

# 1. Introduction

In today's fast-paced world, finding reliable contractors for home improvement and maintenance projects can be a daunting task for customers. Traditional methods often lead to frustration, lack of transparency, and inconsistent service quality. To address these challenges, we introduce Thekedar Hub, a dedicated online platform designed to bridge the gap between customers and local contractors (thekedars). Thekedar Hub simplifies the hiring process by providing a user-friendly interface that facilitates direct interaction through a unique bidding system. Customers can easily post their project requirements, while thekedars can respond with competitive bids, allowing for informed decision-making based on price, expertise, and user reviews. This platform not only empowers customers to find the right professionals for their needs but also helps thekedars showcase their skills and secure new opportunities. By fostering a transparent and efficient marketplace, Thekedar Hub aims to redefine the contracting experience, ensuring satisfaction for all users involved.

## 1.1 Feasibility Study

**1.1.1 Technical Feasibility** The technical development of ThekedarHub is well within reach using existing technologies. The platform can utilize modern web development frameworks such as React for the frontend and Node.js for the backend, ensuring scalability and responsiveness. Integrating blockchain technology for secure transactions and smart contracts is feasible with established platforms like Ethereum. Additionally, augmented reality (AR) features can be implemented using tools like Unity or AR.js, which are already effective in similar applications. Thus, the technical infrastructure for ThekedarHub can be successfully established with available resources and expertise.

**1.1.2 Financial Feasibility** The initial costs associated with developing ThekedarHub will include expenses for web development, marketing, and operational support. Funding can be sought from various sources, including investors, grants, or crowdfunding campaigns. A subscription model for service providers, along with transaction fees for projects completed through the platform, can create a sustainable revenue stream. Based on market projections, attracting around 5,000 users in the first year could lead to potential earnings of approximately \$100,000. With prudent financial management and targeted marketing, ThekedarHub can achieve profitability within two to three years.

**1.1.3 Operational Feasibility** The operational structure of ThekedarHub involves forming partnerships with contractors and ensuring they meet established quality standards. A dedicated team will be necessary to oversee operations, marketing, and customer support. Furthermore, the platform must adhere to local regulations governing home renovation services to operate legally. By prioritizing quality control and enhancing user experience, ThekedarHub can build a loyal customer base and foster strong relationships with service providers, ensuring efficient operations and customer satisfaction.

## 1.2 Need and Significance

Need Home renovation can be overwhelming for customers. Finding reliable contractors and managing projects can be a challenge. There isn't a simple, easy-to-use platform that

connects customers with trustworthy professionals while ensuring clear communication, secure payments, and effective project management. This scattered approach often leads to confusion, delays, and poor results.

Significance ThekedarHub solves these problems by offering a one-stop solution where customers can find verified service providers, visualize their renovations using augmented reality (AR), and efficiently manage their projects. By using blockchain technology, ThekedarHub enhances transparency, which helps reduce fraud and disputes. This platform makes the renovation process easier and more reliable for customers and provides contractors with a trustworthy place to showcase their work. Ultimately, ThekedarHub aims to improve the home renovation experience, making it more accessible and secure for everyone involved.

## 1.3 Intended User

**1.3.1 Homeowners** Homeowners looking to renovate or improve their living spaces can find design ideas, professional services, and cost estimates. The site provides resources and inspiration, helping them plan renovations that meet their style preferences and budget, making home improvement easier and more accessible.

**1.3.2 Interior Designers** Interior designers can showcase portfolios and attract clients by sharing project samples on the platform. They can offer advice, collaborate with homeowners, and connect with contractors, creating a professional network that enhances their visibility and opportunities for client engagement.

**1.3.3 Contractors and Service Providers** Contractors, carpenters, electricians, and other skilled professionals can register on the site to reach a broader client base. By offering service listings, they make it easier for homeowners to find reliable professionals, fostering trust and creating more business opportunities in home renovation.

**1.3.4 Real Estate Agents** Real estate agents aiming to increase property value through renovations can use the site to get design insights and connect with professionals. By understanding trends and obtaining renovation services, they enhance property appeal, ultimately improving the marketability of homes for sale.

## 1.4 Abbreviations and Acronyms

**1.4.1 CRM - Customer Relationship Management** CRM systems help track and manage customer interactions, allowing the website to improve user experience by personalizing recommendations, answering queries quickly, and managing leads for contractors and service providers to boost engagement and conversions.

**1.4.2 SEO - Search Engine Optimization** SEO ensures the website ranks higher on search engines, making it more accessible to users searching for home renovation services. Optimized content, keywords, and images improve visibility, helping potential clients find and engage with the website easily.

**1.4.3 CMS - Content Management System** CMS platforms, like WordPress or Joomla, allow easy management of website content, from articles and images to user-generated content. This makes updating design ideas, portfolios, and renovation tips efficient, keeping the site fresh and informative for users.

**1.4.4 API - Application Programming Interface** APIs enable the website to integrate third-party services, such as payment gateways, design tools, or CRM software. They streamline processes and enhance website functionality, allowing for a seamless user experience with added features and tools.

## 2 Problem Statement

- **Difficulty in Finding Reliable Contractors** Customers often struggle to find trustworthy and skilled thekedars for their projects. Traditional methods of searching can lead to a lack of information, resulting in poor hiring decisions.
- **Inconsistent Quality of Service** Without a standardized way to evaluate contractors, customers may end up with varying levels of service quality. This inconsistency can lead to dissatisfaction and wasted resources.
- **Inefficient Communication Channels** Current methods of communication between customers and contractors are often fragmented and inefficient. This can lead to delays, misunderstandings, and a lack of clarity regarding project requirements.
- **Inadequate Feedback Mechanisms** Customers often lack a reliable way to provide feedback on contractors, which can hinder future users from making informed decisions. A lack of reviews and ratings can perpetuate poor service and limit accountability.
- **Inefficient Communication Channels** Current methods of communication between customers and contractors are often fragmented and inefficient. This can lead to delays, misunderstandings, and a lack of clarity regarding project requirements.

## 3. Objective

- **Connect Customers and Professionals** One of the primary objectives is to create a centralized platform that links customers with verified contractors, architects, and designers. This feature ensures that users can easily find and hire professionals who meet their specific needs for home renovation projects. By offering a reliable database of qualified service providers, ThekedarHub helps streamline the process of finding the right expert for every renovation task.
- **Enhance Project Visualization** To improve decision-making, ThekedarHub will provide users with augmented reality (AR) tools that enable them to visualize renovation ideas before implementation. These tools will allow customers to experiment with different design

elements, such as colors, layouts, and furnishings, directly in their living spaces. By enhancing project visualization, users can make more informed choices and feel confident about their renovation plans.

- **Ensure Secure Transactions** Security is a top priority for ThekedarHub. Integrating blockchain technology will ensure secure and transparent contracts and payments. This feature reduces the risk of fraud, providing users with peace of mind during financial transactions. Smart contracts will automatically enforce agreements, ensuring that service providers are compensated only when they fulfill their obligations, thus fostering trust between users.
- **Streamline Project Management** ThekedarHub aims to simplify the renovation process by offering a comprehensive project management system. This system will help customers track project progress, manage timelines, and facilitate communication with service providers. By centralizing all project-related information, users can stay organized and informed, reducing the stress often associated with home renovations.

