

MANAGEMENT SYSTEM FOR INTERIOR DESIGNER

DESIGNED AND DEVELOPED

BY

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**THIRD YEAR BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)**

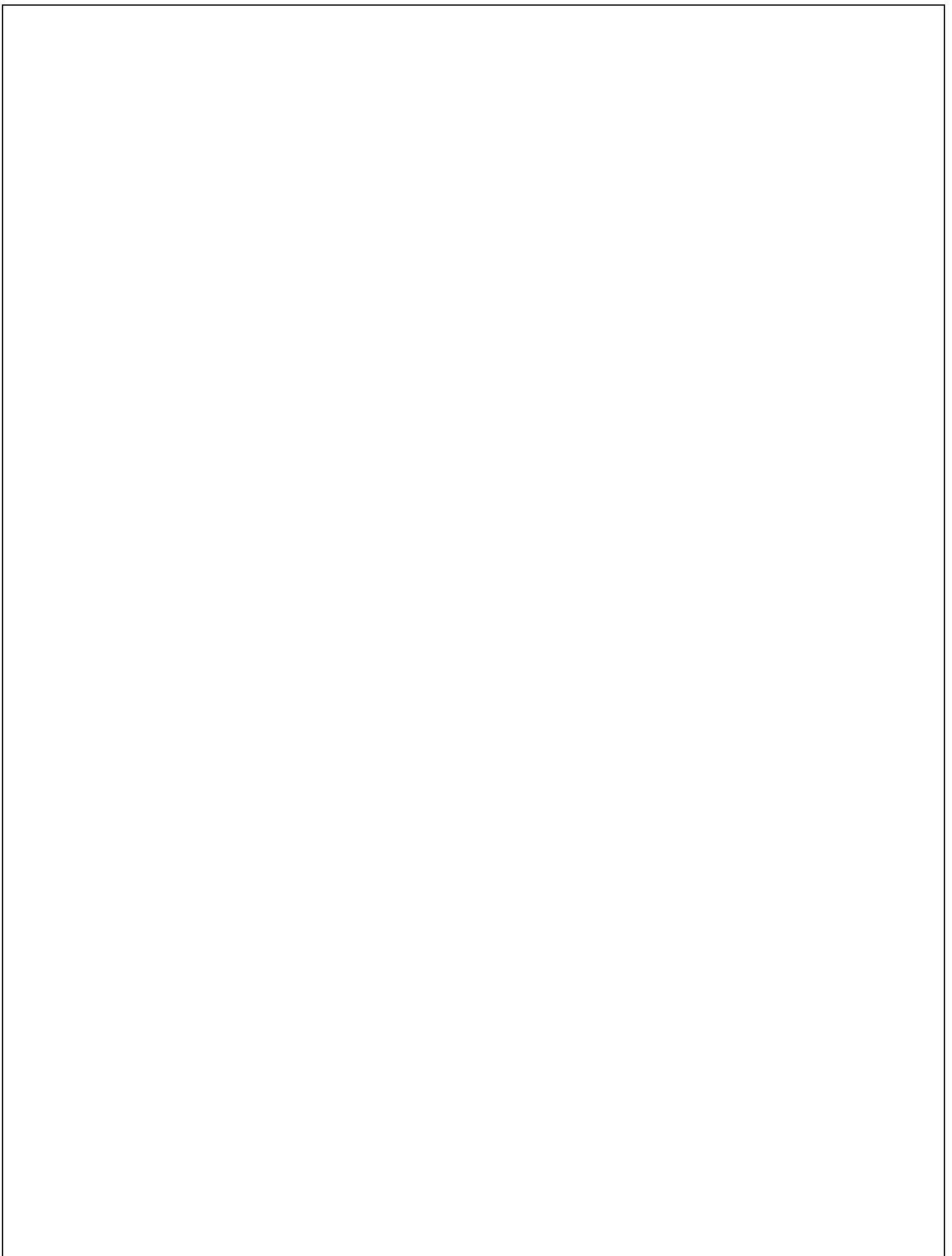
**DEPARTMENT OF INFORMATION TECHNOLOGY
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ABSTRACT

Management System for Interior Designer is a system designed to simplify daily operational activities involved in interior design projects. Traditionally, interior designers manage quotations, project progress, expenses, and material requirements manually, which often leads to delays, errors, data misplacement, and difficulty in tracking project history. This system addresses these challenges by providing a centralized platform to manage clients, generate quotations, monitor project activities, record expenses, and maintain project documentation efficiently.

The system allows the interior designer to create consistent and reusable quotations, maintain detailed project records, track room-wise materials, and keep a history of all completed or ongoing projects. It also enables expense logging, task tracking, and structured documentation, which enhances transparency and decision-making. Since the system is easy to use and customizable, even a single staff member can handle daily operations effectively.

By reducing manual workload and improving information accessibility, the system enhances productivity and accuracy. It supports better planning, cost estimation, and communication between team members and clients. The Management System for Interior Designer aims to provide organized workflow management, improved project monitoring, and higher professional efficiency, enabling designers to focus more on creativity and client satisfaction rather than administrative tasks.

ACKNOWLEDGMENT

I am glad to present my project **Management System for Interior Designer**. For everything I have achieved, the credit goes to all those who offered me invaluable assistance and guidance to make the project.

I take this opportunity to express my sincere gratitude to the management of **B. N. BANDODKAR COLLEGE OF SCIENCE** for giving this opportunity to accomplish this project work.

I am thankful to our project guide **MR. TEJAS JADHAV** for most sincere, useful & encouraging contribution throughout the project span. Without their support we couldn't complete the project on time.

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I would also like to thank non-teaching staff members. I would also like to thank my project member **SUJAL DURAPHE** developing and appreciate my team the project and friends who support me and have spent their efforts to make the project successful.

I would also like to thank my friends and classmates for their continuous encouragement and valuable suggestions during the development of this project.

This project has been a great learning experience and has helped me enhance my technical and problem-solving skills.

DECLARATION

I hereby declare that the project entitled, "**Management System for Interior Designer**" done at B. N. Bandodkar College of Science, has not been submitted, in any case, to any other university for the award of any degree. To the best of my knowledge, other than me, no one has submitted this project to any other university.

The project is done in partial fulfilment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)** to be submitted as final semester project as part of our curriculum.

Name and Signature of the Student

SYNOPSIS

1. Introduction

Many interior and repair businesses still use paper quotes, Excel for budgets, and manual methods to track work. This makes things slow, confusing, and hard to manage, especially when checking how well a project is doing or if it's making a profit.

This project solves these problems by giving one simple system to handle everything from creating the first quote to finishing the project. It helps businesses make accurate quotes, manage ongoing work, and keep track of all costs all in one easy-to-use software.

2. Current System

At present, quotation preparation is done manually and informally. Designers first write details on paper, which are later transferred to Excel by staff. Every time a new quote is needed, the process is repeated — from scratch.

There's no fixed format; taxes and totals are calculated manually or using Excel formulas. Past quotations are stored in folders but difficult to reuse efficiently. Formatting is inconsistent depending on who prepares the quote, leading to variation in presentation and branding.

This manual process is time-consuming, repetitive, and error-prone. As the business grows, handling more clients and quotation history using this system becomes harder to manage.

3. Problems Faced in the Current System

- Time-consuming manual workflow
- No clear link between quotation and project execution
- Repetitive data entry for each quotation
- Difficulty in updating or reusing past quotations
- Unorganized quotation history
- No centralized data for client, materials or pricing
- Difficulty in tracking the progress and profitability of active projects.

4. Proposed System

The proposed solution, will be a structured software system designed to automate and unifies business operations. It will provide a seamless workflow to manage business operations from start to finish.

