Chapter 4

4.1 Design Goal

Our project objective is to create a reliable and easy to use solution effectively addresses the specific issue outlined in the problem statement while meeting all designated requirements. Throughout the design process, emphasis will be placed on achieving optimal performance, dependability, and ease of maintenance, as well as meeting the needs and expectations of users.

4.1.1. Performance Criteria

The project performance standards entail ensuring that the system responds promptly to user commands, efficiently accommodates multiple simultaneous users, and maintains a high level of throughput. In order to provide a smooth and uninterrupted user experience, we will strive to optimize resources allocation and minimize response times.

When designing the system, it is crucial to consider the end users and prioritize creating an intuitive interface to ensure user- friendliness. By taking the needs and preferences of end users into account during the design process, we can create a system that is easy to use and meets their expectations

In addition to user-friendliness, the design process should also focus on optimizing system performance. To achieve this, we will explore various methods and approaches during the design stages that can help ensure the systems effectiveness. By assessing factors such as resource allocation, load balancing, and system architecture, we can identify areas for improvement and implement solutions to optimize system performance.

4.1.2 Dependability Criteria

Dependability is a critical aspect of our project, and therefore, we have prioritized designing a system that is both highly reliable and fault-tolerant. To archive this, we will implement redundant components, error-handling tools. These measures will ensure that the system remains operational even in the event of failures or interruptions.

Our ultimate goal is to create a system that can provide uninterrupted service to end users, and by incorporating these dependability features, we can minimize the risk of system downtime and maintain system availability

4.1.3 Maintenance Criteria

To simplify maintenance and updates, the team will design the system with modularity and documentation in mind. This will involve the industry best practice to ensure that the system can be easily modified and expanded without causing interruptions.

By prioritizing modularity and documentation, we can streamline the maintenance process and reduce system downtime. Additionally, this approach will make the system simpler to administer, which will ultimately result is better system performance and improves end user satisfaction

4.2 Deployment Diagram

For any system design to be successful, we need to choose a definite architecture pattern that is suitable for the system from every aspect. An Architectural Pattern is a general, reusable solution to a commonly occurring problem in software architecture within a given context.

There are various types of architectural patterns of which, we followed the Three-tier architecture pattern, separating applications into three logical and physical computing tiers, and is the predominant software architecture for client-server applications.

For the proposed system we used MERN stack, which is a full stack web development framework, following the three-tier architectural pattern. MERN stands for MySQL, Express, React, and Node, after the four key technologies that make up the stack.

