WattWise

Presented to the Faculty of the Computer and Information Sciences Polytechnic University of the

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INTRODUCTION

In the rapidly changing energy landscape, staying up to date on monthly rates is not only a matter of financial caution; it is also a critical component of informed decision-making for consumers and businesses alike. Welcome to WattWise, a dedicated platform aimed at providing a comprehensive understanding of the energy sector through monthly rate tracking and in-depth insights into various aspects of this complex industry.

Purpose:

WattWise has a clear mission: to make energy information accessible and useful for everyone. Our main goal is to give consumers, businesses, and policymakers accurate details about energy prices. By keeping a close eye on monthly rates from major energy companies, our platform wants to help people make smart decisions based on real data. This isn't just about providing numbers – it's about creating a more open and competitive energy market.

We believe that when people have the right information, they can make choices that fit their needs and values. That's why WattWise goes beyond just tracking rates; we're also here to teach. Our platform is a learning resource, packed with background info to boost everyone's understanding of how energy works. We want to empower users to navigate the energy world with confidence, making choices that are good for their wallets and the planet.

In a nutshell, WattWise is on a mission to transform the way people interact with energy information. By offering real-time data and fostering energy literacy, we aim to contribute to a more transparent, competitive, and sustainable energy market for everyone.

Audience:

Our target audience includes a wide range of energy system stakeholders. This includes the following:

- Consumers: People who want to make informed decisions about their energy providers, comparing rates for the best financial and environmental impact.
- Businesses: Companies that want to manage operational costs, evaluate the sustainability practices of energy providers, and stay on top of industry trends that affect their bottom line.
- Policymakers: Decision-makers who shape energy policies and need comprehensive data and analyses to inform regulatory frameworks that are aligned with broader societal goals.
- Researchers and Students: Academics and students who are interested in the complexities of the energy sector and are looking for reliable data sources and insightful content for their studies.

Scope:

The scope of WattWise is comprehensive, driven by a commitment to delivering real-time insights and fostering energy literacy. A pivotal facet is the Energy Rate Tracker, ensuring accuracy in tracking and updating energy rates. The platform hosts an extensive Educational Repository, curating articles and guides to enhance user understanding. Company Profiles offer transparency on energy firms, detailing history, mission, and sustainability practices. Interactive Tools, including calculators for savings and environmental impact, enrich user decision-making. User Interaction mechanisms, coupled with Responsive Design, optimize engagement across devices. While Scalability and collaboration with stakeholders' position WattWise as a user-centric resource within the dynamic energy landscape.

Module2

PROJECT OVERVIEW

Project Objectives:

The project objectives are as follows:

- Energy Rate Tracking: Develop and maintain a dynamic tool that tracks energy rates from leading companies, ensuring users have the most accurate and current information for decision-making.

- Educational Resource: Create an extensive repository of articles, guides, and infographics to enhance energy literacy among users, empowering them to make informed decisions and understand the complexities of the energy sector.
- Company Transparency: Provide detailed profiles of energy companies, including their history, mission, and sustainability practices, enabling users to align their choices with their values and encouraging companies to adopt more sustainable practices.
- Interactive Features: Implement interactive tools for users to calculate potential savings, estimate carbon footprints, and investigate the environmental impact of different energy sources, promoting a holistic understanding of the consequences of energy choices.

Key Features:

- Monthly Rate Tracker: Real-time updates on energy rates from leading providers, allowing users to compare and choose the best options for their needs.
- Educational Repository: A comprehensive collection of articles, guides, and infographics covering various energy-related topics to enhance user understanding.
- Company Profiles: Detailed information about energy companies, including their history, mission, and sustainability practices, providing transparency for users.
- Interactive Tools: Calculators for potential savings, carbon footprint estimation, and environmental impact analysis, enabling users to make well-informed decisions.

