SUN SERVICES "ONE STOP SOLAR SOLUTION"

A PROJECT SUBMITTED TO

Atmiya University

Department of Computer Application & Information Technology

RAJKOT



Submitted in partial fulfillment of the requirements for the degree of

"Bachelor of Computer Application"

Sem-5

(Year 2023-2024)

Submitted By:-

Guided By:-

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Dr. Malay Solanki

PROJECT PROFILE

Project Title	"Sun Services"			
Project Id	BCAC3X018			
Organization	Atmiya University-Rajkot			
Front-End Tools	Xampp			
Back-End Tools	1. Mysql			
	2. Database			
	3. MongoDB			
Language	1. Php			
	2. Html			
	3. Javascript			
	4. Css			
Platform Used	1. Visual Studio Code			
	Version:- 1.81.1			
	2. Google Chrome			
	Version:-116.0.5845.188			
Developed By	Bhakti Hirpara			
Project Guide	1 (Dr) Madhuri Barchha			
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Additionally, I want to acknowledge the open-source community and all the developers who contributed to the various libraries, frameworks, and tools we used in our project. Your work has greatly facilitated our development process and made it possible to create a robust and efficient system.

Thank you once again to everyone who contributed to this project, directly or indirectly. Your involvement and support have been invaluable, and we look forward to continued success and future endeavors.

Sincerely,

Bhakti Hirpara

DECLARATION

I, hereby declare that the project work entitled "Sun Services" is the original work done by me, and further declare that it is never submitted anywhere else in part or in full.	Ι
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ABSTRACT

- In a world of late services and heightened customer expectations, the "Sun Services" PHP project emerges as a solution to revolutionize the Services industry.
- This project aims to develop an innovative web-based platform that addresses longstanding challenges faced by traditional servicing.
- Remaining Key objectives include the automation of order management, real-time package tracking, error reduction in address handling, and improved customer engagement.
- "Sun Services" seeks to enhance operational efficiency while prioritizing environmental sustainability by transitioning from paper-based documentation to digital systems.

TABLE OF CONTENTS

Sr. No.	Chapter Title	Page no	
CHAPTER	1		
1.1	Problem Statement	2	
1.2	Project Scope	3	
1.3	Purpose	4	
CHAPTER	5		
2.1	System Analysis	6	
2.2	Software and Hardware Requirements	7	
CHAPTER 3: PROJECT PLANNING AND SCHEDULING		8	
CHAPTER	4: SYSTEM DESIGN	12	
4.1	Logical Design		
	4.1.1 UseCase diagram	13	
	4.1.2 Data flow diagram (DFD)	14	
	4.1.2 ER Diagram	18	
	4.1.4 Module Design	19	
	4.1.4 Data Dictionary	20	
CHAPTER 5 :SCREENLAYOUT AND TESTING		22	
5.1	Screen Layout		
	5.1.1 Admin Side	23	
	5.1.2 User Side	30	
5.2	Testing Approach	34	
CHAPTER	37		
CHAPTER	39		
CHAPTER	41		
CHAPTER	44		

Chapter 1: Introduction

1.1 Problem Statement

- Lack of Information: Many solar panel owners and operators struggle to find reliable information and resources for solar panel maintenance and servicing. This lack of information often leads to system inefficiencies and reduced energy production.
- Limited Access to Solar Maintenance Services: Many homeowners and businesses with solar installations struggle to find reliable and affordable servicing and maintenance options. There is a need for a platform that connects them with trusted solar service providers.
- Inefficient Scheduling and Coordination: Coordinating solar servicing appointments can be cumbersome. Users require a system that streamlines the scheduling process, reducing wait times and improving service efficiency.
- Quality Assurance: Ensuring the quality of solar servicing is critical. The website needs
 mechanisms to verify and validate service providers, ensuring that users have access to
 skilled and reputable professionals.
- User-Friendly Experience: A user-friendly interface is essential for the success of the
 website. It should be accessible and intuitive for all users, regardless of their technical
 expertise.
- Inefficient Service Request Process: The process of requesting and scheduling solar panel servicing is often cumbersome and time-consuming. Homeowners and businesses need an easier way to request and manage maintenance services.
- Service Provider Matching: There is a need for a platform that effectively matches solar panel owners with qualified and trusted service providers. Ensuring that the service providers are experienced and certified is a key concern.

1.2 Project Scope

- Website Development: Design and develop a user-friendly website for solar servicing that is accessible on desktop.
- Service Request System: Develop a user-friendly system for solar panel owners to request maintenance and servicing. Allow users to input essential details, such as location, type of solar system, and specific service requirements. Implement a scheduling system that confirms service appointments.
- Feedback: Include a rating and review system for service providers. Gather feedback from users to continually improve service quality.
- Testing and Quality Assurance:Conduct thorough testing, including usability testing, security testing, and performance testing, to ensure a stable and reliable website.
- Maintenance and Support: Establish a support system for users and service providers to address inquiries and technical issues.
- Project Timeline and Milestones: Create a detailed project schedule with key milestones and deadlines for each development phase.

1.3 Purpose

- Information Hub: The website aims to provide a centralized repository of information and resources related to solar panel maintenance, cleaning, troubleshooting, and best practices.
- Service Request Facilitation: The website allows solar panel owners to easily request and schedule maintenance and servicing for their solar systems. It simplifies the process of finding qualified service providers and requesting their services.
- Service Provider Connection: For solar service providers, the website serves as a platform to showcase their qualifications, certifications, service areas, and pricing.
- Maintenance Record Keeping: Solar panel owners can use the website to maintain a digital record of their solar panel maintenance history.
- User Community: It can foster a community of solar panel owners and service providers, allowing them to share experiences, tips, and reviews. This sense of community can build trust and encourage collaboration within the industry.
- Promotion of Solar Energy: By promoting regular servicing and maintenance, the website
 contributes to the overall sustainability and effectiveness of solar energy systems. It
 encourages more individuals and businesses to invest in solar energy by addressing
 concerns related to maintenance.
- Convenience and Accessibility: The website offers a convenient and accessible platform for users to access information and services related to solar panel maintenance. Users can access it from the comfort of their homes or offices.
- Data and Insights: Over time, the website can collect data on servicing trends, user preferences, and common issues in the solar energy industry. This data can be valuable for improving services and addressing industry challenges.

