Title of the Project

Fast Office: Smart Office Solutions

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APPROVAL

This Project titled **"Fast Office: Smart Office Solutions"**, Submitted by **Shinthya Hasan Orthy**, ID No: **211-16-565** to the Department of Computing and Information Systems, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computing & Information Systems and approved as to its style and contents. The presentation has been held on 12-01-2025.

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Declaration

I hereby declare that; this project has been done by me under supervision of **Mr. Israfil, Lecturer,** department of Computing and Information System (CIS) of Daffodil International University. I am also declaring that this project or any part of there has never been submitted anywhere else for the award of any educational degree like, B.Sc., M.Sc., Diploma or other qualifications.

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Acknowledgement

Successfully completing the Fast Office: Smart Office Solutions project has been an incredibly rewarding experience. I am deeply grateful for the blessings and guidance that have supported me throughout this journey of innovation and development.

I would like to extend my heartfelt gratitude to my esteemed supervisor, Mr. Israfil, Lecturer, Department of CIS, Daffodil International University. His unwavering support, invaluable feedback, and dedicated mentorship have been instrumental in the successful realization of this project. His profound expertise, constructive guidance, and encouragement have not only ensured the completion of this work but have also significantly enhanced my intellectual growth and professional development.

Furthermore, I wish to acknowledge the resources, facilities, and learning opportunities provided by Daffodil International University, which have been pivotal in shaping the direction and success of this endeavor.

This project has been an enlightening journey of learning and self-discovery. I am sincerely thankful to everyone who contributed, directly or indirectly, to its completion. Their unwavering encouragement and support have been crucial in overcoming challenges and achieving this milestone.

A heartfelt thank you goes to my parents and friends who offered their unwavering support and motivation throughout the process. Their constructive criticism and encouragement have been a source of strength, especially during challenging phases of this project. I deeply appreciate their collaboration, which helped refine ideas and push the boundaries of innovation.

This project has been more than just an academic pursuit—it has been a journey of self-discovery, perseverance, and intellectual growth. The experience of developing the Fast Office project, with its focus on revolutionizing office rental services and incorporating cutting-edge technologies like AI-powered cost-benefit analysis, has significantly expanded my technical and creative horizons

Executive Summary

The Office Rental System (Fast Office) project is an innovative solution designed to revolutionize the office rental industry by providing comprehensive, fully equipped office spaces tailored to the needs of businesses and entrepreneurs. This platform streamlines the process of renting office spaces by integrating advanced technologies and user-friendly features that address common challenges in securing and managing professional workspaces.

The platform fast office to three distinct user roles:

- Users (Clients): Individuals or businesses seeking office rentals can browse and book office based on their specific requirements, such as office size (e.g., square footage), location preferences, and included facilities.
- Employees: Responsible for managing client interactions, employees utilize video conferencing to provide detailed office tours, facilitate product sales, and ensure seamless operations of the rental services.
- Admin: Administrators oversee the entire platform, including user and employee management, monitoring transactions, and ensuring service quality. Admins also have access to two AI-powered systems to optimize decision-making:
- Cost Benefit Analysis System: This AI evaluates the profitability and potential risks associated with individual rental units and services.
- Location-Based Cost Benefit Analysis System: This tool analyzes profitability based on geographical and market data, providing actionable insights to enhance the platform's overall efficiency.

One of the standout features of Fast Office is its integrated video conferencing functionality, which allows clients to connect with employees for personalized consultations and virtual office tours. This capability ensures transparency, fosters trust, and provides a seamless experience for prospective renters.

In conclusion, the Office Rental System (Fast Office) project combines advanced technology, user-centric design, and innovative features to create a comprehensive solution for modern businesses. It addresses the evolving needs of companies seeking hassle-free, fully equipped office spaces while ensuring operational excellence and profitability through AI-powered tools. This project stands as a testament to the potential of technology-driven innovation in transforming traditional industries.

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Chapter 1 - Introduction

Description of the Project:

Fast Office is an innovative office rental platform designed to meet the evolving needs of businesses by providing fully furnished, ready-to-use office spaces. The platform aims to simplify the process of renting office spaces while offering a wide range of facilities and features to enhance productivity, collaboration, and convenience for clients. Fast Office provides fully equipped office spaces that include essential furniture, meeting rooms, and modern office equipment. These solutions address to startups and large enterprises, ensuring they can focus on their core business without the hassle of managing office logistics.

Key Functionalities:

AI-Powered Cost Benefit Analysis: This system evaluates the profitability and risk associated with each rental unit, enabling data-driven decision-making for both clients and administrators.

Location-Based Cost Analysis: This tool leverages AI to assess office profitability based on geography.

Three User Roles:

- Users: Clients can browse office spaces based on size, location, and features, then book to rental services tailored to their needs.
- Employees: Responsible for managing consultations, sales, and operations, employees ensure seamless service delivery and client satisfaction.
- Admin: Administrators oversee all activities, manage users and employees, and leverage AI tools to monitor performance and optimize profitability.

The revenue model is based on flexible subscription plans, offering scalable solutions to businesses of all sizes.

Project Objectives:

- To provide a hassle-free, end-to-end solution for office rentals.
- To empower businesses with access to modern office infrastructure and technology.
- To enhance operational efficiency and profitability using AI-driven insights.
- To foster collaboration and productivity through innovative features like video conferencing.

Chapter 2 - Initial Study

2.1 Project proposal:

1. Initial Concept

A. Brief description of the project:

Fast Office is a cutting-edge office rental platform designed to simplify and enhance the process of securing fully furnished and operational office spaces. The project aims to serve businesses of all sizes, providing flexible and scalable office rental solutions that include modern equipment, high-speed internet, meeting rooms, and other essential facilities.

The platform incorporates innovative features such as integrated video conferencing, enabling clients to interact with employees, view virtual office tours, and receive detailed consultations. Additionally, Fast Office leverages AI-powered tools, such as a Cost Benefit Analysis System and a Location-Based Cost Benefit Analysis, to optimize operational efficiency and provide data-driven insights for administrators.

B. Proof of concept:

i. Prototype:

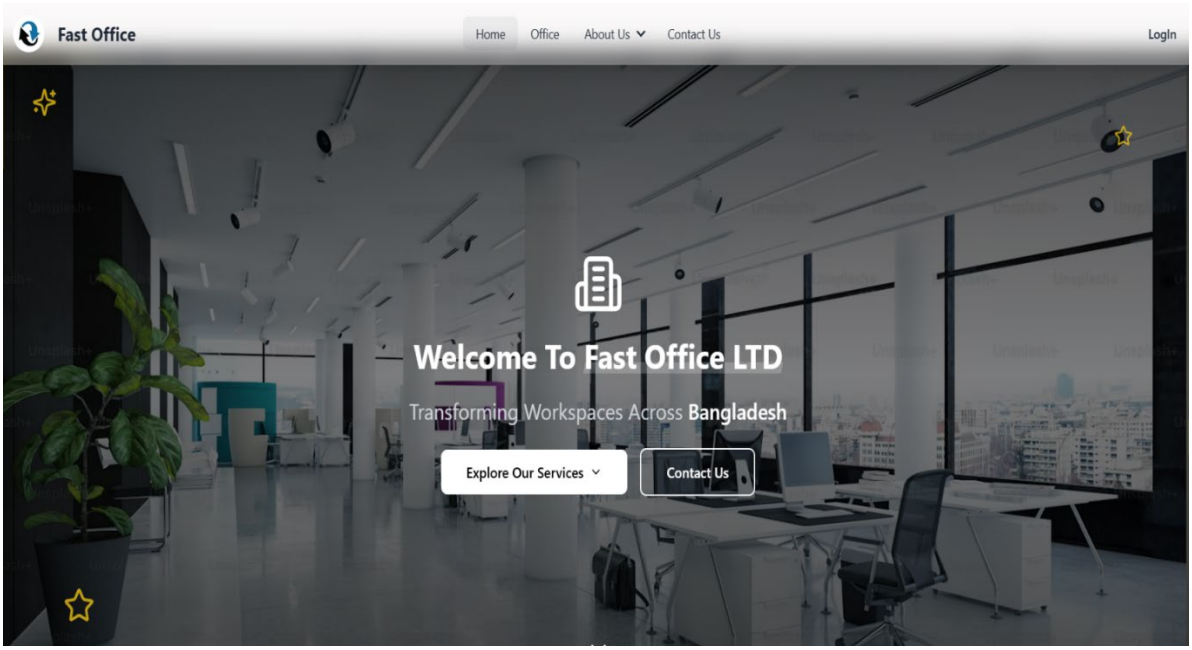


Figure 2.1. Demo of Fast office

ii. Initial research:

Market Viability:

Fast Office addresses a significant gap in the modern office rental industry by leveraging technology to streamline the process of renting and managing office spaces. With businesses increasingly prioritizing efficiency, flexibility, and cost-effectiveness, Fast Office is uniquely positioned to meet the growing demand for comprehensive office rental solutions. Its ability to provide fully equipped spaces, seamless user experiences, and data-driven insights makes it an essential platform for organizations looking to optimize their workspace management. The rising trend of hybrid work models and the growing need for ready-to-use office spaces have created a heightened demand for flexible office rental services. Fast Office aligns perfectly with these trends by offering fully furnished spaces, video conferencing for personalized consultations, and AI-powered tools for operational efficiency. Its Cost Benefit Analysis System and Location-Based Cost Analysis ensure that businesses can make informed, strategic decisions, while the platform's focus on scalability and convenience addresses to the evolving needs of modern organizations. By integrating innovative features such as real-time video consultations and advanced AI analytics, Fast Office not only simplifies the rental process but also ensures transparency, reliability, and profitability. This combination of technology and user-centric design positions Fast Office as a leading solution for businesses seeking smart, flexible, and cost-effective office rental services **[1]**.

Feasibility Study

A. Operational Feasibility:

The use of advanced technologies like NodeJS, Express, and Mongoose in Fast Office's backend ensures a robust and scalable platform capable of handling high volumes of data, transactions, and user interactions. This tech stack provides a reliable foundation for managing office space rentals, real-time consultations, and user role management with speed and efficiency. By integrating WebRTC via Agora.io, Fast Office ensures seamless video conferencing capabilities, a critical feature for providing virtual office tours and facilitating real-time communication between clients, employees, and administrators. The single-page application architecture powered by React.js enhances the platform's performance, delivering a smooth and responsive user experience. Optimized load times and intuitive navigation enable users—whether they are clients exploring office spaces, employees managing operations, or

administrators overseeing the system—to engage with the platform efficiently, ensuring usability and satisfaction.

B. Technical Feasibility:

Fast Office leverages a modern and robust technology stack to ensure technical feasibility for managing the complexities of a comprehensive office rental system. The combination of NodeJS, Express, and Mongoose provides a stable and scalable backend capable of efficiently handling large volumes of data, concurrent user interactions, and complex queries. NodeJS's non-blocking architecture ensures the platform remains highly responsive even under heavy load, making it ideal for real-time operations like video consultations and dynamic role management. The integration of WebRTC via Agora.io facilitates seamless, high-quality video conferencing, a key feature for delivering virtual office tours and real-time client consultations. WebRTC ensures real-time communication with minimal latency, creating a smooth and engaging experience for users. By incorporating Agora.io, Fast Office benefits from a reliable and high-performance video communication API that supports video conferencing effectively, regardless of the user's geographical location.

Hardware	Computer/Laptop Maximum 8 GB RAM 512 SDD WIFI Connection Needed
Software	NodeJS
	ExpressJS
	Mongoose
	Type Script
	WebRTC
	React JS
	Visual Studio Code

	Browser

Table 2.1. Fast Office System Equipment

C. Economic feasibility:

The economic feasibility of Fast Office evaluates the costs associated with developing, deploying, and maintaining the platform, while also considering its potential to generate revenue and ensure profitability. A comprehensive analysis of the project's financial aspects, including initial development, operational expenses, and revenue generation, is essential to determine its long-term economic viability.

The initial development costs for Fast Office focus on building a scalable and robust platform, integrating real-time video conferencing for virtual consultations, and implementing secure payment systems. Key areas of expenditure include backend development using NodeJS and Mongoose, integration of Agora.io for seamless video communication, and the development of AI-powered tools like the Cost Benefit Analysis System and Location-Based Cost Analysis.

Fast Office plans to recover development costs through its subscription-based and pay-per-use revenue models, targeting an initial customer base of startups, SMEs, and large corporations. The breakeven point is projected within 18-24 months, depending on the pace of customer acquisition and market penetration.

With focused marketing strategies, strategic partnerships, and ongoing enhancements to the platform, Fast Office aims to achieve strong customer retention and consistent growth. Annual growth rates of 15-25% in the first five years are expected, leading to a positive ROI and long-term financial sustainability [2].

Costs:

- Software cost
- Hosting cost
- Storage cost

D. Comparative analysis:

Fast Office stands out in the office rental market by combining advanced technology, real-time video communication, and data-driven insights to enhance the rental process. Compared to traditional office rental platforms, Fast Office offers a more comprehensive and flexible solution. While conventional platforms might focus on simply listing office spaces or connecting property owners with tenants, Fast Office provides an end-to-end service that includes virtual office tours, AI-based cost-benefit analysis, and real-time consultations with employees, greatly improving the decision-making process for businesses.

By combining these advanced features into one platform, Fast Office delivers a truly innovative and user-centric solution, making it a top choice for businesses looking for flexible, cost-effective, and well-equipped office spaces.

