



# Expense Monitor with Expense Wizard: A Secure and User-Centric Personal Finance Management System Using Flask

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## ABSTRACT

*Managing personal finances has become an important need in today's digital world. Many individuals find it difficult to track their spending, control their budget, and plan savings properly. This paper presents the design and development of Expense Monitor with Expense Wizard, a web-based application created to help users manage their budget, record expenses, generate reports, and set savings goals in a simple and organized way. The system is developed using Flask for backend processing, MySQL for database storage, and HTML, CSS, and JavaScript for building a responsive user interface. The application allows users to create an account, securely log in, set a monthly budget, add daily expenses, and define savings targets. It also provides basic report generation features to help users understand their financial status and spending patterns. Proper validation techniques are used to ensure accurate data entry and to maintain data consistency. User authentication and session management are implemented to protect personal financial information. The system follows a modular structure, where budgeting, expense tracking, savings management, and reporting are handled in separate sections for better organization and maintainability. Testing of the application shows that it performs efficiently and provides correct summaries of financial data. The proposed system replaces manual record keeping with a structured digital solution, making financial management easier and more convenient. Expense Monitor with Expense Wizard demonstrates the practical use of web development technologies in building a simple and useful personal finance management system for everyday users.*

**Keywords:** - MySQL, HTML, CSS, JavaScript, Budget Management, Expense Tracking, Savings Goals, Google Authentication

## 1. INTRODUCTION

Personal finance management is important for students and working individuals in daily life. Many people face difficulty in tracking their expenses, managing their monthly budget, and planning savings properly. Manual methods such as maintaining notebooks or performing calculations manually often lead to errors and poor financial understanding. Web-based applications provide a simple and organized way to maintain financial records [1].

Expense Monitor with Expense Wizard is a web-based application developed to help users manage their budget, record expenses, track savings goals, and generate basic financial reports. The system is developed using Flask as the backend framework, MySQL for database storage, and HTML, CSS, and JavaScript for the frontend interface. Secure login is implemented using normal authentication and Google Authentication through Google Cloud Console. Ngrok is used for securely accessing the locally hosted application on mobile devices for testing purposes. The system focuses only on essential financial management features and aims to provide a simple and user-friendly solution.

### 1.1 Background of Expense Monitor with Expense Wizard

With the increase in digital payments and online transactions, managing personal finances has become more important. Many users need a simple platform where they can record their expenses and monitor their budget in an organized way. Existing systems may include complex financial tools that are not necessary for basic users. Expense Monitor with Expense Wizard is designed to provide only the essential features required for daily financial tracking, making it simple and easy to use.

### 1.2 Problem Statement

Many individuals face the following problems while managing their finances:

- Difficulty in maintaining daily expense records
- Lack of proper monthly budget planning
- No structured method to track savings goals



- Errors in manual calculations
  - Poor awareness of spending patterns
- These problems create a need for a simple web-based system to manage personal finances effectively.

**1.3 Research Objective**

The main objective of this research is to design and develop a web-based personal finance management system. The specific objectives are:

- To implement secure user authentication including Google login
- To allow users to set and manage monthly budgets
- To enable recording and monitoring of expenses
- To provide savings goal tracking
- Generating basic financial reports

**1.4 Scope of the Study**

This study focuses on the development of a web-based expense management system using Flask and MySQL. The system includes budget management, expense recording, savings goal tracking, report generation, and secure authentication. Ngrok is used for remote access and mobile testing. The study does not include advanced financial analytics, automatic bank integration, or mobile application development. The scope is limited to the features implemented in the Expense Monitor with Expense Wizard web application.

**2. LITERATURE REVIEW**

In earlier days, people managed their expenses using notebooks or Excel sheets. These methods were simple but could lead to calculation errors and difficulty in tracking savings.

Many online expense management systems have been developed to make financial tracking easier. Some of these systems provide advanced features, but they may be complex for users who only need basic budget and expense tracking.

From studying existing systems, it was observed that there is a need for a simple and user-friendly web application that focuses only on essential features. Therefore, the Expense Monitor with Expense Wizard system is developed to provide budget management, expense recording, savings goals, and report generation in a simple and clear way.