Key features:

- Allows users to create, edit, and save quotations with a simple step-by-step interface.
- Generates room-wise cost breakdowns with real-time summaries (including GST and discounts).
- Converts approved quotations into projects with one-click tracking for tasks and expenses.
- Maintains a centralized library for clients, materials, and services with editable pricing.
- Produces professional PDF quotations and keeps a searchable history of all records.
- Offers a dashboard for quick business overviews and project status tracking.

5. Software Requirements

- Frontend: React.js with Tailwind CSS
- PDF Generation: jsPDF or PDFKit
- Backend: Node.js with Express
- Database: MySQL
- Operating System: Windows or Linux
- Browser Compatibility: Chrome, Firefox, Edge

6. Hardware Requirements

A laptop or desktop with at least:

- 4GB RAM
- Intel i3 processor or higher
- 100 MB or more of free disk space

7. Tenure

The project is estimated to get completed for use within 7 months.

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INTRODUCTION

1.1 Background:-

The Management System for Interior Designer is an application created to help interior designers handle their everyday tasks more easily. Interior designers often deal with many activities like managing clients, preparing quotations, tracking projects, and checking expenses. Doing all this work manually using paper or Excel files can be time-consuming and confusing.

In most small design firms, these manual methods lead to mistakes, missing records, and difficulties in tracking the progress or profit of a project. As the number of clients and projects grows, it becomes harder to stay organized and maintain accurate information. This affects both efficiency and the quality of service provided to clients.

This project aims to solve these problems by providing one simple system to manage all design activities. The system helps designers create quotations, track projects, manage materials, and record expenses in one place. It saves time, reduces errors, and allows designers to focus more on creativity and client satisfaction rather than paperwork.

1.2 Feasibility:-

1. Technical Feasibility

Technical feasibility assesses whether the project can be built with the proposed technology and resources. This study evaluates the availability of hardware, software, programming languages, and the necessary technical skills to ensure the solution is implementable.

The proposed system is technically feasible because it is designed using industry-standard, widely-supported, and open-source technologies.

- **Frontend:** The system will use React.js, a widely adopted JavaScript library known for its speed, scalability, and strong community support. Combined with Tailwind CSS, it ensures a clean, modern, and fully responsive user interface with minimal development effort.
- **Backend:** The backend will be built using Node.js with Express, offering high performance, flexibility, and scalability. Both are well-established technologies, ensuring stable and reliable server-side operations.
- **Database:** MySQL will be used as the database. It is secure, efficient, and widely supported, making it suitable for managing structured data such as client details, quotations, and project records.

- **PDF Generation:** Libraries like jsPDF or PDFKit are specifically designed for clientside PDF generation in JavaScript environments, directly supporting one of the core requirements of the system.
- **Hardware and Software:** The system requires only basic hardware (Intel i3 processor, 4GB RAM or higher) and can run smoothly on a standard laptop or desktop, making development and deployment accessible. Since the software stack is open-source, no licensing costs are involved.

2. Operational Feasibility

Operational feasibility evaluates whether the proposed system will solve the current problems and be used effectively by the target users. It focuses on how the system will integrate into the existing business workflow and whether it will be accepted by the users. The proposed system is operationally feasible and designed to directly address the problems faced by interior design businesses.

- **Problem-Solving:** The existing manual process of using paperwork and Excel sheets is slow, repetitive, and prone to errors. The proposed system replaces this with a structured digital workflow, making quotation preparation and project tracking faster and more reliable.
- **Usability:** The system will be designed with a user-friendly, step-by-step interface to guide users through the quotation creation process. The intuitive layout will ensure that designers and staff with basic computer skills can use the system with minimal training.
- **Workflow Integration:** The system will smoothly link quotations to project work. With a "one-click conversion" feature, a quotation can instantly become a project, removing gaps in the process and giving one place to track both progress and profits.
- **Training & Support:** Minimal training will be required, and clear documentation will be provided so staff can quickly adapt to the system. Occasional troubleshooting can be handled easily without disrupting operations.
- **Adaptability:** The system is flexible enough to accommodate future requirements, such as adding new modules, reports, or features, ensuring it remains useful as the business expands.

The proposed solution is highly practical and will be well-received as it significantly improves efficiency, reduces errors, and provides clear insights into project profitability, which are key operational goals for any growing business.

3. Economic Feasibility

Economic feasibility examines the financial viability of the project by analyzing the costs of development versus the benefits it provides.

This project is considered economically feasible as it minimizes development and operational costs while providing significant long-term benefits to the business.

- **Development Costs:** Development costs are very low since all selected technologies, including React.js, Node.js, and MySQL, are open-source and free to use.
- **Operational Costs:** The system can be deployed on a local server or a low-cost cloud hosting service. Given the limited number of users (the interior design business and its staff), the operational costs for hosting and maintenance are expected to be very low.
- **Economic Benefits:** The system saves time and reduces manual effort by automating quotation generation, tax calculations, and project tracking. It also minimizes costly errors by using standardized templates and accurate calculations, preventing financial losses.
- **Long-Term Value:** By providing clear insights into project expenses and profitability, the system supports better decision-making. Professional, branded PDF quotations also improve the company's image, helping attract more clients and increasing revenue potential over time. The system acts as a central repository for all client, material, and project data. This organized history makes it easy to reuse past quotations, analyze pricing trends, and streamline future projects, adding significant long-term value to the business.

4. Legal Feasibility

Legal feasibility checks if the project follows all rules, laws, and policies. The proposed system is legally feasible because it uses only open-source technologies, protects customer data, and supports standard business practices.

- **Software Licensing:** All tools like React.js, Node.js, MySQL, and Tailwind CSS are free and open-source, so there are no licensing issues.
- **Data Privacy:** The system will handle sensitive business data, including client information, contact details, and financial records. The design will incorporate secure data storage and controlled access through user authentication to comply with general data privacy principles. The system will not collect personal data beyond what is necessary for business operations, minimizing legal risk.
- **Business Compliance:** The system creates proper quotations and records that can be used for accounts, billing, and client communication, helping the business stay professional and transparent.
- **Ownership & Usage:** The system will be owned and used only by the interior design firm implementing it, with access restricted to authorized staff through role-based permissions. It will be used solely for internal business operations, ensuring security of client data and preventing third-party misuse.

5. Schedule Feasibility

Schedule feasibility examines whether the project can be completed within a reasonable and realistic timeframe.

The project is schedule-feasible and can be completed within a reasonable timeframe if developed in planned phases. Based on the scope, the estimated timeline is about 10–12 weeks, divided as follows:

- **Weeks 1–2:** Requirement gathering, detailed system design.
- **Weeks 3–4:** Frontend development (React.js interface, Tailwind CSS), including user interface for quotation creation, project tracking, and the main dashboard.
- **Weeks 5–6:** Backend development (Node.js, Express, MySQL), focusing on data management, calculations, and PDF generation.
- **Weeks 7–8:** Integration of frontend and backend, ensuring seamless data flow and functionality.
- **Weeks 9–10:** Testing (functional, usability, and bug fixes).
- **Weeks 11–12:** Deployment, documentation, and final project review.

This phased approach ensures that the system is developed systematically and delivered within a realistic schedule.

1.3 Objectives:-

The main objective of this project is to develop a user-friendly system for interior designer business. The system will be designed to:

- Let the business create room-wise quotations easily
- Allows selection of materials with editable pricing and pricing per room • Handles taxes, discounts, and totals automatically
- Saves past quotations for editing or future reuse
- Exports the final quote as a downloadable PDF with proper formatting and branding.
- Maintain a centralized, searchable history of all clients, projects, and quotes.
- Seamlessly convert quotations into active projects.
- Track project progress and related expenses.

1.4 Purpose:-

The purpose of the **Management System for Interior Designer** is to simplify, organize, and automate the workflow of interior designers and small design firms. It helps manage clients, projects, quotations, materials, and expenses in one integrated platform. By reducing manual work and errors, the system ensures faster and more accurate operations, allowing designers to focus more on creative tasks and client interaction. The platform provides real-time data, professional reports, and automated calculations, making decision-making easier and improving overall productivity.

