# A

# PROJECT REPORT ON

# **Construction Ease**

Submitted in partial fulfillment for the award of

# Post Graduate Diploma in Advance Computing (PG-DAC) from

# INSTITUTE OF EMERGING TECHNOLOGIES

**Authorized Training Centre** 



# **Under the Guidance of Prof. Sampada Tarare**

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# **CERTIFICATE**

This is to certify that the project report entitled **Construction Ease** is a bonfire work carried out by **YASIR SHAIKH, PRAJWAL SONAWANE, TUSHAR PATLE, AMEYA KULKARNI, PRAJAKTA KARAPE And VYENKTESH MOHTE** and submitted in partial fulfillment of the requirement for the C-DAC ACTS, DAC course in Institute of Emerging Technology in the batch of SEPT 2023.

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# **ACKNOWLEDGEMENT**

This project **Construction Ease** was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC).

We are very glad to mention **Prof. Ms. Sampada Tarare** for his valuable guidance to work on this project. His guidance and support helped us to overcome various obstacles and intricacies during the course of project work.

Our most heart full thanks go to *Mr. Sangram Patil* (**Director, IET**) who gave all the required support and kind coordination to provide all the necessities like required hardware, internet facility, and extra lab hours to complete the project and throughout the course up to the last day here in C-DAC ACTS, Pune.

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# **Abstract**

"Construction Ease" presents a pioneering solution as a mediator platform catering to the needs of homeowners and contractors in the home construction domain. With an increasing demand for efficient and trustworthy connections in the construction industry, this project aims to revolutionize the way homeowners find contractors and initiate their home building projects

The platform offers a user-friendly interface where homeowners can navigate through a diverse array of contractor profiles. Each profile showcases the contractor's expertise, portfolio, and ratings, empowering homeowners to make well-informed decisions aligned with their specific project requirements. Additionally, users have the flexibility to select construction plans ranging from basic to premium, tailored to their preferences and budget constraints.

Both homeowners and contractors have the opportunity to create detailed profiles, enhancing transparency and facilitating effective communication. Contractors can upload project details, enabling homeowners to gain insights into their previous work and capabilities. This streamlined approach fosters trust and collaboration between the parties involved.

Key features of Construction Ease include seamless profile creation, extensive contractor selection options, and a repository of construction plans to cater to diverse needs. By leveraging technology to simplify the contractor selection process and provide valuable resources for project planning, Construction Ease aims to optimize the home construction experience for all stakeholders involved.

# **Index**

Sr. No.	Title	Page No.
1	Introduction	6
2	Problem Definition & Scope	7
2.1	Problem Definition	7
2.2	Goals & Objectives	8
2.3	Major Constraints & Outcomes	10
3	Software Requirement Specification	12
3.1	Purpose	12
3.2	Scope	10
3.3	Functional & Non-functional Requirements	13
4	Performance-Requirements	15
4.1	H/W Requirements & S/W Requirements	15
5	UML Diagram	16
5.1	DFD	16
5.2	ERD	18
5.3	Use case diagram	19
5.4	Deployment diagram	20
6	Application Screenshots	20
7	References	25

# 1. Introduction

The construction industry plays a pivotal role in shaping the places we live, work, and thrive in. However, navigating the complexities of home construction projects can often be daunting and time-consuming, especially for homeowners seeking reliable contractors to bring their vision to life. In response to this challenge, "Construction Ease" emerges as a ground breaking mediator platform, dedicated to bridging the gap between homeowners and contractors, thereby revolutionizing the home building experience.

"Construction Ease" serves as a digital nexus, facilitating seamless connections between homeowners embarking on construction projects and contractor's eager to lend their expertise. At the core of this platform lies a comprehensive database of contractor profiles, meticulously curated to encompass a wide spectrum of specialties, experience levels, and geographical locations. Homeowners are empowered to explore these profiles, evaluating contractors based on their portfolios, reviews, and ratings, to identify the perfect match for their project needs.

One of the distinguishing features of "Construction Ease" is its provision of construction plans, ranging from basic to premium, tailored to accommodate varying budgets and preferences. This innovative approach not only simplifies the planning process for homeowners but also enables them to visualize and select the most suitable blueprint for their dream home.

Moreover, "Construction Ease" places a premium on user engagement and transparency. Homeowners and contractors alike have the opportunity to create detailed profiles, showcasing their skills, past projects, and unique offerings. Contractors can upload comprehensive project details, providing homeowners with valuable insights into their capabilities and expertise. This transparency fosters trust and confidence, laying the foundation for fruitful collaborations.

In essence, "Construction Ease" redefines the landscape of home construction by leveraging technology to streamline the contractor selection process and provide invaluable resources for project planning. By offering a user-friendly platform where homeowners can seamlessly connect with reputable contractors and access a range of construction plans, "Construction Ease" paves the way for smoother, more efficient, and ultimately more satisfying home building experiences.

