PROPOSAL DOCUMENTATION

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**CHAPTER 1. Introduction**

**Background**

The administration of a person's financial affairs, including budgeting, saving, investing, and spending, is referred to as personal finance. Fundamentally, it entails making well-informed choices on the management of earnings, outlays, and assets in order to attain long-term objectives and financial stability. Managing everyday spending is an essential component of personal finance since it has a direct impact on one's capacity to stick to a budget, save for future needs, and remain out of debt.   
Effectively controlling everyday spending has become increasingly important in recent years. People are finding it harder to keep track of where their money is going due to rising living expenses, consumer debt, and volatile financial markets. It becomes challenging to create financial goals, adhere to a budget, or manage finances if one does not have a clear awareness of their daily spending habits.

Additionally, people must be more proactive and systematic in their financial management due to modern lives, which frequently involve a number of spending categories (such as entertainment, dining, transportation, and subscriptions).   
In this regard, technology is essential for assisting people in taking charge of their financial situation. For people who want to make better financial decisions and keep up a sound financial life, tools and systems that offer real-time expense tracking, budget management, and spending analysis are becoming more and more crucial.

**Problem Statement**

Managing daily expenses and staying within a budget can be an overwhelming task for many people, especially in today’s fast-paced and often unpredictable financial landscape. Several challenges contribute to this difficulty:

1. **Lack of Awareness and Tracking** Not keeping track of daily costs is one of the main problems people encounter. Small everyday purchases like coffee, snacks, and transportation expenses are frequently not regularly tracked by many people, which results in an imprecise picture of their spending. Because they are not aware of how rapidly these ostensibly insignificant expenses add up, this lack of awareness frequently leads to unexpected financial gaps. It is nearly impossible to stick to a budget or evaluate the success of their financial decisions if they lack precise insight into their spending patterns.
2. **Unrealistic Budgeting** Setting a budget that is either too stringent or too lax is another frequent problem. Some people may establish difficult-to-achieve financial goals that are unreasonable, including excessively restricting necessary expenditures in their budget. However, some people might not set strict enough boundaries, which could result in excessive spending. It can be challenging to successfully modify budgets to match actual income and expenses if there are unclear insights into how spending is allocated across categories (such as grocery, entertainment, and housing).
3. **Impulse Purchases and Emotional Spending**: Impulse buying and emotional spending are significant contributors to financial imbalance. In today’s consumer-driven society, individuals are often swayed by advertising, peer pressure, or personal emotions, leading to spontaneous purchases that were not planned. Without a system to monitor and control these purchases, it's easy for individuals to exceed their budget without realizing it until it's too late. Emotional spending can also result from stress or other psychological factors, leading to habits that are hard to break without self-awareness.
4. **Irregular or Unpredictable Income**: For many people, especially those who are freelancers, gig workers, or self-employed, income can be irregular or fluctuate month to month. This uncertainty makes it even harder to stick to a strict budget, as it's challenging to anticipate how much money will be available for spending and saving. Planning and forecasting become more complex when income is inconsistent, increasing the chances of overspending or mismanaging funds.
5. **Difficulty in Identifying Spending Patterns**: Understanding spending patterns is crucial for effective financial management, but many individuals struggle to identify where and how their money is being spent. It can be challenging to recognize the trends in daily expenses—whether spending is occurring in a specific category, at certain times, or due to particular habits. Without this insight, people may overlook opportunities for savings or fail to notice that certain expenses have gradually increased over time.
6. **Lack of Financial Literacy**: Many people lack the financial knowledge to manage their money effectively, from understanding how to allocate funds for savings, investments, or long-term goals, to how to track and manage daily expenses. Financial literacy plays a significant role in creating realistic budgets, understanding spending habits, and ultimately achieving financial goals. Without this knowledge, it becomes easier to make poor financial decisions, which can lead to debt accumulation or missed opportunities for wealth-building.
7. **Time Constraints**: For busy individuals juggling multiple responsibilities (work, family, personal commitments), tracking daily expenses can feel like a time-consuming and tedious task. Without enough time to review spending regularly or plan ahead, individuals may neglect their financial management altogether, relying on their intuition rather than a systematic approach to budgeting and expense tracking.