- Digitizes all interior design business operations for better organization.
- Creates accurate, professional quotations with room-wise cost breakdowns.
- Maintains a centralized database of clients, projects, and materials.
- Tracks project progress, expenses, and profitability in real time.
- Automates calculations for taxes, discounts, and total costs.
- Generates PDF exports, reports, and summaries for professional presentation.
- Reduces repetitive administrative work and improves efficiency.
- Enhances transparency and consistency across all projects and quotations.
- Supports future business growth with scalable and flexible management tools.

1.5 Scope:-

The scope of the Management System for Interior Designer is to simplify the daily workflow involved in managing clients, quotations, projects, materials, and expenses. The system reduces manual effort and saves time by providing quick access to project and client information, making the operations more organized and efficient. It eliminates errors caused by paper-based record keeping and ensures that information remains accurate and reusable for future reference.

This system can be used to manage various activities such as preparing quotations, maintaining material records, tracking project progress, logging expenses, and storing notes or task-related updates. All data is stored securely in the system, ensuring that only authorized users can access or modify project records.

The system can be implemented on a standard computer setup where all data is stored digitally in a structured database for long-term use.

1.6 Advantages:-

- Time Efficiency: Reduces the time spent on manual record-keeping, calculations, and repetitive administrative tasks, allowing designers to focus on core creative work.
- Accuracy: Minimizes human errors in quotations, billing, expense tracking, and project data management, ensuring reliable and precise records.
- Automation: Automates cost calculations, including taxes and discounts, as well as the generation of professional reports and PDF quotations.
- Accessibility: Provides instant and easy access to client information, project details, material lists, and financial data from a centralized platform.
- Enhanced Client Satisfaction: Enables faster response times, professional and standardized documents, and better communication with clients.
- Better Decision Making: Provides accurate, real-time data on projects, expenses, and quotations to support informed decisions and business planning.
- Data Security and Consistency: Protects sensitive client and project information through secure authentication while ensuring consistent formatting of quotations and reports across all projects.

1.7 Applicability:-

The Management System for Interior Designer is designed to be useful for interior designers and small design firms who want to streamline their workflow and manage projects efficiently. It helps organize client information, track project progress, manage materials, and generate professional quotations and reports. By digitizing these processes, the system reduces manual work, improves accuracy, and enhances productivity. It is suitable for both new designers starting fresh and established firms looking to upgrade from manual or spreadsheet-based systems. The system is also scalable, allowing businesses to expand without losing control over project management and client communication.

- Independent Designers: Ideal for freelancers and solo interior designers to manage projects and clients efficiently.

- Small Design Firms: Helps small teams coordinate multiple projects, clients, and materials from a single platform.
- Project Tracking: Enables tracking of project phases, deadlines, and expenses in real time.
- Quotation Management: Provides tools to create, store, and reuse professional quotations with accurate calculations.
- Reporting and Analysis: Generates reports for project status, expenses, and client interactions to support better decision-making.

1.8 Achievements:

During the development of this project, I have gained valuable insights into how an interior design project can be managed and tracked efficiently to meet its goals. I have also learned a lot about the technologies and software used, including React.js, Node.js, and MySQL. Once fully completed, the software will allow the client to manage all project data, client information, quotations, and expenses more efficiently, saving both time and resources.

SURVEY OF TECHNOLOGY

Management System for Interior Designer is developed using a modern stack that ensures scalability, performance, and reliability. The technologies are chosen carefully to provide a robust architecture, smooth user experience, and easy system maintenance. This system enables interior designers to manage quotations, clients, materials, and ongoing projects through an interactive and automated digital platform.

The selected technologies follow modern web development standards and best practices. Each component of the stack is selected based on its compatibility, community support, learning curve, and ability to deliver long-term reliability. Together, these technologies ensure that the application runs efficiently, remains user-friendly, and can be easily updated or scaled in the future.

2.1 Frontend Technologies

➤ React.js

React.js is used as the main frontend framework for building the user interface of the system. It provides a component-based architecture that makes the code reusable, modular, and easy to maintain. Key advantages include:

- Reusable components for consistent design
- Dynamic data handling for real-time updates
- Smooth navigation and single-page application (SPA) structure
- Easy integration with APIs for fetching and displaying data

➤ HTML5

HTML5 serves as the structural base of the frontend, defining the overall layout and elements of the web pages. It supports responsive design, accessibility, and multimedia integration. Main features utilized include:

- Local storage for saving temporary data on the client side
- Responsive image handling for better performance across devices

➤ Tailwind CSS

Tailwind CSS provides advanced styling and responsiveness. Tailwind CSS is a utility-first framework that helps create professional, clean, and adaptive designs quickly. Important features include:

- Flexbox and Grid for flexible layout creation
- Custom variables for consistent color and font management
- Media queries for responsiveness across devices
- Transitions and animations for improved user experience
- Predefined classes for spacing, alignment, and typography

➤ JavaScript

JavaScript adds dynamic behavior to the application, making it interactive and responsive. It handles real-time validation, DOM manipulation, and asynchronous communication with the backend. Main functionalities include:

- Dynamic updates without reloading pages
- Event handling for buttons, forms, and user actions
- API calls using Axios for backend communication
- Validation of user input to maintain data integrity
- Enhancing UI interactivity and responsiveness

2.2 Backend Technologies

➤ Node.js

Node.js is chosen as the main backend runtime environment. It allows the use of JavaScript for server-side logic, enabling smooth integration between the frontend and backend. It provides high performance, scalability, and asynchronous handling of requests. Advantages include:

- Lightweight and fast processing suitable for web applications
- Easy integration with RESTful APIs
- Support for multiple frameworks and libraries
- Scalable and maintainable server-side logic

➤ Express.js

Express.js serves as the backend framework built on Node.js. It simplifies server and API development, providing structure and flexibility for managing routes, requests, and middleware. Key features include:

- Simplified routing for HTTP methods (GET, POST, PUT, DELETE)
- Middleware for authentication, logging, and data validation
- Efficient error handling and response management
- RESTful API creation for frontend communication
- Integration with MySQL for data storage and retrieval

2.3 Database Technology

➤ MySQL Database

MySQL is used as the main relational database management system for storing and managing all project-related data, including client details, quotations, materials, and expenses. It ensures consistency, accuracy, and quick data access.

- Support for complex SQL queries and relationships

- Data integrity through constraints and foreign keys
- Fast and optimized indexing for better query performance

2.4 Development Tools and Environment

➤ Visual Studio Code

Visual Studio Code is the main Integrated Development Environment (IDE) used for writing and testing code. It provides support for JavaScript, Node.js, and React.js along with helpful extensions. Its key features include:

- Syntax highlighting and IntelliSense for better coding accuracy
- Integrated terminal for running Node.js servers
- Git integration for version control and collaboration
- Debugging tools for identifying and fixing errors quickly

➤ MySQL Workbench

MySQL Workbench is used for designing and managing the system's database. It offers tools for creating ER diagrams, writing SQL queries, and monitoring database performance. Main benefits include:

- Visual schema design and database modeling
- Query building and testing environment
- User account and permission management
- Performance monitoring and optimization

REQUIREMENT AND ANALYSIS

3.1 Problem Definition

The current system used by the interior designer is completely manual and paper-based. Most of the work, such as maintaining client records, preparing quotations, tracking material details, and managing project expenses, is done using registers or Excel sheets. When a new quotation or project needs to be created, the designer has to go through multiple files or spreadsheets to find relevant data, which consumes a lot of time and increases the chances of human error.

There is no centralized system for storing or retrieving client or project information, making it difficult to maintain organized records. Updating item prices or modifying an existing quotation requires starting from scratch, which leads to repetitive work. The manual process of calculating costs, taxes, and discounts also makes the quotation process slow and prone to mistakes.