# 2. Problem Definition and Scope

# 2.1. Problem Definition

**Problem Definition**: The traditional process of connecting homeowners with contractors for home construction projects is often characterized by inefficiencies, lack of transparency, and difficulty in finding reliable and skilled contractors. Homeowners face challenges in identifying reputable contractors who align with their project requirements, leading to delays, cost overruns, and sometimes subpar construction quality. Similarly, contractors struggle to reach potential clients, showcase their expertise, and differentiate themselves in a crowded marketplace. Moreover, the absence of standardized construction plans exacerbates these challenges, complicating the planning process and hindering effective communication between homeowners and contractors. Therefore, there is a critical need for a mediator platform that simplifies the contractor selection process, facilitates transparent communication, and offers standardized construction plans to streamline the home construction journey for both homeowners and contractors.

**Scope**: The scope of the "Construction Ease" project encompasses the development of a comprehensive mediator platform designed to address the challenges faced by homeowners and contractors in the home construction industry. The platform will enable homeowners to create profiles, browse through a curated database of contractor profiles, and select contractors based on their expertise, portfolios, ratings, and reviews. Similarly, contractors will have the ability to create detailed profiles, showcase their skills and past projects, and upload project details to attract potential clients.

Furthermore, the platform will offer a range of standardized construction plans categorized from basic to premium, providing homeowners with clear blueprints and specifications to choose from. These plans will serve as a guide for homeowners in planning their construction projects and will help facilitate effective communication and collaboration between homeowners and contractors.

Key functionalities of the platform will include:

- 1. User registration and profile creation for homeowners and contractors.
- 2. Contractor profile browsing and selection based on various criteria.
- 3. Standardized construction plan selection and customization options for homeowners.
- 4. Contractor project detail uploading and management.
- 5. Secure messaging and communication features between homeowners and contractors.
- 6. Transparent review system for both homeowners and contractors.
- 7. Responsive customer support to address user inquiries and concerns.

Initially, the platform will focus on serving homeowners and contractors involved in residential construction projects. However, there is potential for expansion into other construction sectors in the future. The platform will prioritize user experience, security, and scalability to ensure a seamless and reliable service for all stakeholders involved in the home construction process.

# 2.2 Goals and objectives:

#### Goals:

## 1. Enhance User Experience:

- Develop an intuitive and user-friendly platform interface for seamless navigation and interaction.
- Implement features such as filters, search options, and clear categorization to facilitate easy access to information.
- Prioritize user feedback and continually iterate on the platform to improve usability and satisfaction.

#### 2. Streamline Contractor Selection Process:

- Provide homeowners with a comprehensive database of contractor profiles, including detailed portfolios and ratings.
- Enable users to easily compare and evaluate contractors based on their expertise, previous projects, and customer feedback.
- Simplify the process of contacting and hiring contractors through secure messaging and communication channels.

#### 3. Offer Flexible Construction Plans:

- Offer a range of construction plans tailored to different budgets, preferences, and project requirements.
- Provide clear descriptions, visuals, and pricing options for each plan to help users make informed decisions.
- Allow users to customize and adapt selected plans to better suit their specific needs and constraints.

#### 4. Empower Contractors to Showcase Their Expertise:

- Enable contractors to create and manage their profiles with detailed information about their skills, qualifications, and past projects.
- Offer tools and guidance for contractors to effectively highlight their unique selling points and attract potential clients.
- Provide resources and support to help contractors optimize their profiles for maximum visibility and engagement.

## 5. Ensure Data Security and Privacy:

- Implement robust security measures to protect user data and ensure confidentiality throughout the platform.
- Adhere to industry standards and regulations regarding data handling and privacy protection.
- Regularly audit and update security protocols to address emerging threats and vulnerabilities.

#### 6. Enable Efficient Admin Management:

- Provide admin functionalities for managing user and contractor details, including adding, updating, and deleting profiles.
- Implement permissions and access controls to ensure appropriate management of platform resources.
- Offer admin tools for monitoring platform activity, resolving disputes, and addressing user inquiries.

# **Objectives:**

# 1. Develop a User-Friendly Interface:

- Design an intuitive platform interface that is easy to navigate for both homeowners and contractors.
- Ensure accessibility across various devices and screen sizes to accommodate different user preferences.

#### 2. Enable Efficient Contractor Selection:

- Create a comprehensive database of contractor profiles, including detailed information on skills, expertise, and past projects.
- Implement search and filter functionalities to allow users to easily find and compare contractors based on their specific requirements.

# 3. Offer Diverse Construction Plans:

- Provide a range of construction plans categorized from basic to premium, catering to different budgets and project complexities.
- Include clear descriptions, visuals, and pricing information for each plan to aid users in making informed decisions.

#### 4. Facilitate Effective Communication:

- Implement secure messaging and communication channels to enable direct interaction between homeowners and contractors.
- Provide tools for sharing project details, documents, and updates to facilitate collaboration throughout the construction process.

# 5. Empower Contractors with Profile Management:

- Allow contractors to create and manage their profiles, including adding project details, uploading images, and receiving client feedback.
- Offer guidance and resources to help contractors optimize their profiles for increased visibility and client engagement.

## 6. Ensure Admin Management Efficiency:

- Develop admin functionalities for managing user and contractor details, including adding, updating, and deleting profiles.
- Implement permissions and access controls to ensure data security and privacy compliance.
- Provide admin tools for monitoring platform activity, resolving disputes, and addressing user inquiries effectively.