3. Foundation

A. Define Goal and Object of the Project:

Goal: The primary goal of Fast Office is to revolutionize the office rental industry by integrating advanced technologies, real-time video communication, and data-driven insights to streamline the office space rental process, improve decision-making, and ensure a better fit between businesses and their office needs. Fast Office aims to provide an all-in-one platform that not only facilitates seamless office space bookings but also enhances the experience by incorporating AI-powered tools for cost-benefit analysis, automated office evaluations, and virtual consultations. By offering fully furnished office spaces, real-time virtual tours, and AI-driven analysis, Fast Office empowers businesses to make informed decisions on office rentals, ensuring flexibility, cost-effectiveness, and optimal office utilization. This innovative approach not only simplifies the process of finding and renting office spaces but also enhances user satisfaction, making it a comprehensive solution for modern businesses in need of adaptable office environments

Objectives:

- Simplify the Management of Office.
- Simplify the Management of Booking.
- Insure Scalability and Performance.
- Efficient payment ledger Management.
- Implement AI for Cost Benefit Analysis.

- ❖ Ensure Scalability and Performance.
- ❖ Admin, User & Employee Controlling System.
- ❖ User Feedback and Reviews.

Hight level features/requirement to achieve goals/objectives:

- User Authentication and Authorization.
- Office Rental Model Use Fast Office.
- Real Time Communication.
- All Company's Office Space Management.
- Payment Integration.
- Admin Dashboard.
- Data Security and Privacy.
- AI Generative Cost Benefit Analysis.
- User Interface and Experience.

Nonfunctional requirements:

- Performance.
- Availability.
- Security.
- Usability.
- Maintainability.
- Interoperability.
- Reliability.
- Support and Documentation.

4. Exploring and Engineering

A. Iterative development:

Time Boxing

Timeboxing is a straightforward time management method that entails setting up a specific amount of time in advance for an activity and then finishing it inside that time limit.

No	Description of task	Time	Resource
1	Initial Study	10 days	User & Developer
2	Requirement Gathering and Analysis	5 days	Developer User & Admin
3	Design	5 days	Developer User & Admin
4	Implementation	20 days	Developer & User
5	Testing	5 days	Developer & User
6	Documentation	3 days	Developer & Analyst

Table 2.2. Time-Boxing table

Deployment:

Deploying the Fast Office Project involves several essential steps to ensure a smooth, secure, and scalable rollout. The backend, developed using Node.js and Express, is containerized with Docker to maintain consistent environments across development, testing, and production. Mongoose, the selected database, is hosted on a reliable and scalable managed service such as Amazon RDS. Prisma, the ORM, is used to efficiently manage database schemas and migrations. The AI-powered Cost Benefit Analysis System, which helps evaluate the profitability of rented office spaces, is properly configured and integrated with the AI model to ensure seamless functionality in the production environment. Additionally, the Tracing Location-Based Cost Benefit Analysis system is set up to provide real-time insights into location efficiency. The real-time video communication feature for conference rooms, powered by WebRTC, is set up via Agora.io, with the necessary SDKs and API keys configured for secure and smooth operation in production. The frontend, built using React.js, is deployed on

Vercel, offering benefits like server-side rendering (SSR) to improve performance, enhance SEO, and ensure fast load times.

2.2 Background of the Project:

With the increasing demand for flexible and scalable office rental solutions, the Fast Office project aims to revolutionize how clients, employees, and administrators interact with office spaces. By leveraging cutting-edge technologies such as Node.js, Express, Mongoose, and React JS, the system ensures secure and efficient data management. The platform offers real-time communication during conference calls, seamless management of office rentals, and dynamic scheduling of meeting rooms and services.

It also integrates AI-powered tools, such as the Cost Benefit Analysis System, which evaluates the profitability of rented office spaces, and the Location-Based Cost Benefit Analysis feature, which provides insights into location efficiency. The system enables clients to book services, employees to manage office details, and admins to control all activities efficiently.

2.3 Problem areas:

Implementing the Fast Office project can present several challenges across different aspects of the system. Identifying these potential problem areas early can help in devising strategies to mitigate them effectively. One of the main challenges is ensuring smooth real-time communication during video conferences, which can be impacted by internet connectivity or system performance. Addressing this requires optimizing the WebRTC integration and ensuring proper server configuration with Agora.io to minimize latency and interruptions, especially during critical business meetings and conference calls.

Another challenge is the AI-driven Cost Benefit Analysis System and Location-Based Cost Benefit Analysis. Ensuring that the AI models accurately analyze profitability and location efficiency can be complex and requires continuous fine-tuning. To mitigate this, it is essential to gather sufficient data on office usage patterns, financial performance, and location-based factors to train the models effectively. Testing these systems under various real-world scenarios ensures their reliability and precision in providing actionable insights.

- Instantaneous Communication.
- Privacy and Security of Data
- System Integration.

2.4 Possible solution:

- Scalability and Performance: Use cloud-based infrastructure to ensure the system can handle increasing numbers of users, office rentals, and data efficiently, with the ability to scale based on demand.
- Security: Implement robust authentication and authorization protocols for all user roles (clients, employees, and admins), including encryption for data in transit and at rest, to safeguard sensitive client and rental information.
- Real-Time Communication: Leverage WebRTC with Agora.io for reliable and high-quality video and audio communication in conference rooms, incorporating fallbacks and optimizations to ensure minimal latency and high availability, especially in different office locations.
- Office Scheduling: Use an intuitive and responsive scheduling system for booking office spaces and meeting rooms, with real-time updates and automated reminders to prevent conflicts and missed bookings.
- Data Management: Employ Prisma with PostgreSQL for efficient data handling, schema management, and backup solutions, ensuring that rental information, office details, and client data are securely stored and easily retrievable.
- Payment Processing: Integrate secure payment gateways and ensure compliance with payment security standards, such as PCI-DSS, to handle transactions smoothly and securely, supporting various payment methods for rental services.

Chapter 3 – Literature Review

The Fast Office project focuses on leveraging artificial intelligence (AI) and real-time communication to revolutionize the office rental and management process, specifically in the context of optimizing office space utilization, cost analysis, and location-based efficiency assessments. Several key areas of technology have been researched and analyzed to ensure the success of this project.

AI in Office Rental Optimization: AI has increasingly been utilized in property management systems to optimize space usage, predict cost efficiency, and enhance overall decision-making. Research indicates that AI can provide valuable insights by analyzing data such as office usage patterns, location efficiency, and financial performance (Chien & Chen, 2021). By applying machine learning algorithms to rental data, AI can identify patterns and predict the profitability of renting specific office spaces. In the case of Fast Office, the AI-powered Cost Benefit Analysis System will assess the profitability of rented office spaces, while the Location-Based Cost Benefit Analysis tool will help determine the most cost-effective locations for businesses. These AI tools will facilitate a more data-driven and objective approach to office space management.

Behavioral Analytics in Office Space Usage: Behavioral analysis is also emerging as a valuable tool in the management of office spaces. AI systems can be trained to detect patterns in office usage, such as the frequency of meeting room bookings, the duration of space usage, and even employee preferences for specific office environments. This data can provide deeper insights into how spaces are utilized and whether they meet the needs of the users (Lee et al., 2020). In Fast Office, AI will be integrated to analyze office space usage behaviors, providing admins and employees with a comprehensive understanding of how spaces are being utilized. This analysis will help optimize space allocation, improve cost efficiency, and ensure that office environments meet the needs of businesses and their employees **[3]**.

3.1 Discussion about problem and solution domain-based on published article:

The problem domain for Fast Office revolves around the inefficiencies and limitations in traditional office rental and space management processes, particularly in areas such as space utilization, cost optimization, and overall user experience. Traditional methods often involve subjective decision-making, which can lead to inconsistent office space allocation, underutilized spaces, and missed opportunities for cost savings. Several challenges are commonly faced in office rental processes **[4]**. Traditional office rental systems may not fully

optimize the use of available office space, leading to underutilized areas or mismatched space allocation for clients' needs. This inefficiency can result in unnecessary costs for businesses, as they may be paying for more space than they need **[5]**.

By using AI-powered tools, such as the Cost Benefit Analysis System and Location-Based Cost Benefit Analysis, Fast Office can optimize office space utilization and predict the profitability of rental agreements. This ensures businesses only pay for the space they need and can make data-driven decisions on which locations offer the best cost efficiency **[6]**. Through WebRTC integration with Agora.io, Fast Office enables seamless, high-quality video conferencing for clients renting meeting rooms. This feature enhances collaboration while ensuring a smooth user experience during virtual meetings.

Fast Office utilizes WebRTC via Agora.io for real-time, high-quality video communication during conference calls in rented office spaces. This solution addresses the challenges of poor connectivity and low-quality video often encountered in traditional video conferencing systems. WebRTC is known for its low latency, which is essential for ensuring smooth communication and a seamless experience during virtual meetings (Nikolov et al., 2019). By integrating Agora.io's WebRTC solution, Fast Office can provide a reliable and efficient platform for conference calls, ensuring that users, employees, and clients can collaborate effectively, regardless of their location, within rented office spaces.

3.2 Recommended approach:

To successfully implement the Fast Office project, it is crucial to adopt a methodical approach that combines technology, process design, and user experience considerations. The following key recommendations outline an effective approach for developing, deploying, and scaling Fast Office.

Waterfall Model:

The first step involves gathering comprehensive requirements from all stakeholders, including users, employees, and administrators. This phase aims to define what functionalities the platform should support, such as office space booking, conference room management, AI-driven cost optimization, and secure payment processing. The implementation phase involves coding the platform using appropriate technologies, including integrating AI for cost-benefit analysis, WebRTC for conference room communication, and secure payment gateways. This

is where the technical development of the platform begins, turning the design into a functional system **[7]**.

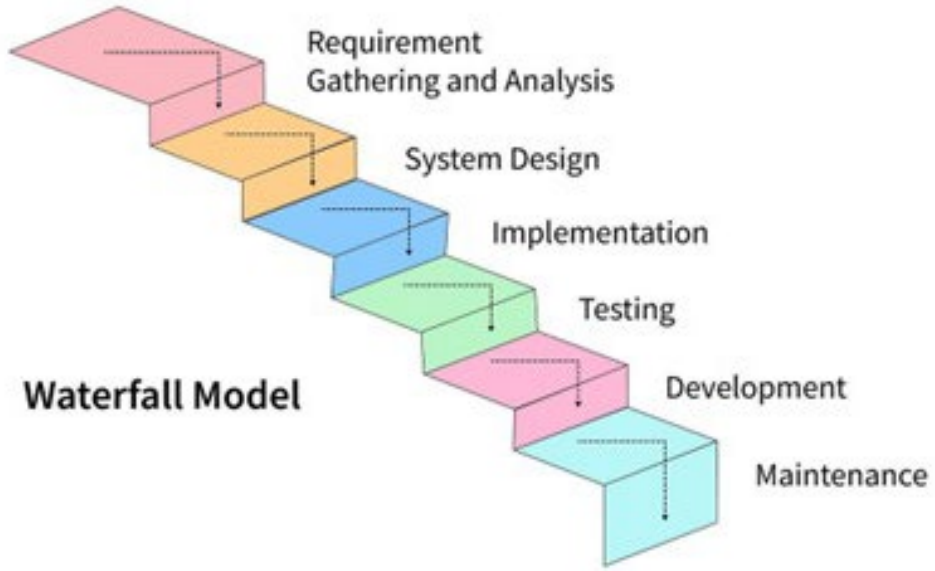


Figure 3.1. Waterfall business model

Agile Methodology:

Implementing Agile Methodology in the Fast Office project would involve embracing a dynamic, adaptive, and collaborative approach to software development. Agile thrives on delivering incremental, high-value segments of the application in regular, well-defined sprints (typically lasting 2-4 weeks), allowing the team to continually refine and optimize features based on real-time feedback. This iterative process not only accelerates delivery but also fosters innovation by continuously adapting to user needs and market demands **[8]**.

Figure 3.2. Agile Methodology

DSDM-Methodology:

Dynamic System Development Methodology (DSDM):

The Dynamic Systems Development Methodology (DSDM) is an agile project management framework that provides a structured, yet flexible approach to delivering projects. Initially designed for software development, DSDM has evolved into a versatile framework suitable for various industries. For the Fast Office project, DSDM's iterative and collaborative approach can significantly enhance the development of office rental services, including office space bookings, conference room management, and AI-powered cost benefit analysis tools. DSDM emphasizes the importance of close collaboration with stakeholders to ensure the product meets their needs. In the case of Fast Office, this means continuous engagement with users, admins, and employees to gather feedback on features like office space selection, service booking, and real-time conference room management. This collaboration ensures that the platform remains relevant, user-friendly, and aligned with market needs **[9]**.

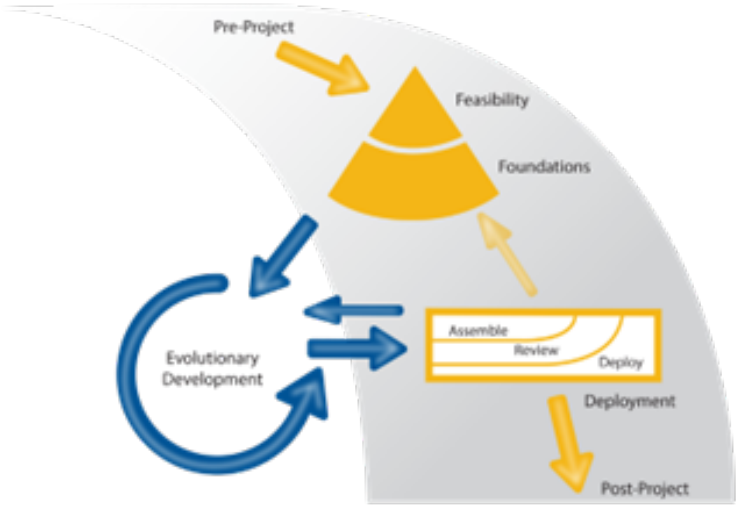


Figure 3.3. DSDM Process Methodology

DSDM focuses on delivering functionality in small, incremental stages. For Fast Office, this approach allows the team to release key features, such as the office booking system, conference room video calling functionality, and AI-driven cost optimization, in regular iterations. Each sprint focuses on a specific aspect of the platform, ensuring that valuable features are made available to users early in the project lifecycle.