## 4 Literature Review

Author Name	Year	Contribution	Limitaions
WengMarcLim and.CarmenBowman [1]	2024	The paper "Investigating the Role of Trust in Collaborative Projects: A Systematic Review" contributes to understanding trust dynamics in collaborative construction projects, emphasizing its importance for successful partnerships.	Limitations include potential biases in selected studies and the lack of empirical data from diverse project contexts, which may affect generalizability.
Shishu Ding[2]	2024	The paper " <i>Integration of Mixed Reality and Digitalization in Construction Projects</i> " discusses the advantages of digitalization in enhancing collaboration among stakeholders in construction projects. Key contributions include improved communication through digital tools and the implementation of mixed reality for better project visualization.	limitations arise from the technological adoption barriers within the industry, such as high costs and a lack of standardization, which may hinder widespread implementation.

EsatGashi and. MarjanIvezaj [3]	2023	The paper <i>"Factors Influencing Construction Project Success: A Literature Review"</i> contributes by synthesizing various factors that affect project success, including stakeholder engagement, communication, and risk management. It identifies critical	Limitations include potential bias in selected studies and the variability of success definitions across different contexts.
MehmetHakan Küçükarslan and Mehmet Nur İbo[4]	2023	Efficiency Improvement, Transparency and Trust , Risk Mitigation , Enhanced Collaboration	Technical Challenges ,Legal an.Regulatory Issues,Integration with.ExistingSystem s,Scalability Concerns
Harry Virani and Manthan Kyada[5]	2022	Offers a comprehensive review of existing security vulnerabilities and solutions in smart contracts. Proposes a classification framework for categorizing security issues.	May not cover all recent developments due to the fast-paced nature of blockchain technology.Lacks empirical data to support some of the proposed solutions
HeinzHerrman n , M. J. Cobo Martín[6]	2021	The paper <i>"Trust in Contractor Services: Empirical Evidence from the Construction Industry"</i> contributes by providing empirical insights into factors affecting trust in contractor services, helping to inform better practices in contractor-client relationships.	Its limitations include a potential bias in sample selection and limited generalizability beyond specific contexts or regions.
N Manukyan , Eleni Papadonikolai [7]	2019	The paper "Digitalisation in Construction: Mixed Blessing for Collaboration in Projects" highlights contributions to understanding how digital tools impact collaboration among construction stakeholders. It emphasizes both the positive and negative effects of digitalization, such as improved communication and potential information overload	limitations include a focus on specific case studies that may not represent broader industry trends and a lack of longitudinal data to assess long-term impacts.

JenniferShane and Ghada M.Gad[8]	2014	The contribution lies in providing a comprehensive synthesis of existing studies on trust in the construction sector, highlighting its impact on project success and collaboration.	limitation is that the paper primarily focuses on the theoretical aspects of trust, with limited empirical evidence from real-world projects.
Yao Wang, Yi-lin Yin[9]	2013	Identifies key elements that enhance trust in construction projects. Proposes a framework for trust mechanisms based on empirical data.	Focuses primarily on qualitative aspects, lacking quantitative analysis.Limited generalizability due to a narrow sample size from specific regions.
D. Singh and Robert L. K. Tiong [10]	2006	The paper " <i>Measuring the Effect of Trust on Team Performance in the Construction Industry</i> " contributes by identifying how trust influences team dynamics and project success in construction. It emphasizes the need for fostering trust to enhance collaboration.	Limitations include a narrow focus on specific case studies, which may not be representative of broader industry practices, and potential subjective bias in trust.

## 5 Proposed Methodology

### 5.1 Functional Requirements

**5.1.1 User Registration and Profile Module** This module enables users to create accounts, set up profiles, and manage personal information. Homeowners, designers, and contractors can customize their profiles, making it easier to connect, showcase work, and receive personalized recommendations and updates.

**5.1.2 Project Management Module** Allows users to plan and track renovation projects, including budgeting, timelines, and resource allocation. Contractors and homeowners can collaborate, monitor progress, and update project stages, making it easy to manage all aspects of a renovation in one place.

**5.1.3 Design Inspiration and Ideas Module** A section that provides users with design ideas, trending styles, and renovation tips. It includes image galleries, articles, and videos, helping homeowners and designers find inspiration and practical advice to refine their renovation concepts and preferences.

**5.1.4. Service Provider Directory Module** A searchable database where users can find local contractors, interior designers, and other professionals. With ratings, reviews, and contact information, it simplifies the process of hiring reliable service providers suited to specific renovation needs.

**5.1.5 Messaging and Communication Module** Facilitates communication between homeowners, contractors, and designers. With direct messaging and notifications, users can easily discuss project details, share updates, ask questions, and keep everyone involved and informed, streamlining project collaboration.

## **5.2 Non-Functional Requirements**

**5.2.1 Usability** Usability refers to how easy and efficient it is for users to interact with the platform. For ThekedarHub, a user-friendly interface is crucial. It should feature a clean design that allows users to navigate seamlessly without confusion. Intuitive icons, straightforward menus, and logical workflows can guide users through the process of finding contractors, visualizing projects, and managing renovations. Incorporating features like a search bar and categorized services will further enhance usability, ensuring that customers can quickly find the information they need. Usability testing should be conducted with real users to gather feedback and make necessary adjustments, ensuring that the platform meets the needs of its diverse audience.

**5.2.2 Availability** The site should be accessible 24/7, ensuring users can browse design ideas, manage projects, and connect with professionals anytime. Reliable hosting, regular maintenance, and scalable infrastructure are essential to provide seamless, uninterrupted access for all users globally.

**5.2.3 Efficiency** efficiency will be a core feature, ensuring fast loading times, easy navigation, and a seamless user experience. By optimizing backend systems, the platform will minimize downtime, offer quick access to design ideas, services, and professionals, and ensure smooth, uninterrupted performance for users.

**5.2.4 Accuracy** Accuracy will be paramount in providing reliable information, services, and recommendations. The platform will ensure precise project estimates, accurate service provider listings, and up-to-date design trends. Accurate calculations for budget, timeframes, and material costs will empower users to make informed decisions in their renovation journey.

**5.2.5 Performance** Performance is a critical aspect of any digital platform, as it directly affects user satisfaction. ThekedarHub must load quickly, with minimal waiting time, to keep users engaged. This can be achieved by optimizing the platform's code, using efficient databases, and employing content delivery networks (CDNs) to serve data more quickly. Additionally, the system should be able to handle multiple users simultaneously without lag.

Performance testing should be regularly conducted to identify and resolve bottlenecks, ensuring that the platform remains responsive even during peak usage times, such as when many customers are searching for services or managing projects.