# 7. Enhance User Satisfaction:

- Gather feedback from users to identify areas for improvement and implement enhancements to enhance user satisfaction.
- Continuously monitor platform performance and usability to ensure a positive experience for all stakeholders involved.

# 2.3 Major Constraints and Outcomes:

#### **Constraints:**

- 1. **Data Security and Privacy**: Ensuring the security and privacy of user data, including personal information, project details, and communication exchanges, is paramount. Compliance with data protection regulations, such as GDPR or CCPA, adds an additional layer of complexity and constraint.
- 2. **Scalability:** As the platform gains popularity and attracts a larger user base, scalability becomes a crucial consideration. The system must be designed to handle increased traffic, user interactions, and data storage requirements without compromising performance or user experience.
- 3. **Technical Compatibility:** Ensuring compatibility across various devices, operating systems, and web browsers is essential to provide a seamless user experience. This includes optimizing the platform for both desktop and mobile devices to accommodate users' preferences and accessibility needs.
- 4. **Contractor Verification and Quality Control**: Verifying the qualifications, credentials, and quality of contractors listed on the platform is crucial to maintain user trust and satisfaction. Implementing robust vetting processes and quality control measures may require significant resources and coordination.
- 5. **Legal and Regulatory Compliance:** Compliance with relevant laws, regulations, and industry standards, such as construction licensing requirements and consumer protection laws, is essential to mitigate legal risks and ensure the platform's legality and legitimacy.
- 6. **Platform Maintenance and Updates**: Regular maintenance, updates, and bug fixes are necessary to address issues, improve functionality, and enhance security. Balancing ongoing maintenance tasks with new feature development and user support can be challenging and may require careful resource allocation.
- 7. **User Support and Customer Service:** Providing timely and effective user support and customer service is crucial for addressing user inquiries, resolving disputes, and ensuring a positive user experience. Allocating sufficient resources and establishing efficient support channels are essential constraints to consider.
- 8. **Financial Sustainability**: Ensuring the financial sustainability of the platform through revenue generation models, such as subscription fees, advertising, or commission-based transactions, is essential to support ongoing development, maintenance, and operational costs.

#### **Outcomes:**

# 1. Improved Contractor-Homeowner Collaboration:

• Enhanced communication and collaboration between contractors and homeowners, leading to smoother project execution and increased satisfaction for both parties.

## 2. Streamlined Contractor Selection Process:

• Simplified process for homeowners to find and select contractors based on their specific requirements, preferences, and project scope, leading to more informed decision-making.

## 3. Increased Contractor Visibility and Opportunities:

• Improved visibility and exposure for contractors, allowing them to showcase their skills, expertise, and past projects to a wider audience of potential clients, thereby increasing business opportunities.

## 4. Enhanced User Experience:

 User-friendly platform interface and intuitive navigation tools that enhance the overall user experience for homeowners, contractors, and admins, leading to increased user satisfaction and engagement.

# 5. Greater Transparency and Trust:

• Transparent contractor profiles, project details, and customer reviews that foster trust and confidence among homeowners and contractors, resulting in stronger relationships and more successful project outcomes.

## 6. Efficient Admin Management:

• Streamlined admin management tools and functionalities for managing user and contractor details, facilitating efficient platform administration and maintenance.

# 7. Diverse Construction Plan Options:

• Range of construction plans categorized from basic to premium, offering homeowners flexibility and choice in selecting the most suitable plan for their project needs and budget constraints.

# 8. Compliance with Legal and Regulatory Standards:

• Adherence to relevant laws, regulations, and industry standards, ensuring legal compliance and legitimacy of the platform, thus mitigating legal risks and liabilities.

#### 9. Scalable Platform Infrastructure:

• Scalable platform architecture that can accommodate growth in user base, traffic, and data storage requirements, ensuring the platform's sustainability and performance over time.

# 10. Financial Sustainability:

• Implementation of revenue generation models, such as subscription fees or commission-based transactions, to ensure the financial sustainability of the platform and support ongoing development and maintenance efforts.

# 3. Software Requirement Specifications

# 3.1 Purpose

The purpose of the Construction Ease project is to create a mediator platform that fosters seamless collaboration between homeowners and contractors in the home construction industry. By providing a user-friendly platform accessible to all stakeholders, including homeowners, contractors, and admins, the project aims to streamline the process of connecting homeowners with reputable contractors for their construction projects. The platform facilitates this process by allowing users to browse through a diverse array of contractor profiles, view construction plans ranging from basic to premium, and communicate effectively with each other.

Through this platform, homeowners can easily find and select contractors that best match their project requirements, while contractors gain increased visibility and opportunities to showcase their expertise and past projects. The project also aims to enhance transparency and trust between users by providing comprehensive contractor profiles, project details, and customer reviews.

Additionally, the Construction Ease project serves the purpose of efficient admin management, allowing admins to oversee and manage user and contractor details effectively. By implementing scalable infrastructure and adhering to legal and regulatory standards, the project ensures its sustainability and legitimacy over time.

