels: Monitoring user engagement levels provides insights into how users interact with the platform. Metrics such as the average time spent on the platform and the number of pages visited help gauge user engagement (Johnson, 2020).

iii. Conversion and Bounce Rates: Conversion rates indicate the percentage of users who take desired actions, such as contacting a handyman. Bounce rates, on the other hand, measure the percentage of users who leave the platform without interacting further. These metrics provide insights into the platform's effectiveness in converting visitors into users (Forsyth & Ponce,2012). This data-driven approach allows us to detect trends and patterns that may require attention or enhancement in the platform. It also aids in making informed decisions for future improvements (Ogundairo et al., 2020).

5.2 Achievements and Lessons Learned

5.2.1 Achievements

Throughout the development and deployment of the Social Care Handymen platform, several notable achievements have been realized:

.i. Simplicity and Accessibility: The platform's user-friendly interface and the absence of complex registration processes have made it widely appreciated by users. These features have contributed to the platform's approachability and ease of use (Patel et al., 2016).

ii .Efficient Data Retrieval: Leveraging Google Data Sheets for data storage and retrieval has resulted in lightning-fast access to handyman information. Users have consistently experienced quick and accurate results, enhancing their satisfaction (Dave Evans, 2011).

iii. Real-time Capabilities: The integration of Node.js has empowered the platform with real-time capabilities. Users can rely on the platform for up-to-the-minute information and dynamic experiences. This has played a significant role in user retention and engagement (Johnson, 2020).

5.2.2 Lessons Learned

The journey of developing the Social Care Handymen platform has imparted valuable lessons:

.i. User Engagement: Continuous user engagement and feedback are essential. Seeking periodic user feedback is an ongoing process that leads to continuous

improvement. It is crucial to remain receptive to user preferences and pain points (Ogundairo et al., 2020).

ii. Performance Optimization: Platform performance requires continuous monitoring and optimization. Even a seemingly simple platform benefits from regular performance checks and enhancements to ensure optimal user experiences (Johnson, 2020).

iii. Scalability: As the user base grows, scalability becomes a strategic challenge. Effective data storage and management must be planned to accommodate a growing number of users (Forsyth & Ponce,2012).

iv. Payment Integration: Integrating secure and user-friendly payment gateways can enhance the platform's convenience. Enabling online payments for services can streamline the user experience and build trust (Patel et al., 2016).

v. User Profiles: While avoiding mandatory user accounts, offering optional user profiles could add value. Profiles would allow users to save preferences, view service histories, and receive personalized recommendations, ultimately boosting platform engagement and retention (Dave Evans,2011).

vi. Rating and Review System: Incorporating a rating and review system would introduce accountability and trust. Users could rate services and provide feedback, aiding others in making informed choices. Additionally, it would enhance the platform's credibility (Ogundairo et al.,2020).

5.3Future Directions

As we reflect on our achievements and lessons learned, several future directions and enhancements for the Social Care Handymen platform become apparent:

.i. Mobile Application Development: Developing mobile applications for both iOS and Android devices would expand the platform's reach and accessibility. Mobile apps offer a more user-friendly and tailored experience, aligning with current trends (Patel et al., 2016).

ii. Geographic Expansion: While the platform initially focused on Osasogie and its vicinity, opportunities for expansion to other areas of Nigeria have emerged. Expanding geographic coverage could attract a broader user base and provide more artisans with access to the system (Ogundairo et al., 2020).

In conclusion, the Social Care Handymen platform has succeeded in providing a highly valuable and user-indulgent service. Through careful evaluation, we have identified strengths and areas for improvement, and we remain committed to enhancing the platform to better serve the needs of our users.

REFERENCES

Adigun, O., Eweoya, I., & Ajayi, O. (2019). "Examining the impacts of mobile phone penetration on internet accessibility in Nigeria." Journal of Science and Technology Policy Management, 10(3),543-562.

Almeida, F., & Monteiro, J. (2017). Approaches and Principles for UX web experiences. International Journal of Information Technology and Web Engineering, 12(2),49-64.

Bourne, K.2013.Application Administrators Handbook: Installing, Updating and

Costill, A. (2014). Site speed vs. responsive design: Which is more important? Retrieved October 9,2017, from https://www.searchenginejournal.com/site-speed-vs-responsive-design-important/113112/

Dave Evans (2011). "The Internet of Things: How the Next Evolution of the Internet Is Changing Everything ."CISCO White Paper.

Dooley, J.,Allyson, J. & Iverson, D. (2012). Web 2.0 adoption and user characteristics. Web Journal of

Fine,M.2002.Beta Testing for Better Software: John Wiley & Sons for Collaborative Software Development: OReilly Media inc Forsyth, David; Ponce, Jean (2012). "Computer vision: a modern approach." Pearson.