**5.2.6 Reliability** Reliability will be a cornerstone, ensuring consistent access to services and resources. Users can trust that service provider listings are genuine, design ideas are up-to-date, and project management tools function smoothly. Regular updates, strong security measures, and continuous support will ensure a dependable experience for all users.

**5.2.7 Maintainability** *The website* will be easy to maintain due to its user-friendly Content Management System (CMS) and scalable architecture. Regular updates, automated backups, and streamlined code will simplify content updates, bug fixes, and system enhancements. Maintenance tasks will be efficient, ensuring consistent performance and user satisfaction.

**5.2.8 Security** Security is paramount when dealing with sensitive user information and financial transactions. ThekedarHub must implement robust security measures to protect user data, including personal information and payment details. This can include encryption for data at rest and in transit, multi-factor authentication for user accounts, and regular security audits to identify vulnerabilities. Compliance with data protection regulations, such as GDPR or CCPA, is also essential. By prioritizing security, ThekedarHub can build trust with users, reassuring them that their information is safe and secure, which is crucial for maintaining a loyal user base.

## 5.3 Hardware Requirements

- Multi-core processor (e.g., Intel Xeon or AMD Ryzen) for handling multiple requests
- Minimum 16 GB RAM (32 GB recommended) for efficient management of applications and user sessions.
- SSD storage with at least 500 GB capacity for fast data retrieval and backup
- Desktops, laptops, tablets, and smartphones.
- Devices should be equipped with at least 4 GB of RAM and modern web browsers (Chrome, Firefox, Safari) to access the application efficiently.
- Quad-core processors, 16 GB RAM, and adequate storage for development tools.
- Machines that replicate various user environments (different browsers and operating systems)
- High-speed internet connection (minimum of 100 Mbps) to support concurrent users
- Dedicated hardware firewalls for enhanced security.

## 5.4 Software Requirement

### 5.4.1 Frontend Requirements

- HTML5, CSS3, JavaScript For creating the structure, design, and interactivity of the website.
- React.js or Angular JavaScript libraries for building a dynamic, responsive, and interactive user interface.



- Bootstrap or Tailwind CSS Frontend frameworks for designing responsive layouts and ensuring a mobile-friendly experience.
- Axios For making API requests and fetching data from the backend.
- Webpack For bundling and optimizing JavaScript, CSS, and other assets.
- Figma or Adobe XD Tools for UI/UX design and prototyping.

#### 5.4.2 Backend Requirements

- Node.js JavaScript runtime for building the backend server and API services.
- Express.js Web framework for Node.js to handle routing, middleware, and HTTP requests.
- MongoDB or MySQL Database management system (MongoDB for NoSQL or MySQL for SQL databases) to store user profiles, project data, service provider details, etc.
- JWT(JSON Web Tokens) For secure authentication and user session management.
- REST API To handle communication between frontend and backend, ensuring seamless data exchange.
- Git/GitHub Version control system for managing code and team collaboration.