Chapter 2: Requirements and Analysis

2.1 System Analysis

- Use Case Analysis: Create use cases and user stories to represent the interactions between different user roles (e.g., solar panel owner, service provider) and the system. Specify the steps, inputs, and outputs for each use case to understand how users will interact with the website.
- Data Modeling:Develop an entity-relationship diagram (ERD) to model the database structure, including tables for user profiles, maintenance records, service providers, and educational content. Define relationships between entities and attributes for each data entity.
- System Architecture:Decide on the technology stack for the website. Design the overall system architecture, including the front-end, back-end, and database components.
- User Interface Design:Create wireframes for the website's user interface, focusing on usability and user experience.Develop user interface design guidelines, including color schemes, fonts, and responsive design for PC.
- Testing and Quality Assurance:Develop a testing plan that includes unit testing, integration testing, usability testing, and security testing. Create test cases and conduct testing to ensure that the website meets its requirements and functions as expected.
- Documentation:Produce comprehensive documentation that includes system architecture diagrams, user manuals, and technical documentation for developers and administrators.
- Timeline and Milestones:Create a project timeline with key milestones and deadlines for each phase of development.

2.2 Software and Hardware Requirements

→ SSD (Solid State Drive)

→ Hard Disk Space : 40 GB

• Software Requirements:
→ PHP
→ Web Server : Apache
→ Database Management System : MySQL
→ Front-end Technologies: HTML, CSS, JavaScript
→ Operating systems like Windows, Linux/Unix, MacOS etc
→ Text Editor like Visual Studio Code, Sublime Text or Notepad++ etc
• Hardware Requirements:
→ 8 GB RAM

→ Network Infrastructure : Hight Internet Connection is necessary for web and database

Chapter 3: Project Planning and Scheduling

• Our project "Sun Services" which is designed for a Solar servicing system. The Project is developed by us to ease the Solar servicing work.

• Project Goals:

→ Developing a web-based Solar Servicing system that can run operations like Knowledge about Different Types of Solar, Registration for Different Types of Solar Servicing, etc..

→ Our main Goal is to Provide Our Customer Home Service from their Home itself.

• Project Planning & Scheduling:

Phase 1: Project Planning

→ Project planning started with what unique features will be included in the project. Some features are Service is provided at their time & place.

Phase 2: Gathering Requirements & Analysis

→ The next step is to find the correct Solar service template to start designing the website.

→Adding the basic features and needed features in the website like registration, adding, adding feedback or Service form.

→ Explore more PHP projects and practiced a little about HTML, CSS and JavaScript which make me familiar with it and help further in my project.

Phase 3: Design

→ By analyzing the whole system I created Use Case diagrams for the user and admin side.

→ Designing ER diagram for both admin and user side.

→ Designing DFD diagram 0-level, 1-level, 2-level for both admin and user side.

→ Deciding the Logo and tag of the website.

Phase 4: Coding or Implementation

- → Completing the design of user side & admin side.
- → Design the database for storing information about Enquiry, Service Registration, feedback & personal Details.
- → Create a normalized database structure.
- → Developing PHP backend code.
- → Implementing user registration and login code by connecting it to the database.
- → Implementing PHP code on the user side for the operations like adding all Registration to the Database, Fetching data From the database And show it into User side.

Phase 5: Testing

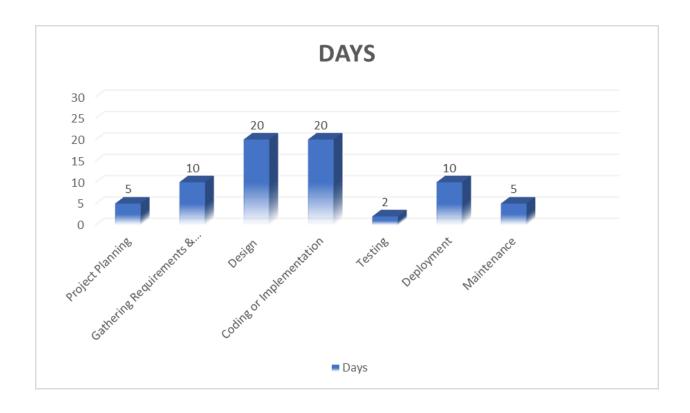
→ Trying the admin panel after adding features of add, update and delete for Services, Enquiry & Feedback.

Phase 6: Deployment

→ Fixing the bugs and errors that arise during the database management.

Phase 7: Maintenance

→ Maintaining the database.



Chapter 4: System Design

4.1 Logical Design

4.1.1 Use Case diagram

Use Case Diagram captures the system's functionality and requirements by using actors and use cases. Use Cases model the services, tasks, function that a system needs to perform. Use cases represent high-level functionalities and how a user will handle the system. Use-cases are the core concepts of Unified Modelling language modeling.

NO	FIGURE	NAME	EXPLANATION
1		Actor	Functionality provided by the system as units that exchange messages between units or actors, is usually expressed using the verb at the beginning of the phrase name use case.
2		Use Case	People, processes, or other systems that interact with information systems that will be created outside the information system that will be created themselves.
3		Association	Communication between actors and use cases that participate in use cases has interaction with actors.