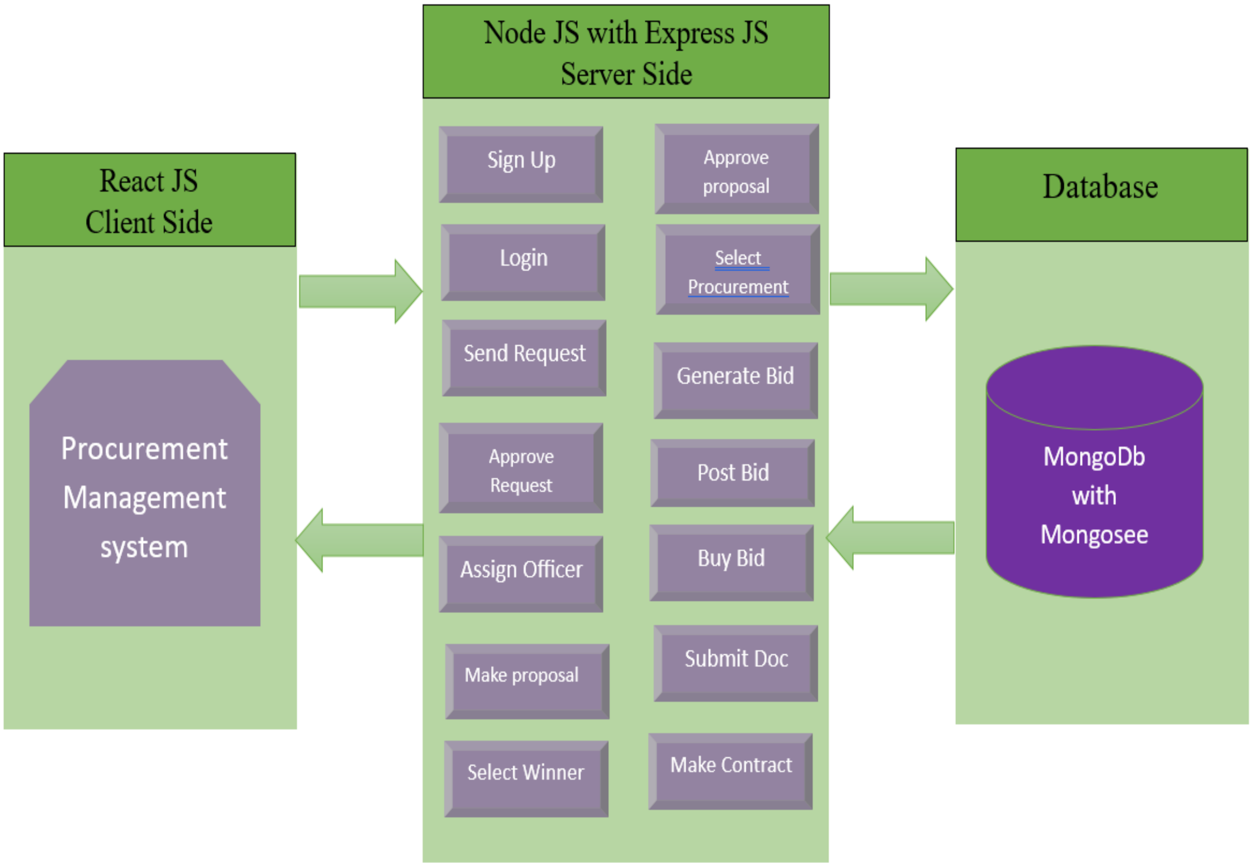
- MySQL— relational database

- Express(.js) — Node.js web framework

- React(.js) — a client-side JavaScript framework

- Node(.js) — the premier JavaScript web server

The MERN architecture allows you to easily construct a three logical and physical computing tiers, including the front-end display tier (React.js), application tier (Express.js and Node.js), and database tier (MongoDB) entirely using JavaScript and JSON



4.3 The Architecture of the system

The procurement project aims to effectively manages the purchasing of goods and services while ensuring cost efficiency and compliance with regulations. To achieve this, we will adopt the model-view-controller (MVC) architecture for the system design.

MVC architecture separates the system into three interconnected components the model, which represents the data and business logic of the system, the view, which is responsible for presenting the data to users in a user-friendly way, and the controller, which handles user input and interacts with both the model and view components.

By adopting the MVC architecture, we can achieve greater flexibility and modularity in the system design, which will simplify maintenance and updates.

Additionally, this architecture allows for clear separation of concerns, making it easier to develop and test individual components of the system. One of the key benefits of using the MVC architecture for the procurement project is that it allows for greater flexibility in the development process. By separating the system into distinct components, developers can work on individual parts of the system without disrupting the overall functionality. This result is more efficient development process, as changes can be made to specific components without affecting the rest of the system.

The MVC architecture promotes code reusability, as each component can be reused in different parts of the system. This means that developers can save time by not having to write new code for each component, resulting in a quicker and more efficient development process

Another advantage of the MVC architecture is that it provides a clear separation of concerns between the Model, View, and Controller components. This separation makes it easier to identify and fix issues within the system, as each component has a specific responsibility. This separation makes it easier to scale the system, as each component can be scaled independently of the others