## 6 Diagrams

### 6.1 Flow chart

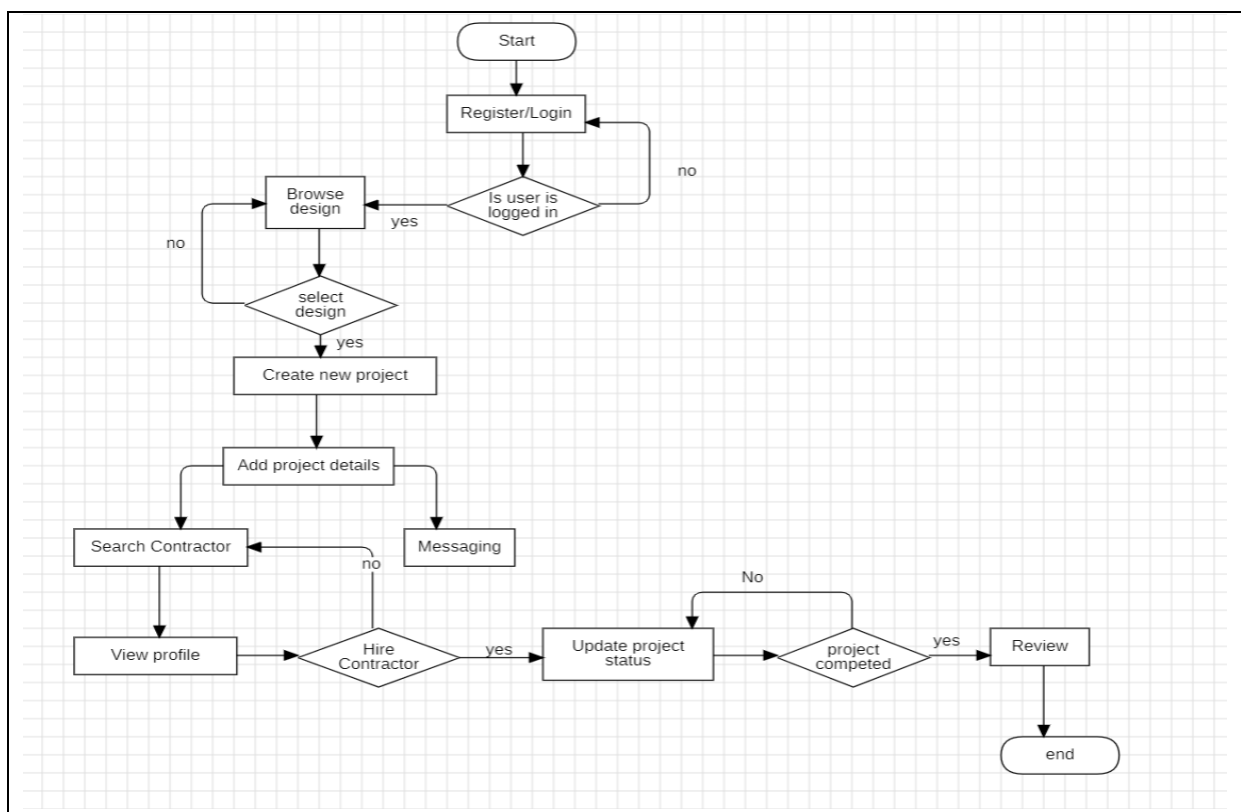


Image 6.1

## 6.2 Class Diagram

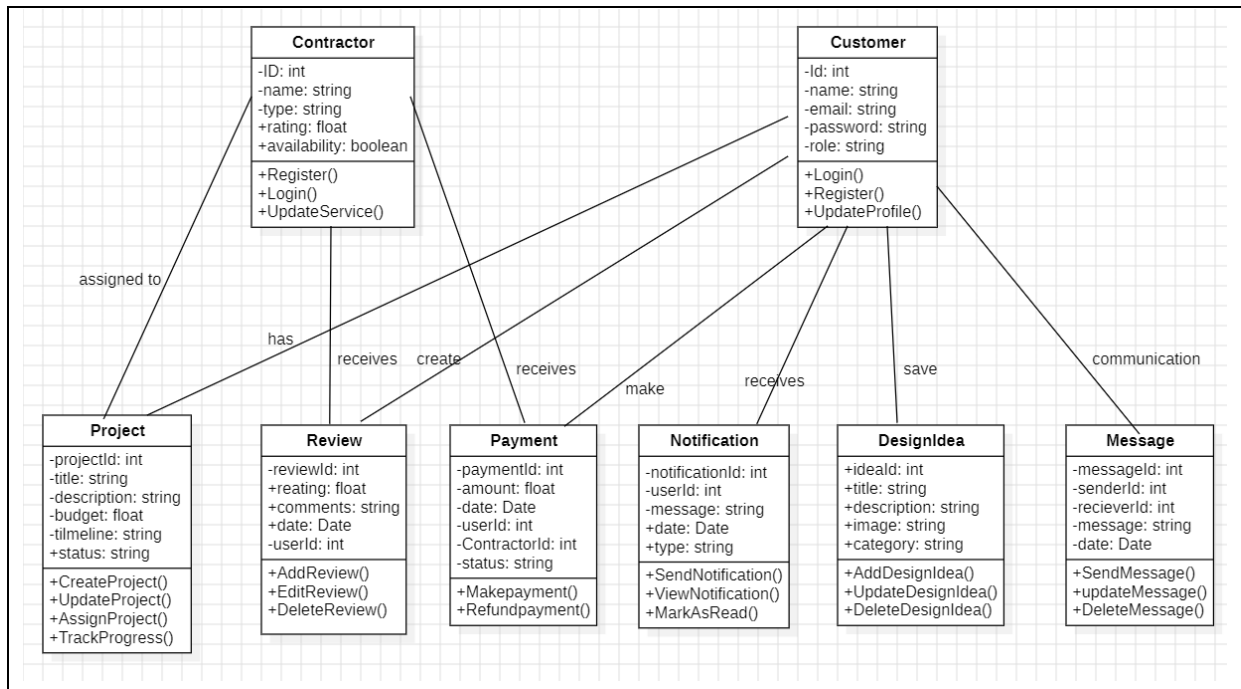


Image 6.2

## 7.3 Use Case

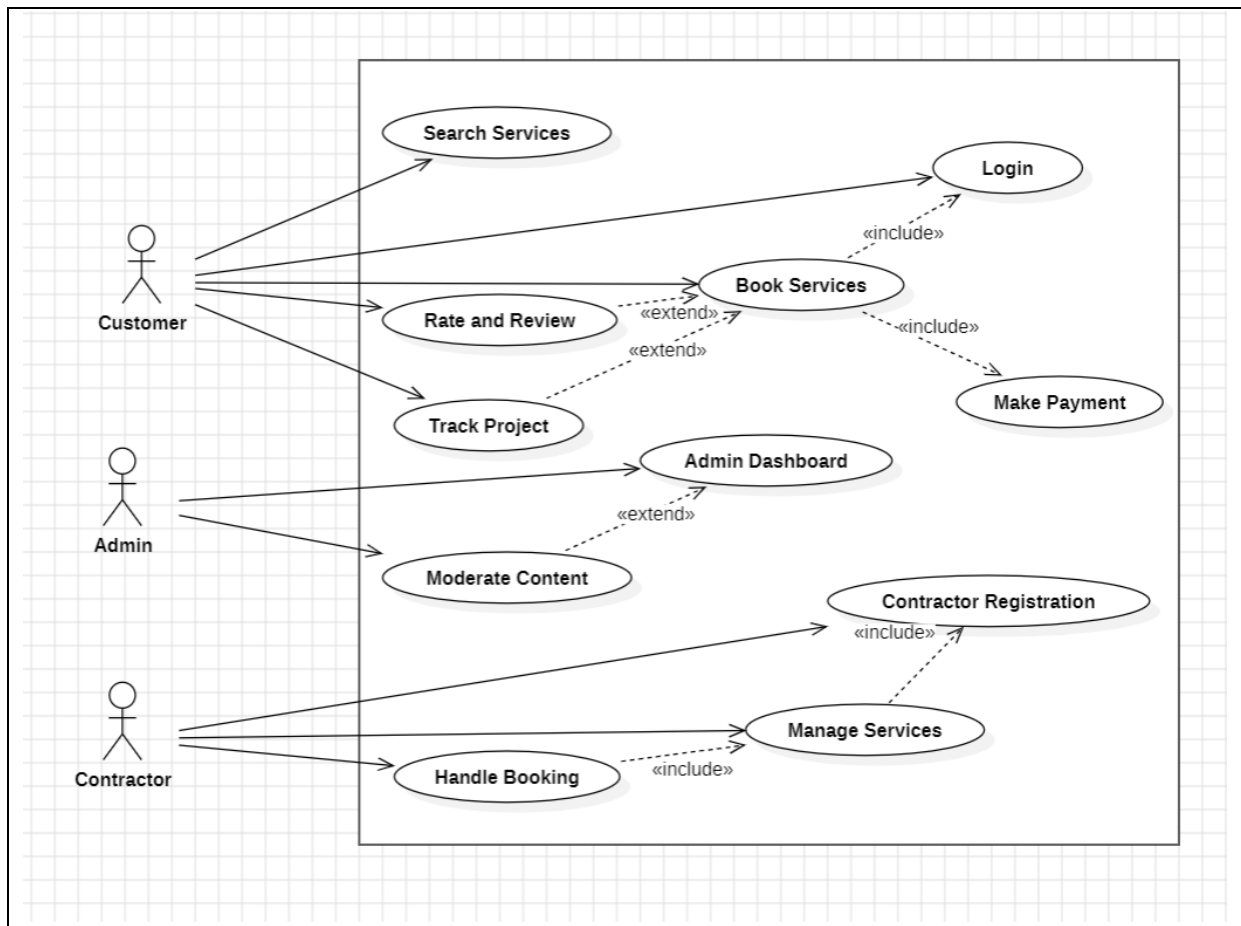