4.1.2 Data flow diagram (DFD)

A data flow diagram (DFD) is the flow of a system or a procedure in terms of inputs and outputs. It also represents the requirement of the system and shows how the current system is implemented.

Levels of DFD

A DFD also has levels that help us organize and categorize the data. Starting with Level 0, which is the most basic, a DFD increases in terms of complexity with the increase in the level number.

Level 0: Context diagram

It shows a larger image of the process. However, it doesn't include all the details. It only contains one process node and its connections with the entities.

Level 1: Process decomposition

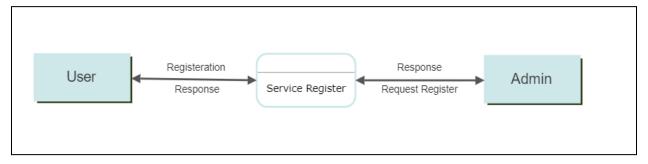
They are like level 1 but this level is more detailed. We break the diagram into smaller steps and explain each process step.

Level 2: Deeper dives

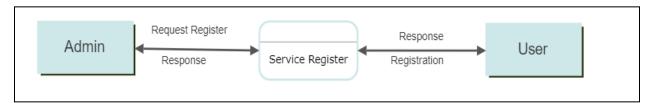
This layer further breaks down each process of level 1. The aim is to provide the detail of every little step. This helps us understand the system better before and while working on it.

DFD Symbols (Gane & Sarson)

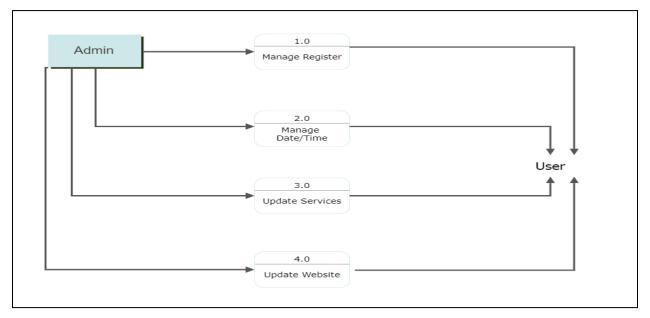
Process	
Data Flow	
Data Store	
Source/Sink (External Entity)	



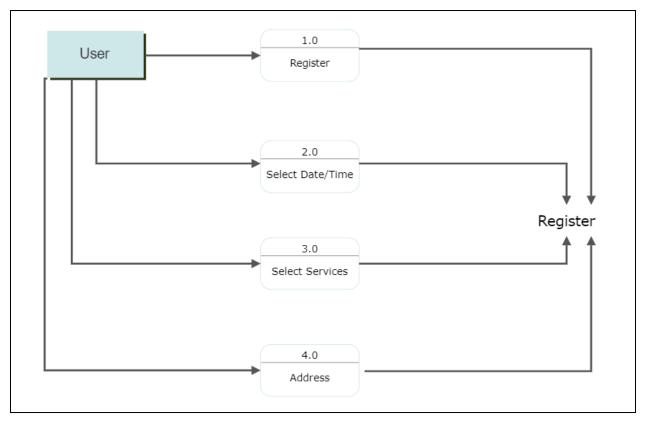
User Side 0-level



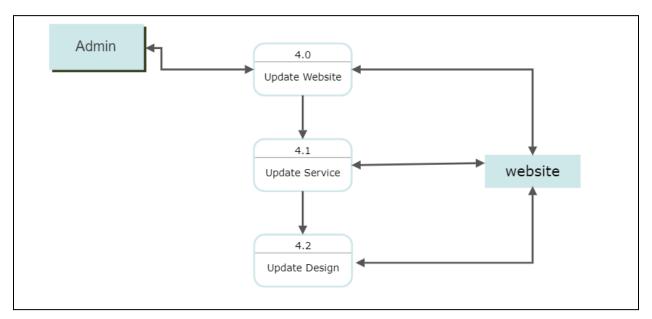
Admin Side 0-level



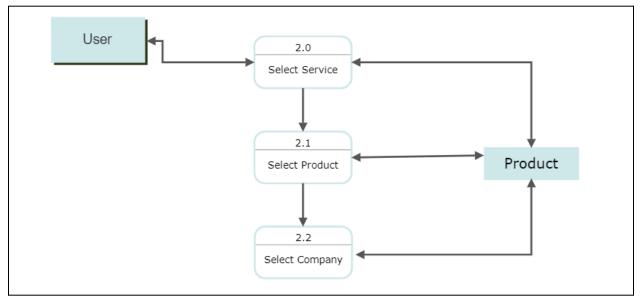
Admin Side 1-level



User Side 1-level



Admin Side 2-level



User Side 2-level

4.1.3 E-R Diagram

An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database. Lets have a look at a simple ER diagram to understand this concept.

Rectangle: Represents Entity sets.