Overall, the purpose of the Construction Ease project is to revolutionize the home construction industry by providing a convenient and reliable platform for homeowners and contractors to collaborate, resulting in smoother project execution, increased satisfaction, and successful project outcomes.

# 3.2 Scope

- 1. User Interface Design: Develop an intuitive and visually appealing platform interface for easy navigation and interaction.
- 2. Contractor Profile Management: Allow contractors to create, edit, and manage their profiles, showcasing their skills, expertise, and past projects.
- 3. Homeowner Interaction: Enable homeowners to browse contractor profiles, view construction plans, and communicate with contractors to discuss project details.
- 4. Admin Tools: Provide admin functionalities for managing user and contractor details, including adding, updating, and deleting profiles.
- 5. Construction Plans: Offer a range of construction plans categorized from basic to premium, with clear descriptions and pricing information.
- 6. Communication Features: Facilitate secure messaging and communication channels between homeowners and contractors for efficient collaboration.
- 7. Legal Compliance: Ensure compliance with relevant laws and regulations, such as data protection and consumer rights laws.
- 8. Continuous Improvement: Gather user feedback, conduct testing, and implement enhancements to improve platform usability and performance over time.

# 3.3 Functional & Non-functional Requirements

# **Functional requirements:**

## 1. User Registration and Profile Management:

- Users (both homeowners and contractors) should be able to register and create profiles with relevant information.
- Profiles should include details such as name, contact information, location, and specialization (for contractors).
- Users should have the ability to edit and update their profiles as needed.

# 2. Contractor Profile Creation and Management:

- Contractors should be able to create and manage their profiles, including uploading images, showcasing past projects, and detailing their expertise.
- They should have the option to add project details, including descriptions, images, and client testimonials.
- Contractors should be able to update their profiles to reflect changes in their availability, services, or contact information.

#### 3. Construction Plan Selection:

- Users should have access to a variety of construction plans categorized from basic to premium.
- Plans should include detailed descriptions, pricing information, and visuals to help users make informed decisions.
- Users should be able to select and purchase construction plans directly through the platform.

#### 4. Contractor Search and Selection:

- Users should be able to search for contractors based on criteria such as location, specialization, ratings, and reviews.
- The platform should provide a list of relevant contractor profiles matching the user's search criteria.
- Users should have the ability to view contractor profiles, including portfolios, ratings, and client reviews, to aid in contractor selection.

# 5. Admin Management:

- Admins should have the ability to manage user and contractor details, including adding, updating, and deleting profiles.
- They should be able to monitor platform activity, resolve disputes, and address user inquiries efficiently.

## 6. Responsive Design and Compatibility:

- The platform should be accessible and responsive across various devices, including desktops, laptops, tablets, and smartphones.
- It should be compatible with different web browsers to ensure a consistent user experience for all users.

## 7. Legal Compliance:

- The platform should comply with relevant laws and regulations, including data protection and privacy laws.
- It should include terms of service and privacy policy documents outlining user rights and responsibilities.

# 8. Feedback and Rating System:

 Users should have the ability to leave feedback and ratings for contractors based on their experience. • The platform should aggregate and display ratings and reviews to help users make informed decisions.

# Non-functional requirements for Mental Health Mate Web Application:

# 1. Performance:

- The platform should be responsive and load quickly to provide a seamless user experience.
- Response times for actions such as profile creation, contractor search should be minimal.
- The system should be capable of handling concurrent user interactions without significant slowdowns or downtime.

#### 2. Security:

- User and contractor details should be securely stored and protected from unauthorized access.
- OTP authentication should be implemented to verify user and contractor identities during registration and login processes.
- Payment transactions should be encrypted and processed securely using industry-standard encryption protocols.

## 3. Scalability:

- The platform should be scalable to accommodate growth in user base and data volume over time.
- It should be able to handle increasing numbers of concurrent users and transactions without performance degradation.

#### 4. Reliability:

- The platform should be highly available and reliable, with minimal downtime for maintenance or updates.
- Data backups should be performed regularly to prevent data loss in the event of system failures or disasters.

#### 5. Compatibility:

• The platform should be compatible with a wide range of devices, browsers, and operating systems to ensure accessibility for all users.

# 6. Usability:

- The platform should have an intuitive and user-friendly interface that is easy to navigate and understand.
- Features such as search filters, messaging, and profile management should be intuitive and user-friendly.

## 7. Disaster Recovery:

- The platform should have robust disaster recovery measures in place to ensure data integrity and availability in the event of system failures or disasters.
- Data backups should be stored securely and regularly tested to ensure recoverability.

## 8. Customer Support:

- The platform should provide timely and effective customer support to address user inquiries, issues, and concerns.
- Support channels such as email, chat, or phone should be available to assist users with platform-related queries.