**Objective of the System**

The primary goal of the Daily Expense Management System is to provide individuals with an intuitive and efficient tool to track, manage, and optimize their daily spending. By offering a user-friendly interface and powerful features, the system aims to empower users to make better financial decisions and achieve greater financial control. Specifically, the system will:

1. Track Expenses:
   * The system will allow users to input and categorize their expenses as they occur, offering real-time tracking. By automatically displaying the breakdown of expenses (e.g., food, transportation, entertainment), users will have immediate visibility into their spending patterns, helping them stay on top of their finances.
2. Create and Manage Budgets:
   * Users will be able to set realistic budgets for different spending categories (e.g., monthly grocery budget, entertainment budget, etc.) and monitor their progress in real time. Alerts will notify them when they are nearing their budget limits, helping to prevent overspending and ensuring that they stick to their financial goals.
3. Analyze and Optimize Spending:
   * The system will provide insights into spending trends and patterns, enabling users to identify areas where they may be overspending. Through easy-to-read charts, graphs, and reports, users will be able to evaluate their expenses over different time periods (daily, weekly, monthly) and make informed decisions to optimize their financial habits.
4. Generate Custom Reports:
   * Users will be able to generate customizable reports based on the timeframes they choose (e.g., daily, monthly, or yearly). These reports will provide a clear picture of total expenses, helping users track their financial progress and make adjustments as necessary.
5. Visualize Financial Data:
   * The system will present financial data through visualizations such as graphs and charts, making it easier for users to understand complex financial information at a glance. Whether it’s seeing a pie chart of spending categories or a bar graph comparing expenses across months, the system will make it simple for users to interpret their financial data.
6. Facilitate Better Financial Decisions:
   * By helping users track their spending, set and manage budgets, and analyze their financial habits, the system will enable users to make more informed and strategic decisions about their money. Whether they aim to save for a big purchase, reduce debt, or build an emergency fund, the system will provide the tools necessary to meet their financial objectives.
7. Improve Financial Literacy:
   * The system will offer educational insights and tips to help users improve their financial literacy. By understanding spending habits and how to manage budgets, users can develop better financial habits that lead to long-term financial stability and success.

**Scope of the System**

**Features of the Daily Expense Management System**

* **Dashboard Overview**:
  + The dashboard will serve as the main interface, providing a snapshot of the user’s financial situation at a glance. It will display real-time information on daily expenses, total expenditure, and remaining budget. The dashboard will include the following key components:
    - **Expenses Summary**: Shows total spending for today, yesterday, last 7 days, and last 30 days.
    - **Budget Tracker**: Displays the remaining budget for the current month or specified period.
    - **Total Expenditure**: A quick summary of the total amount spent, with easy-to-understand indicators such as "spent vs. remaining".
    - **Quick Add Expense Button**: A user-friendly button that allows users to add expenses directly from the dashboard.
* **Expense Tracking**:
  + Users will be able to input, categorize, and track their daily expenses efficiently. This feature will include:
    - **Add Expense**: A simple interface where users can enter expense details such as the amount, category (e.g., food, transportation, entertainment), and payment method.
    - **Expense Categories**: Predefined categories (and customizable ones) such as groceries, bills, and dining out, enabling users to see where their money is going.
    - **Recurring Expenses**: Option to add recurring expenses (e.g., subscriptions, rent) for automatic tracking.
    - **Expense Search and Filter**: Allows users to search and filter their expenses by category, date, amount, or specific keywords.
    - **Expense History**: Access to a chronological list of past expenses for reference and comparison.
* **Budgeting**:
  + The budgeting feature will help users set realistic financial goals and monitor their progress throughout the month. This includes:
    - **Set Budget Limits**: Users can define monthly or category-based budgets (e.g., $200 for dining, $500 for groceries).
    - **Budget Status Indicators**: Visual indicators (e.g., green for under budget, red for over budget) to easily see how well users are sticking to their budget.
    - **Budget Adjustments**: Users can modify their budgets as needed, allowing for flexibility depending on lifestyle or changes in income.
    - **Budget Alerts**: Notifications will warn users when they are close to exceeding their budget for a specific category or for the entire month.
* **Report Generation**:
  + The system will provide users with detailed, customizable reports to help them analyze their spending over different periods. The report generation features will include:
    - **Custom Time Frames**: Reports can be generated for any time period (daily, weekly, monthly, yearly), allowing users to track both short-term and long-term spending.
    - **Visual Reports**: Graphical representations of data in the form of bar charts, pie charts, and line graphs to visually depict spending patterns over time.
    - **Comparison Reports**: Compare expenses across different time periods (e.g., this month vs. last month) to identify trends and changes in spending behavior.
* **Data Visualization**:
  + To make financial insights easier to understand, the system will include powerful data visualization tools:
    - **Spending Graphs**: Graphs showing spending trends over different periods, such as daily or monthly expenditure. This will help users quickly see if their spending is increasing or decreasing over time.
* **Expense Management**:
  + Users will have full control over their expenses through intuitive management features, including:
    - **Edit and Delete Expenses**: Users can easily modify or remove expenses if there are mistakes or changes in spending.
    - **Expense Tags**: Tagging expenses with labels (e.g., "business," "travel," "urgent") to further organize and filter expenses for detailed tracking.
* **Security and Data Protection**:
  + Security features will ensure that user data is protected:
    - **User Authentication**: Secure login with username and password, with optional two-factor authentication for added security.