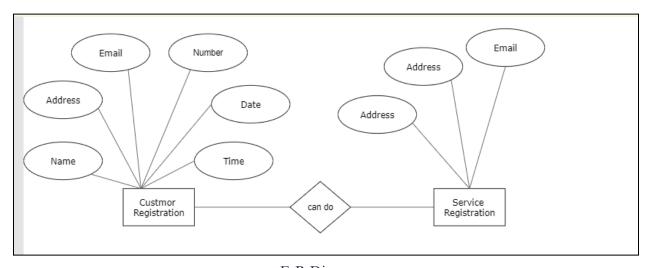
Ellipses: Attributes

Diamonds: Relationship Set

Lines: They link attributes to Entity Sets and Entity sets to Relationship Set

Double Ellipses: Multivalued Attributes

Dashed Ellipses: Derived Attributes



E-R Diagram

4.1.4 Module Design

User Side before Registration

- Home·
- User registration
- Services
- About us
- Testimonials
- Feedback

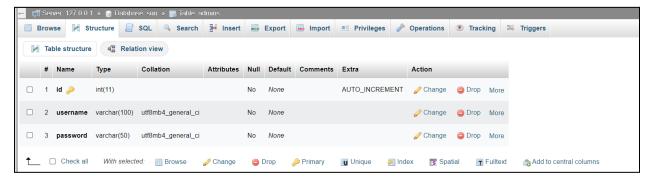
User Side after Registration

- Home·
- Service registration
- Services
- About us
- Testimonials
- Feedback

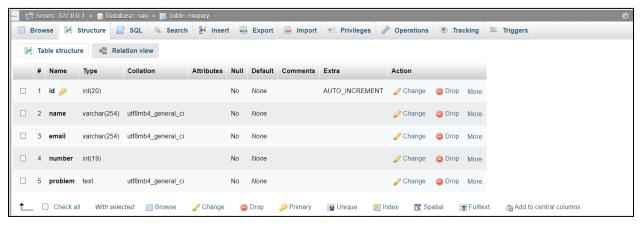
Admin Side after Login

- Home
- User Registration
- Service Registration
- Feedback
- Inquiry
- Add Service
- Logout