**2.1 Existing Methods**

Before the development of web-based financial tracking systems, individuals mostly relied on traditional methods to manage their expenses. These methods include:

- Writing daily expenses in notebooks
- Maintaining manual registers
- Using simple spreadsheet files
- Performing manual budget calculations

Although these methods help in recording data, they have several limitations such as calculation errors, lack of automatic summaries, and difficulty in tracking savings goals.

In recent years, various financial management applications have been introduced to simplify expense tracking [2]. Many of these systems provide complex financial analysis tools, investment tracking, or bank integration features. However, such advanced features may not be required for users who only need basic budget management and expense recording.

**2.2 Limitations of Existing Solutions**

Despite the availability of financial applications, certain limitations still exist:

- Some applications require paid subscriptions
- Complex interfaces may confuse new users
- Overloaded features make basic tracking difficult
- Some systems do not provide simple savings goal management
- Manual methods still lack automation and report generation

Because of these limitations, there is a need for a simple, web-based system that focuses only on essential financial management features.

<b>Feature / Aspect</b>	<b>Traditional Methods (Notebook / Excel)</b>	<b>Expense Monitor with Expense Wizard System</b>
Expense Recording	Manual entry	Online form-based entry
Budget Management	Manual calculation	Budget can be added and stored digitally
Savings Goal Tracking	Not structured	Dedicated savings goal feature



Report Generation	Manual calculation required	Automatic report generation
Data Security	No password protection	Secure login with authentication
Accessibility	Limited to physical notebook or file	Accessible through web browser
Error Handling	High chance of calculation errors	Reduced errors through system validation

Fig - 1: Comparison Between Traditional Methods and Proposed Expense Monitor with Expense Wizard System

### 2.3 Need for Proposed System

The proposed Expense Monitor with Expense Wizard system is designed to overcome the above limitations by:

- Providing a simple and clean user interface
- Allowing budget setting and expense recording
- Supporting savings goal tracking
- Generating basic financial reports
- Offering secure login including Google Authentication

Unlike complex financial systems, Expense Monitor with Expense Wizard focuses only on necessary features required for daily personal finance management.

## 3. METHODOLOGY

The methodology of this research describes the step-by-step process followed to design and develop the Expense Monitor with Expense Wizard web application. The system was developed using a structured and practical approach to ensure that all required features were implemented correctly and functioned smoothly. The development process began with identifying the main problem faced by users in managing their daily expenses and savings. Based on this analysis, the core requirements of the system were defined, which include secure user authentication, budget management, expense recording, savings goal tracking, and report generation.

After defining the requirements, the system architecture was planned to use a web-based model. The backend of the application was developed using the Flask framework to handle user requests and application logic. MySQL was used as the database to store user information, budgets, expenses, savings goals, and report data in a structured manner. The frontend interface was designed using HTML, CSS, and JavaScript to ensure a simple and user-friendly experience.

Google Authentication was integrated using Google Cloud Console to provide secure login functionality. During development and testing, Ngrok was used to generate a secure public URL for accessing the locally hosted application on mobile devices.

Finally, the system was tested to verify that each module works correctly and that the data is stored and retrieved properly. This structured methodology ensured the successful development of a simple and effective personal expense management system.

### 3.1 Development Approach

The Expense Monitor with Expense Wizard system is developed using a web-based development approach. The application follows a modular structure where different components such as authentication, budget management, expense tracking, savings goals, and report generation are handled separately. This approach improves system organization and makes maintenance easier.

The development process includes requirement analysis, system design, database creation, frontend development, backend integration, and system testing.