**Significance**

This Daily Expense Management System is important because it provides individuals with the tools to track, manage, and optimize their spending in a simple and organized way. By offering real-time expense tracking, budget management, and insightful reports, the system helps users make better financial decisions, stay within budget, and avoid overspending. It enables users to identify spending patterns, adjust their habits, and allocate funds more efficiently, ultimately improving their financial health.

For businesses or organizations, the system can be a valuable tool for managing operational expenses, ensuring that budgets are adhered to, and providing clear financial reports for decision-making. By maintaining control over expenses, both individuals and businesses can improve financial planning, save money, and avoid unnecessary debt or financial strain.

**2. Literature Review**

**There are several popular expense management tools available today, such as:**

* **Mint:**
  + **Features: Tracks income and expenses, sets budgets, provides bill reminders, and offers credit score monitoring.**
  + **Pros: Free, integrates with bank accounts, offers detailed financial insights.**
  + **Cons: Limited customization options, sometimes inaccurate categorization, limited reporting flexibility.**
* **YNAB (You Need a Budget):**
  + **Features: Focuses on budgeting with a zero-based budgeting system, allows tracking of expenses and goals.**
  + **Pros: Excellent for budgeting, great customer support, educational resources.**
  + **Cons: Subscription-based, steep learning curve, no automatic bill payment integration.**
* **Expensify:**
  + **Features: Tracks expenses, manages receipts, and generates reports for both individuals and businesses.**
  + **Pros: Great for business use, integrates with accounting software.**
  + **Cons: Can be expensive, features aimed more at businesses than individuals.**

**Technologies Used**

**Most modern expense management systems leverage a combination of the following technologies:**

* **Web-based Platforms: Tools like Mint and YNAB are often accessed through web browsers, allowing users to track expenses from any device with an internet connection.**
* **Mobile Apps: Many solutions, such as Mint and Expensify, offer dedicated mobile apps that allow users to input expenses on-the-go.**
* **Bank Integrations: Integration with banks and credit cards (e.g., Mint’s automatic transaction import) enables seamless tracking of expenses in real-time.**
* **Cloud Storage: Expense data is often stored in the cloud, ensuring that users can access their data from any device and preventing loss of information.**
* **Data Analytics and Visualization: Many systems use data analytics to categorize expenses and generate visual reports, offering users insights into spending patterns.**

**Key Concepts in Financial Management**

**Understanding the basics of budgeting and expense tracking is essential to financial health. Key concepts include:**

* **Budgeting: Setting limits on how much to spend in various categories (e.g., groceries, entertainment) based on income. A balanced budget helps ensure that expenses don’t exceed income.**
* **Expense Tracking: Monitoring and recording daily expenses to stay on top of where money is being spent. This is crucial for identifying areas to cut back or optimize.**
* **Financial Goals: Setting short-term and long-term savings or spending goals, and adjusting your budget accordingly to meet those objectives.**
* **Savings and Debt Management: Allocating funds to savings or debt reduction after budgeting for essential expenses.**