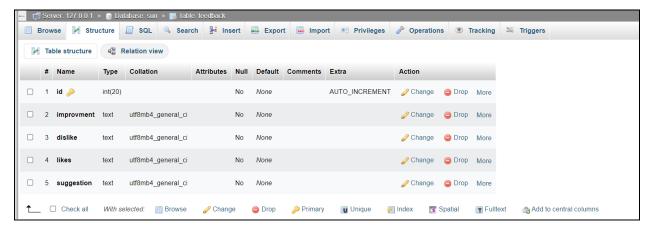
4.1.5 Data Dictionary



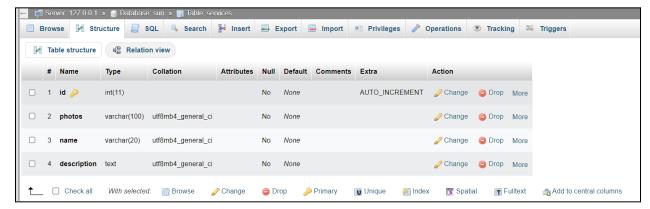
Admin Table



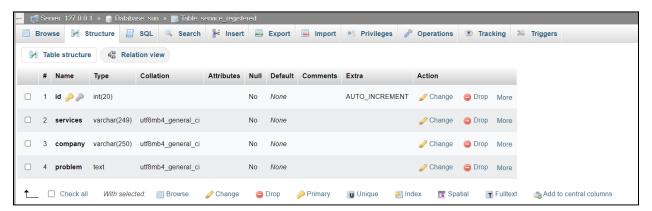
Enquiry Table



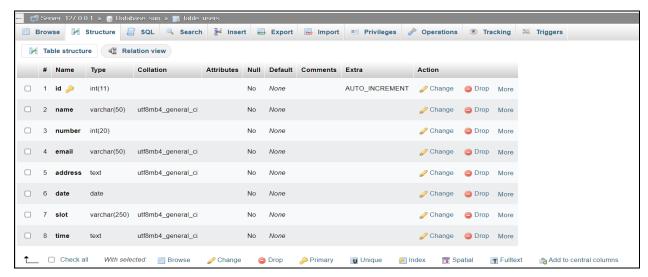
Feedback Table



Services Table



Service_reg Table

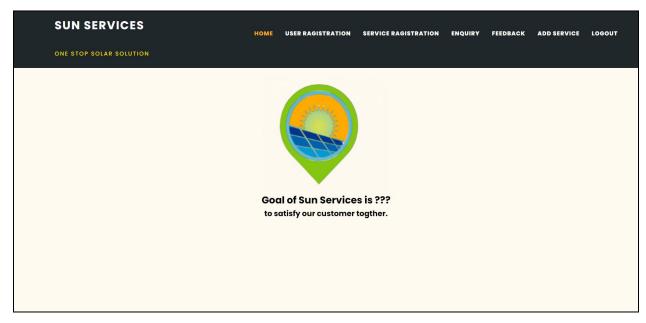


User Table

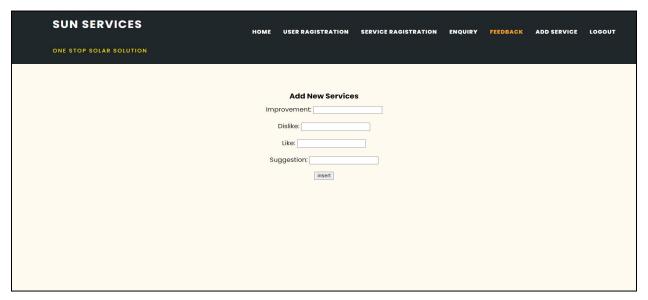
Chapter 5: Screenlayout and Testing

5.1 Screen Layout

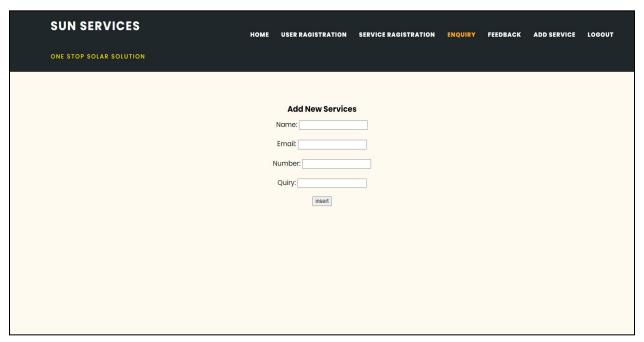
5.1.1 Admin Side



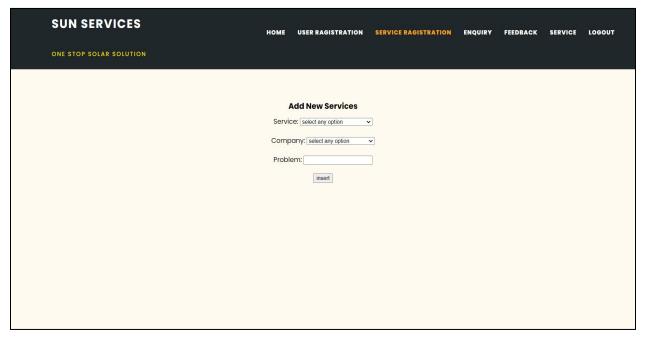
Admin Home Page



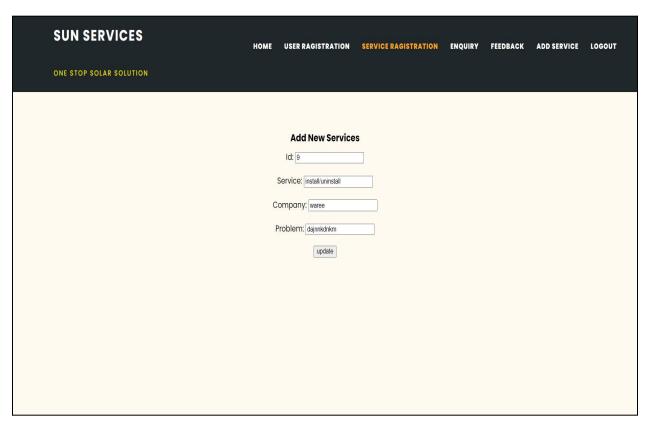
Feedback add page



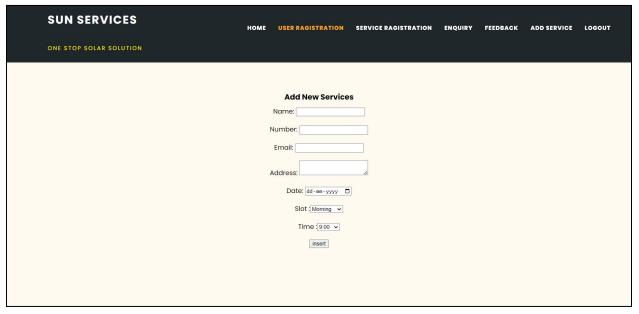
Enquiry add page



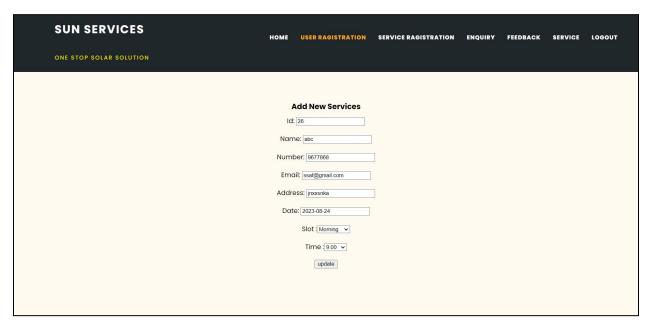
Service Registration Add Page



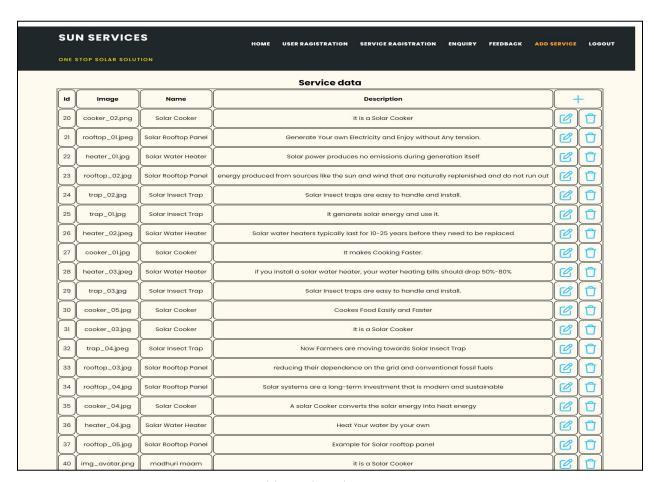
Service Registration update page