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## 6.4 DFD

### 6.4.1 Level 0

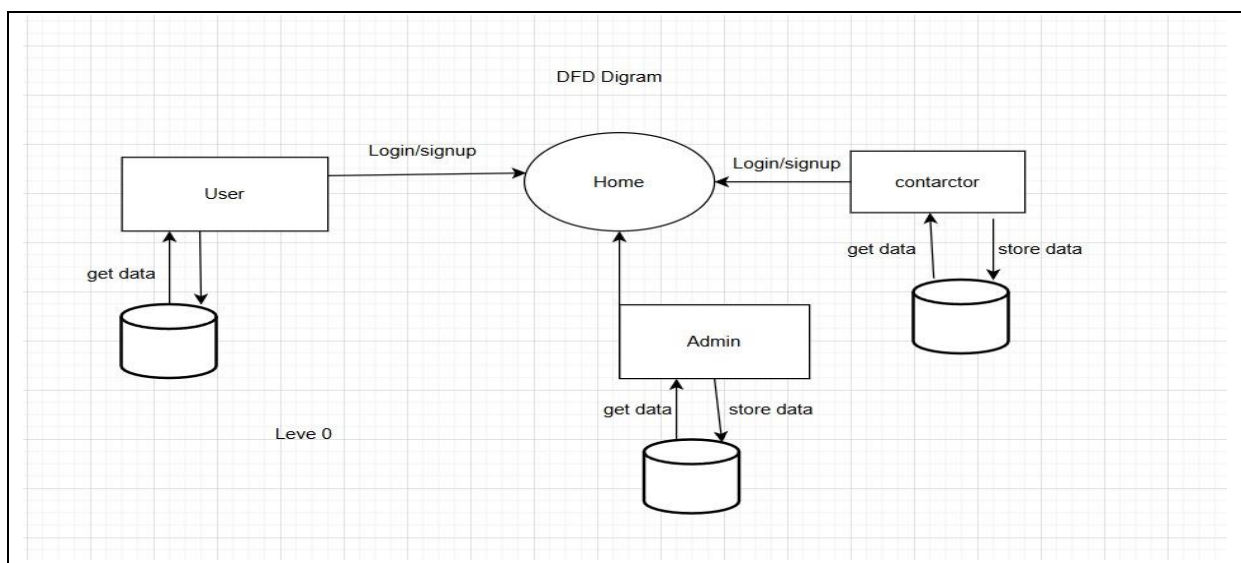
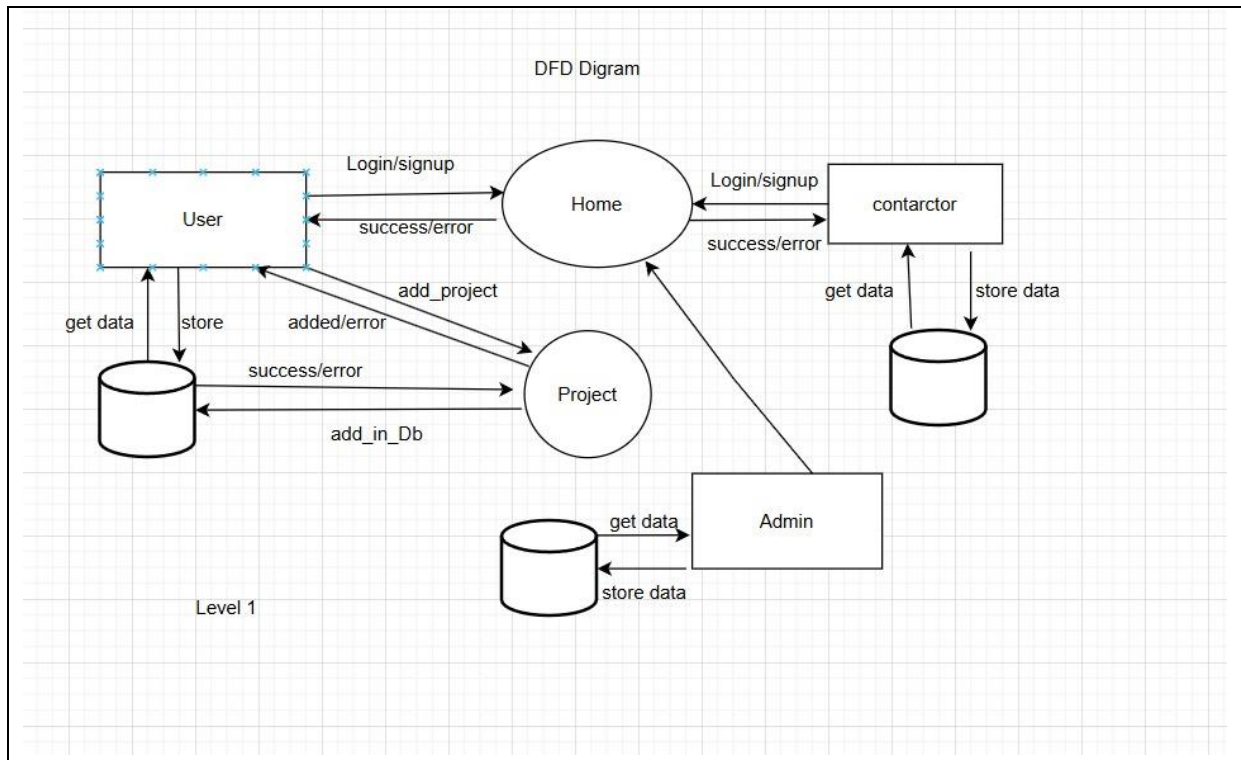
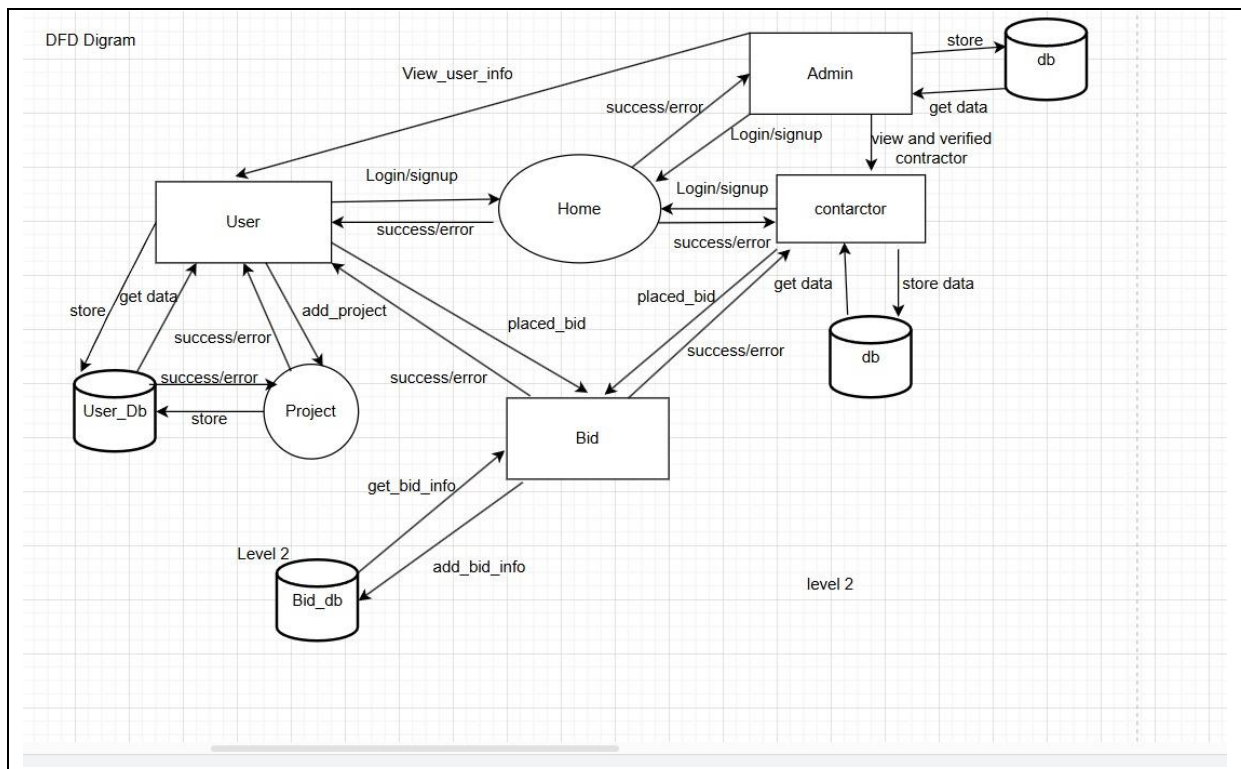