At the start of each phase, Fast Office will prioritize requirements based on user feedback, business needs, and technical feasibility. This ensures that the most important features are developed first, such as payment processing, secure user authentication, and office space management, while allowing less critical features to be developed later.

3.2 Why to Use:

At Fast Office, we understand the challenges that businesses face when it comes to finding the right office space, equipped with all the necessary infrastructure, at an affordable price. Our goal is to simplify the office rental process while providing a seamless, flexible, and fully-equipped workspace solution for your business needs. Here's why Fast Office is the ideal choice for your business:

- The system enables seamless interaction between Client, Employee, and administrators.

Fully Equipped Workspaces. At Fast Office, we provide more than just office space. Our workspaces come fully equipped with high-quality office furniture

- Flexible Rental Plans

We know that each business has unique needs. Whether you're a startup, a growing company, or an established enterprise, Fast Office offers flexible rental plans tailored to your requirements. From short-term to long-term leases, we ensure that you only pay for the space and services you need, with no unnecessary overhead costs

- Prime Locations

Location matters when it comes to business success. Fast Office offers premium office spaces in strategically located areas, making it easier for your team and clients to connect. Whether you need an office in the city center or a location close to transportation hubs, we have options that suit your business.

3.4 Implementation Plan:

The Fast Office project aims to provide flexible and fully furnished office spaces, tailored for businesses of all sizes. The implementation plan for Fast Office focuses on delivering a seamless user experience, efficient back-end infrastructure, and robust features such as office rental, equipment management, payment systems, and AI-powered insights for clients. Below is a comprehensive breakdown of how the project will be implemented, ensuring that all phases are efficiently managed to deliver a high-quality product.

In this initial phase, we will lay the foundation for the project by gathering requirements from all relevant stakeholders, including potential users (clients), employees, and administrators. Stakeholder interviews and surveys will help define critical features like office space listings, rental categories, payment models, equipment management, and AI-powered insights. The goal is to document functional and non-functional requirements, ensuring that all objectives are aligned with client needs. Additionally, a market analysis will be conducted to understand current trends in office rental services, particularly in regions like Bangladesh. This will guide the development of a competitive, user-focused platform. A detailed project roadmap will be created, specifying milestones, timelines, and resource allocations.

Chapter 4 – Planning

4.1 Project Plan:

The Fast Office project aims to provide flexible, fully furnished office spaces with necessary office equipment and a comprehensive rental system. The platform will serve to startups, SMEs, and large corporations, offering them not only office space but also convenient booking systems, payment solutions, and real-time communication tools for meetings. The project plan below outlines the key phases, objectives, and deliverables necessary for the successful launch and scalability of the Fast Office platform.

- Stakeholder Meetings: Engage with clients, potential users, and internal teams to gather detailed requirements for office space types, equipment, features, and payment models.
- Market Research: Conduct a competitive analysis to identify industry trends, customer pain points, and key features that should be implemented.
- Feature List Finalization: Prioritize features such as office listings, booking, payment systems, equipment management, AI-powered insights, and video calling.
- Risk Assessment: Identify potential risks such as scalability issues, security concerns, and operational challenges.
- Project Scope Definition: Define deliverables, timelines, and resource allocation for each phase.
- Roadmap Creation: Develop a comprehensive timeline detailing each phase of development and deployment **[10]**.

4.1.1 Work Breakdown Structure (WBS):

A Work Breakdown Structure (WBS) is a hierarchical decomposition of the project into smaller, more manageable components. The WBS for the Fast Office project outlines the major deliverables and tasks involved in the development, implementation, and maintenance of the office rental platform. Below is a detailed WBS for the Fast Office project.

No	Task-description	Time / Day
1	Registration & Login System.	5
2	UI Design for web	5
3	Customer able to filter office based on their desire.	7

4	Online payments.	10
5	Booking and online receipts generated by the system.	5
6	Real time office view.	10
7	AI integration	10

Table 4.1. Chart table of Fast Office System

4.1.2 Time Boxing:

Time duration and time boxing are critical components of project management, ensuring that tasks are completed within specific time frames to maintain progress and meet project deadlines. For the Fast Office project, each phase is time-boxed to ensure that the project stays on track and delivers within the expected time frame. Below is a proposed time boxing plan for the different phases of the Fast Office project **[11]**.

No	Description of task	Time/Days	Resource
1	Initial Study	15	User & Developer
2	Requirement Gathering and Analysis	10	Developer User & Admin
3	Design	10	Developer User & Admin
4	Implementation	15	Developer & User
5	Testing	10	Developer & User
6	Documentation	3	Developer & Analyst

Table 4.2. Time boxing of Fast Office System Execution

4.1.3 Gantt Chart:

A Gantt chart is a vital tool in the Fast Office project, visually representing information through a horizontal bar graph. It enables project managers and team members to quickly view task schedules, dependencies, and progress at a glance. By planning and displaying all tasks in one centralized view, the chart ensures the team remains organized and focused, helping to meet project deadlines efficiently **[12]**.

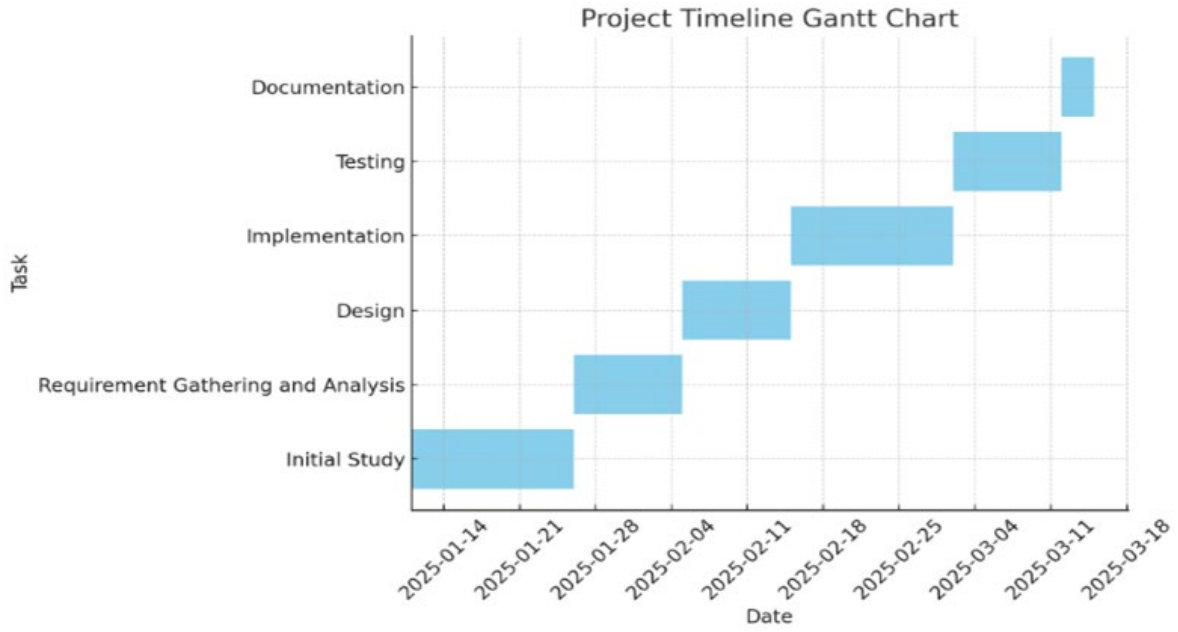


Figure 4.1. Gantt-Chart

4.2 Test plan:

The test plan for the Fast Office project will ensure that all system components function effectively and meet user expectations. The testing strategy includes unit testing to validate individual features, integration testing to verify seamless interactions among modules, and end-to-end testing to ensure the system's overall functionality. Functional testing will cover key user roles—Admin, Employee, and Client—to confirm account management, office rental booking, equipment management, video conference room functionalities, and payment processing capabilities. Security testing will focus on safeguarding authentication, authorization, and data privacy for users and transactions. Performance testing will evaluate the system's responsiveness and scalability under varying conditions. The reliability and latency of real-time communication for conference room features will also be rigorously tested. Lastly, user acceptance testing (UAT) will involve real users to ensure the platform meets practical requirements and expectations. The comprehensive test plan is designed to identify and resolve issues, guaranteeing a robust, efficient, and user-friendly Fast Office platform.

4.2.2 Required Test:

Functional Testing for the Fast Office Project:

Integration Testing: This phase is critical for ensuring seamless interaction between multiple components, especially in a system as dynamic as Fast Office. Integration testing combines key features or groups to verify smooth functionality. Rigorous verification processes confirm that all modules operate cohesively before advancing to final test executions.

Unit Testing: Detailed testing of individual segments and components ensures the accuracy and proper functioning of each element. Unit testing plays a vital role in maintaining quality, supporting development activities, and verifying compliance with standards and requirements.

System Testing: After integration testing, system testing provides a comprehensive evaluation of Fast Office's capabilities, features, and requirements. This phase ensures that the system performs effectively under different scenarios and highlights areas for optimizing workload management.

Acceptance Testing: In the final testing phase, user participation is essential. Acceptance testing evaluates user satisfaction by assessing whether the system meets core business objectives and fulfills user expectations. This step ensures Fast Office delivers value and achieves its intended goals.

Nonfunctional Testing for the Fast Office Project:

Security Testing: This phase is dedicated to evaluating the Fast Office system's security robustness from both internal and external perspectives. It involves identifying vulnerabilities, such as SQL injection risks, to strengthen defenses against potential threats. Comprehensive assessments of security measures ensure the protection of sensitive data and mitigate risks effectively.

Usability Testing: This phase focuses on assessing Fast Office's user interface and overall usability. The aim is to create a user-friendly and intuitive experience that allows users, employees, and administrators to navigate and interact with the system efficiently, enhancing satisfaction and convenience.

Reliability Testing: Reliability testing evaluates Fast Office's durability and performance under different conditions. This phase ensures the system operates consistently and dependably, reinforcing its resilience and maintaining trustworthiness during various scenarios.

Chapter -5 Feasibility

The feasibility study for the Fast Office project is an essential step to determine whether the initiative is technically, economically, and legally viable. The study evaluates critical aspects that will help in making informed decisions regarding the project's development, deployment, and long-term sustainability. Below are the key areas of feasibility for Fast Office. Fast Office utilizes modern technologies such as cloud infrastructure, real-time communication systems, AI-powered cost analysis, and robust security protocols. The technical feasibility focuses on the availability and compatibility of these technologies with the existing systems.

5.1 Possible types of Feasibility:

- Economic Feasibility
- Technological Feasibility
- Operational Feasibility.

5.1.1 Economic Feasibility:

The economic feasibility study for Fast Office is crucial to ensure that the project is financially viable and sustainable. It evaluates the costs involved in the development, implementation, and operation of the platform, as well as the potential revenue generation and long-term profitability. The goal is to determine if the investment in Fast Office will yield a positive return, considering the expenses, expected revenue, and market dynamics. The initial investment will include costs for technology development (software, hardware, etc.), UI/UX design, infrastructure setup (cloud services, servers, etc.), and security implementations. This phase includes hiring developers, system architects, and other personnel for building the platform:

Components	Price
Software	20,000/=
Hardware	70,000/=
Hosting	15,000/=

Others	15,000/=
Total	120,000/=

Table 5.1. Economic Feasibility

5.1.2 Technological Feasibility:

The technological feasibility of the Fast Office project evaluates the viability and scalability of the technological solutions required to develop, deploy, and maintain the platform. This involves assessing whether the proposed technologies can meet the project's functional requirements while ensuring reliability, security, and scalability. The following sections provide a comprehensive evaluation of the technological feasibility for Fast Office. To support flexible office space management and scalability, Fast Office will utilize cloud computing for storage, data management, and computational resources. Leading cloud providers like Amazon Web Services (AWS), Google Cloud, or Microsoft Azure will be used for hosting the platform. Cloud-based infrastructure will enable Fast Office to scale effortlessly, add new features, and maintain data redundancy for increased availability and disaster recovery.

5.1.3 Operational Feasibility:

Operational feasibility assesses whether the Fast Office project can be implemented and sustained effectively within the operational environment. This evaluation looks at whether the project can be successfully executed from an operational standpoint, considering the required resources, staffing, processes, and organizational capabilities. The goal is to determine if the system can be smoothly integrated into the existing operational framework and if the company can manage and maintain it in the long term. Skilled Personnel: Fast Office requires a skilled workforce to manage the development, implementation, and ongoing maintenance of the platform. Key personnel include developers, project managers, IT support staff, sales and marketing teams, customer support representatives, and administrative staff. Staff will need training to use the Fast Office platform effectively. This includes training for internal staff on platform features, troubleshooting, and system management. Additionally, users (businesses and individuals renting office spaces) may need guidance on how to use the platform for booking spaces, handling payments, and using the video conference features.