Technologies used

In the meticulous development process of this project, a diverse array of technologies was harnessed to ensure both robust functionality and an engaging user experience. The system utilizes Vscode as its primary coding tool, a renowned and versatile source code editor recognized for its adaptability and extensive functionalities. Database management is supported through XAMPP, an integrated solution incorporating Apache, MySQL, and PHP, guaranteeing effective and secure data management. On the frontend, a meticulous combination of HTML5, CSS3, and JavaScript formed the bedrock of the user interface,

complemented by the dynamic capabilities of React.js. This amalgamation facilitated the creation of interfaces that were not only visually appealing but also responsive to user interactions, thereby enhancing the overall user experience. Meanwhile, the backend operations were powered by the adept utilization of PHP and MySQL, enabling dynamic and interactive web development. Furthermore, Figma emerged as the cornerstone tool for UI design, enabling iterative design prototyping and version control, ensuring the integrity of the design throughout the development lifecycle. To manage data effectively, reliable options such as MongoDB or MySQL were integrated, serving as robust repositories for user information and other pertinent content.
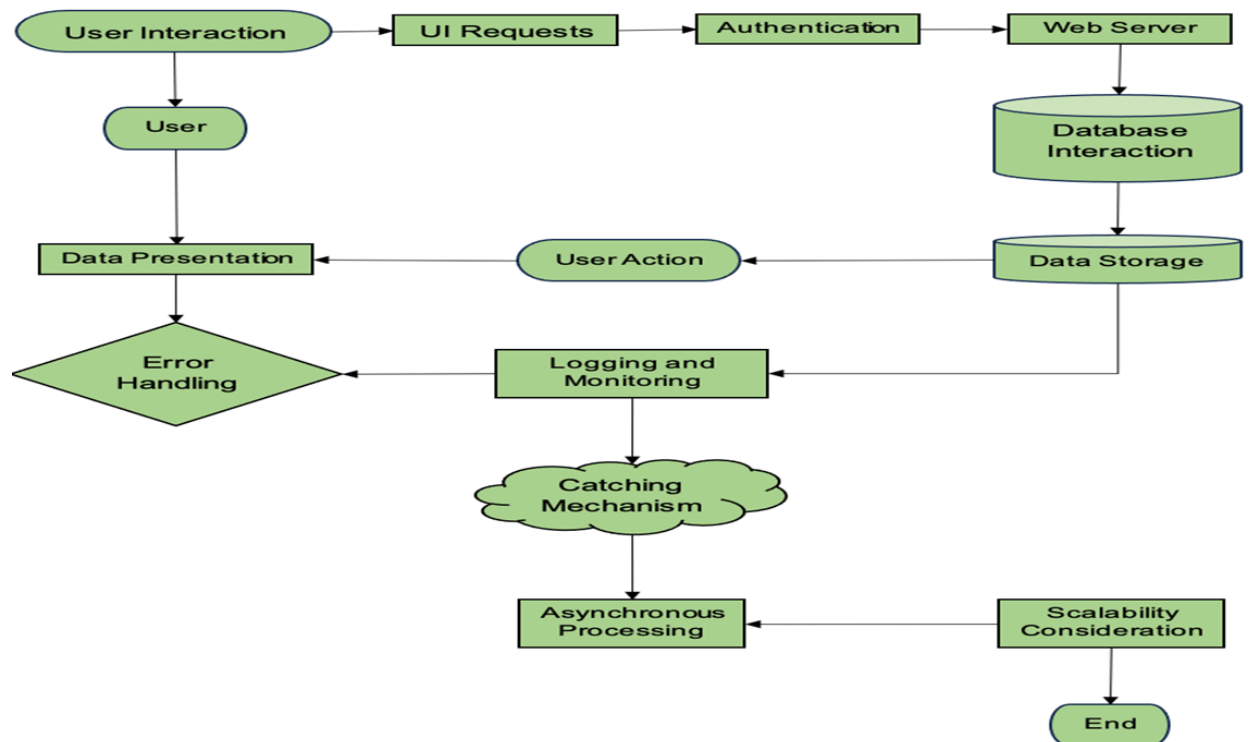
Module 3

SYSTEM ARCHITECTURE

WattWise has been meticulously designed to serve as a comprehensive resource within the ever-changing energy sector. The platform, which uses a layered architecture, prioritizes adaptability and scalability in order to effectively navigate the complex landscape of energy information. The core functionalities are built around a powerful search engine, sophisticated filters, and user-friendly categorizations, all of which are intended to simplify the discovery and comparison of energy-related data.