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## 6.4.2 Level 1



## 6.4.3 Level 2



## 6.5 E-R Diagram

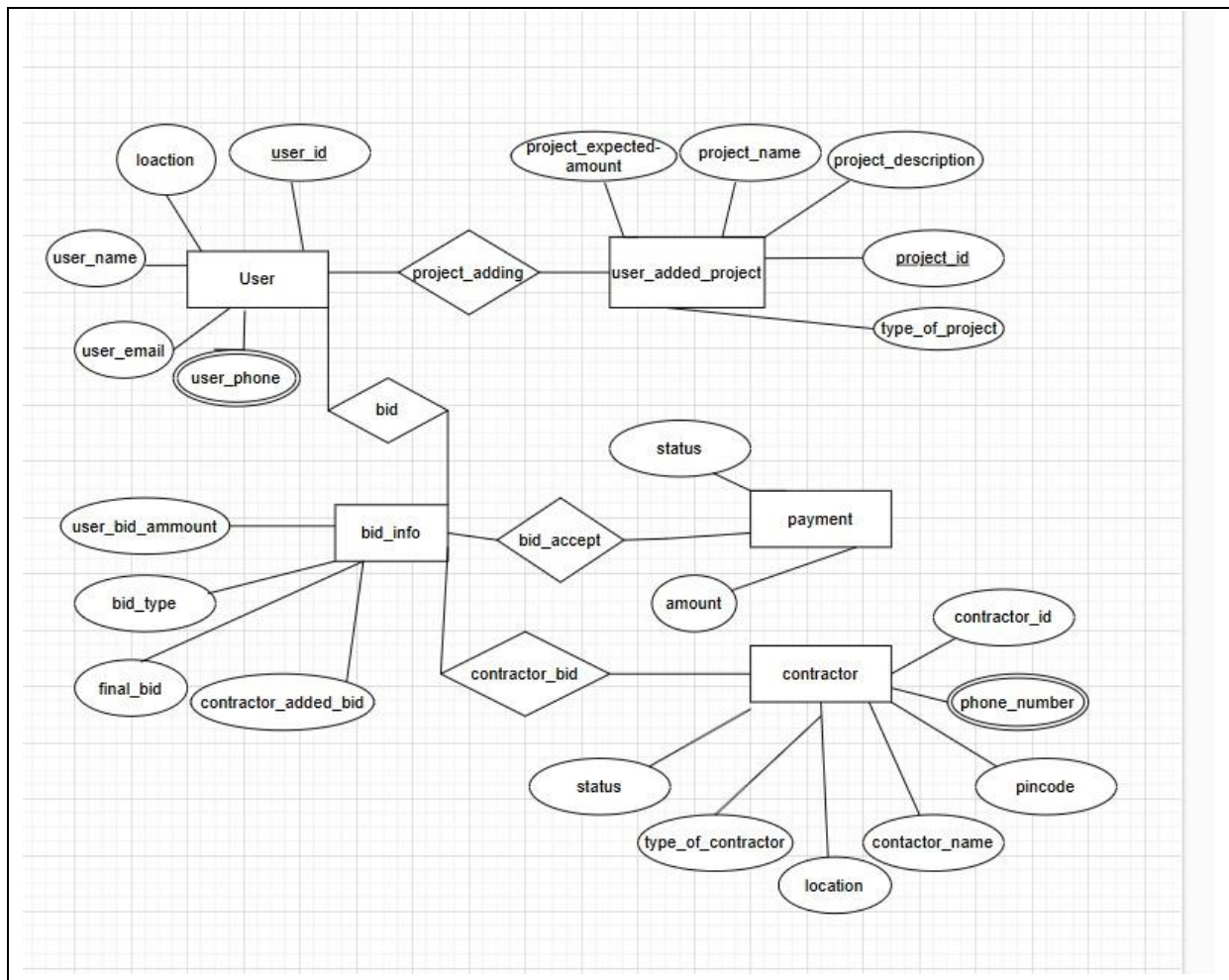


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## 6.6 Gantt Chart

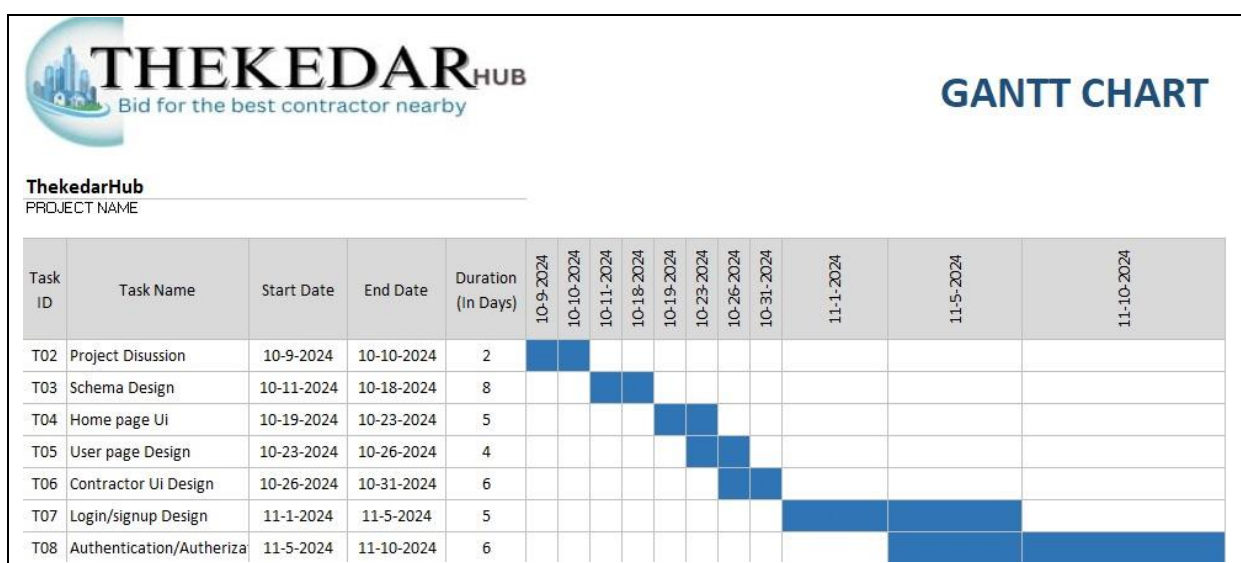


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## 7 Snap of Running Project