5.2 Cost Benefit Analysis:

A Cost-Benefit Analysis (CBA) for the Fast Office project helps evaluate the financial feasibility of the platform by comparing the anticipated costs with the expected benefits. This analysis will provide insight into the profitability, long-term sustainability, and overall value of the platform.

No.	Sector Expenditure	Year 1	Year 2	Year 3	Year 4	Total
1	Software	1500/=	1500/=	1500/=	-	4500/=
2	Hardware	420000/=	-	10000/=	-	52,000/=
3	Hosting	8000/=	8000/=	8000/=	8000/=	32,000/=
4	Office		100000/=	-	-	-
5	Staff		70000/=	70000/=	70000/=	70000/=
6	Development	80000/=	80000/=	80000/=	80000/=	320000/=
	Total		**132,5000/=**	**52,5000/=**	**22,5000/=**	**21,0000**

Table 5.2. Cost-Benefit Analysis

Total revenue:

SL No	Sector Expenditure	Year 1	Year 2	Year 3	Year 4
Total Earn	132,300/=	52,400/=	22,700/=	24,000/=	228,500/=
Total Expense	32,400/=	30,400/=	30,400/=	30,400/=	121,600/=
Total Revenue	162,900	82,900/=	52900/=	51,400/=	350,100/=

Table 5.3. Total-Revenue Analysis

After completing a detailed cost analysis, the revenue is projected to increase to 350100 /=. This shows, I am confident that this program has significant profitability.

Chapter 6 – Foundation

6.1 Over All Requirement List:

The two main types of requirements utilized in software engineering are functional and non-functional requirements. Here are some examples of each:

6.1.1 List of functional requirements:

- Registration & Login.
- Profile Management.
- Role-Based Access.
- Search and Filter.
- Office Space Booking
- Real-time Communication
- Meeting Room Booking.
- Payment Integration.
- Admin Management.

6.1.2 List of Not Functional Requirement:

- Response Time
- Throughput
- Scalability
- Reliability
- User-Friendliness
- Maintainability
- Data Integrity
- Compliance
- Auditability.

6.2 What Technology Implemented:

The Fast Office platform leverages advanced technologies to deliver a high-performance and efficient office space management system. The backend is built using NodeJS and Express, providing a scalable and robust server-side architecture. Prisma, a powerful Object-Relational Mapping (ORM) tool, seamlessly handles database operations with Mongoose, ensuring reliable and secure data management.

The platform incorporates real-time communication features for conference calls using WebRTC via Agora.io, ensuring smooth, low-latency interactions during meetings. On the

front end, Fast Office utilizes React JS—a React-based framework—to power a dynamic and responsive user interface, ensuring a seamless and user-friendly experience for office renters, admins, and employees.

Key Features

- ❖ Real-Time Communication
- ❖ User Authentication
- ❖ Candidate Application Process
- ❖ AI Generative Cost Benefit Analysis
- ❖ Role-Based Account Management
- ❖ Payment Integration
- ❖ Conference Room
- ❖ Single-Page Application (SSR).

6.3 Recommendations and Justifications:

The Fast Office platform leverages advanced technologies to deliver a high-performance and efficient office space management system. The backend is built using NodeJS and Express, providing a scalable and robust server-side architecture. Prisma, a powerful Object-Relational Mapping (ORM) tool, seamlessly handles database operations with Mongoose, ensuring reliable and secure data management. The platform incorporates real-time communication features for conference calls using WebRTC via Agora.io, ensuring smooth, low-latency interactions during meetings. On the front end, Fast Office utilizes React.js—a React-based framework—to power a dynamic and responsive user interface, ensuring a seamless and user-friendly experience for office renters, admins, and employees.

Real-time communication through video calls powered by WebRTC (via Agora.io) ensures smooth, interactive meeting sessions, offering both office renters and employees a dynamic, face-to-face experience. The AI-driven generative scanner analyzes user behavior and compares it to office space requirements, helping companies make informed decisions. Automated space booking processes, meeting scheduling, and real-time notifications make the platform user-friendly and efficient. In addition to these features, the system provides secure user authentication, subscription-based access, and payment integration through SSLcommerz, ensuring that all transactions are safe and reliable.

Fast Office platform also offers advanced features for efficient management of office spaces and services. With real-time availability updates, office renters can easily browse, book, and

manage their desired office spaces, meeting rooms, and amenities. The platform provides dynamic pricing based on factors such as location, time of use, and the type of service, allowing businesses to make cost-effective decisions based on their specific needs.

The AI-powered analytics system helps track the utilization of office spaces, providing businesses with insights into space efficiency, helping optimize resource allocation. Administrators can access comprehensive dashboards that display key metrics like booking history, usage patterns, and payment details, enabling them to monitor and manage operations effectively.

Chapter 7-Explorations

Fast Office involves creating a seamless and efficient office space management process using advanced technology and cutting-edge development techniques. This system fosters innovation, efficiency, and personalized workspace management. It encompasses activities like real-time conference calls, AI-powered space utilization tracking, and secure data management, offering a fulfilling and streamlined approach to office space rental. Fast Office supports office renters, employees, and admins, allowing for tailored experiences and smooth workflows, whether for individual users or large-scale office space management efforts. It is an effective solution for both enhancing office management strategies and offering a personalized, efficient workspace experience for all stakeholders.

Fast Office not only revolutionizes the way office spaces are rented but also ensures optimal utilization and management of resources. By incorporating real-time analytics, the platform allows admins to monitor office usage, track available equipment, and adjust bookings or service requests based on real-time demand. This ensures that office spaces are not only functional but also cost-efficient, providing a dynamic solution for businesses of all sizes.

The integration of AI-driven insights allows Fast Office to suggest personalized office layouts, space configurations, and even equipment arrangements that best suit the user's needs, whether they are a solo entrepreneur or part of a larger organization. The platform's subscription-based model ensures flexibility for both long-term and short-term office space rentals, providing users with a wide range of options tailored to their specific needs.

7.1 Old System Use Cases:

Figure 7.1. Fast Office use case

7.2 Old system full activity-diagram:

Admin-activity diagram:

Figure 7.2. Admin Activity-Diagram of Fast Office

ERD Diagram:

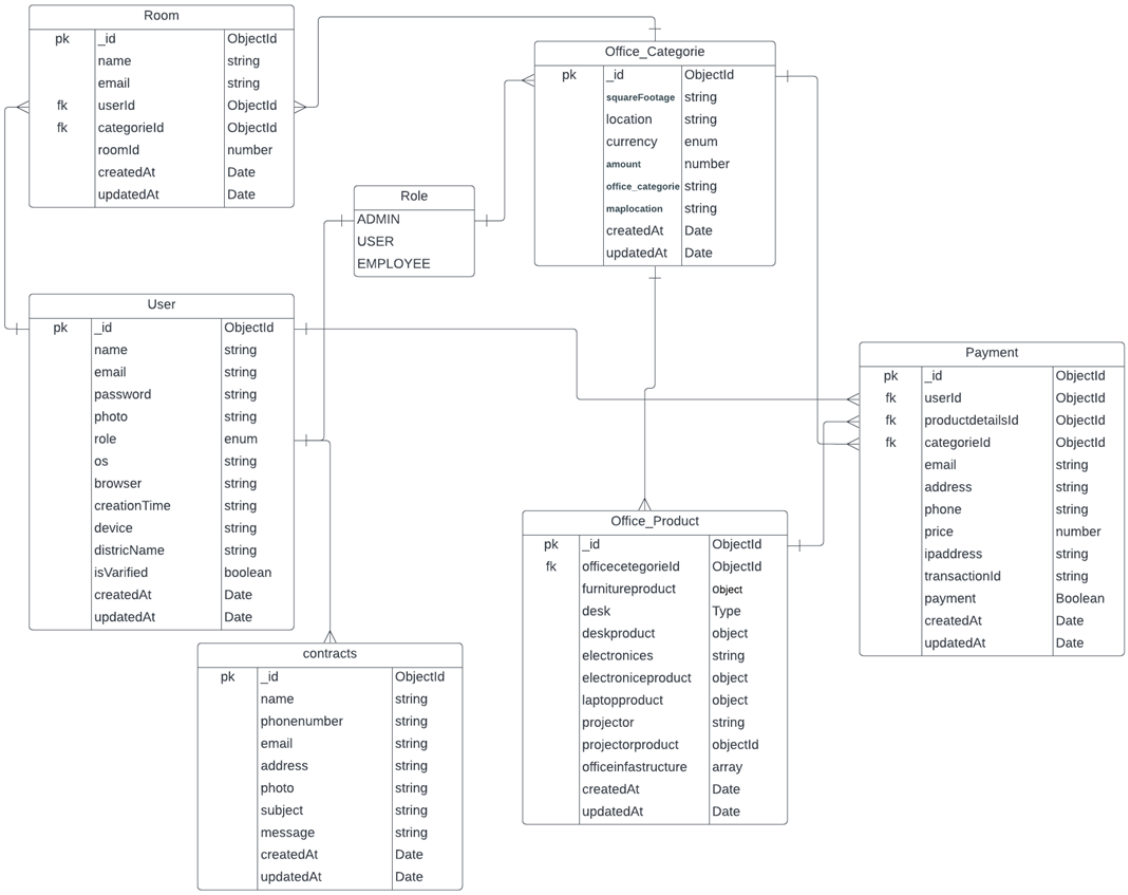


Figure 7.3. Employer Activity-Diagram of Fast Office

7.3 Prioritization Requirement List (PRL):

Applying Moscow:

MoSCoW rule is fundamental to the feature prioritization in the Fast Office project, aiding in efficiently categorizing and understanding requirements. This approach ensures a structured application process by prioritizing features into four categories: Must-Have, Should-Have, Could-Have, and Won't-Have for now. Below are the characteristics of the MoSCoW method as applied to Fast Office.

R No	Requirement Name	Priority
R-01	Use WebRTC to enable audio and video calls between customer and emoployee.	High

R-02	Provide a strong framework for safe account management and login.	High
R-03	Establish a system for rent booking and customize office booking.	High
R-04	Create thorough admin profiles that include office building name, location, square foot and price per square.	High
R-05	Give Ai Cost Benefit Analysis to know the office project is profitable or loss before adding on office section.	High
R-06	Put in place a safe way to handle transactions and payment ledger.	High
R-07	Provide administrators with the resources they require in order to manage user and employee accounts, monitor system metadata, and make booking.	Medium
R-08	Display comprehensive details on office, such as real time office view and components.	Low
R-09	Payment Get way with SSL Commerze.	Low

Table 7.1. Prioritized-Requirement List of Fast Office

7.4 Prototype of the System:

Prototyping is a strategic approach designed to optimize website development by focusing on essential marketing elements **[13]**. Below, you will find the prototype for the new system:

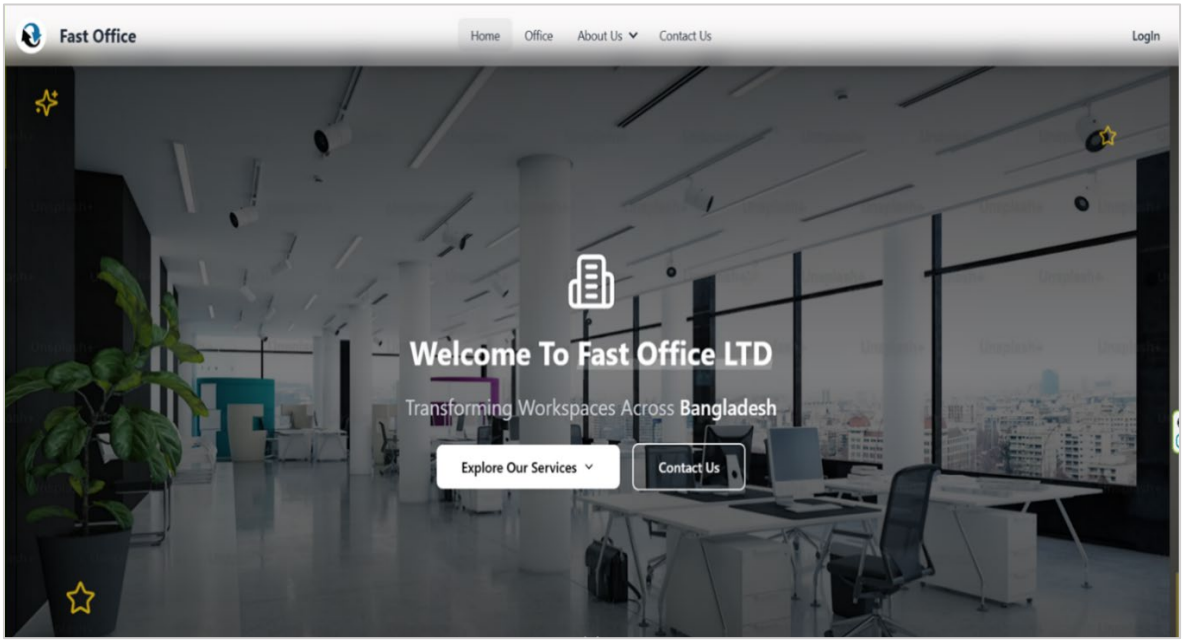


Figure 7.4. Prototype-home page

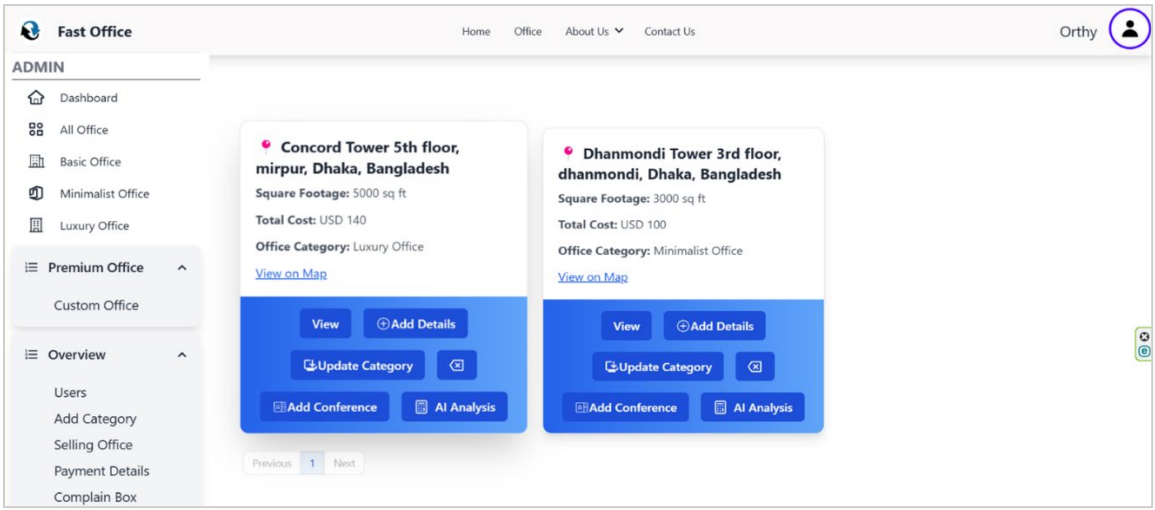


Figure 7.5. Prototype-product card

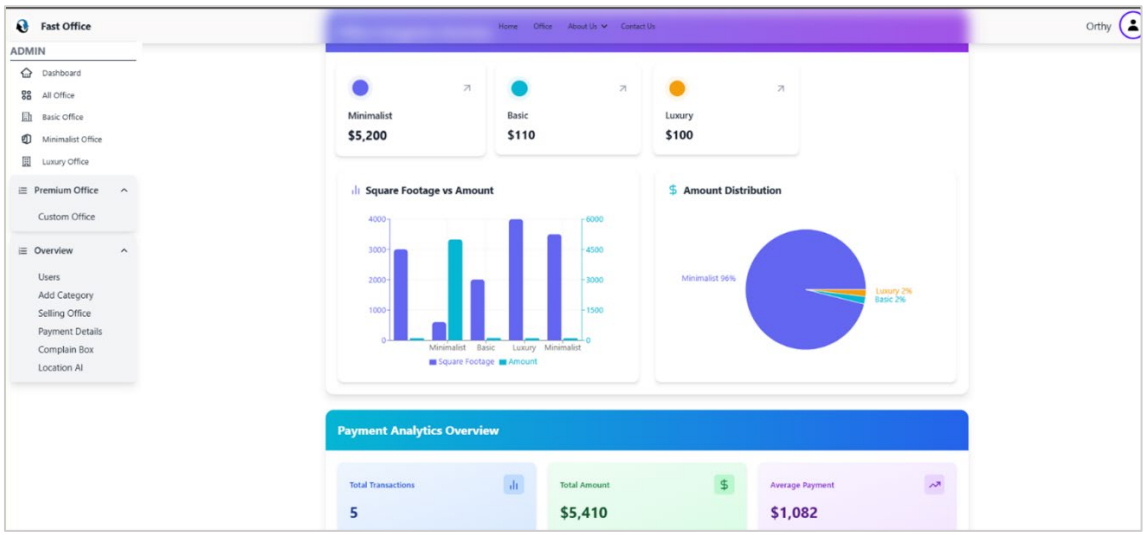


Figure 7.6. Prototype-side navigation

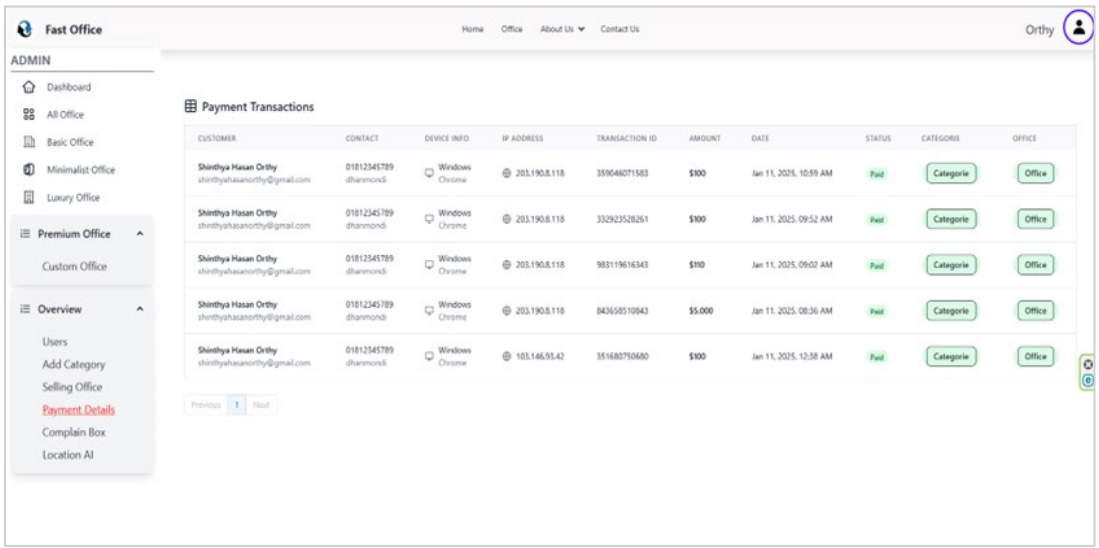


Figure 7.7. Prototype-monitoring panel

Chapter 8 - Engineering

8.1 New System Modules:

The proposed Fast Office web application system offers a comprehensive suite meticulously designed to address office space management needs effectively. These modules are tailored to meet to diverse user requirements, ensuring versatility and flexibility in the office rental and management process. Below, I outline the primary trends and models of the proposed system, highlighting its standout features and unique capabilities.