As the number of clients and ongoing projects increases, it becomes more complicated to track progress, expenses, and profitability. The lack of automation not only reduces efficiency but also affects client satisfaction and overall business productivity. Hence, a computerized system is required to streamline all business operations and eliminate dependency on manual record-keeping.

3.2 Requirement Specification

Management System for Interior Designer allows the designer (admin) to log into the system securely and manage all business operations in one place. The admin can store and organize client details such as name, contact, and project requirements in the database. The system also helps in managing materials, quotations, and ongoing projects efficiently.

The designer can create new quotations for clients by selecting materials, applying room-wise costing, and adding taxes or discounts automatically. Once the quotation is approved, it can be converted into a project for tracking progress, expenses, and completion status. The system also stores all previous quotations and projects, which can be easily accessed and reused when needed.

The application provides features to monitor project expenses, manage material updates, and generate professional reports or invoices for clients. If required, a quotation or invoice can also be downloaded or printed as a hard copy.

For developing this system, the following technologies and tools are used:

- Frontend: React.js with Tailwind CSS
- Backend: Node.js with Express.js
- Database: MySQL
- PDF Generation: jsPDF or PDFKit
- Code Editor: Visual Studio Code

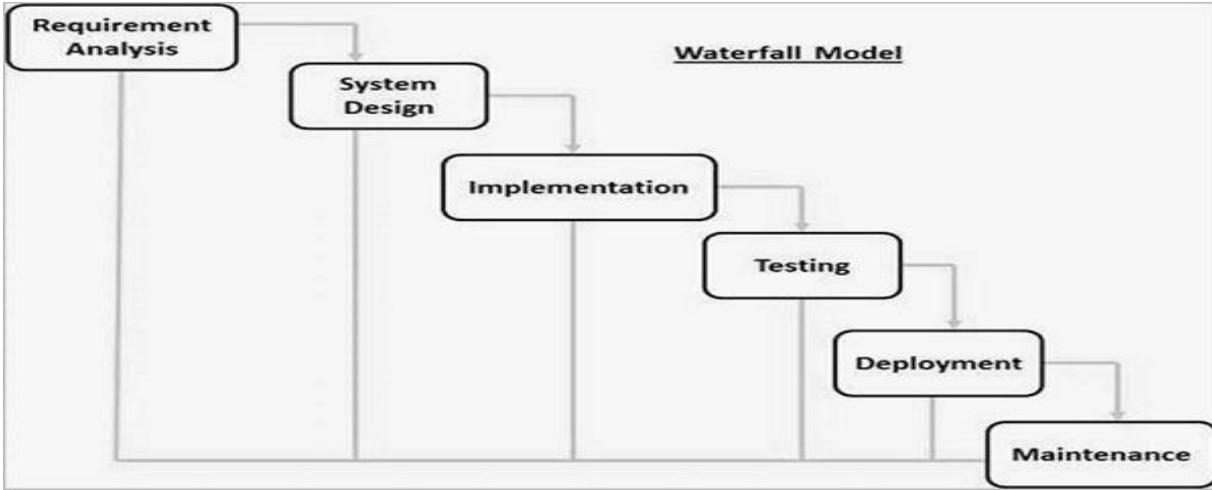
3.3 Planning and Scheduling

3.3.1 Project Life Cycle

Software Development Life Cycle (SDLC) is a process used to design, develop and test high quality software. The SDLC aims to produce a high-quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates.

➤ Waterfall Model

The Waterfall Model is selected as the development model for this project because it provides a well-structured and step-by-step approach. This model is ideal since all requirements are clearly defined, and the project scope is not expected to change frequently. Each phase must be completed before moving to the next, which ensures accuracy and proper documentation. It also aligns well with academic project requirements and provides clear checkpoints for progress tracking.



➤ Phases of Waterfall Model

1. Requirements Definition Phase

- Collected and documented all client needs and project requirements.
- Prepared the Software Requirement Specification (SRS).
- Finalized features such as quotation management, project tracking, expense logging, and staff management.

2. System and Software Design Phase

- Designing system architecture and database structure.
- Preparing user interface layouts and screen flow diagrams.
- Creating detailed technical documentation and test plans.

3. Implementation Phase

- Developing the frontend using React for user interface.
- Implementing backend logic with Node.js/Express and database integration (MySQL or MongoDB).
- Integrating all modules such as quotations, clients, and project tracking.
- Performing basic unit testing of each module.

4. Testing Phase

- Conducting integration and system testing.

- Executing user acceptance tests to ensure all requirements are met.
- Fixing any bugs and verifying system stability.

5. Deployment Phase

- Setting up the software in a real or simulated production environment.
- Importing initial data (clients, projects, materials, etc.).
- Conducting client training sessions.
- Preparing final documentation and presenting the working system.

6. Maintenance Phase

- Providing post-deployment support and updates.
- Fixing newly identified issues or adding small improvements.
- Ensuring long-term reliability and scalability of the system.

3.3.2 Gantt Chart

The Gantt chart shows the complete project timeline for the Management System for Interior Designer. It provides a clear view of all major phases such as requirement gathering, system design, development, testing, and deployment. The chart helps to plan and monitor the progress of each task according to the schedule. It also shows dependencies between tasks, ensuring that each phase is completed before the next begins. Important milestones, like the completion of the design and implementation stages, are clearly marked. This helps the team identify delays, manage resources effectively, and ensure that the project stays on track and is completed within the planned duration.

Management System for Interior Designer

GANTT CHART

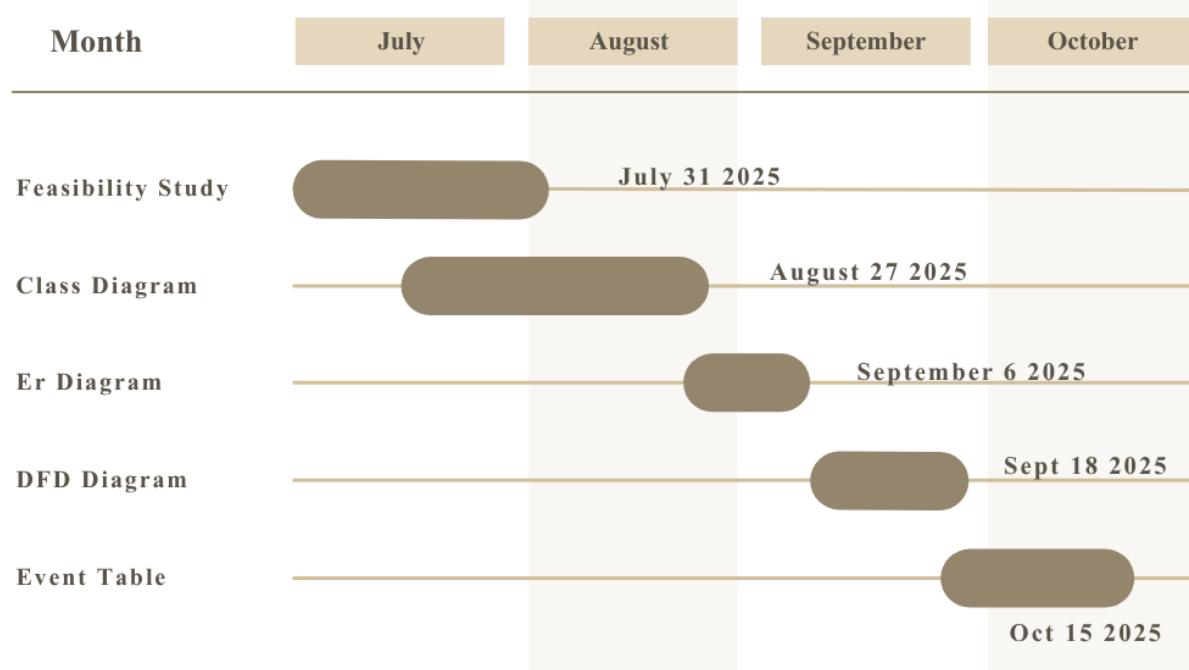


Fig 3.2 Gantt Chart

3.4 Software and Hardware Requirement

➤ Software Requirements:

- OS: Windows 8 or higher
- Frontend: React.js with Tailwind CSS
- Backend: Node.js with Express

- Database: MySQL/ MySQL Workbench
- Browser: Chrome, Edge, or Firefox

➤ **Hardware Requirements:**

- Processor: Intel Core i3 or higher
- RAM: Minimum 4 GB
- Hard Disk: Minimum 100mb free space

3.5 Event Table

Sr. No.	Event	Trigger	Source	Activity	Response	Destination
1	Login	Login	Admin	Validate username and password	Dashboard displayed if valid, else error message	Dashboard
2	Create Quotation	Create	Admin	Enter quotation details	Quotation created	Quotation Detail
3	Update Quotation	Update	Admin	Modify existing quotation details	Quotation updated	Quotation Detail
4	Delete Quotation	Delete	Admin	Remove quotation	Quotation deleted	Quotation List
5	Add Client	Add	Admin	Enter new client details	Client record stored	Client List
6	Edit Client	Update	Admin	Modify existing client details	Client details updated	Client List

7	Delete Client	Delete	Admin	Remove client record	Client deleted	Client List
8	Add Room	Add	Admin	Insert room name	Room added	Quotation Detail
9	Add Material	Add	Admin	Enter material name, cost, and unit	Material added	Quotation Detail
10	Edit Material	Update	Admin	Modify material details	Material data updated	Quotation Detail
11	Delete Material	Delete	Admin	Remove material	Material deleted	Quotation Detail
12	Generate Quotation Report	Generate	Admin	Summary of quotation rooms, materials, and totals	Report displayed	Quotation summary
13	Create Project	Add	Admin	Create project using quotation info	Project created	Quotation Detail View
14	Edit Project	Update	Admin	Update project details	Project information updated	Project Detail
15	Delete Project	Delete	Admin	Remove project record	Project removed	Project List
16	Add Expense to Project	Add	Admin	Enter expense details (amount, description, date)	Expense saved	Project Detail

17	Manage Tasks	Add	Admin	Add, assign, edit, or mark tasks complete	Task list updated	Project Detail
18	Add Notes to Project	Add	Admin	Enter notes	Notes stored with date/time	Project Detail
19	Generate & View Project Report	Generate	Admin	Summarize project cost, progress, tasks, expenses	Report displayed	Project Summary
20	Logout	Logout	Admin	Logging out	Navigate to login page	Login page

SYSTEM DESIGN

4.1 System Modules:-

The Management System for interior designer is structured into several core modules to handle the workflow of an interior designer efficiently. Each module serves specific business functions and integrates with others.

4.1.1 Authentication & Authorization Module

- **User Login System:** Securely logs the designer into the system.
- **Session Management:** Uses JWT tokens to manage user sessions after login.
- **Password Security:** Stores passwords securely using bcrypt hashing

4.1.2 Client Management Module

- **Client Information Management:** Add, view, edit, and delete client records (name, contact info, address).
- **Client Search & Filter:** Ability to search for specific clients.

4.1.3 Material Library Module

- **Material Catalog:** Manages a central library of materials (tiles, electrical etc.).
- **Add/Edit/Delete Materials:** Allows the admin to manage the material list.
- **Material Details:** Stores name, category, cost, unit etc.

4.1.4 Quotation Management Module

- **Quotation Creation:** Generate new quotations with title, status, and link to materials/rooms.
- **Add Rooms/Items:** Add room and add material items with quantities.
- **Cost Calculation:** Automatically calculates total amounts based on materials and quantities.
- **Edit/Delete Quotations:** Manage existing quotations.

4.1.5 Project Management Module

- **Project Creation:** Create projects linking them to clients or converting from quotations.
- **Project Details Management:** Track project status, deadlines, client info.
- **Expense Tracking:** Add and manage expenses related to specific projects.
- **Task Management:** Create, assign (if needed), and track project tasks.
- **Notes:** Add project-specific notes and updates.

4.1.6 Reporting Module

- **Quotation Reports:** Generate printable/viewable summaries of quotations.
- **Project Reports:** Generate reports summarizing project costs, expenses, tasks, and progress

4.2 Data Design:-

The data design outlines the structure and relationships of the data stored within the system. This design fits the data into a relational database model (MySQL).

Management System for Interior Designer contains key tables managing admin, clients, materials, rooms, quotations, and projects.

- **Users table –**

Stores login information for the system user (the designer/admin).

Field	Data Types	Constraints
id	INT	Primary Key, AUTO_INCREMENT
username	VARCHAR(100)	Not Null, Unique
password	VARCHAR(255)	Not Null

- **clients table –**

Manages information about the designer's clients.

Field	Data Types	Constraints
id	INT	Primary Key, AUTO_INCREMENT
name	VARCHAR(100)	Not Null
email	VARCHAR(100)	Unique
phone	INT	Not Null
address	VARCHAR(100)	Not Null

- **Materials table –**

Core table storing details for the global material library.

Field	Data Types	Constraints
id	INT	Primary Key, AUTO_INCREMENT
name	VARCHAR(255)	Not Null
category	VARCHAR(100)	Not Null
unit	VARCHAR(100)	Not Null
price_per_unit	DECIMAL(10,2)	Not Null

- **Quotations table –**

Stores header information for each quotation.

Field	Data Types	Constraints
id	INT	Primary Key, AUTO_INCREMENT
title	VARCHAR(255)	Not Null
status	ENUM('Draft', 'Approved')	Not Null, DEFAULT 'Draft'
total_amt	DECIMAL(12,2)	Not Null
client_id	INT	Foreign Key (clients.id)
created_at	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP
updatedAt	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP

- **projects table –**

Manages high-level information about each interior design project.

Field	Data Types	Constraints
id	INT	Primary Key, AUTO_INCREMENT
name	VARCHAR(255)	Not Null
client_id	INT	Foreign Key (clients.id)
status	ENUM('Active', 'Completed')	Not Null, DEFAULT 'Active'
start_date	DATE	
end_date	DATE	
expense	DECIMAL(12,2)	
created_at	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP
updated_at	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP
notes	VARCHAR(100)	
progress	VARCHAR(100)	

4.3 Data Integrity and Constraints –

➤ Primary Key Constraints

- All primary tables (admin, clients, materials, quotations, projects) use an AUTO_INCREMENT id as the Primary Key.
- This guarantees each record has a unique identifier.

➤ Foreign Key Constraints

- quotations.client_id references clients.id to link quotations to clients.

- projects.client_id references clients.id to link projects to clients.

➤ Data Validation

- NOT NULL: Ensures essential fields like names, titles, email, address.
- UNIQUE: Prevents duplicate client emails.
- ENUM: Restricts status fields to predefined values (e.g., 'Draft', 'Approved').
- DECIMAL: Used for financial values (price_per_unit, totalamt, expense) to maintain precision.
- DEFAULT VALUES: Automatically set created_at timestamps and default statuses.

➤ Business Logic Constraint

- Calculated totals (quotations.totalamt, projects.expense) should accurately reflect item prices and quantities.
- Project end_date should logically be after start_date.

4.4 Logic Diagram

Logic diagrams illustrate how the system operates and makes decisions during various business processes. They use symbols such as AND, OR gates, and decision nodes to represent rules and conditions. These diagrams visually map how data moves through operations like client management, quotation creation, project tracking, and expense calculation. They also depict error handling paths and exceptions, helping developers understand complex conditional workflows. Overall, logic diagrams serve as a blueprint for implementing business rules accurately, ensuring smooth and error-free operation throughout the system.