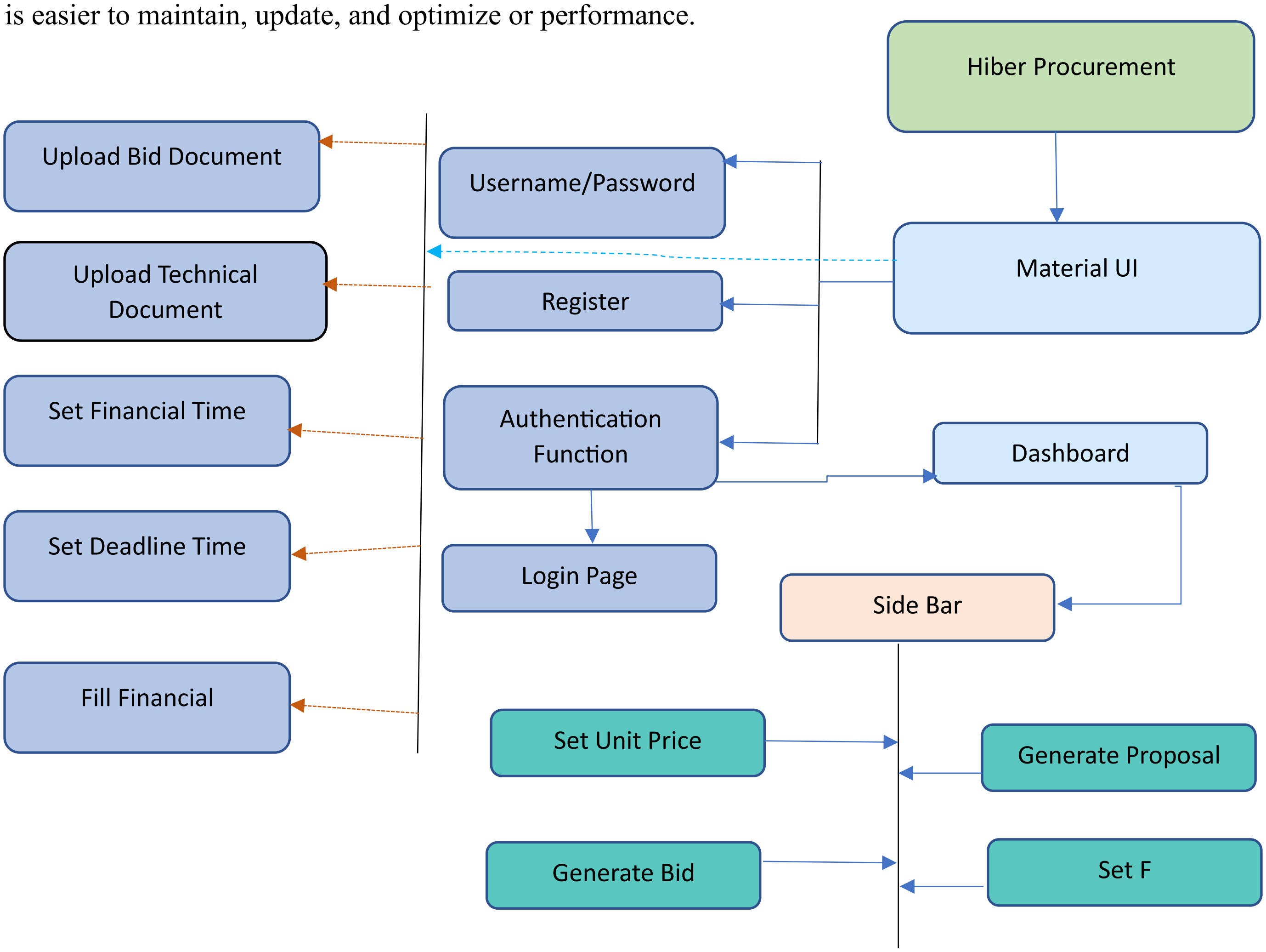
Overall, the adoption of the MVC architecture fir the procurement project will result in a system that is scalable, flexible, and easy maintain, and will benefit from the adoption of the MVC architecture, which will enable us to create a robust and scalable system that meets the needs of the organization while providing a user-friendly interface for end users

4.4 System Components

To ensure that our system is comprehensively designed, we will include several components such as hardware devices, software modules, databases, external interfaces, and communication channels. Each component will be documented in detail to provide a clear understanding of its role within the system.

This documentation will be instrumental in facilitating the systems design, implementation, and maintenance. It will provide a roadmap for developers and stakeholders to follow, making it easier to identify ad resolve issues within the system. Additionally, the documentation will provide a reference point for future updates and modification to the system.

By documenting each component, we can create well-organized and efficient system. This will also help to streamline the development process, as developers can refer to the documentation process, as developer's cam refer to the documentation to understand each components function and interconnection with other components, ultimately, this approach will result in a system that is easier to maintain, update, and optimize or performance.


Hiber Procurement
Upload Bid Document
Username/Password
Material UI
Upload Technical Document
Register
Set Financial Time
Authentication Function
Dashboard
Set Deadline Time
Login Page
Side Bar
Fill Financial
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Generate Proposal
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