8.2 New System Use Case diagram

Figure 8.1. New System-Use Case diagram

8.3 New system ERD Diagram:

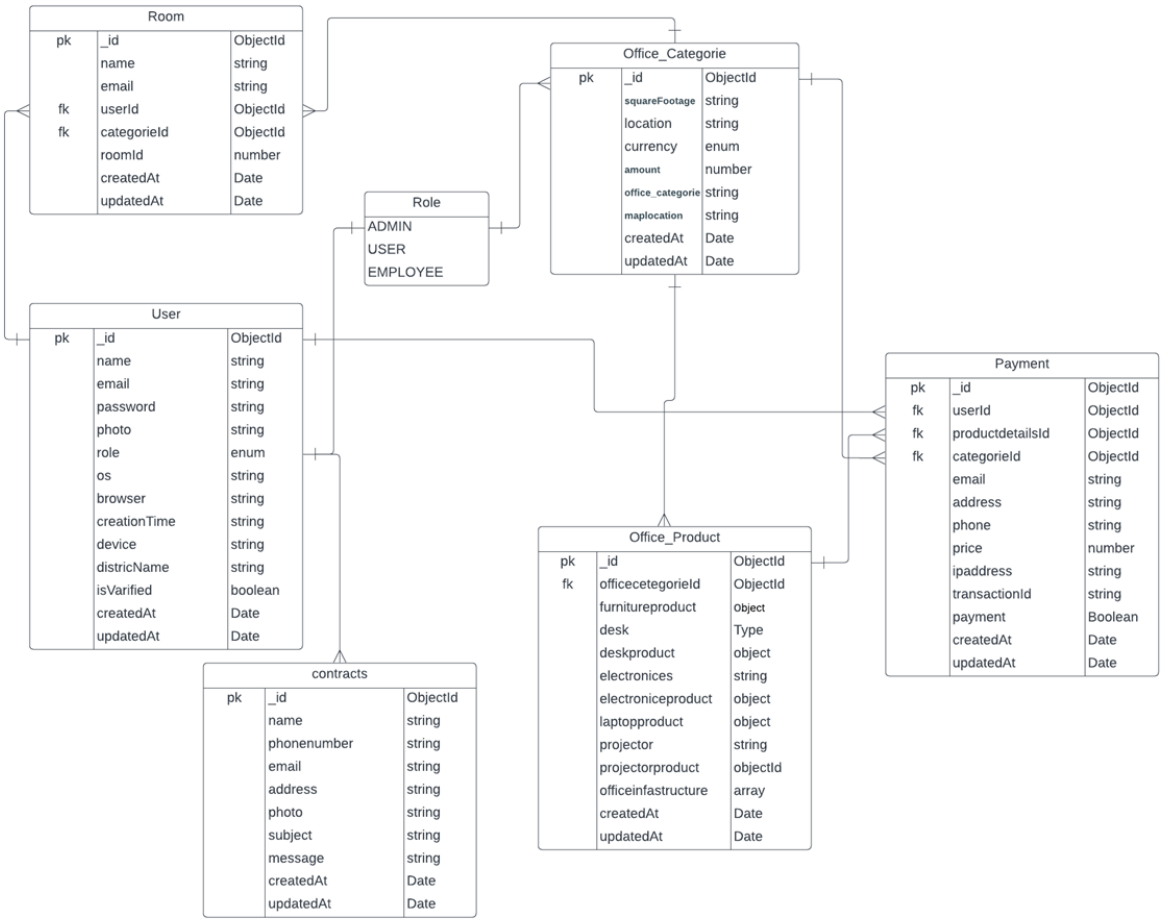


Figure 8.2. ERD-Diagram

8.4 System Interface Design/Prototype:

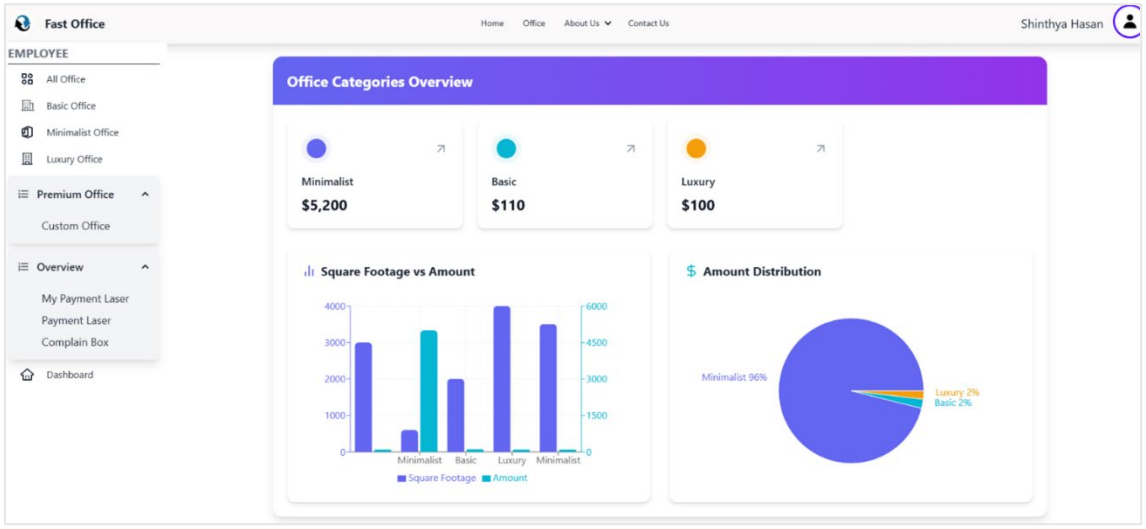


Figure 8.3. System Interface-Dashboard

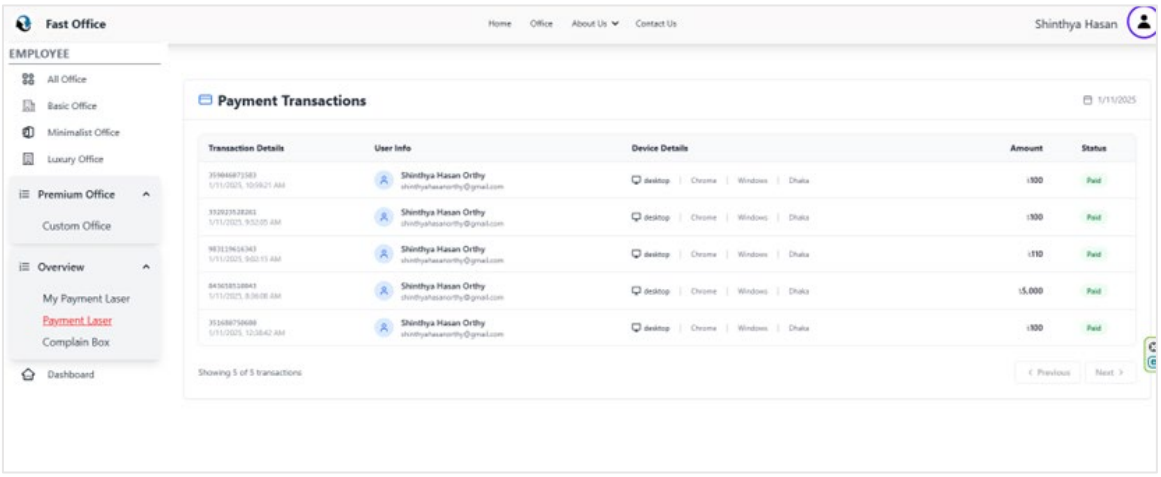


Figure 8.4. System Interface-Payment Transaction

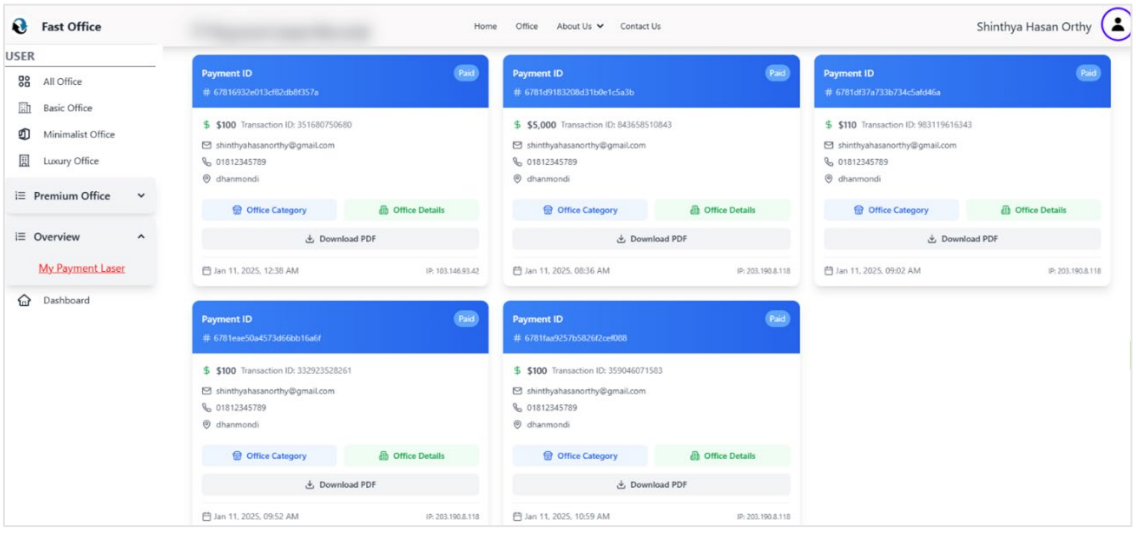


Figure 8.5. System Interface-System chart

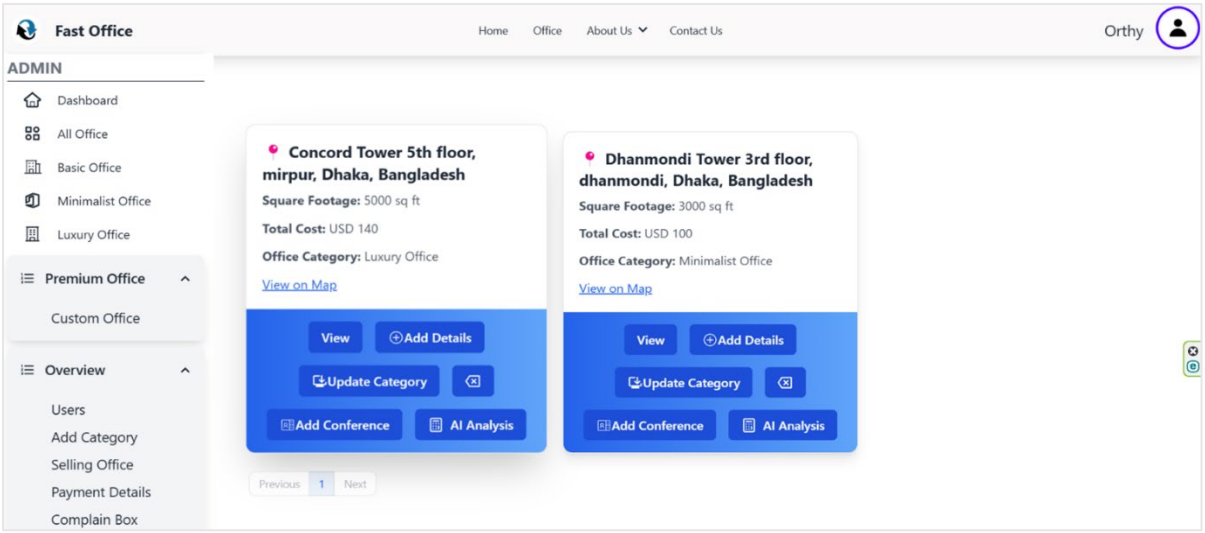


Figure 8.6. System Interface-Available Office

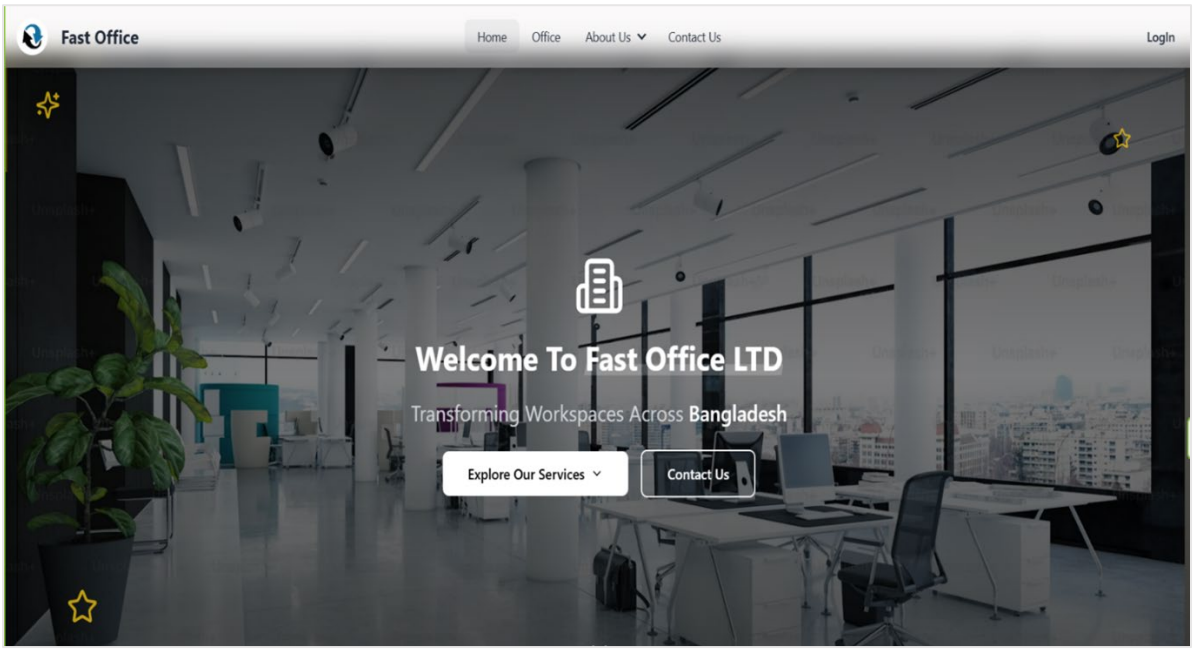


Figure 8.7. System Interface-Product management

Chapter 9 - Development

9.1 Core Modules Coding Simples:

At this stage of the Fast Office project, implementation and construction commenced after completing all the necessary analyses. Breaking down tasks into smaller, manageable segments ensured a streamlined development process. A variety of programming languages and tools were utilized to build the recommended framework, including Node.js, Express.js, React JS, Tailwind CSS, Agora.io for WebRTC, Tailwind CSS, and JavaScript. Here are some examples of the code:

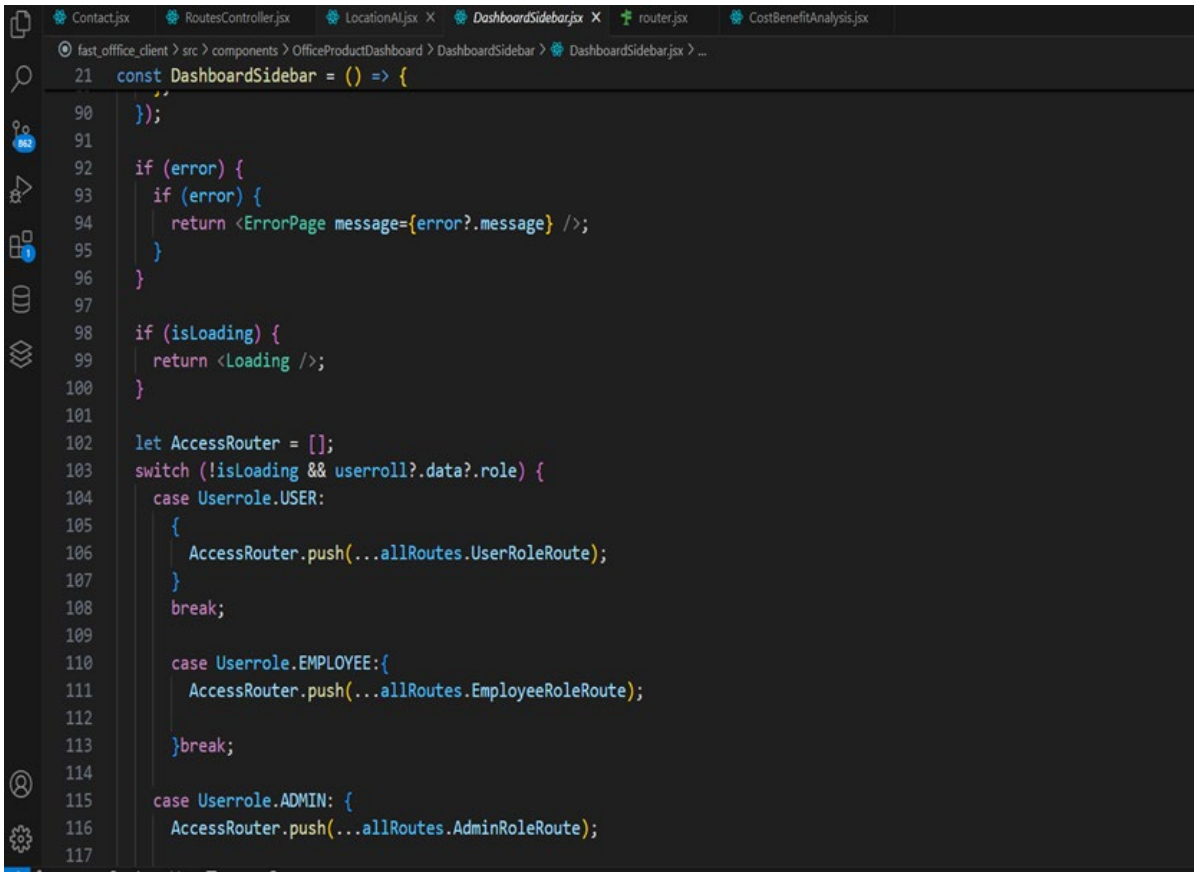
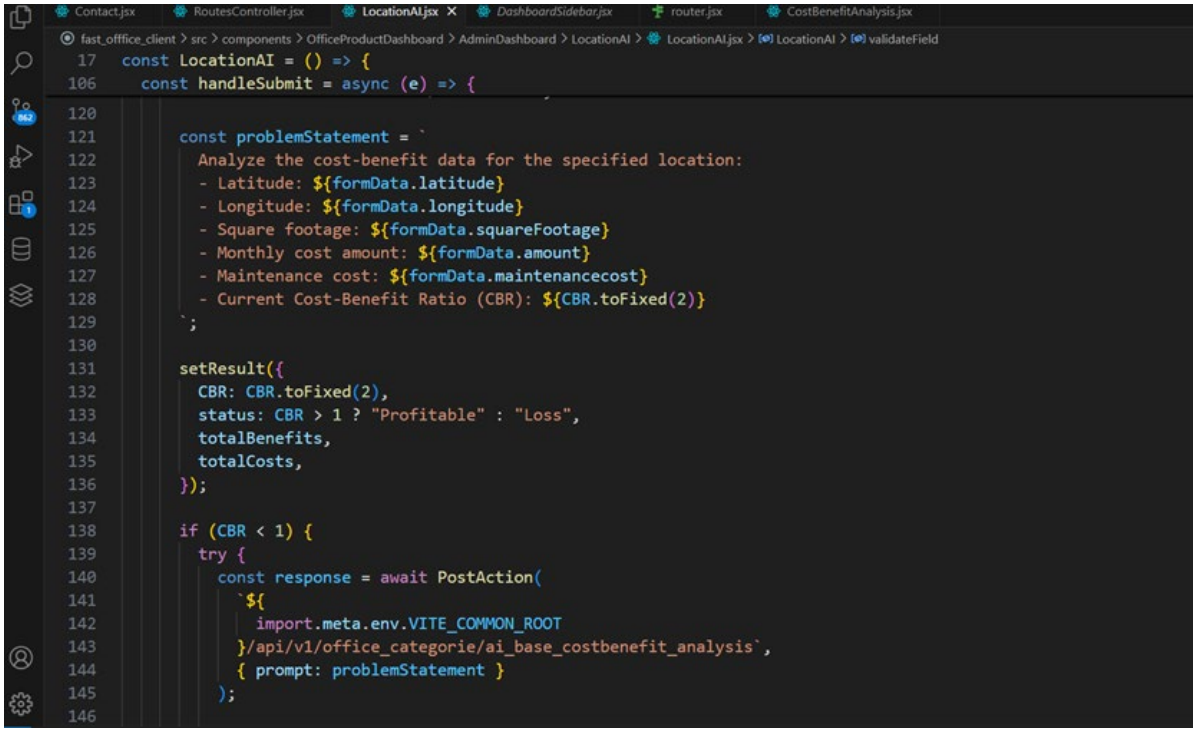
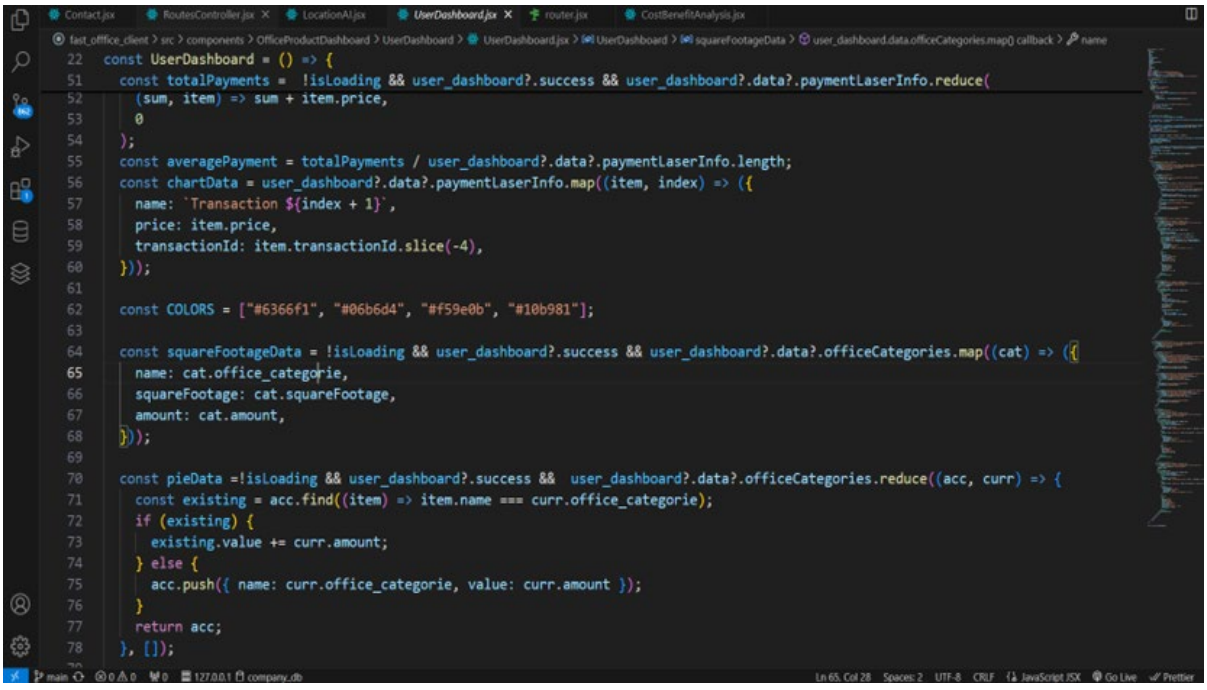