4.4.1 Class Diagram

A class diagram provides a structural view of the system by showing classes, their attributes, methods, and relationships. It defines the entities present in the system, the data they hold, the operations they perform, and how they interact.

In this system, the class diagram maps key entities such as Clients, Projects, Materials, and Quotations, and illustrates their relationships. For example, a Client can have multiple Projects, each Project can include multiple Materials, and each Quotation is linked to a specific Project and Client. This visual representation ensures proper alignment between the database schema and the code structure, clarifies business rules like cost calculations, material assignments, and report generation, and prevents design inconsistencies. By providing a clear reference for developers before implementation, it ensures a robust, maintainable, and scalable system architecture.

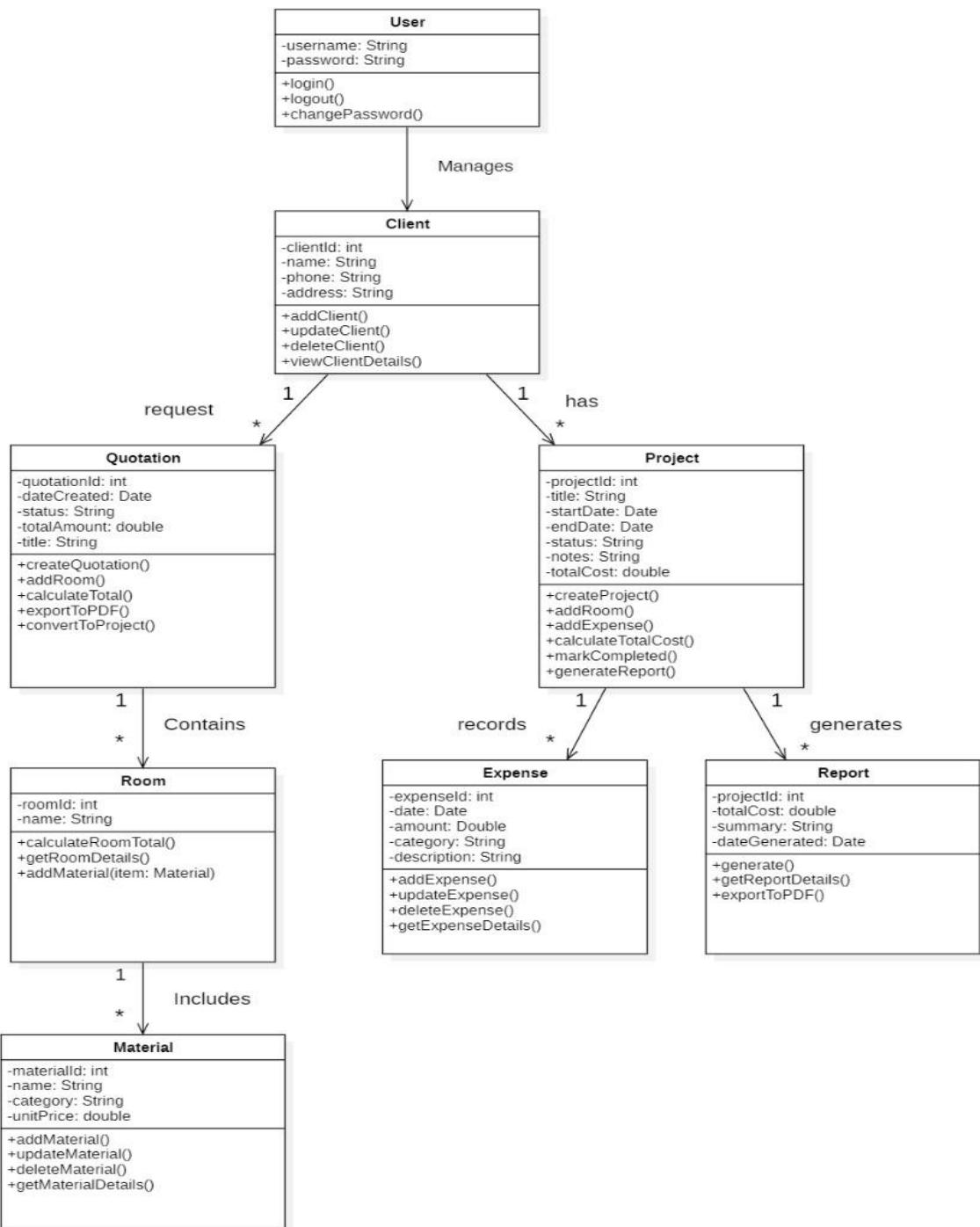


Fig 4.1 Class Diagram

4.4.2 ER Diagram

The Entity-Relationship (ER) Diagram illustrates the main functionalities of the Management System for Interior Designer and shows how the system manages data for interior design projects. The primary entities in the system are Clients, Projects, Materials, and Quotations.

A single Client can have multiple Projects, and each Project can include multiple Materials assigned to different rooms. Quotations are connected to both Clients and Projects, allowing the designer to create detailed and accurate estimates for each project. The system also keeps track of Project Expenses, helping to monitor costs, discounts, taxes, and overall profitability.

The relationships between these entities ensure that all data is organized and easy to access, allowing the designer to quickly retrieve past quotations, manage ongoing projects, and generate professional reports. This ER Diagram provides a visual representation of how information flows and is stored in the system, ensuring smooth management of all operations from initial client contact to project completion.

