 <b>Marwadi University</b> Marwadi Chandarana Group	<b>Marwadi University</b> <b>Faculty of Engineering and Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: CP</b>	<b>Aim: System Design and Architecture</b>	
	<b>Date: 25-09-2025</b>	<b>Enrolment No: 92310133002</b>

## 1. Introduction

The FinSecure platform has been designed as a web-based solution that simplifies insurance planning and financial guidance for users. The architecture follows a modular and layered design approach to ensure flexibility, scalability, and maintainability. The system is divided into independent components, each responsible for a specific function such as premium calculation, user interaction, form handling, and deployment. This approach ensures that changes in one module do not disrupt others, making the system more reliable and easier to extend in the future.

## 2. Modular Design

The system is structured into the following modules:

1. User Interface (Frontend Module): Developed with TypeScript and styled with Tailwind CSS. Provides interactive pages such as Home, Life Insurance, Health Insurance, General Insurance, and Get Quote.
2. Premium Calculation Module: Contains static formulas for calculating life, health, and general insurance premiums. Implemented as reusable utility functions (calculation.ts).
3. Form Handling Module: Collects user input through structured forms and uses Formspree to securely forward submissions without a backend.
4. Deployment Module: Hosted on Vercel, connected directly to the GitHub repository, enabling automatic builds and redeployment.

Benefits of Modularity:

- Maintainability: Developers can work on one module without affecting the others.
- Reusability: Premium calculation logic can be reused in other financial projects.
- Extensibility: Additional features can be added without rewriting existing code.


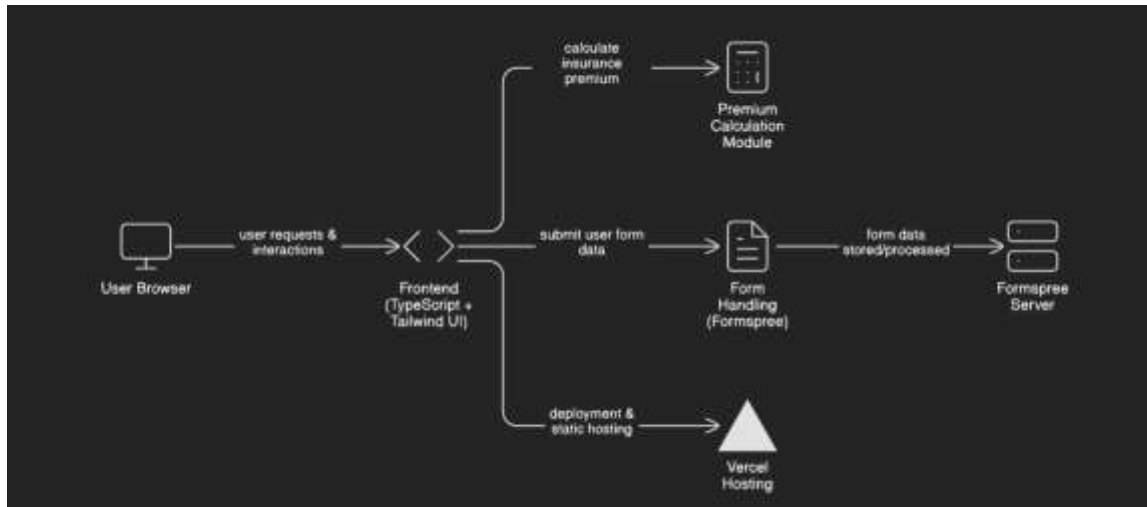
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Figure 1: System Architecture Diagram



### 3. Technology Stack

- Programming Language: TypeScript (ensures type safety and reduces runtime errors).
- Framework & Styling: React with TypeScript and Tailwind CSS (for modularity and responsive design).
- Form Handling: Formspree (secure, serverless form submissions without backend setup).
- Deployment Platform: Vercel (integrates with GitHub, supports automatic builds and scaling).
- Version Control: Git + GitHub (collaboration and transparent commit history).

Justification: According to a 2023 Stack Overflow Developer Survey, TypeScript and React are among the most widely used technologies for frontend development. Vercel is widely adopted for serverless hosting, making it suitable for lightweight web applications.