**Gaps in Current Solutions**

**While existing solutions are effective, there are a few common gaps that your system can address:**

* **Ease of Use: Many apps, like YNAB, have steep learning curves or require significant time investment to fully understand. Your system can focus on offering a simpler, more intuitive interface.**
* **Flexibility in Reporting: Many tools offer fixed or limited reporting options. Your system can stand out by offering highly customizable reports, allowing users to generate exactly what they need (e.g., by day, week, month, or custom time frame).**

**3. Methodology**

**For the development of the Daily Expense Management System, we will follow the Agile methodology. This approach allows for iterative development and constant feedback, ensuring that the system evolves based on user needs and expectations. The Agile approach will enable flexibility, faster delivery of features, and the ability to quickly adapt to changes or new requirements.**

**Tools and Technologies**

**The following tools, programming languages, frameworks, and libraries will be used to develop the system:**

* **Frontend:**
  + **HTML/CSS/JavaScript: For creating the structure, style, and interactivity of the user interface.**
* **Backend:**
  + **MySQL: A relational database to store user data, such as expenses, budgets, and transaction history.**
  + **PHP:** **PHP will serve as the server-side scripting language for handling user requests, business logic, and database operations. PHP can communicate with MySQL to manage and retrieve user data.**
* **Mobile (If developing a mobile app):**
  + **React Native: A framework to build cross-platform mobile applications using JavaScript.**
* **Data Visualization:**
  + **Chart.js or D3.js: Libraries for displaying interactive graphs and charts to visualize spending data.**
  + **Bcrypt.js: For password hashing and ensuring secure storage of user credentials.**

**System Architecture**

**The Daily Expense Management System will be a web application with a mobile app version for on-the-go expense management. The architecture will consist of the following components:**

* **User Interface (UI): The front end where users interact with the system (built using React.js, HTML/CSS, and Bootstrap).**
* **Backend: The server side where business logic is executed, and API requests are processed (Node.js and Express.js).**
* **Database: MySQL will store all user data, such as expenses, budgets, and transaction history.**
* **APIs: RESTful APIs will allow communication between the front end and back end.**
* **Mobile App: For mobile users, a React Native-based app will provide the same functionality as the web version, ensuring cross-platform compatibility.**

**Data Management**

**User data (such as expenses, budgets, and financial reports) will be managed as follows:**

* **Data Storage: All user data will be securely stored in a MySQL database. This includes expenses, budget limits, transaction history, and customized reports.**
* **Data Processing: When users input new expenses, the data will be processed in real-time by the backend (Node.js) and stored in the database. Budget calculations, spending analysis, and report generation will be done dynamically based on this data.**
* **Data Display: The front-end application (React.js) will fetch and display the data to the user, including interactive charts, spending reports, and budget status. Data visualization libraries like Chart.js or D3.js will be used to generate graphs and reports that are easy for users to understand.**

**4. System Investigation, Analysis, and Requirements**

**To investigate the needs of potential users, we will employ the following methods:**

1. **Surveys and Questionnaires: Distribute surveys to a sample of potential users to gather quantitative data on their expense management needs, pain points, and desired features. Questions will focus on how they currently manage their finances and what features they find most useful.**
2. **Interviews: Conduct in-depth interviews with a smaller group of users to understand their financial habits, specific requirements, and feedback on existing solutions. This will provide qualitative insights into user preferences and challenges.**
3. **Market Research: Analyze competitor tools and systems in the expense management space to identify features that users expect, trends, and any gaps in the current market offerings.**

**Through these methods, we will prioritize the most critical features and define clear user requirements for the system.**