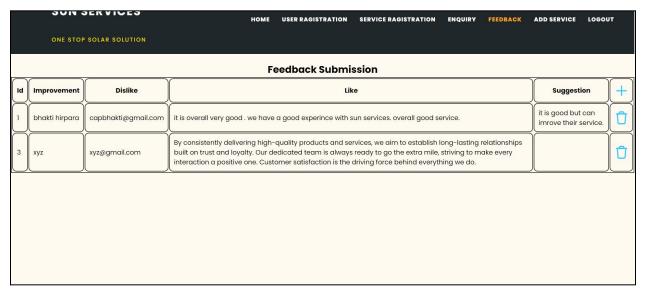
User Registration add page



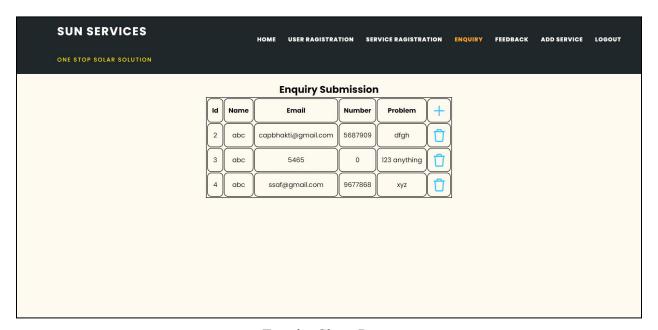
User Registration Update Page



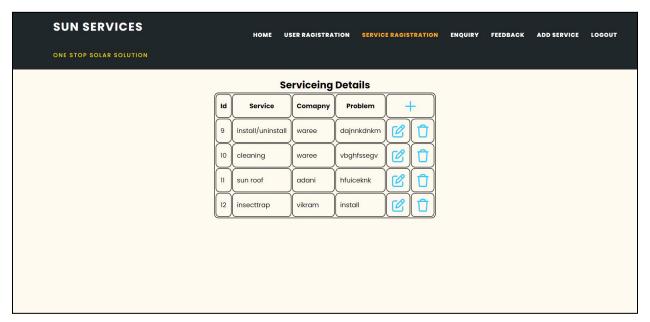
Add Service Show page



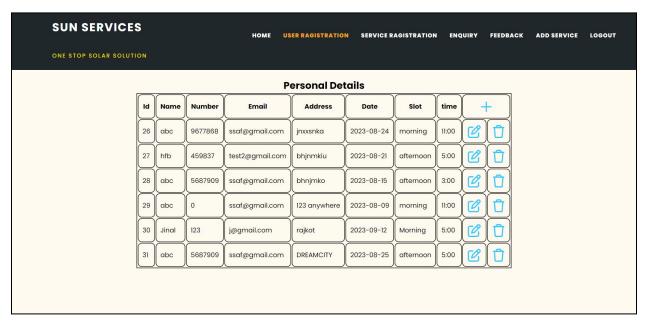
Feedback Show Page



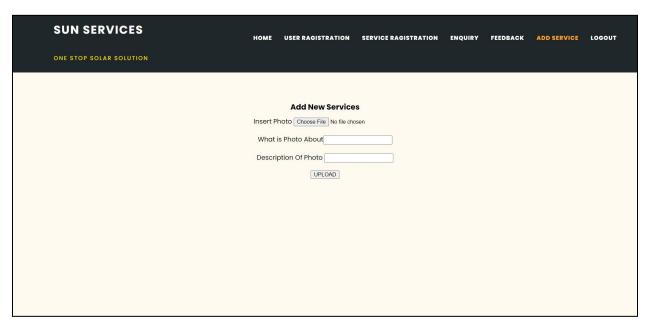
Enquiry Show Page



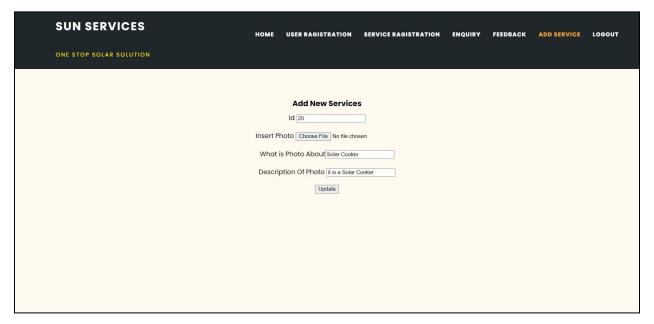
Service registration Show Page



User Registration Show Page

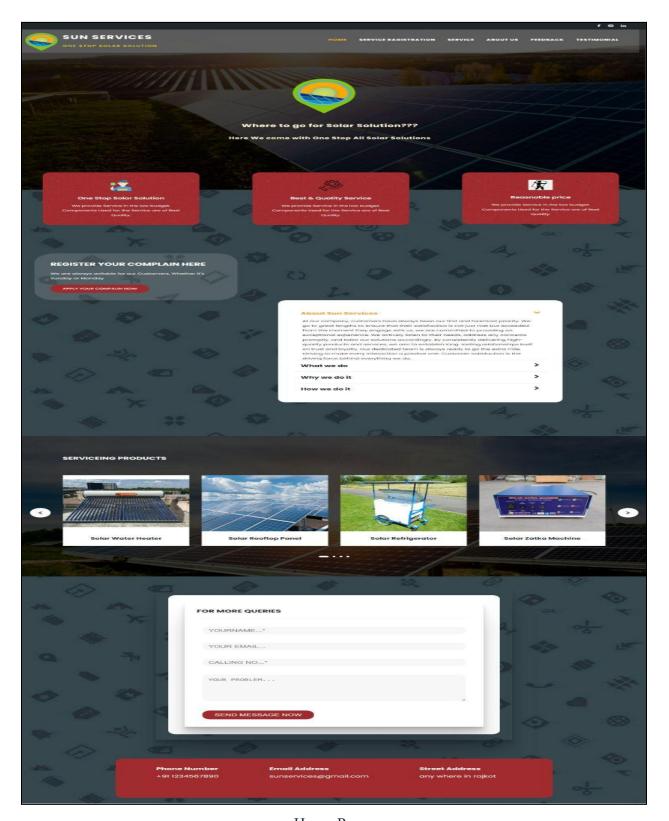


Add Service Add page

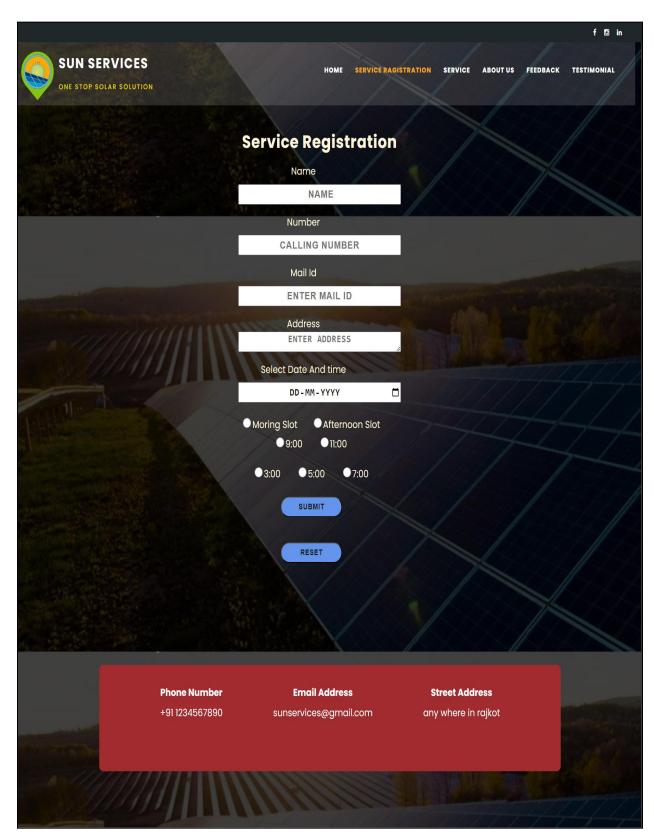


Add Service Update Page

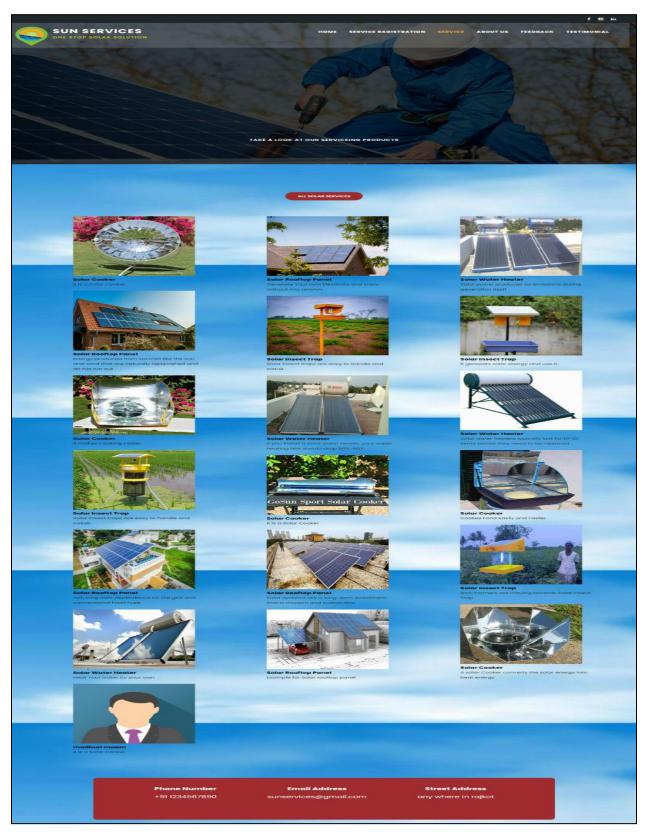
5.1.2 User Side



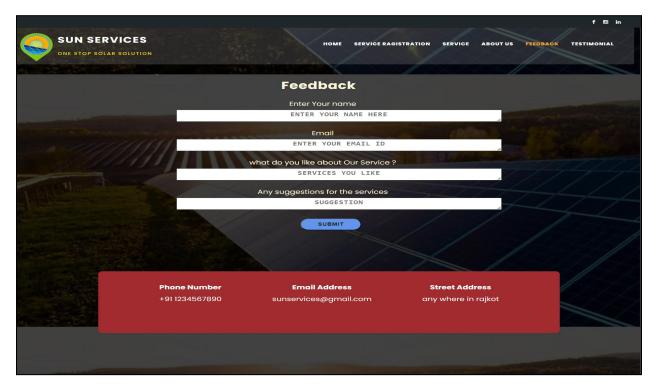
Home Page



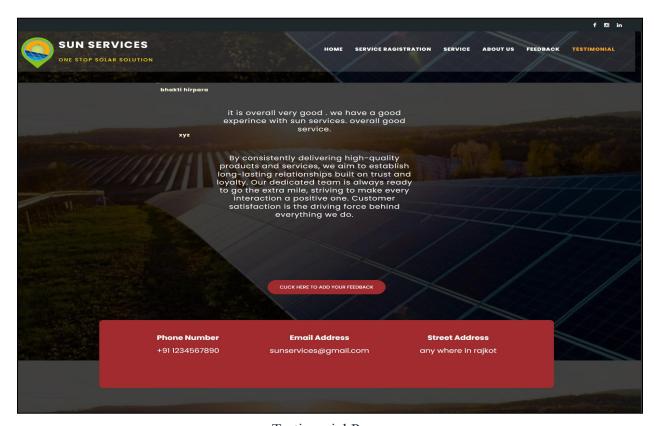
User Registration



Services Page



Feedback Page



Testimonial Page

5.2 Testing Approach

Sr. No.	Test Case	Expected Result	Passed / Failed
1	Type the URL of the Home page in the address bar of the browser and try to access the application.	After Pressing 'Enter' One should Directly redirect to the Home Page.	Passed
2	Check the title of the internet explorer window	The name should be meaningful and should reflect the action done in window	Passed
3	Check the size of buttons in all windows	All the buttons should be of same size	Failed
4	Check the size of pop up screen	All the pop up screens should be of appropriate size according to the action it is doing	Passed
5	Check the placement of all the controls	All controls should be properly placed	Passed
6	Check the color in all window	The color should be uniform	Passed
7	Check the font and size of font in different pages	The font and size of font should be same	Passed

