

# FINTRACK: Personal Finance Management System Using Web Technologies

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**Abstract:** *In today's fast-paced digital world, managing personal finances efficiently has become increasingly important. Individuals often struggle to track income, expenses, savings, and financial goals due to the lack of simple and accessible tools. Traditional methods such as manual record-keeping or spreadsheets are time-consuming, error-prone, and lack real-time insights.*

*This project presents FinTrack, a web-based Personal Finance Management System developed using modern web technologies. The system enables users to record financial transactions, categorize expenses, monitor income, and visualize financial data through interactive dashboards. The application follows a full-stack architecture using HTML, CSS, and JavaScript for the frontend, Node.js with Express for backend services, and SQLite for database management.*

*The system implements secure user authentication using JSON Web Tokens (JWT) and bcrypt-based password hashing. Data communication between client and server is handled using JSON-based APIs. Visualization tools such as Chart.js are used to present financial insights through charts and graphs.*

*The proposed system improves financial awareness, simplifies expense tracking, enhances decision-making, and provides a scalable and user-friendly solution for personal finance management.*

**Keywords:** Personal Finance, Expense Tracking, Web Application, Node.js, Express, SQLite, JWT Authentication, Chart.js, Financial Dashboard

## I. INTRODUCTION

In the modern digital era, individuals manage multiple financial activities such as income tracking, expense management, savings planning, and budgeting. However, many people lack efficient tools to monitor their financial activities in real time. This often leads to poor financial planning, overspending, and lack of savings awareness.

Traditional finance management methods such as notebooks or spreadsheets require manual effort and do not provide automated insights or visualization. With increasing digitalization, there is a growing need for simple, secure, and intelligent systems that can help users manage their finances effectively.

The FinTrack Personal Finance Management System addresses this problem by providing a web-based solution that enables users to track financial transactions, visualize spending patterns, and manage their finances efficiently using an interactive dashboard.

## II. OBJECTIVES OF THE STUDY

The major objectives of the proposed system are:

- To design a web-based personal finance management system
- To enable users to track income and expenses efficiently
- To store financial data securely using SQLite database



- To implement user authentication using JWT and bcrypt
- To develop an interactive dashboard using Chart.js
- To provide real-time financial insights through visualizations
- To simplify financial record-keeping and analysis
- To reduce manual effort in personal finance tracking
- To ensure secure and scalable system architecture
- To improve financial awareness and decision-making

### **III. LITERATURE SURVEY**

Previous research highlights the importance of financial management systems in improving personal and organizational financial decision-making.

Puschmann (2017) discussed the evolution of digital finance systems and emphasized the role of web applications in financial tracking and user engagement.

Tilkov and Vinoski (2010) explained the importance of RESTful APIs in modern web applications, which support scalable communication between frontend and backend systems.

Fielding (2000) introduced REST architecture, which forms the foundation for modern API-based communication used in this project.

SQLite documentation highlights its efficiency as a lightweight, serverless database suitable for small to medium-scale applications.

Existing finance applications often lack simplicity, customization, and privacy. This project addresses these limitations by providing a lightweight, secure, and user-friendly finance tracking system.

### **IV. PROBLEM DEFINITION**

Managing personal finances manually is inefficient and prone to errors. Many individuals find it difficult to track daily expenses, categorize spending, and analyze financial patterns.

Existing applications may be complex, require subscriptions, or compromise user privacy. Additionally, many systems do not provide real-time insights or simple visualization tools for better understanding.

Therefore, there is a need for a simple, secure, and efficient personal finance management system that enables users to track, store, and analyze financial data with ease.

### **V. METHODOLOGY**

#### **5.1 System Architecture**

The system follows a full-stack web architecture:

- Frontend: HTML, CSS, JavaScript
- Backend: Node.js with Express
- Database: SQLite
- Communication: JSON-based REST APIs

#### **5.2 Frontend Development**

The frontend is developed using:

- HTML for page structure (index.html, dashboard.html)
- CSS for styling (styles.css)
- JavaScript for dynamic functionality (app.js)
- The dashboard displays financial data using interactive charts powered by Chart.js.



### 5.3 Backend Development

The backend is implemented using Node.js and Express:

- Express handles routing and API endpoints
- REST APIs manage user and financial data
- Middleware handles authentication and request processing

### 5.4 Database Management

SQLite is used as a lightweight database:

- Stores user credentials and financial records
- SQL queries are written in db.js
- Supports efficient data retrieval and storage

### 5.5 Authentication and Security

The system ensures secure access using:

- JWT (JSON Web Tokens) for authentication
- bcrypt for password hashing
- Cookies for session management

## VI. MODELING AND ANALYSIS

The system processes financial data based on:

- Income tracking
- Expense tracking
- Category-based analysis

Users can:

- Add financial transactions
- View summaries of income and expenses
- Analyze spending patterns through charts

Performance of the system is evaluated based on:

- Responsiveness
- Data accuracy
- Security
- User experience

## VII. RESULTS AND DISCUSSION

The FinTrack system successfully enables users to manage personal finances through a simple and interactive interface.

Key results include:

- Efficient tracking of income and expenses
- Secure user authentication system
- Real-time financial insights using charts
- Improved financial awareness among users

Visualization tools such as bar charts and pie charts help users understand spending patterns clearly and make better financial decisions.

Compared to manual methods, the system improves efficiency, accuracy, and usability.



### **VIII. ADVANTAGES OF THE PROPOSED SYSTEM**

- Easy-to-use interface
- Secure authentication system
- Real-time financial tracking
- Interactive dashboard visualization
- Lightweight and fast performance
- No dependency on large external systems
- Scalable and customizable architecture
- Improves financial discipline
- Reduces manual errors

### **IX. CONCLUSION**

The project "FinTrack: Personal Finance Management System" successfully demonstrates how modern web technologies can be used to build an efficient and secure finance tracking system.

The system provides users with tools to manage income, track expenses, and visualize financial data effectively. It enhances financial awareness, simplifies record-keeping, and supports better decision-making.

Future enhancements may include:

- Mobile application development
- AI-based expense prediction
- Multi-user support
- Cloud deployment
- Integration with banking APIs

Overall, the project highlights the importance of web-based solutions in personal finance management.

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