Users who visit the WattWise website will find an interface that allows them to quickly access extensive information and insightful recommendations. Users encounter an interface designed for ease of use and clarity when researching energy companies, calculating potential savings, or delving into environmental impacts. The layered architecture is driven by a commitment to scalability, performance, and security, ensuring a seamless and secure experience for a growing user base.

In the user component, modules such as the Educational Resource module offers an extensive repository of articles and guides to enhance energy literacy. Company profiles provide transparency about energy companies, promoting informed decision-making aligned with user values.

The moderators oversees the backend operations, with modules like the Company Database Management ensuring the accuracy and completeness of company profiles. Interactive features, including calculators and environmental impact analyses, enhance the user experience and contribute to the project's goal of fostering a more informed and sustainable energy market.

WattWise's system architecture, inspired by a commitment to education and transparency, is a testament to its mission: to revolutionize the energy landscape by providing users with the tools and information needed for informed decision-making

NAVIGATION MENU AND SITEMAP

Portal
- Industry Insights
- Renewable Energy Hub
- Oil and Gas Exploration
- Videos

Articles
- Categories
- Trending Topics
- Archives

LogIn/ SignUp
- User Accounts

Homepage

About Us
- Mission and Vision
- Team
- Editorial Guidelines

Profiles
- Company Profiles
- Innovators and Pioneers

Contact Us
- General Inquiries
- Partnership Opportunities
- Advertisements

DESIGN AND LAYOUT

Introduction

The user interface (UI) of the WattWise is designed to cater to individual eager to delve into the knowledge of energy that provides solution for individual and businesses. WattWise offers intuitive tools and shared knowledge empowering empowering users to embrace sustainability while efficiently managing their energy usage.

Key Features:

- 1.Navigation Bar - A clean and accessible navigation bar at the top provides easy access to core sections such as Home, Portal, Article, Profiles , Contact Us, About Us, Log in.
- 2.Home Page - The home page serves as the central hub for research, offering streamlined access to critical components such as "Explore Us," providing insights into our organizational identity and values. Navigate efficiently to our "Mission" section, delving into the core objectives driving our research endeavors. Access a wealth of informative "Articles" covering a spectrum of research topics, fostering intellectual engagement. The "Information Portal" stands as a comprehensive resource hub, facilitating seamless access to valuable data and insights essential for in-depth research exploration.
- 3.Portal Page - Information Portal is a dedicated platform for rigorous research on gas, oil, and energy exploration. Here, you can access detailed information on the extraction and refinement processes of oil and gas, as well as explore the latest advancements in energy exploration technologies.
- 4.Article Page - Article Page serves as a meticulous resource for research, offering a diverse array of articles centered on oil, gas, energy, and electricity. Explore nuanced discussions on energy production methodologies, technological innovations in the oil and gas sectors, and the evolving landscape of electricity generation.
- 5.Profile Page - The Profile Page is a concise repository of information detailing diverse companies and their respective operations. It offers a streamlined interface for researchers seeking insights into the unique identities and activities of various organizations.
- 6.Contact Us Page - The Contact Us page is a functional platform enabling users to convey messages or address concerns.