8	Click on 'Refresh' button on the browser	The page should get refreshed	Passed
9	Click on 'Back' button on the browser (other than Home Page)	It should go back to the previous page	Passed
10	Click on 'Forward' button on the browser	It should go to the next page (only for those pages for which are browsed already)	Passed
11	While doing any of the functions with regards to application click on browser 'Stop' button	It should stop that process	Failed
12	In the site, check if there any link appears, if there is any, right click on that link and select 'Open in a New Window'	The corresponding link should be displayed in new window	Passed
13	In the site check if there any link appears, if there is any, right click on that link and select 'Open Link'	The corresponding page for the link should be displayed.	Passed
15	Check the functionalities in all the browsers like different versions of IE, different versions of Netscape etc	In all the versions of the browsers the functionalities, fonts and images should be same.	Failed
16	Click on the link provided for logout	It should take to the login screen	Passed

Sun Services

17	After logging out click on back button in the browser	It should not go to the previous page	Failed
18	Click on the link provided for logout	It should take to the login screen	Passed
19	After logging out click on back button in the browser	It should not go to the previous page	Failed
20	Check session is destroyed after logout, Try direct URL	It should not allow you to move directly without login to application. And login page should be displayed	Passed

Chapter 6: System Security and Measures

Securing your website, "Sun Services," is paramount to safeguard your data and user trust. Start by maintaining the latest software updates for your web server, content management system (CMS), and plugins. Outdated software is a prime target for cyberattacks. Implement robust authentication methods, like multi-factor authentication (MFA), to ensure that only authorized individuals can access your site's backend.

Additionally, prioritize regular backups, secure file uploads, and effective error handling mechanisms to prevent data loss and breaches. Set security headers in your web server configuration and employ input validation to thwart common attacks like SQL injection and cross-site scripting (XSS). Log critical events and set up monitoring alerts to identify and respond swiftly to security incidents.

Develop a comprehensive incident response plan and train your staff on security best practices. Ensure that third-party services and APIs integrated into your website also adhere to security standards. Conduct regular security testing and maintain compliance with relevant data privacy regulations. Finally, establish a solid backup and disaster recovery plan to ensure business continuity in case of data loss or system failures. Remember that cybersecurity requires ongoing attention and adaptation to evolving threats and technologies. Consulting with cybersecurity experts can provide valuable insights into enhancing your website's security posture.

Chapter 7: Future Scope and Enhancement

The future scope and enhancements for your Servicing website, Sun Services, hold immense potential to keep your platform competitive and user-centric. To begin, consider integrating cutting-edge technologies such as artificial intelligence (AI) and machine learning to provide personalized investment recommendations. These advanced tools can analyze market trends and user preferences, ensuring that your users receive tailored investment strategies that align with their financial goals.

To foster community and provide valuable insights to investors, consider adding social networking features. Allow users to follow and engage with expert investors or financial influencers, creating a sense of belonging and facilitating knowledge sharing within your platform.

Moreover, advanced data analytics, robo-advisors, blockchain technology for transparency, and a robust educational section can significantly enhance the user experience and build trust. Expanding globally, staying compliant with regulations, partnering with key players in the financial industry, and prioritizing security remain fundamental strategies for Sun Services's future success.

Always keep an ear to the ground, gathering user feedback and actively seeking to improve your platform. By staying agile, responsive, and in tune with industry trends and user preferences, Sun Services can continue to evolve as a leading destination for investment enthusiasts.

Chapter 8: Conclusion and Limitation

- 1. User-Centric Approach: Sun Services's commitment to a user-centric approach has been instrumental in creating a platform that empowers investors of all levels. The incorporation of AI-driven investment tools, cryptocurrency integration, and a dedicated mobile app underscores our dedication to meeting users' evolving needs.
- 2. Innovation and Technology: Staying at the forefront of technological advancements, we have leveraged AI, blockchain, and data analytics to provide cutting-edge solutions. These enhancements not only enhance user experiences but also bolster security and transparency.
- 3. Global Expansion: Expanding our services to international markets has allowed us to offer diverse investment opportunities while maintaining a strong emphasis on regulatory compliance. This global approach ensures that Sun Services remains a versatile platform for investors worldwide.
- 4. Community and Education: The introduction of social networking features, educational content, and gamification elements has fostered a vibrant and engaged user community. Sun Services not only facilitates investments but also nurtures learning and networking opportunities for investors.

Limitations:(chat gpt)

- 1. Market Volatility: Despite our best efforts, Sun Services cannot eliminate the inherent risks associated with servicing sector .
- 2. Regulatory Challenges: Regulatory landscapes can be complex and ever-changing, especially in the financial sector. Compliance with various regulations across different regions can be a significant challenge, and users must stay informed about the legal implications of their investments.
- 3. Technical Risks: As a technology-based platform, Sun Services is susceptible to technical glitches, cyberattacks, and downtime.
- 4. Investment Outcomes: While our AI tools and recommendations aim to optimize servicing strategies, it's crucial to remember that no prediction is foolproof. Users are ultimately responsible for their Service decisions and should exercise due diligence.
- 5. User Discretion: Sun Services provides information, tools, and resources, but it is not a substitute for professional Solar Service Users should consult with their Solar COmpany respectively and conduct their research before registering for Service.

Chapter 9: Bibliography

I have used this kind of references for making this document and project:

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https://templatemo.com/

https://htmlcodex.com/template/

https://colorlib.com/wp/

Front-end Design:

https://getbootstrap.com/

https://www.w3schools.com/

https://getbootstrap.com/

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https://www.geeksforgeeks.org/

https://www.w3schools.com/

https://www.phptutorial.net/php-pdo/

Ajax & jQuery:

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Thank You