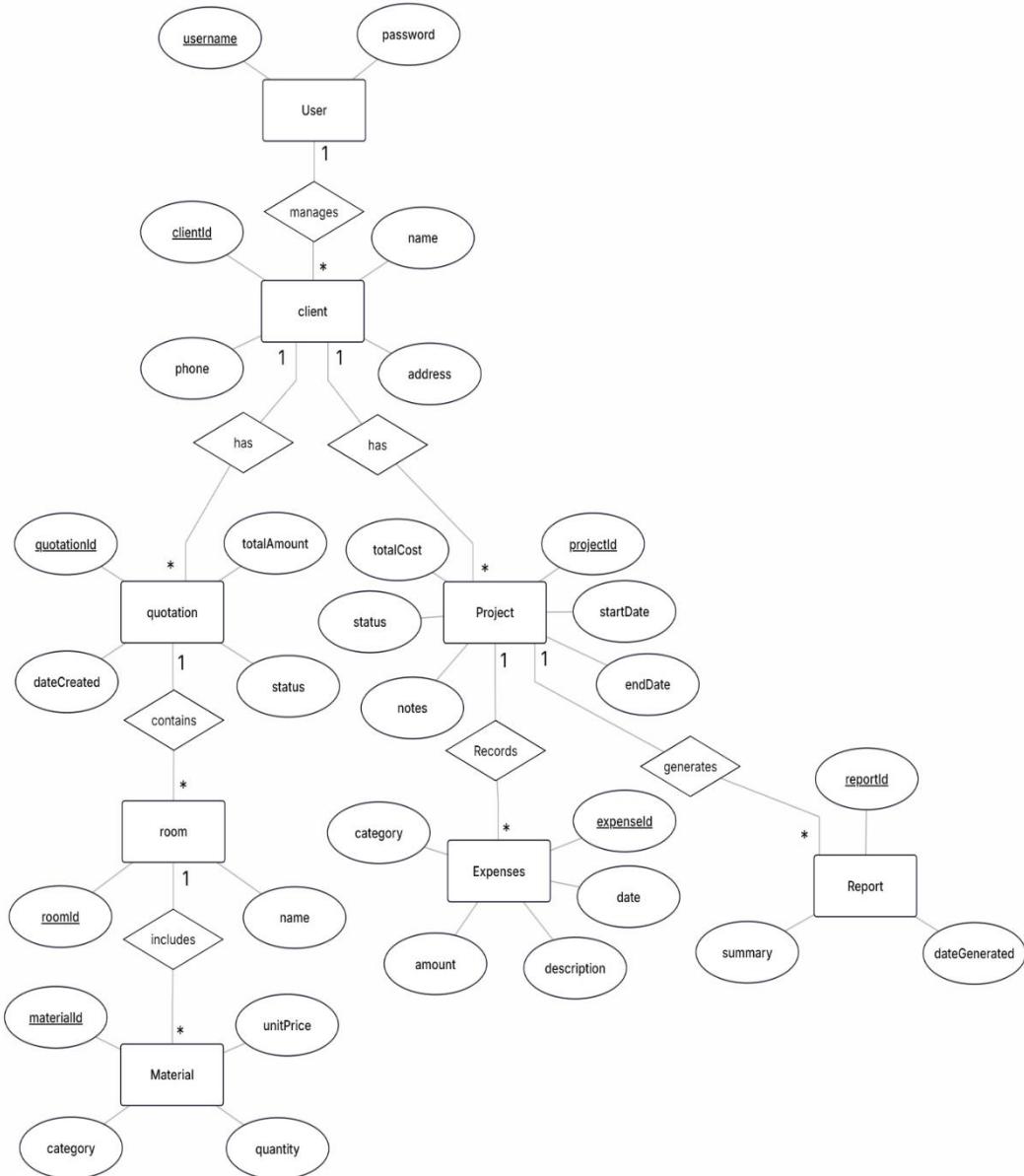


Fig 4.2 ER diagram

4.4.3 Use case Diagram

Use case diagrams show the system's functionality from the user's perspective, illustrating how the Designer interacts with the system to perform tasks like Client Management, Project Tracking, Material Management, Quotation Generation, and Expense Monitoring. They highlight dependencies, such as creating a quotation leading to project creation or updating expenses affecting profitability reports, while system boundaries define the scope of operations from initial client contact to final project completion. These diagrams help stakeholders understand system capabilities clearly without technical details and ensure all user requirements are captured effectively.

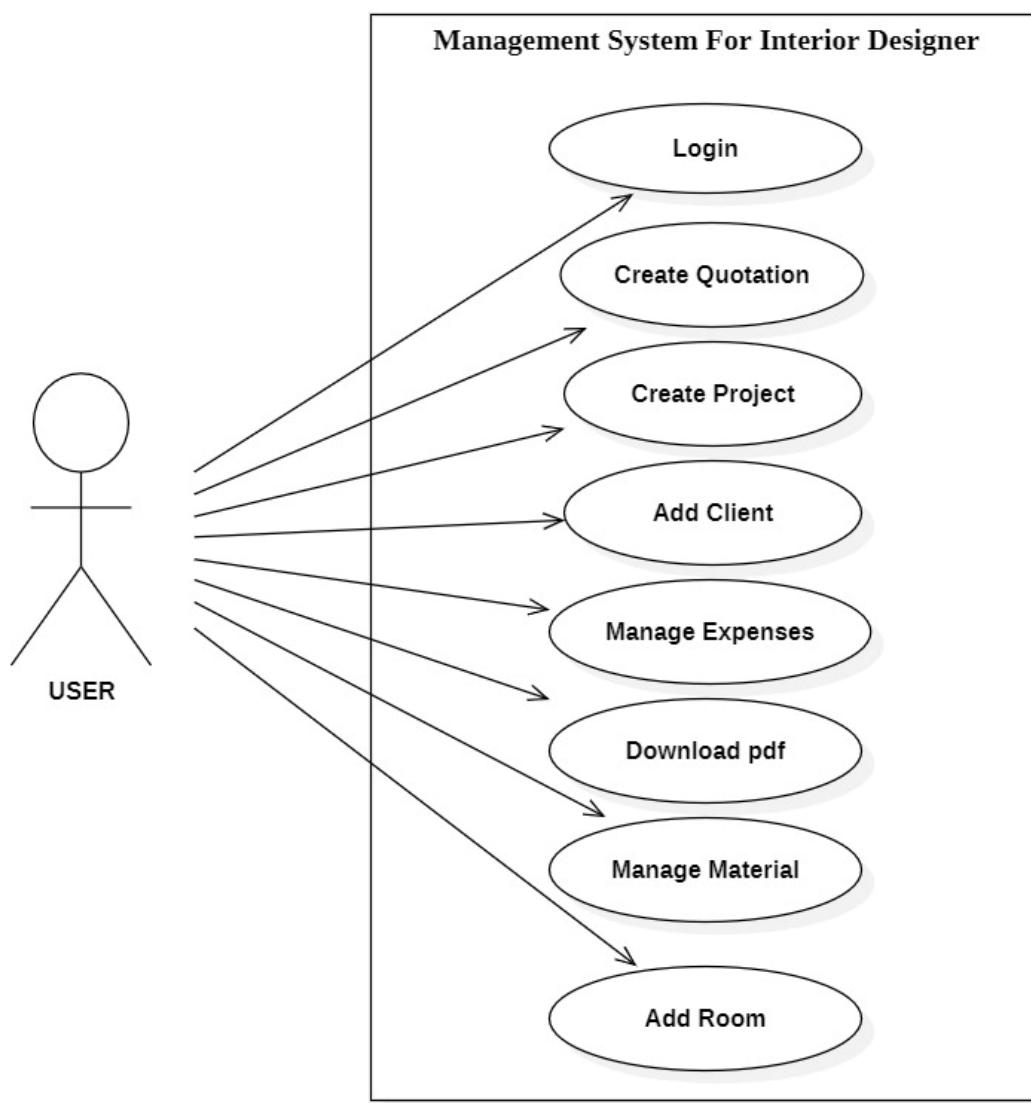


Fig 4.3 Use case diagram

4.4.4 Activity Diagram

Activity diagrams model the workflow and sequence of operations in the system, illustrating how tasks are executed from start to finish. They show parallel processes, such as updating project details while generating quotations, and include decision points for business rules like material availability or project approval. Swim lanes organize activities primarily by the Designer and the System, providing a clear view of responsibilities. These diagrams detail scenarios from login and client management to project tracking and report generation, helping the designer understand system behavior and interactions within the single-user environment.