Figure 9.1. Side Menu Bar



```
Contact.jsx  RoutesController.jsx  LocationAI.jsx  DashboardSidebar.jsx  router.jsx  CostBenefitAnalysis.jsx
fast_offfice_client > src > components > OfficeProductDashboard > AdminDashboard > LocationAI > LocationAI.jsx > LocationAI > validateField
17   const LocationAI = () => {
106    const handleSubmit = async (e) => {
120
121      const problemStatement = `
122        Analyze the cost-benefit data for the specified location:
123        - Latitude: ${formData.latitude}
124        - Longitude: ${formData.longitude}
125        - Square footage: ${formData.squareFootage}
126        - Monthly cost amount: ${formData.amount}
127        - Maintenance cost: ${formData.maintenancecost}
128        - Current Cost-Benefit Ratio (CBR): ${CBR.toFixed(2)}
129      `;
130
131      setResult({
132        CBR: CBR.toFixed(2),
133        status: CBR > 1 ? "Profitable" : "Loss",
134        totalBenefits,
135        totalCosts,
136      });
137
138      if (CBR < 1) {
139        try {
140          const response = await PostAction(
141            `${
142              import.meta.env.VITE_COMMON_ROOT
143            }/api/v1/office_categorie/ai_base_costbenefit_analysis`,
144            { prompt: problemStatement }
145          );
146
```

Figure 9.2. Cost Benefit Analysis Ai



```
Contact.jsx  RoutesController.jsx  LocationAI.jsx  UserDashboard.jsx  router.jsx  CostBenefitAnalysis.jsx
fast_offfice_client > src > components > OfficeProductDashboard > UserDashboard > UserDashboard.jsx > UserDashboard > squareFootageData > user_dashboard.data.officeCategories.map() callback > name
22   const UserDashboard = () => {
51     const totalPayments =  !isLoading && user_dashboard?.success && user_dashboard?.data?.paymentLaserInfo.reduce(
52       (sum, item) => sum + item.price,
53       0
54     );
55     const averagePayment = totalPayments / user_dashboard?.data?.paymentLaserInfo.length;
56     const chartData = user_dashboard?.data?.paymentLaserInfo.map((item, index) => ({
57       name: `Transaction ${index + 1}`,
58       price: item.price,
59       transactionId: item.transactionId.slice(-4),
60     }));
61
62     const COLORS = ["#6366f1", "#06b6d4", "#f59e0b", "#10b981"];
63
64     const squareFootageData = !isLoading && user_dashboard?.success && user_dashboard?.data?.officeCategories.map((cat) => ({
65       name: cat.office_categorie,
66       squareFootage: cat.squareFootage,
67       amount: cat.amount,
68     }));
69
70     const pieData =!isLoading && user_dashboard?.success &&  user_dashboard?.data?.officeCategories.reduce((acc, curr) => {
71       const existing = acc.find((item) => item.name === curr.office_categorie);
72       if (existing) {
73         existing.value += curr.amount;
74       } else {
75         acc.push({ name: curr.office_categorie, value: curr.amount });
76       }
77       return acc;
78     }, []);
```

Figure 9.3. Admin Dashboard

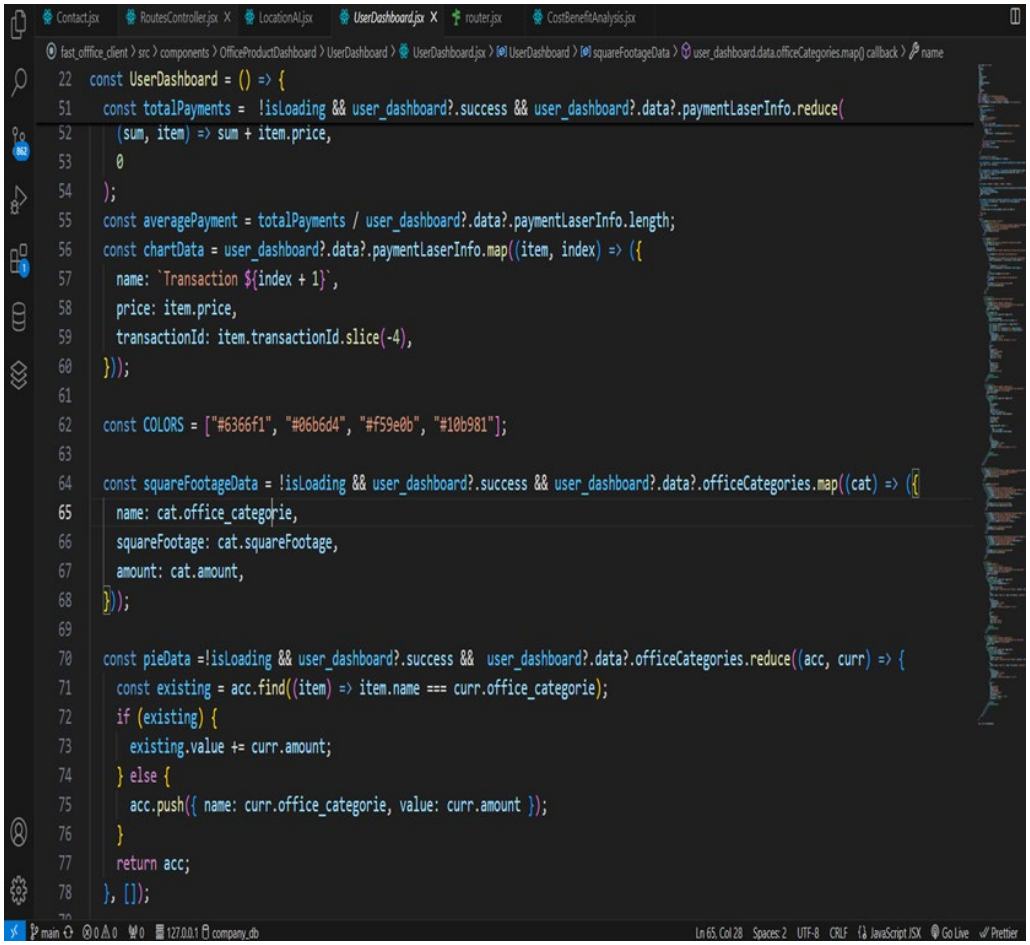


Figure 9.4. User Dashboard

```
import toast from "react-hot-toast";
const PutAction = (url, selectedSpecialties, refetch) => {
  fetch(url, {
    method: "PUT",
    headers: {
      "content-type": "application/json",
      authorization: `bearer ${localStorage.getItem("accessToken")}`,
    },
    body: JSON.stringify(selectedSpecialties),
  })
    .then((res) => {
      if (!res.ok) {
        throw new Error("API ERROR");
      }
      return res.json();
    })
    .then((data) => {
      toast.success(data?.message);
      refetch();
    })
    .catch((error) => {
      toast.error(error?.message);
```

Figure 9.5. Authentication Code

9.2 Possible problem breakdown:

A problem breakdown for the Fast Office project can be structured into several key areas, each of which requires focused attention during development. Below is a possible breakdown:

User Management Issues

- Authentication and Authorization: Ensuring secure user login and role-based access control (Admin, Employee, Client).
- Problems: Unauthorized access to sensitive office space and payment data, weak password policies, insecure data handling.
- Solutions: Implement multi-factor authentication (MFA), secure password storage (e.g., bcrypt), and role-based access control.
- Profile Management: Difficulty in updating user details and managing subscriptions.
- Problems: Lack of personalized user profiles, inconsistency in data updates.
- Solutions: Allow users to edit profiles, track office bookings, and manage subscription preferences.

Booking System

- Space Availability and Booking Conflicts: Ensuring real-time availability of office spaces and conference rooms.
- Problems: Double bookings, incorrect real-time availability updates, system crashes during peak usage.
- Solutions: Implement real-time synchronization with WebRTC, create alerts and confirmation notifications, and integrate an efficient calendar and booking system.
- Booking Process Errors: Users experiencing issues in booking the right spaces or adding necessary resources.
- Problems: User confusion, wrong configurations, issues with multi-location offices.
- Solutions: Simple UI design with clear instructions, validation checks for bookings, and intelligent suggestions based on user needs.

Resource Management

- Equipment Allocation: Users unable to reserve or access required office resources like computers, printers, and projectors.
- Problems: Insufficient inventory tracking, equipment mismanagement.

- Solutions: Implement a real-time equipment reservation system, integrate inventory tracking and maintenance schedules.

Real-Time Communication

- Video Call Quality: Poor video and audio quality during conference calls due to connectivity issues.
- Problems: Latency, low resolution, and interruptions in real-time communication.
- Solutions: Use Agora.io WebRTC for optimized video calls, implement adaptive bitrate streaming, and provide fallback mechanisms for low-bandwidth situations.
- Security of Communication: Ensuring video and audio communication is secure and private.
- Problems: Unauthorized access, potential data leaks during virtual meetings.
- Solutions: End-to-end encryption, secure meeting URLs, and password-protected conference rooms.

Payment Processing

- Payment Gateway Integration: Users encountering issues when making payments for office space bookings or subscriptions.
- Problems: Transaction failures, incorrect billing, non-compliance with financial regulations.
- Solutions: Use SSL-commerz for secure transactions, implement error-handling mechanisms, and ensure compliance with payment regulations (e.g., PCI-DSS).
- Subscription Management: Handling different subscription models for users (monthly, yearly, etc.).
- Problems: Difficulty in modifying or upgrading subscription plans, tracking billing cycles.
- Solutions: Allow for seamless upgrade/downgrade options, clear billing history, and auto-renewal options.

Chapter 10 - Testing

10.1 Unit Testing:

The unit testing process of a project is essential. Individual assessments ensure that the project code functions correctly in this context **[14]**.