**User Requirements**

**Based on the user research, the system will include the following key features:**

* **Dashboard: Display daily, weekly, and monthly expenses in a user-friendly overview.**
* **Budget Setting and Management: Allow users to set and track their budgets across various categories (e.g., groceries, entertainment).**
* **Expense Categorization: Enable users to categorize expenses (e.g., food, entertainment, transportation) for better tracking.**
* **Graphical Data Representation: Visualize expenses and budget performance using graphs (e.g., bar charts, pie charts)**

**Functional Requirements**

**The core functionalities of the system will be:**

* **User Login and Account Management:**
  + **Secure user authentication, registration, and profile management.**
* **Setting and Tracking Budgets:**
  + **Users can define and track monthly or category-specific budgets.**
* **Adding, Editing, and Categorizing Expenses:**
  + **Input and update expenses in various categories, allowing users to maintain accurate records.**
* **Generating Reports and Visualizations:**
  + **Users can generate reports by day, month, or year, with options for exporting them. Visual representations of data will be included for better insights.**

**Non-Functional Requirements**

**These are the non-functional considerations that will guide the system’s design:**

* **User Interface:**
  + **The system will be intuitive, easy to navigate, and responsive across devices (web and mobile).**
* **Security:**
  + **Data Encryption: All sensitive data (such as financial information) will be encrypted in the database.**
* **Performance:**
  + **Fast response times (within 2-3 seconds for most user actions) and the ability to scale if the user base grows.**

**System Design**

**Use Case Diagram**

**A use case diagram will be created to show how users will interact with the system, including actions like:**

* **Add Expense: User enters an expense and categorizes it.**
* **Set Budget: User defines budget limits for different categories.**
* **Generate Report: User generates and exports a spending report.**
* **View Dashboard: User views a summary of daily, weekly, and monthly expenses.**

**Database Design**

**The database will have several key tables:**

* **Users: Stores user credentials and profile information.**
* **Expenses: Stores each expense entry with attributes like amount, category, date, etc.**
* **Budgets: Stores budget limits for each category and time frame.**
* **Categories: Stores the different categories for expenses (e.g., food, transport).**

**An entity-relationship diagram (ERD) will visually represent the relationships between these tables, ensuring proper data structure and relations.**

**UI/UX Design**

* **Wireframes/Mockups: The design will include mockups of:**
  + **Dashboard: A clean layout showing daily, weekly, and monthly expenses with quick access to add new expenses or view reports.**
  + **Add Expense Form: Simple input fields for adding amounts, categories, and dates.**
  + **Report Generation Page: An interface for selecting time frames and generating/exporting reports with data visualizations.**

**System Workflow**

**The workflow of the system will follow this sequence of user actions:**

1. **Login: User logs in securely.**
2. **Dashboard: User views a summary of expenses and remaining budget.**
3. **Add Expense: User adds a new expense, categorizing it accordingly.**
4. **Track Budget: User views progress toward meeting their budget and adjusts if needed.**
5. **Generate Report: User generates a report based on a selected time frame and exports it.**

**Security Measures**

**The system will incorporate several security measures to protect user data:**

* **Data Encryption: Sensitive data, such as user credentials and financial transactions, will be encrypted using industry-standard encryption algorithms.**
* **User Authentication: Login credentials will be securely hashed using bcrypt. Additionally, optional two-factor authentication (2FA) will be implemented for extra security.**

**6. Reference**

1. **Frontend Development:**
   * **Bootstrap: A CSS framework for responsive web design.**
2. **Backend Development:**
   * **PHP: Server-side scripting language for handling backend logic and interacting with MySQL.**
   * **Node.js (optional for certain parts of the app): JavaScript runtime for backend processes.**
   * **Express.js: Web framework for Node.js, handling server-side requests and APIs.**
3. **Database:**
   * **MySQL: Relational database to store user data, expenses, and budgets.**
4. **Security:**
   * **JWT (JSON Web Tokens): For implementing secure authentication and session management.**
   * **Bcrypt.js: For password hashing to ensure secure storage of credentials.**
5. **Version Control:**
   * **Git: For managing and tracking changes in the codebase.**
   * **GitHub: Hosting the code repository and collaborating with team members.**
6. **Development Environment:**
   * **Visual Studio Code**
   * **IntelliJ**