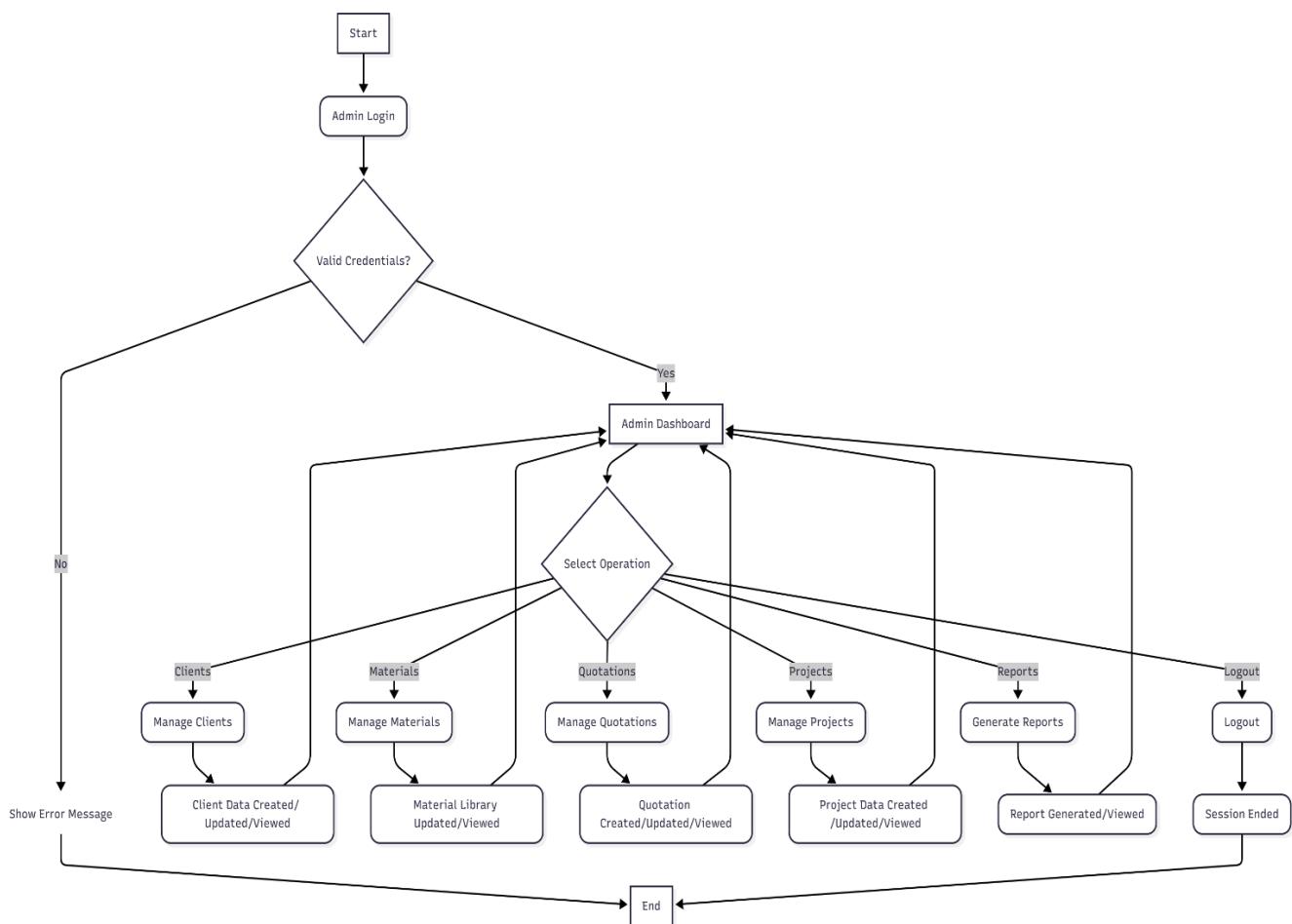


Fig 4.4 Activity diagram

4.4.3 Data-flow Diagram

Data Flow Diagrams (DFDs) illustrate how information moves through the Management System for Interior Designer, showing interactions between processes, data stores, and external entities. Level 0 DFD represents the system as a single process with major data flows, while Level 1 DFD breaks it into subprocesses such as client management, project tracking, material management, and quotation generation. Data stores correspond to database tables like Clients, Projects, Materials, and Quotations.. DFDs help visualize how data is processed, stored, and exchanged, providing a clear overview of system operations and information handling.

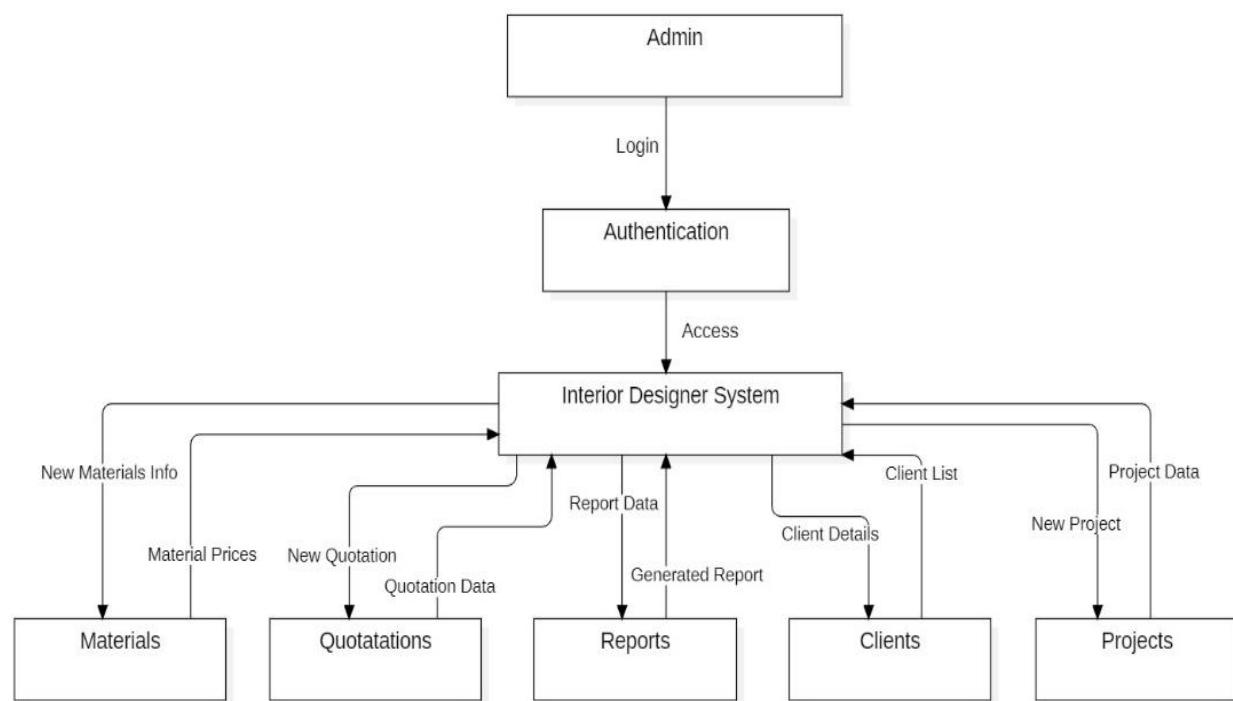


Fig 4.5 Data-flow diagram

4.5 Security Issues

In the Management System for Interior Designer, security concerns include weak authentication mechanisms such as simple passwords or lack of two-factor authentication. Improper access controls could allow unauthorized users to view or modify sensitive client, project, or financial data. Data encryption gaps may expose client details, quotations, or project expenses. Input validation vulnerabilities, such as SQL injection, could compromise the database storing client, project, and material information. Session management issues might allow unauthorized access to ongoing projects.

4.6 Test Case Design

Sr. No	Action	Input	Expected Output	Actual Output	Test Result	Test Comment
1	Launch Application	Click on system icon	Login Page displayed	Login Page displayed	Pass	Successful
2	Enter Valid Admin Credentials	Username: admin, Password: admin063	Admin Dashboard displayed	Admin Dashboard displayed	Pass	Successful
3	Enter Invalid Admin Credentials	Username: user, Password: 0000	Error: Invalid Username or Password	Error message displayed	Pass	Successful
4	Add New Client	Enter client details	Client added successfully	Client added successfully	Pass	Successful
5	Add Client with Missing Data	Leave Name field empty	Error message displayed	Error message displayed	Pass	Successful
6	Create New Project	Enter project details	Project created successfully	Project created successfully	Pass	Successful
7	Create Project with	Leave Project Name empty	Error message displayed	Error message displayed	Pass	Successful

	Missing Data					
8	Add Materials to Project	Enter all material details	Material added successfully	Material added successfully	Pass	Successful
9	Add Material with missing data	Leave Unit field empty	Error message displayed	Error message displayed	Pass	Successful
10	Add room to Quotation	Select room	Room added successfully	Room added successfully	Pass	Successful
11	Search Client	Enter client name	Matching client displayed	Matching client displayed	Pass	Successful
12	Update Project Details	Edit project information	Project updated successfully	Project updated successfully	Pass	Successful
13	Delete Project	Select a project and click delete	Project deleted successfully	Project deleted successfully	Pass	Successful
14	Generate Summary report	Select project	Report generated successfully	Report generated successfully	Pass	Successful
15	Download PDF	Click download button	PDF downloaded	PDF downloaded	Pass	Successful
16	Admin Logout	Click Logout	Redirected to Login Page	Redirected to Login Page	Pass	Successful