# 4. Performance Requirement

# 4.1 Hardware Requirements

- Intel i3 processor 3rd generation or later / AMD Ryzen 200 2nd generation or later
- 4GB RAM.
- Windows 7 Home edition or later.
- 200 GB data HDD Space
- Data Connection 200 kbps

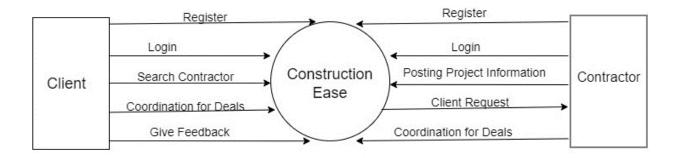
# 4.2Software Requirements

- Eclipse 4.7
- MySQL 5.7 with Workbench 8.0
- Google Chrome version 79.0
- Apache Tomcat Server 8.5
- Maven Dependencies 6. Visual Studio Code

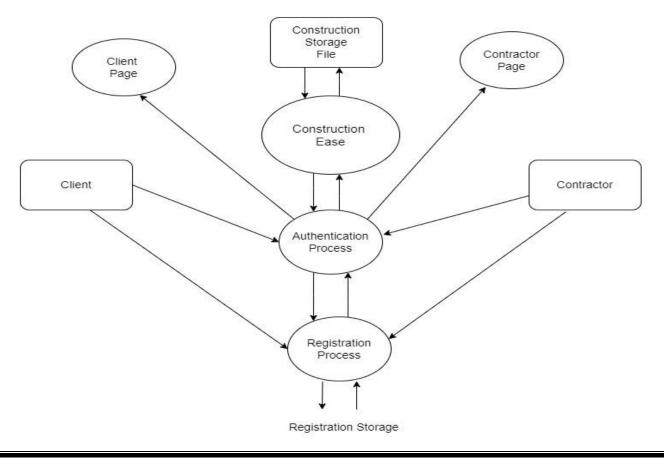
# 5. UML Diagrams

# 5.1 Data Flow Diagram (DFD)

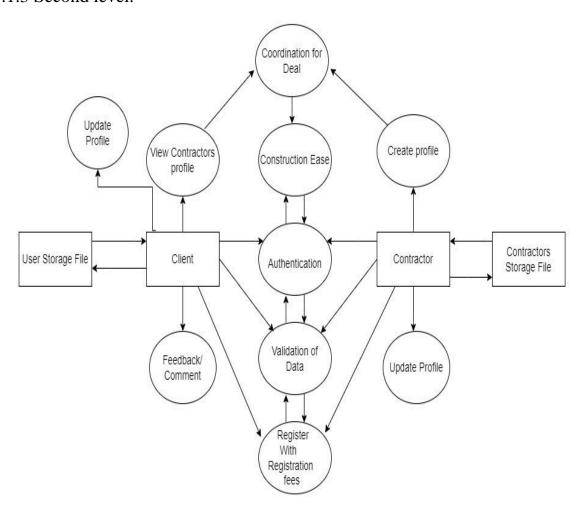
# 5.1.1 Zero level:



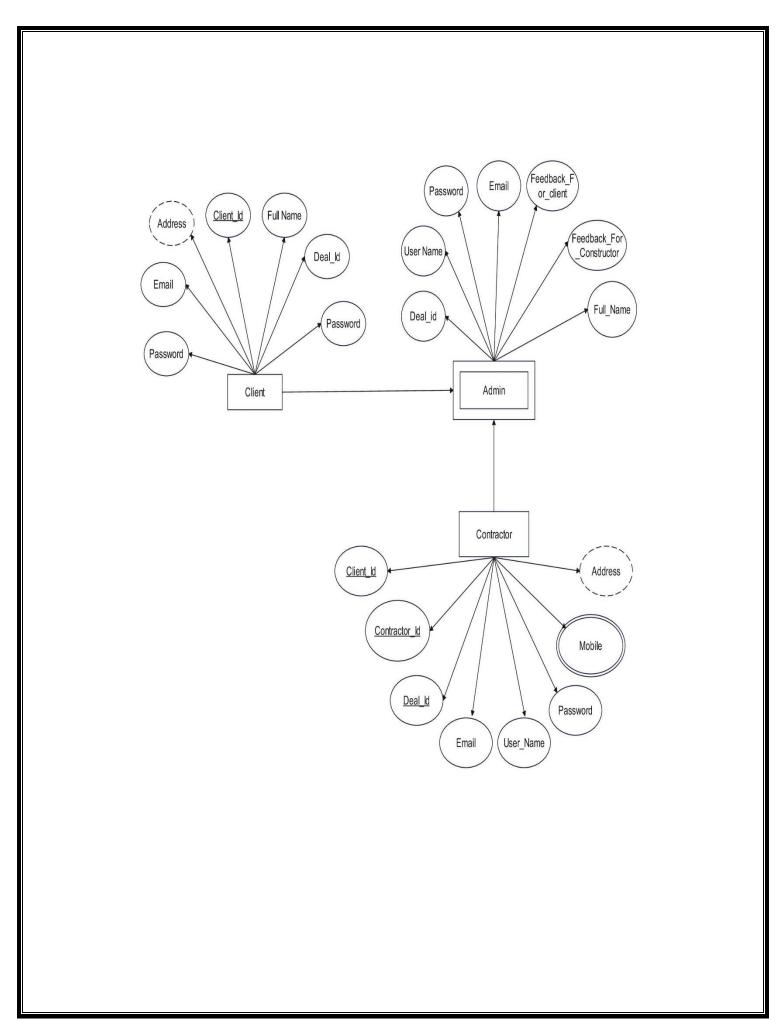
# 5.1.2 First level:



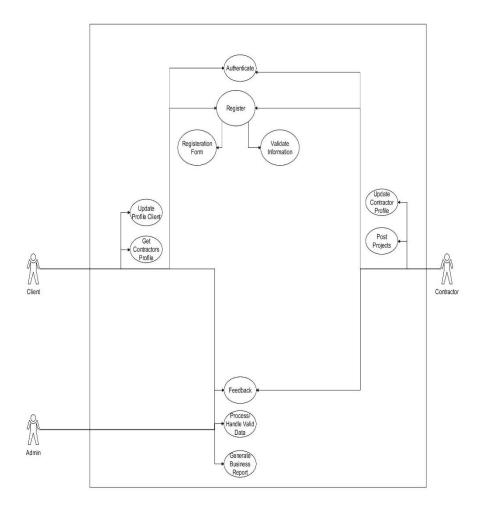
# 5.1.3 Second level:



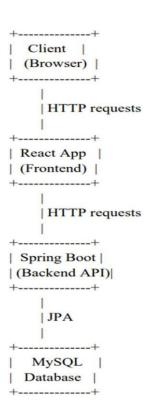
# 4.1 Entity Relationship Diagram (ERD)



# 4.2 Use Case Diagram

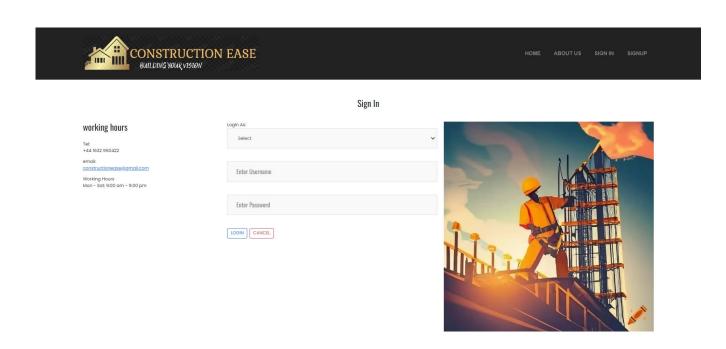


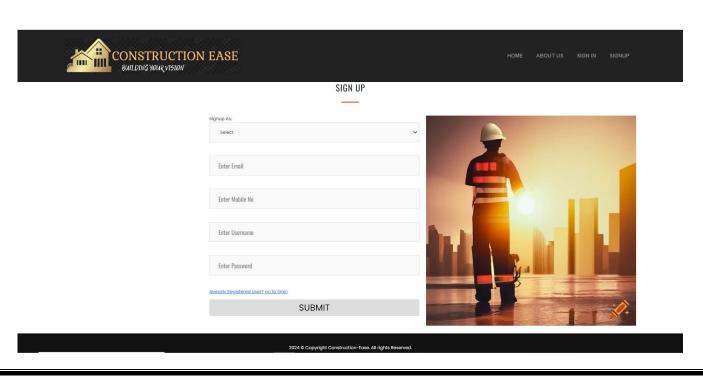
# 4.3 Deployment Diagram

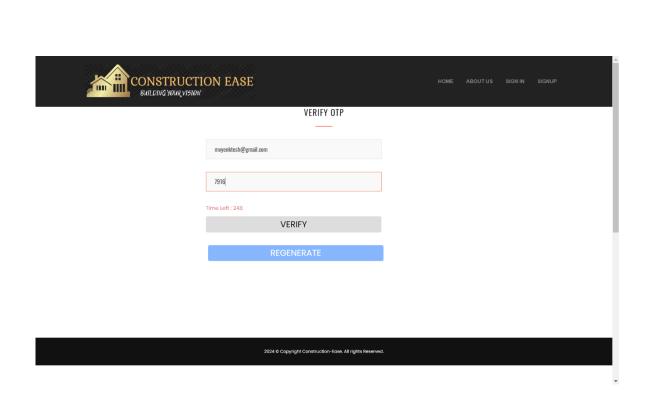


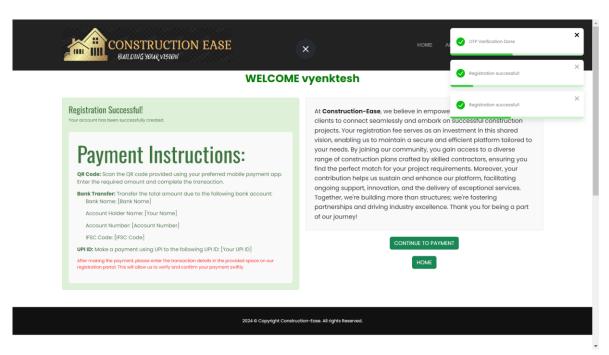
# **5. Application Screenshots**

# 5.1 Web-Application Screenshots:









HOME

ABOUT

FEEDBACK

LOGOUT

#### **OUR PLANS**



#### **REGULAR PLANS**

Our Regular Plan offers a comprehensive solution for those seeking quality construction within a budget. With attention to detail and adherence to industry standards, this plan ensures the successful completion of your project without compromising on quality.