### 4. Scalability Plan

While the current system is designed as a lightweight student prototype, provisions have been made to ensure it can scale to meet future demands.

Potential Bottlenecks & Solutions:

- User Load on Frontend: Use Vercel's automatic scaling and CDN for faster delivery.
- Form Handling via Formspree: Free plan may limit submission volume. Upgrade to Pro or integrate a backend database (e.g., Firebase).
- Premium Calculation: Currently static. Extend into a serverless function for large-scale use.

Scalability Strategies:

1. Horizontal Scaling: Vercel's serverless infrastructure handles increased requests automatically.
2. Caching Mechanisms: Cache repeated premium calculation results.
3. Load Balancing: If backend is added, use AWS ELB or Nginx.
4. Cost & Performance Balance: Start with free-tier services and scale gradually.


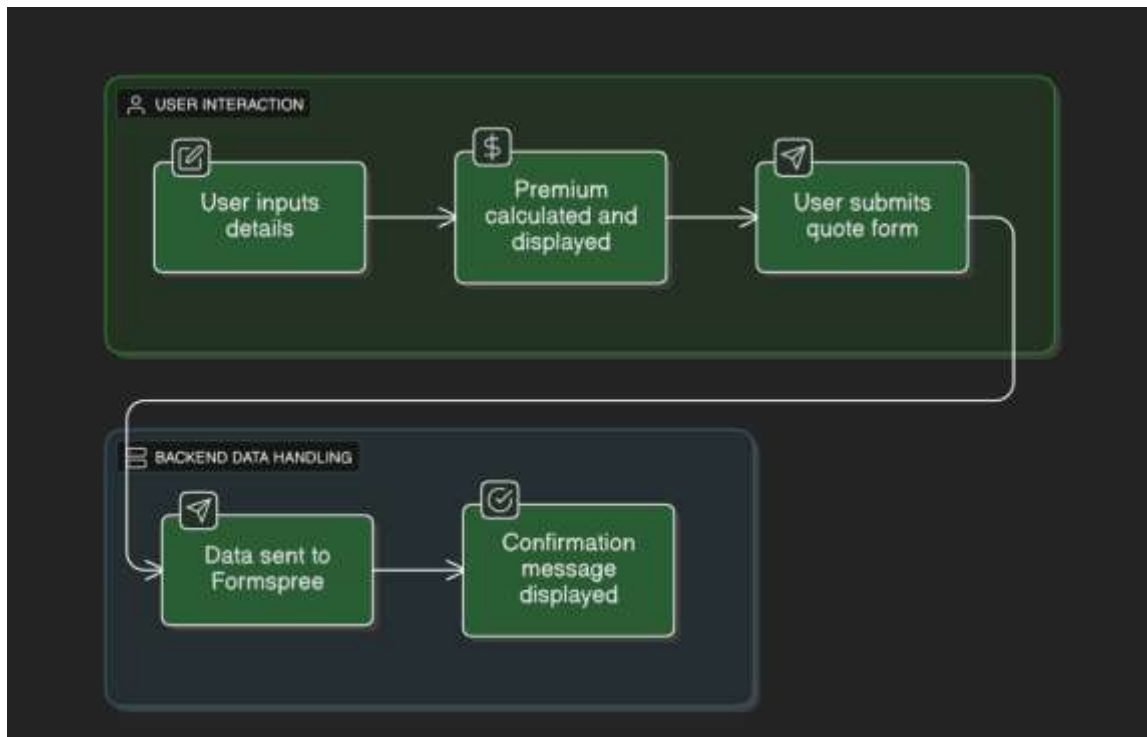
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Figure 2: Data Flow Diagram



## 5. Conclusion

The FinSecure system has been designed with a modular architecture, reliable technology stack, and a clear scalability plan. By separating concerns into distinct modules, the platform achieves maintainability and flexibility. The chosen technology stack ensures rapid development and easy deployment, while scalability measures guarantee the system's ability to handle future growth. This design not only addresses the current requirements of simplifying insurance planning but also lays the foundation for integrating advanced features such as authentication, database-driven premium calculations, or AI-based recommendations in the future.