- 7.About Us Page - The About Us page introduces the individuals behind the creation of the website, offering users a glimpse into the team responsible for its development.
- 8.Log In - The Log-in Page serves as the secure gateway to personalized access, offering a streamlined entry point for authorized users

Visual Design:

- 1.Color Scheme - The color scheme for the WattWise features a modern and professional palette:
  - ❖ Primary Background: White or #FFFFFF
  - ❖ Smaller Panel: Shade of Green or #63D168.
  - ❖ Larger Panel: Semi transparent shade of green or #63D1683D
- 2.Typography
  - ❖ Font: Inter - is a variable font family carefully crafted & designed for computer screens.
  - ❖ Main Title Font Size: 120px
  - ❖ Title of Panel Size: 55px to 70px
  - ❖ Content of Each Panel: 27px
- 3.Layout
  - ❖ The UI design is responsive and allows the user to explore and delve the knowledge of energy that provide solution and shared knowledge about energy usage.

Module 6

CONTENT

Text Content

The WattWise encourages visitors to learn more about sustainable practices that address energy consumption in order to further their exploration and understanding. Understanding manufacturing and utilizing creativity and easily accessible solutions to shape a greener future. WattWise talks about a vibrant platform that encourages people and companies to adopt sustainable energy habits. Discover real-world success stories, learn about cutting-edge inventions, and investigate renewable energy sources like wind and solar. As a thorough research gateway, WattWise provides in-depth analysis of a range of energy-related topics. Examine the oil industry's future, taking a close look at

exploration tactics and production trends. Explore renewable energy sources, evaluating their potential and effects on the energy paradigm as a whole. You will also learn about new and developing technologies that can be used to generate power. Multimedia resources are available at the hub, including educational videos with a local and global perspective. For a deeper knowledge, read articles on important subjects including electricity, gas, oil, and more general energy concerns. View profiles of significant businesses influencing the global energy scene, highlighting their contributions and innovations. For scholars looking for a comprehensive grasp of the dynamic and changing energy sector, WattWise is a great resource.

Images and Media

The photo galleries section of the WattWise captives user to know some information about energy and allowing user to knowing by just seeing the image the topics related when tackling energy. It goes beyond the surface, providing latest innovation highlighting the shaping of greener future and energy and not just for aesthetic purpose yet for functionality of providing information to others

Link:
https://drive.google.com/drive/folders/19BsSxlT8Yb4Wkheza33CUQxEbAddxKg4?usp=sharing

When it comes to video material, the WattWise is a dynamic platform that offers a variety of interesting content that explores important oil and energy issues. These films enthrall viewers while simultaneously functioning as instructional resources, offering insightful perspectives into the complex mechanisms of energy-related topics. The films on WattWise are carefully selected to help visitors understand and navigate the complicated world of energy, whether they are examining the nuances of oil extraction procedures, examining the dynamics of renewable energy sources, or understanding the complexities of electricity generation. The hub seeks to empower users with a deeper understanding of energy-related topics by providing visually engaging and educational material, thereby cultivating an informed and involved community committed to sustainable energy practices.

Module 7

FUNCTIONAL COMPONENTS

Below are the features that serve distinct purposes and contribute to the overall functionality of the site. Each functional component plays a role in enhancing the user experience, providing information, or facilitating specific actions. By integrating these functional components, the website aims to provide a holistic and user-friendly experience, offering information, tools, and resources related to energy while ensuring accessibility and customization options for a diverse audience.