Methodology Step	Description
Research Type	Development-based research
Data Source	User input data (budget, expenses, savings goals)
Analysis Method	Functional testing and system validation
Tools Used	Flask, MySQL, HTML, CSS, JavaScript, Google Cloud Console, Ngrok
Output	Web-based Expense Monitor with Expense Wizard system with budget, expense, savings and report features
How Done in Paper	System design, module development, database integration, authentication setup, and testing

Fig -2: Methodology in Table Form

### 3.2 Development Approach

The Expense Monitor with Expense Wizard system follows a three-layer web architecture consisting of frontend, backend, and database components. The frontend is developed using HTML, CSS, and JavaScript to provide an interactive and user-friendly interface. The backend is implemented using the Flask framework, which handles routing, user authentication, and business logic. MySQL is used as a database to store user credentials, budget details, expense records, savings goals, and report data.

Google Authentication is integrated through Google Cloud Console to provide secure login functionality. During development and testing, Ngrok is used to create a secure public URL for accessing the locally hosted



Flask application on mobile devices. The system ensures proper data flow between the user interface and the database through controlled backend operations.

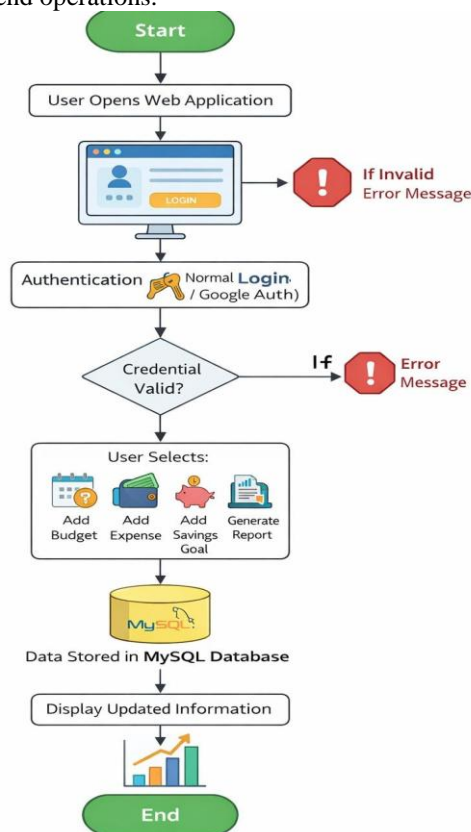


Fig 3: Flowchart – System Architecture

Algorithm – System Architecture:

Step 1: Start the application.

Step 2: Accept user login or registration request.

Step 3: Validate user credentials (Normal or Google Authentication). Step 4: If authentication is successful, redirect it to dashboard.

Step 5: Allow users to perform selected operation (Budget, Expense, Savings, Report). Step 6: Store data in MySQL database.

Step 7: Retrieve updated data and display results. Step 8: End process.

### 3.3 Implementation Modules

The Expense Monitor with Expense Wizard system is divided into the following main modules:

- Authentication Module – Handles user registration, login, and Google Authentication to ensure secure access.
- Budget Module – Allows users to set and manage their monthly budget.
- Expense Module – Enables users to add and manage daily expenses.
- Savings Goal Module – Allows users to define and monitor savings targets.
- Report Module – Generates financial summaries based on stored data.

Each module is connected to the database and performs validation before storing information to ensure data accuracy.

### 3.4 System Testing

After development, the system was tested to ensure proper functionality of all modules. Functional testing was performed to verify:

- Secure login and Google Authentication
- Correct budget entry and storage
- Accurate expense recording
- Proper savings goal tracking
- Correct report generation

Input validation was checked to prevent incorrect data entries. Testing confirmed that the system operates smoothly and provides accurate financial summaries.