Integration testing	Test Class		Designed by Shinthya Hasan Orthy	
Data source:	Functionality Test		Tested By Shinthya Hasan Orthy	
Test-case:	**Test-name**	**Task-name**	**Expected Output**	**Actual Out Put**
1.1	Product Testing	Expect Data: From fill	Successful	Successful

Table 10.1. Unit -Testing

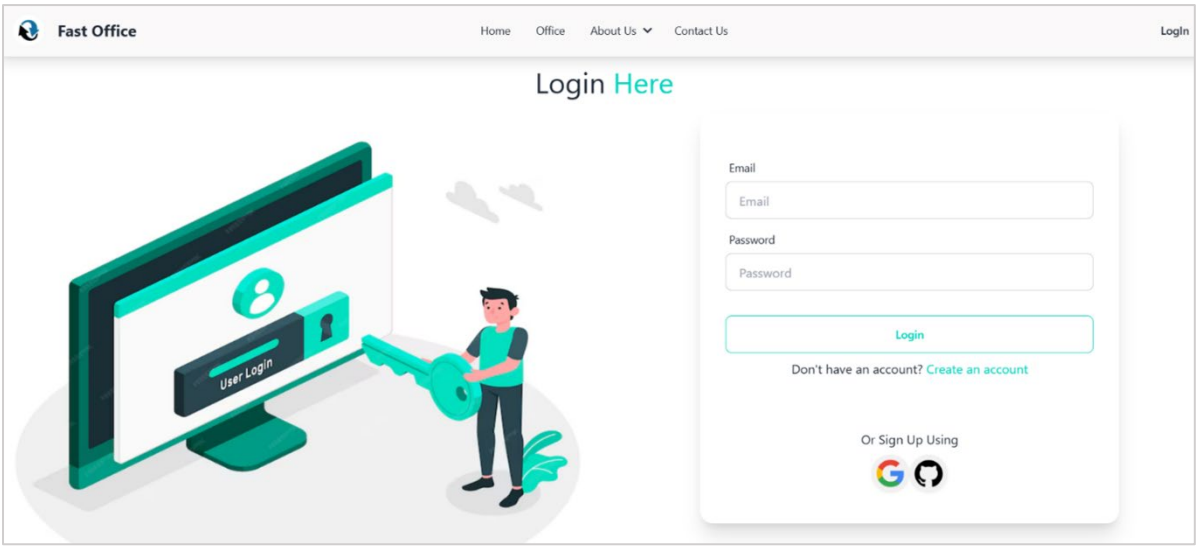


Figure 10.1. Login System Testing

10.2 Module testing:

Module testing in the Fast Office project refers to the protocols, standards, and software components used to rigorously evaluate the system's functionality. It is recommended to focus on testing individual internal modules, such as AI-driven matching algorithms, real-time communication features, and authentication processes, on a smaller scale rather than attempting to test all system components simultaneously. This approach ensures a thorough examination of each module, enhancing the overall reliability and performance of the platform **[15]**.

Integration testing	**Test Class**		Designed by Shinthya Hasan	
Data source:	Object Test Functionality		Tested By Shinthya Hasan	
Test case:	**Test Description**	**Tasks**	**Expected Output**	**Actual Out Put**
1.1	Registration testing	Expect Data: From filling	Successfully creates Account	Successfully creates Account

Table 10.2. Testing-Registration testing

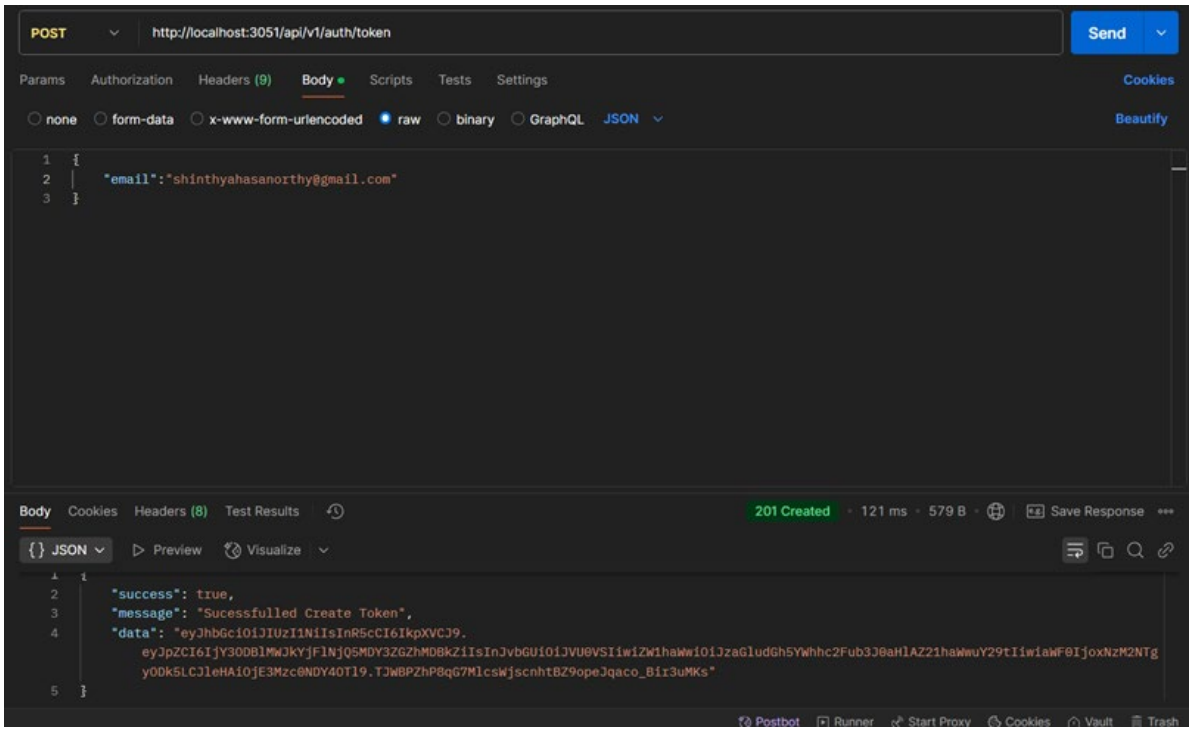


Figure 10.2. Module-testing

10.3 Integration Testing

Individual software components inside a system are tested for functionality through integrated testing. Its goal of discovering design-related problems highlights how important the archive integration test is **[16]**.

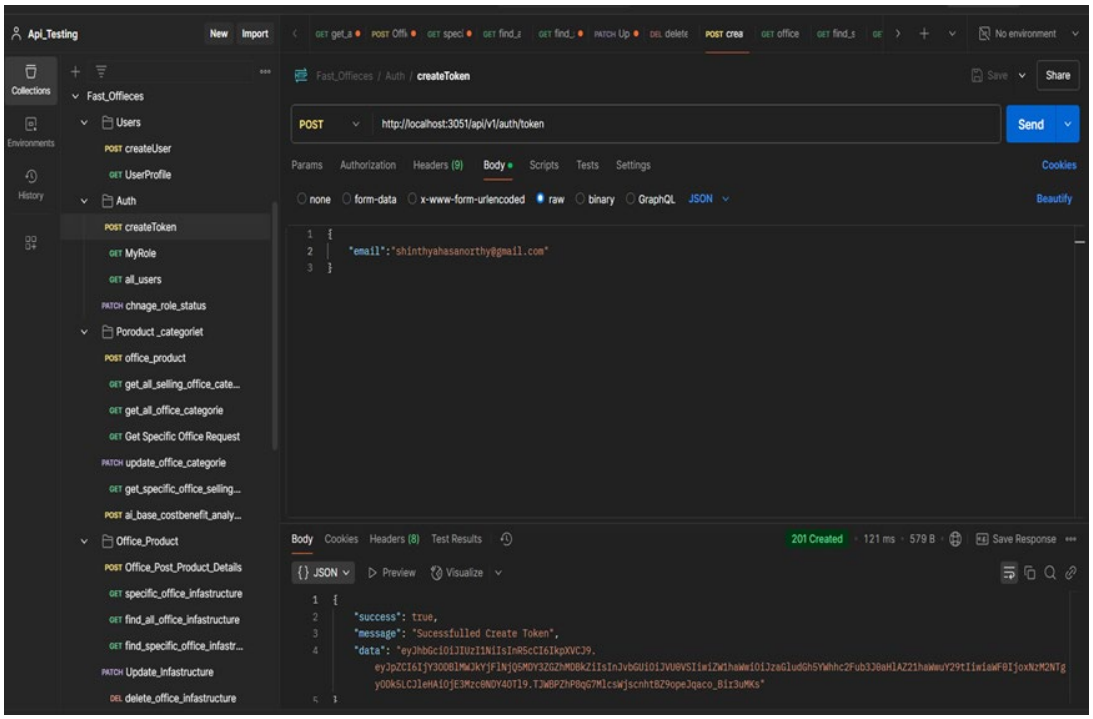


Figure 10.3. Integration-testing

Chapter 11-Implementation

11.1 Training:

Training is a crucial part of development. System users must be trained in order to stay up to date on the most recent system changes and user manuals. Users will find the system simple to use and comprehend after receiving training **[17]**.

SL NO	User	Training Sect.	Time Duration	Note
1	Admin	Account	3 hr	User Application
2		User Activity	45 min	Activity of user
3		User Dashboard	1 hr	Dashboard Information
4		Monitoring User	20 min	User Logs
1	User/Employee	Office Booking	30 min	User, Employee and Admin communication
2		Video calling	10 min	Adaptability
3		Used with UI	1.3 hours	User, Employee and Admin communication

Table 11.1. Training table of Fast Office

11.2 Big bang:

The primary role of the Fast Office project at this stage is the implementation of the new office space management system while phasing out the existing one. The main course of action involves completing rigorous testing and deploying the new platform. However, transitioning data from the old system to the new one may face delays and risks, including potential data loss or corruption, particularly concerning the management of office space reservations, resource allocations, and related records. Careful planning and robust migration strategies are essential to mitigate these risks and ensure a seamless transition **[18]**.

11.3 Recommended implementation process:

The Fast Office technology is currently being deployed across various organizational departments as part of a pilot project. This phased approach ensures that the system is thoroughly evaluated in real-world scenarios. A successful pilot phase is achievable by carefully monitoring performance and gathering user feedback. Once all features are validated and function as expected, the system will transition to full operational status, delivering its complete range of office space management solutions.

Chapter 12 - Critical Appraise and Evaluation

The Fast Office system highlights any critical requirements that were not met during development and provides explanations for these gaps. It also identifies areas where additional effort and potential guidance are necessary to address these unmet requirements, ensuring the platform's functionality aligns with project goals and user expectations **[19]**.

12.1 Objective Cloud be Met:

- ❖ Advanced Analytics and Reporting: Provide detailed analytics and reporting tools for administrators and users to track office usage trends, service performance, and system efficiency.
- ❖ Customizable Notifications: Enable users to personalize notification preferences for office space availability, booking updates, and other critical alerts.
- ❖ Enhanced Security Features: Implement advanced security measures, such as two-factor authentication and data encryption, to safeguard sensitive user data. Resource Access: Provide access to educational materials, office management tips, and workspace utilization resources to help users optimize their office experiences.
- ❖ Advanced Search and Filtering: Enhance search and filtering options for companies to find office spaces based on location, size, availability, and other criteria.
- ❖ Community Forums: Create forums or discussion boards for office renters and service providers to share insights, ask questions, and discuss industry-related topics.
- ❖ These objectives would enhance Fast Office's user experience and further establish it as a comprehensive office rental and management platform.

12.1.2 How much better could have been done:

- Enhanced User Experience
- Performance Optimization
- Security Enhancements
- Feedback and Support.

12.1.3 How better could be the features of the solution?

The Fast Office system excels with its advanced features, offering seamless real-time communication through WebRTC for conference calls and meetings. It ensures secure and efficient management of office space bookings and schedules. The platform integrates a robust authentication system, automated email notifications for booking updates and feedback, and a secure payment gateway for subscription management. Users (renters and employees) can

manage detailed office profiles and generate performance reports with ease, while renters benefit from streamlined booking tracking, office space optimization resources, and personalized feedback. The system's comprehensive admin panel enables efficient management of roles, permissions, and platform activities, ensuring a smooth and effective office rental experience for all users.

12.1.4 Which Features Could Not be Touch

- Real time communication
- Secure user authentication:
- Efficient booking management
- Comprehensive user profiles
- Effective payment ledger management

Chapter 13- Conclusion

13.1 Summery of the Project

The Fast Office project is a comprehensive web-based office space management system designed to enhance communication and streamline processes among office space users, admins, and employees. Leveraging advanced technologies such as NodeJS, Express, Mongoose, WebRTC (via Agora.io), and Type Script, the system offers a robust platform for managing office space bookings, resource allocation, and employee interactions. It supports three primary user roles: admins, who manage user accounts and platform activities; employees, who oversee booking processes and resource management; and office space users, who can rent office spaces, track bookings, and receive updates. Key features include real-time video conferencing for meetings, secure user authentication, automated payment processing, and email notifications. The system ensures user-friendly interactions and reliable performance through detailed usability and reliability testing. By integrating these elements, Fast Office aims to improve office space management efficiency, enhance user experience, and provide a seamless workspace rental process for all users. This project addresses the need for secure, efficient, and accessible office space management services, making it a valuable tool for modern businesses.

13.2 Project Goals

Primary objectives:

The goal of the Fast Office project is to create a comprehensive, user-friendly office space management system that streamlines interactions between office space users, employees, and

administrators. By integrating advanced technologies such as NodeJS, Express, Prisma, WebRTC, and PostgreSQL, the project aims to enhance the efficiency of office space booking, real-time meeting coordination, and resource management. The system seeks to improve the accessibility and convenience of the office space rental process through secure communication, seamless booking management, and automated workflows, ultimately providing a more effective and organized approach to workspace utilization.

13.3 My experience

The completion of the Fast Office web application project has been a highly enriching experience, providing valuable insights into information gathering, problem-solving, and overcoming technical challenges. Initially, the project's complex technical requirements were demanding, but they offered an excellent opportunity to refine my skills. Fast Office features a range of advanced functionalities, including real-time communication via WebRTC, secure user authentication, a comprehensive admin panel, office space booking and management, detailed user profiles, and a seamless payment system. Effective time and cost management were essential to delivering a successful solution.

I am confident that the expertise and knowledge gained from this project will significantly enhance my future endeavors. I am grateful for the strength, wisdom, and support of those who played a key role in the successful completion of the Fast Office project.

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Fast Office

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