- **Search:** A search function allows users to quickly find specific information within your website. It enhances user convenience and efficiency in navigating your content.
- **Energy Article Page:** This component likely refers to a dedicated page or section for articles related to energy. It provides in-depth information, articles, or resources on energy-related topics for users seeking more detailed content.
- **Energy Informational Portal:** An informational portal is a comprehensive section of your website dedicated to providing various types of information related to energy. This could include guides, tips, news, and other relevant content.
- **Navigation Bar:** The navigation bar is a fundamental component that helps users move around your website easily. It typically includes menus and links to various sections, improving overall site usability.
- **Footer:** The footer is located at the bottom of the webpage and often includes important links, contact information, and additional navigation options. It is useful for users who have reached the end of a page and want to explore more.
- **Sidebar:** A sidebar is a vertical section typically placed on the side of the main content area. It can contain additional navigation links, widgets, or information relevant to the page content.
- **FAQs:** Frequently Asked Questions (FAQs) provide quick answers to common queries users may have. It's a valuable resource for improving user understanding and reducing support requests.
- **Customizability/Accessibility:** This feature allows users to customize the appearance of the website according to their preferences. Accessibility features ensure that the website is usable by individuals with disabilities.
- **Energy-Wise Products Recommendation:** This component involves suggesting energy-efficient products to users based on their preferences or needs. It could enhance user engagement and promote eco-friendly choices.
- **Energy Map with Timeline:** An interactive map displaying energy-related information along with a timeline feature. This could be a visual representation of energy-related data over time, providing an engaging and informative experience.

- **Earth Day Timer:** A timer counting down to Earth Day, creating awareness and encouraging users to participate in relevant activities or initiatives.
- **Electricity Bill Calculator:** A tool that allows users to estimate their electricity bills based on specific inputs. This can be a helpful feature for users looking to manage their energy consumption and costs.

DATA MANAGEMENT

Effective data management is crucial for maintaining the integrity, security, and accessibility of information on the website. This encompasses the structure of the database, the flow of data within the system, and procedures for backup and recovery. These software components work together to ensure the smooth management, flow, and protection of data within the website's ecosystem. The specific choices depend on the website's requirements, scale, and the preferences of the development team.

- **Database Structure:** For defining and structuring the database, a relational database management system (RDBMS) is commonly used.

User Accounts Table

firstName	lastName	email	password
totoy	bato	totoybato@email.com	1111
Juan	Dela Cruz	juandelacruz@email.com	1111
Juan	Dela Cruz	juandelacruz@email.com	dasdadas
nico	ampoloquio	nicoampoloquio2003@gmail.com	11111

☐ Show all | Number of rows: 25 ▾ | Filter rows: Search this table

- **Data Flow:** The flow of data within the website's system is typically managed through programming languages and frameworks.

    - **PHP:** Used for server-side scripting to manage data flow in real-time applications.

- **Data Backup and Recovery Procedures:** For backing up and recovering data, specific tools and systems can be implemented

-      **GitHub :** essential for tracking changes in the website's codebase, aiding in recovery and collaboration.

SYSTEM INTEGRATION

Seamless system integration is crucial for the functionality and efficiency of WattWise. This involves the incorporation of third-party APIs and the establishment of robust data exchange and integration processes.These third-party APIs play a crucial role in enhancing WattWise's functionality and providing users with a seamless and enriched experience focused on promoting energy efficiency and sustainability. The integration of these APIs aligns with WattWise's objective of empowering users to make informed decisions and adopt sustainable energy practices.

Data Exchange and Integration for WattWise:

1. User Authentication Integration: WattWise integrates with secure authentication systems to ensure user accounts and sensitive information are managed safely. This allows users to log in securely and access personalized energy-saving recommendations and features.

2. Renewable Energy Integration: WattWise exchanges data with renewable energy providers and utility companies to provide users with information about renewable energy options available in their area. This integration helps users make informed decisions about incorporating renewable energy sources into their energy mix.

3. Google Maps API: Integrating the Google Maps API allows for the incorporation of dynamic maps, location services, and geocoding features. This enables WattWise users to visualize energy consumption patterns, locate energy-efficient resources, and access relevant information based on their geographical location.

4. Social Media APIs (e.g., Facebook, Twitter): Implementing social media APIs enables sharing functionalities, social logins, and real-time updates from social platforms. By integrating these APIs, WattWise enhances user engagement, facilitates community interaction, and encourages the sharing of energy-saving tips and success stories across social networks.