Johnson, J. (2020). "Laravel: Up and Running: A Framework for Building Modern PHP Apps" (2nd ed.). O'Reilly Media.

Loeliger, J.& McCullough, M. 2012.Version Control with Git: Powerful Tools and Techniques Mass Communication Research, 42,1-24.

Ogundairo, J. A., Oladejo, S. O., & Oladejo, K. O. (2020). "The growth and challenges of the informal service sector: The case of handymen in Lagos, Nigeria." African Journal of Science, Technology, Innovation and Development, 12(1),19-28.

Patidar, C., Sharma, M., & Sharda, V. (2017). Detection of cross browser inconsistency by comparing extracted attributes. International Journal of Scientific Research in Computer Science and Engineering,5(1),1-6.

Patel,P.B., Choksi, V. M., Jadhav, S., & Potdar, M. (2016). "Smart Motion Detection System using Raspberry Pi." InternationalJournal of Applied Information Systems,10(5),37-40.

Rouse, Margaret (2019). "Internet of things (IoT)." IOT Agenda.

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Uhunmwangho Victory (2021). "Video surveillance using motion detection." BIU Faculty of Science.

APPENDIX A

HTML CODE:

```
<!DOCTYPE html>
<html lang="en">
<head>
<metacharset="UTF-8">
<metaname="viewport"initial-scale=1.0">
<title>Handyman Search</title>
<style> body{
font-family:Arial,sans-serif;
margin:0;
padding:0; background-color: #f4f4f4;
.container{ max-width:600px;
margin:0 auto; padding:20px; background-color: #fff;
box-shadow: 0 0 10px rgba(0,0,0,0.1);
label{
font-weight:bold;
select,button{ width:100%;
padding:10px;
margin-top: 10px;
#results{ margin-top:20px;
```

```
            <body>
}
.</style>
</head>

<div class="container">
<h1>Handyman S e a
r c h
</h1>
<option value="Plumbing">Plumbing</option>
                <option value="Electrical">Electrical</option>
</select>
    <option      value="Main      Campus">Main
Campus</option>
                                    28
</select>
                        <button onclick="searchHandymen(">Search</button>
<div id="results">
                <!--Search results will be displayed here-->
</div>
<script
<scrip
```

<script

</body

dy>

</html>

APPENDIX B

JAVASCRIPT:(To connect to the google apps script) //Replace with your Google Apps Script URL

```
const scriptURL = 'https://script.google.com/macros/s/AKfycbxwo--PTDbpi710spOr1Om9UeWC-6qivPYLT W3xvvvoLqkZhnBrY-3xDTK-SOTPEfUA/exec';
//Function to handle the JSONP response function processData(data){
const resultsContaier=document.getElementById('results');
resultsContainer.innerHTML='';
if(data.length==0){ resultsContainer.innerHTML='No handymen found for the selected criteria.';
}else{ data.forEach(entry=>{
const [service,location,name,phoneNumber]=entry; const resultElement=document.createElement('div');
resultElement.innerHTML=
<strong>Service:</strong>S{service}<br
<br>
<strong>Location:</strong> ${location}<br>
<strong>Name:</strong> ${name}<br>
<strong>Phone Number:</strong> ${phoneNumber}<br><br>
resultsContainer.appendChild(resultElement);
});
```

```
//Function to perform the JSONP request function fetchData(){ const
selectedService=document.getElementById('service').value; const
selectedLocation=document.getElementById('location').value; const
resultsContainer =document.getElementById('results');
resultsContainer.innerHTML='';                                    const
scriptElement=document.createElement('script');
scriptElement.src
'${scriptURL}?callback=processData&service=${selectedService}&location=
${selectedLocati o n};
document.body.appendChild(scriptElement);
```

APPENDIX C

BACKEND CODE:

```
NodeJS: (For the server side) const express =require('express');
const cors = require('cors');// Import the cors package constapp=exptess0;
constport=3000;
//Use the cors middleware to allow cross-origin requests app.use(cors();
app.get('/getExcelData',async (req,res)=>{
try{
//Replace this URL with your Google Drive Excel file URL
  const                                    googleDriveExcelURL                                    =
'https://docs.google.com/spreadsheets/d/1ZPi1E2W5e5zJGC3b80sDYjNzziKI
G_On/edit?usp=sh
aring&ouid=111000085508897480562&rtpof=true&sd=true'; const
response=await axios.get(googleDriveExcelURL); res.json(response.data);
}catch (error){ console.error('Error fetching Excel data:', error);
res.status(500).send('Error fetching Excel data');
});
app.listen(port,0)=>{
console.log('Proxy server is running on port ${port}');
});
```