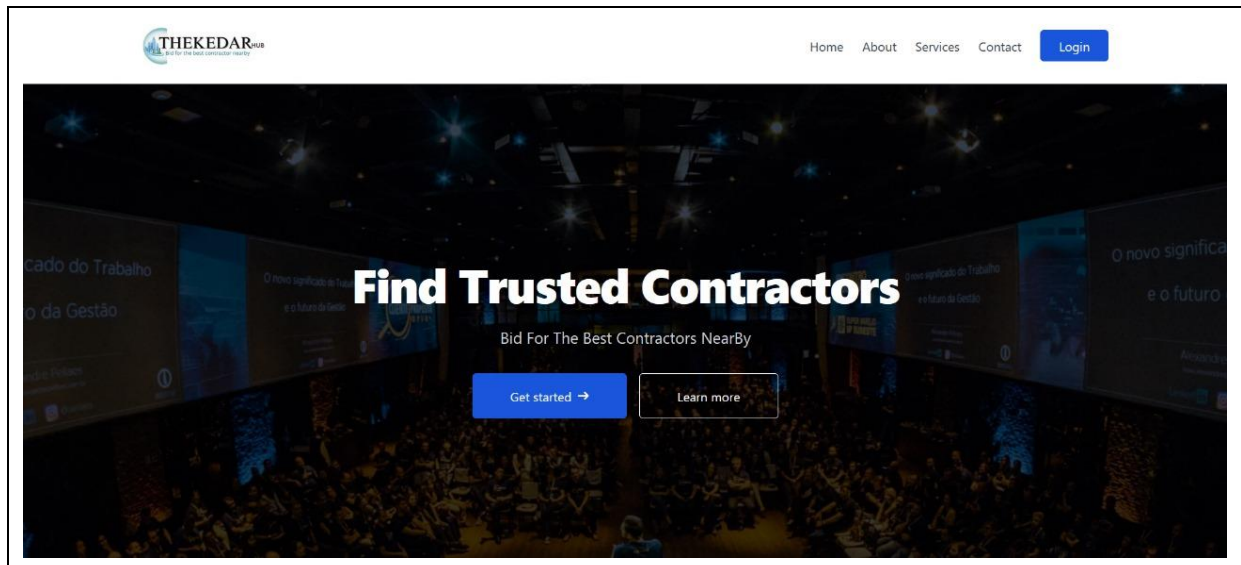


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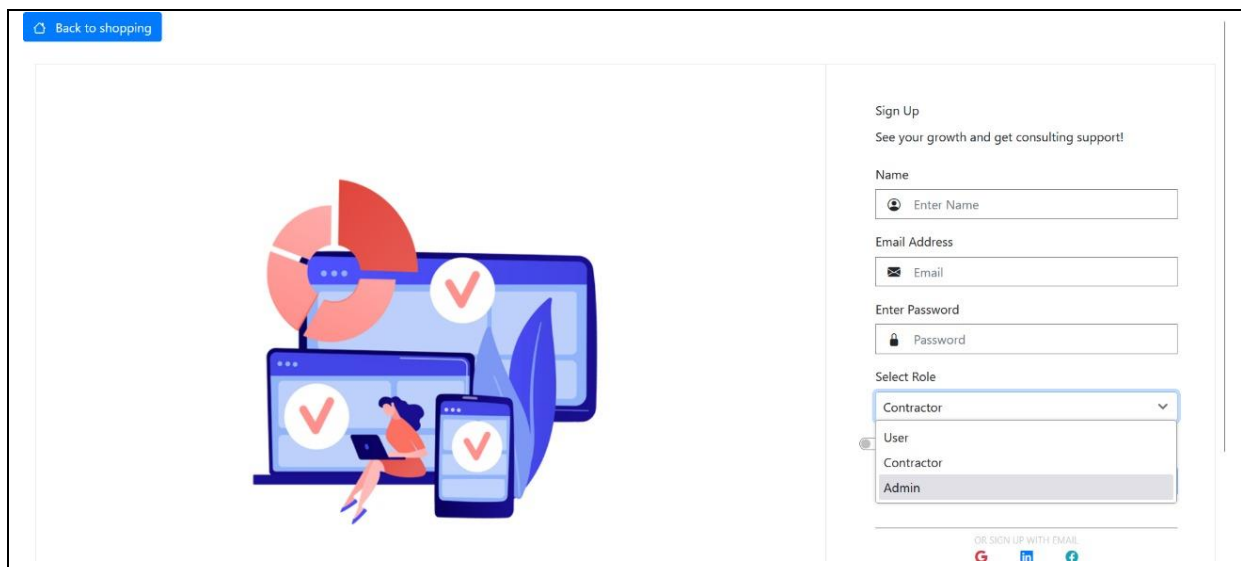