USER EXPERIENCE

User Experience for WattWise:

WattWise offers a comprehensive platform tailored for individuals and businesses navigating the realm of energy efficiency and sustainability. The platform integrates a plethora of features aimed at enhancing user interaction and streamlining product discovery. Robust search functionality empowers users to navigate the extensive catalog of energy-efficient products using keywords, categories, and advanced filters. Detailed product listings provide comprehensive information including specifications, features, pricing, and vendor details, enabling users to make informed decisions. Personalized features such as tailored product recommendations, wish lists, and favorites enhance user experience, promoting ease of use and facilitating future reference.

Additionally, WattWise introduces two new features to further enhance user experience and promote energy-conscious behavior. The Electricity Bill Calculator empowers users to estimate their electricity bill based on energy consumption data and local utility rates, providing valuable insights into energy usage patterns and encouraging informed decisions to optimize consumption and reduce costs. The Earth Day Timer informs users about the upcoming Earth Day with a countdown timer, promoting environmental awareness and encouraging participation in sustainability initiatives. These features complement WattWise's commitment to providing a comprehensive and user-friendly platform that empowers individuals and businesses to make informed decisions and take actions towards a more sustainable future.

SECURITY

1. User Authentication:

User authentication is paramount to ensure the security and confidentiality of user accounts and sensitive information within the WattWise platform. By implementing robust user authentication mechanisms, WattWise fosters a trustworthy environment for users to engage with the platform securely. User authentication plays a crucial role in building a secure and personalized experience, enhancing user trust, and safeguarding the confidentiality of user-related data.

2. Data Encryption:

Data encryption is vital for ensuring the security and confidentiality of sensitive user information and transactional data on the WattWise platform. Given the platform's functionalities involving user accounts, energy consumption data, and preferences, encrypting this data adds an extra layer of protection against unauthorized access and potential breaches, thereby enhancing the overall security posture of WattWise.

3. Database Security:

The database serves as the foundation for storing, managing, and retrieving vast amounts of energy-related information on WattWise. With comprehensive data, including user accounts and preferences, maintaining a well-structured and efficiently managed database is critical. A secure database enables quick and reliable retrieval of energy-related details, supports seamless search functionalities, and facilitates the dynamic generation of personalized recommendations based on user history, thereby enhancing the user experience and security.

Module 12.

THIRD PARTY INTEGRATION (NOT APPLICABLE)

Module 13

ADMINSTRATION

Admin Panel - (NOT APPLICABLE)

User Roles and Permissions:
WattWise implements a secure system for user roles and permissions, defining different levels of access for administrators, moderators, and standard users. This ensures efficient management of platform resources while maintaining security.

- **User** - Allowed to search, add to cart/favorites products, and view the system
- **Moderators** - Full access to all administrative functions. Responsible for overseeing the platform and managing user accounts, content, and settings.

Maintenance and Updates:
WattWise prioritizes regular maintenance and updates to ensure platform reliability, security, and performance. Scheduled activities include software updates, security patches, and system optimizations performed during off-peak hours to minimize user

disruption. Proactive monitoring and user feedback inform continuous improvements to enhance the user experience.

- **Maintenance Tasks for WattWise:**
    - ❖ Regularly back up data and system files to ensure their integrity and continuity.
    - ❖ Monitor system performance and promptly address any issues to maintain the stability and reliability of the platform.
    - ❖ Conduct routine security audits to detect and rectify vulnerabilities, safeguarding user data and system infrastructure.

- **Updates for WattWise:**
    - ❖ Stay updated on software patches and updates to keep the platform current with the latest features and security enhancements.
    - ❖ Schedule periodic updates to introduce new features and fixes, enhancing user experience and platform functionality.
    - ❖ Prior to deployment, thoroughly test updates for compatibility and stability to minimize potential disruptions to users.