REGULAR PLANS



#### SILVER PREMIUM PLANS

Elevate your construction experience with our Silver Premium Plan. Designed for discerning clients who value exclusivity and superior craftsmarship, this plan offers priority scheduling personalized consultations, and access to premium materials, ensuring a seamless journey from concept to completion.

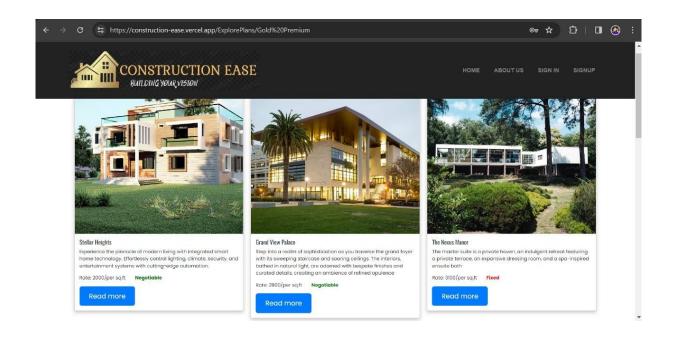
SILVER PREMIUM

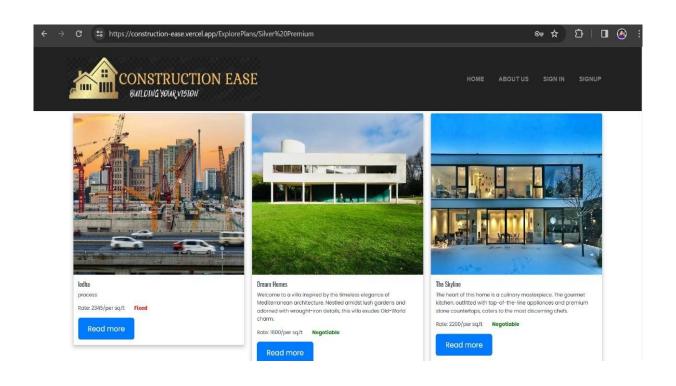


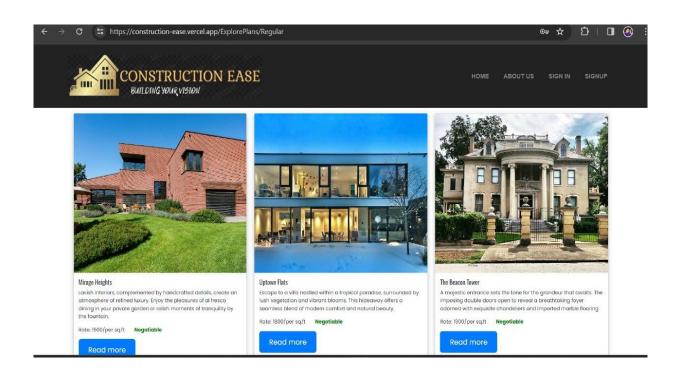
#### GOLD PREMIUM PLANS

Experience luxury and sophistication with our Gold Premium Plan. Tolicred to meet the highest standards of elegance and excellence, this plan offers WP tearbernet, customized designs, and access to the finest materials and finishes, Let us transform your vision into a masterpiece with our unparalleled expertise and attention to detail.

GOLD PREMIUM









HOME

FEEDB

LOGOUT

#### ABOUT THE CONSTRUCTION-EASE

Build your dream home with ease. Our user-friendly platform lets homeowners effortlessly choose contractors and different plans, all from the comfort of home. (Hortlessly access details of different contractors through simple amail and passward registration. For contractors, pining is of resear—they can create and manage profiles with ease. Security is of utmost importance with admin sociusive role switching. The overall aim is to offer a hastlef-hose, efficient, and interactive home construction experience, soving users time and effort while providing a centralized hub for streamlined collaboration between homeowners and contractors.

MORE ABOUT US





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## FEEDBACK

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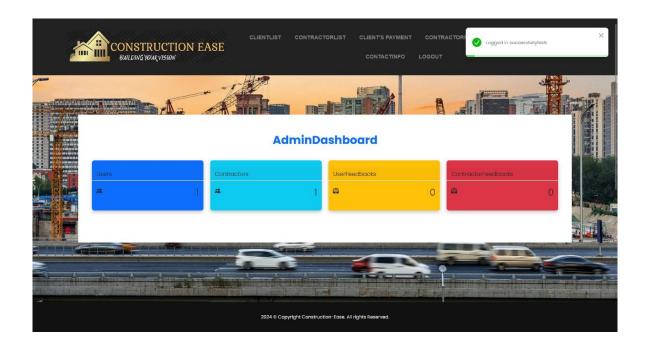
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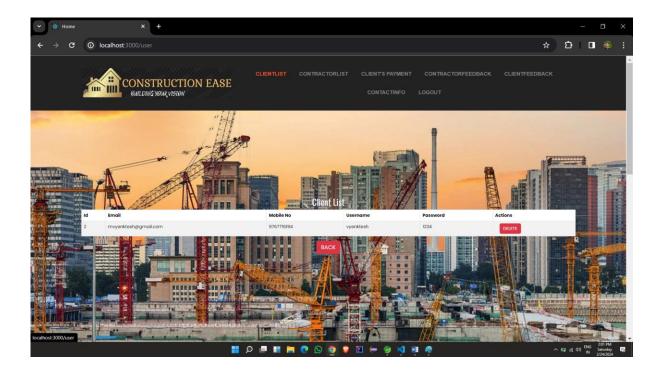
Message