Image:7.2

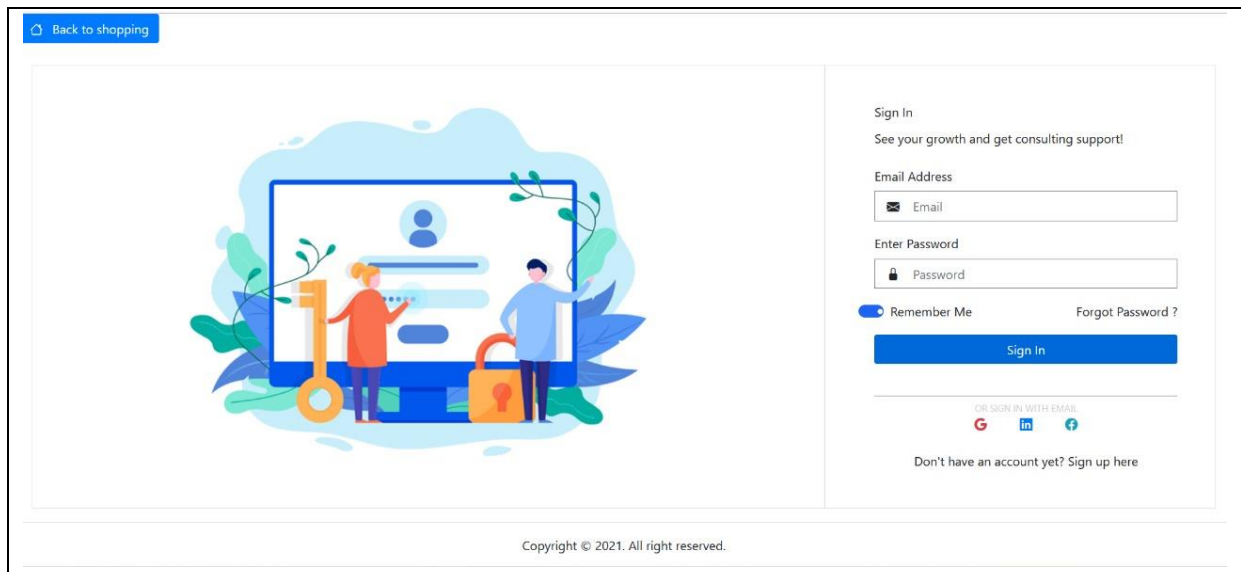


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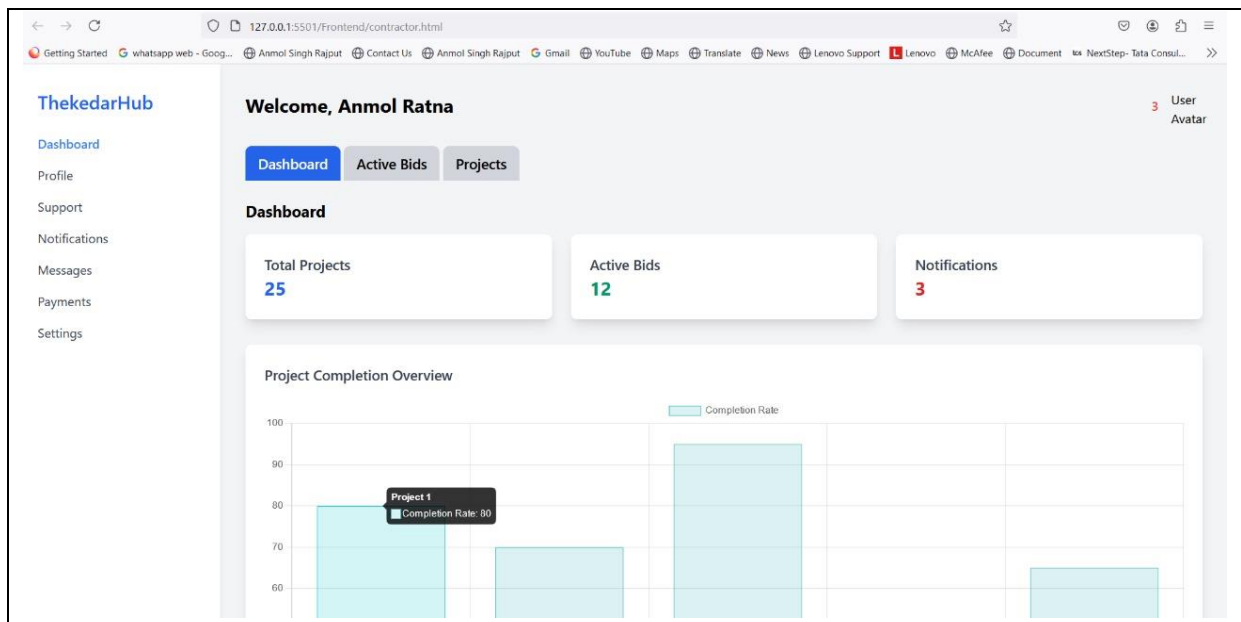


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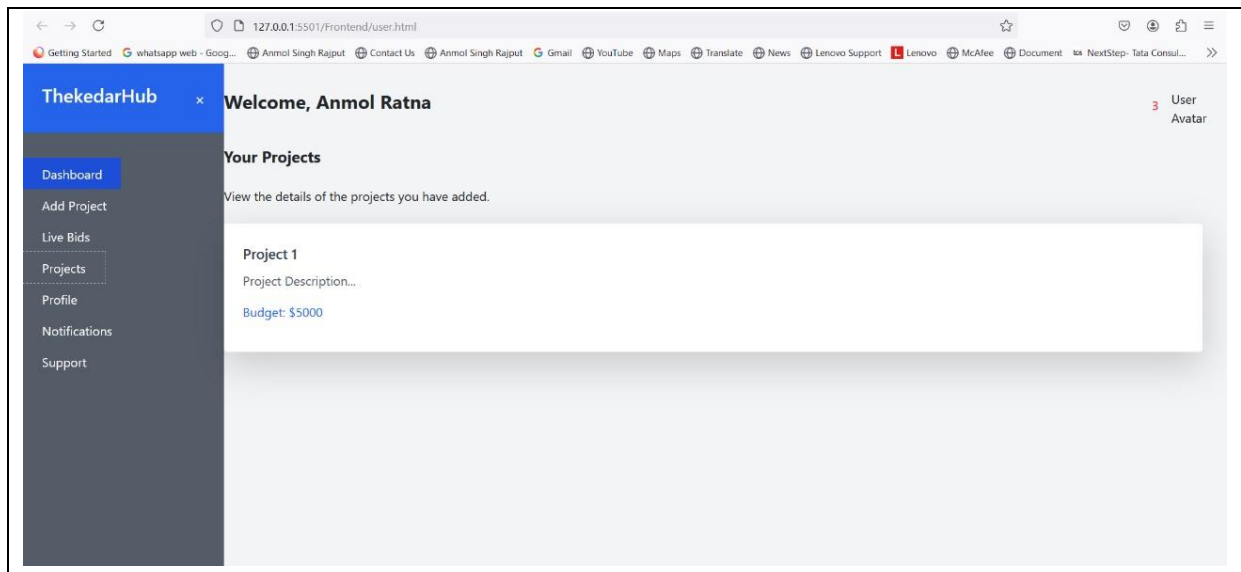


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## 8 Possible application areas

- **Home Renovation and Remodeling** Users can find design ideas, hire contractors, and manage renovation projects, making it ideal for homeowners looking to improve or remodel their living spaces.
- **Interior Design Services** Interior designers can showcase their portfolios and connect with potential clients, offering customized renovation solutions for various spaces such as living rooms, kitchens, or offices.
- **Construction and Contracting** Contractors can list their services, bid on projects, and manage client relationships through the platform, facilitating seamless collaboration between service providers and homeowners.
- **Real Estate Industry** Real estate agents can use the platform to suggest home improvements and renovations that increase property value, benefiting both buyers and sellers.
- **DIY (Do It Yourself) Projects** Homeowners and enthusiasts can access tutorials, tips, and tools for performing their own renovations, from simple home improvements to more advanced projects.
- **E-commerce for Home Improvement Products** The platform can offer an e-commerce feature for buying home renovation materials, tools, furniture, and decor directly through the website.
- **Sustainability and Green Building** The website can focus on eco-friendly renovation practices, offering advice and services for sustainable home improvements, such as energy-efficient appliances, solar installations, or green building materials.
- **Home Staging for Sales** Real estate agents or homeowners can use the platform to stage homes for sale, offering services that help make properties more appealing to potential buyers.



## 9 References

- [1]. WengMarcLim and.CarmenBowman Investigating the Role of Trustin Collaborative.
- [2] Shishu Ding Integration of Mixed Reality and Digitalization.
- [3] EsatGashi and. MarjanIvezaj Factors Influencing Construction Project Success.
- [4] MehmetHakan Küçükarslan and Mehmet Nur İbo Efficiency Improvement, Transparency and Trust , Risk Mitigation , Enhanced Collaboration. Offer
- [5] Harry Virani and Manthan Kyada Offers a comprehensive review of existing security vulnerabilities and solutions in smart contracts.
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- [8] JenniferShane and Ghada M.Gad : The contribution lies in providing a comprehensive synthesis of existing studies on trust in the construction sectors,
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