#### 4. RESULTS AND DISCUSSION

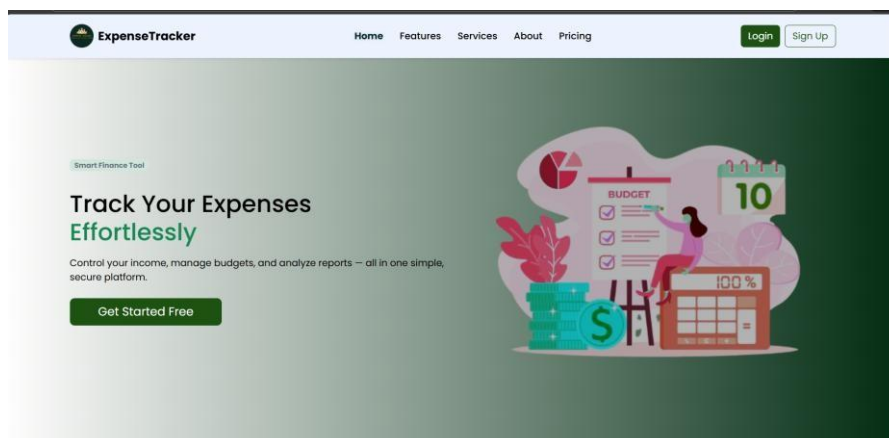


Fig: Website`'s Landing Page

Fig: Dashboard

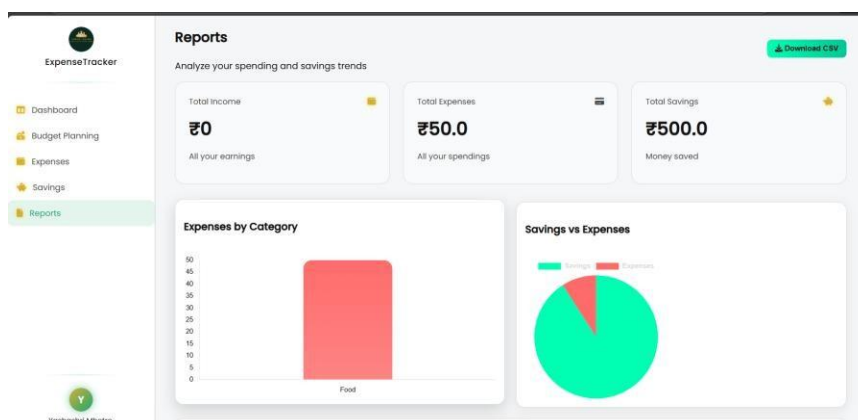
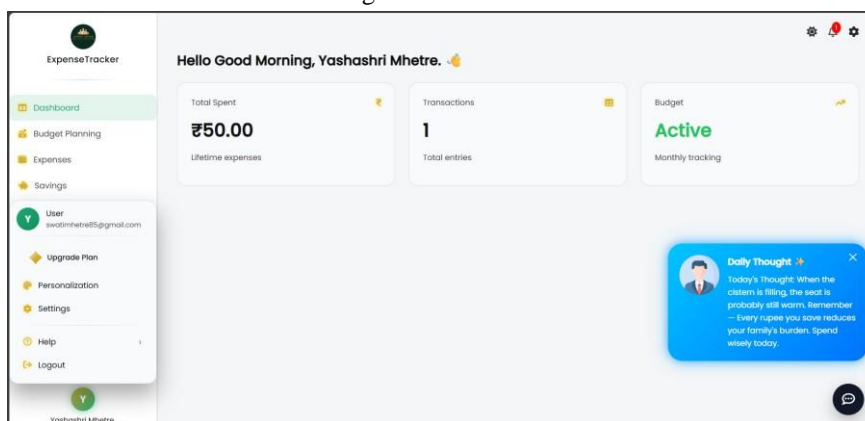


Fig: Graphical

#### 5. CONCLUSIONS

In this paper, a web-based personal finance management system named Expense Monitor with Expense Wizard was successfully designed and developed. The main objective of the system was to provide a simple and organized platform for managing budget, recording expenses, tracking goals savings, and generating financial reports. The system was implemented using Flask for backend development, MySQL for database management, and HTML, CSS, and JavaScript for the frontend interface. Google Authentication was integrated using Google Cloud Console to ensure secure user login, and Ngrok was used for testing the application on mobile devices.



The developed system helps users maintain proper financial records and understand their spending patterns in a structured manner. All modules were tested and verified to ensure correct functionality and data accuracy. The system focuses only on essential financial management features, making it easy to use and suitable for students and individuals.

Overall, Expense Monitor with Expense Wizard demonstrates the practical application of web technologies in solving everyday financial management problems. The system achieves its intended objectives and provides a reliable solution for basic personal expense tracking.

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