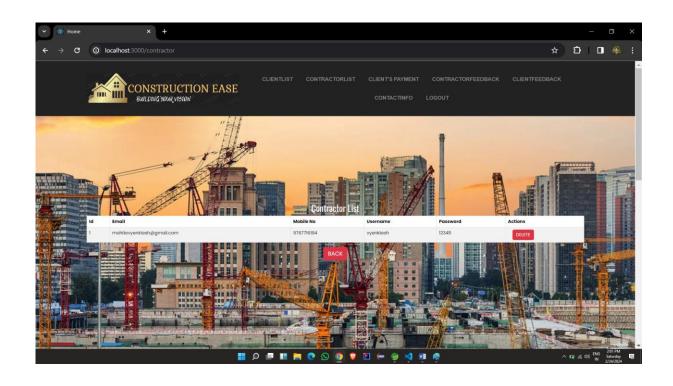
SEND MESSAGE

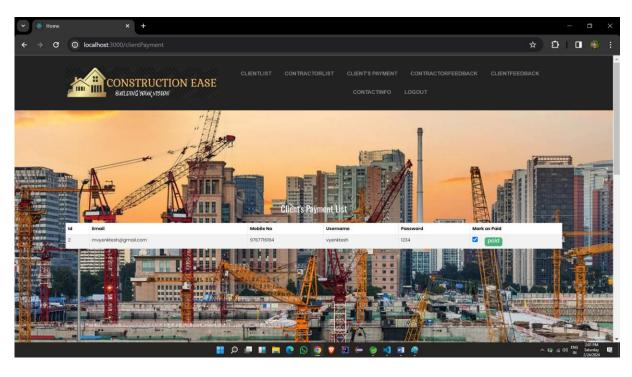
BACK

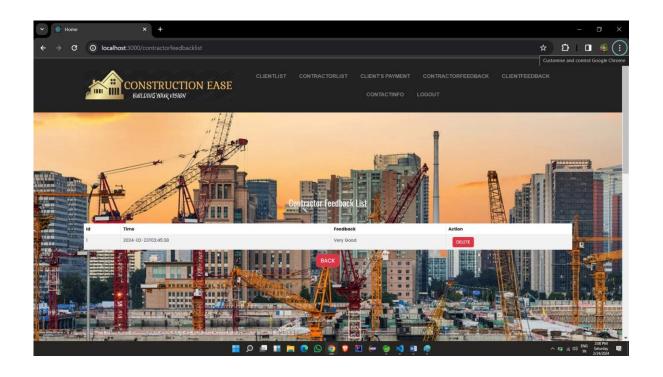
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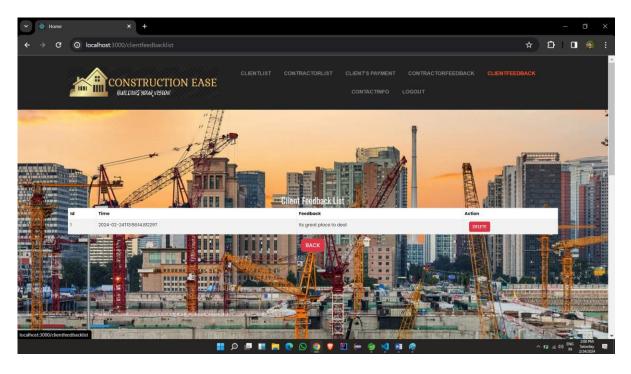


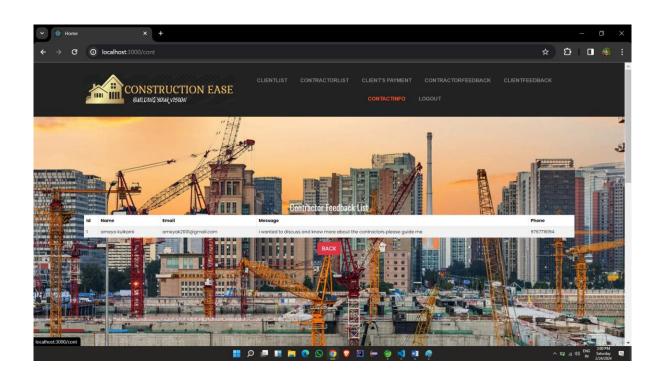












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- 6. X. Tian, "Construction of Building Information Management System Based on Grid 3D Building Model," 2022 2nd International Signal Processing, Communications and Engineering Management Conference (ISPCEM), Montreal, ON, Canada, 2022, pp. 180-184, doi: 10.1109/ISPCEM57418.2022.00042.
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