Module 14
TESTING AND QUALITY ASSURANCE

Testing Methods:
- Unit Testing: We meticulously examine individual components of the website to ensure they function correctly in isolation, scrutinizing each element's functionality, logic, and behavior.
- Integration Testing: We conduct comprehensive assessments to evaluate how different parts of the website interact and collaborate seamlessly, verifying the integration and compatibility of various modules and functionalities.
- Functional Testing: We systematically test the website's features and functionalities to ascertain that they perform as expected and meet the specified requirements, ensuring that users can successfully accomplish their tasks.
- Performance Testing: We rigorously assess the website's speed, scalability, and stability under varying loads and conditions, simulating heavy user traffic to gauge its responsiveness and identify any performance bottlenecks.

Bug Tracking:

- **Bug Reporting:** Users are encouraged to report any issues encountered through a dedicated platform or feedback mechanism, providing detailed descriptions and relevant context to facilitate efficient resolution.
- **Bug Prioritization:** Upon receiving bug reports, we meticulously prioritize them based on severity, impact on user experience, and potential business impact, focusing on resolving critical issues promptly to minimize disruption.
- **Bug Resolution**: Our dedicated team of developers diligently investigates reported bugs, identifying their root causes and implementing appropriate fixes while adhering to rigorous testing procedures to ensure the effectiveness of solutions before deployment.

User Acceptance Testing:
- **Test Planning:** We carefully plan out user acceptance testing scenarios and tasks, outlining specific user journeys and functionalities to be evaluated to gather comprehensive feedback.
- **Test Execution**: Real users are invited to interact with the website, executing predefined test cases and providing valuable feedback on usability, functionality, and overall user experience.
- **Feedback Incorporation:** We meticulously analyze user feedback and incorporate it into the website's development process, iteratively refining features and functionalities to address user needs and preferences before finalizing the website for launch.

Module 15
DEPLOYMENT

Deployment Process:
Our deployment process follows a structured approach to ensure a smooth and successful rollout of updates and new features. It involves several key steps:

- **1. Testing:** Before deployment, updates and new features undergo thorough testing to identify and address any issues or bugs.
- **2. Version Control:** We use version control systems like Git to manage changes and track different versions of the codebase.
- **4. Staging Environment:** Changes are first deployed to a staging environment for final testing and validation before being pushed to the production environment.
- **5. Production Deployment:** Once changes are validated in the staging environment, they are deployed to the production environment following a carefully planned schedule to minimize downtime and disruptions.

Hosting Information:
Our platform is hosted on reliable and secure servers provided by trusted hosting providers. These servers offer high availability, scalability, and performance to accommodate user traffic and ensure a seamless user experience.

Domain Configuration:
As we utilize localhost through XAMPP, the website can be accessed using the default domain assigned by XAMPP, which is typically "localhost" or the "127.0.0.1" IP address. There is no requirement to set up a distinct domain for local development.

Support and Maintenance:
We provide ongoing support and maintenance services to address any issues, perform updates, and ensure the continued reliability and functionality of the platform. This includes:
- **1. Regular Backups:** Performing regular backups of data and files to prevent data loss in case of emergencies.
- **2. Security Updates:** Applying security patches and updates to protect against vulnerabilities and ensure the security of user data.
- **3. 24/7 Technical Support:** Offering round-the-clock technical support to address user inquiries, troubleshoot issues, and provide assistance as needed.

Module 16.
TROUBLESHOOTING

Maintenance Schedule:
To ensure the seamless operation of WattWise, we adhere to a regular maintenance schedule. Our team conducts weekly checks to identify and address any errors or potential issues that may impact the performance of the platform.

Maintenance Check:
Each week, our dedicated team performs a comprehensive system check to detect any errors or issues that could affect the functionality and performance of the WattWise platform.

Contact Information:
For inquiries or assistance, please reach out to the following teams:
- Documentation Team: Contact for questions or issues related to documentation and user guides.
- Design Team: Reach out for inquiries about website design and aesthetics.

- Development Team: Contact for technical assistance or questions about website functionality and features.

Team:
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