

Project Proposal Final

Group 8

Expense Monitoring System

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CS673 A1



Abhishek Gupta
Siddharth Krishnakumar
Julia Peterson
Jiuzhou Lu
Haolong Yang

Title

Expense Monitoring System

Purpose

The main purpose of a Personal Expense Monitoring system is to provide users with a comprehensive and interactive platform to monitor, track, categorize, and analyze their expenses by setting a budget limit monthly or yearly. This also helps the user study and track their spending patterns and revisit their spending on a monthly or yearly basis.

Benefits

Financial discipline is an important habit for one to gain financial stability in life. Making sure that you are within your budget in your daily life is important to many, so this application will offer ways to simplify and consolidate that process. It offers a way to maintain both a personal budget and a group budget with the ability to share expenses with friends and family. Some of the potential benefits of this application are:

1. **Improved Financial Management:** With various features and functionalities, the platform will empower users to manage their financials and develop better financial habits.
2. **Efficient Group Expenses Handling:** Group expenses and bill-splitting features will provide transparent and automated calculations that will lead to fair and efficient financial interaction among the users.
3. **Time-Saving:** The automated processes in the platform will save people time by including all the expenses of different forms like utilities, credit card usage, cash expenses, etc. in a single platform. Users do not have to be involved in complex calculations.
4. **Enhanced User Experience:** Users from various backgrounds will be able to use the platform thanks to its user-friendly design and mobile accessibility. The platform will be intuitive abstracting technical jargon.
5. **Cost Saving:** The platform helps build a financial habit which in the long term will help users to save money inching closer towards financial freedom.
6. **Benefits as an Organization:** This platform will ensure that we as a company become a leading industry in the financial management sector together with various other products the company launches in the domain.

7. Return on Investment(ROI): As the platform gains traction and develops a decent user base we can include prime features and functionalities in the next phase of development. These premium memberships will be our revenue model and in the long term, we will be positive on ROI.

Features and Functionality – Scope

The goal of this application is to simplify the budgeting process, so there are a variety of different functions and features available to users to help serve this purpose:

1. Individual Expense Tracking:
 - Users can create and categorize their personal expenses.
 - View expenditures summary and analytics.
2. Group Expenses Management:
 - Users will be able to create groups to track the expenses and budgeting of a group.
 - Users can invite people to join the group.
 - All the members of a group can add expenses to the group.
 - The share of the individual split will also be reflected in your personal expenses.
3. Bill Splitting:
 - Users can split the bill with other users on the platform.
 - This will support various splitting methods like equal sharing and or custom percentages.
 - Provide a settlement summary to settle the shared expenses.
 - The share of an individual will also be reflected in the Individual expenses.
4. User Authentication and Authorization:
 - The platform will have secured user registration and login.
 - Define user roles and permission for group management.
5. Dashboard and Reports:
 - Every user will be provided with a detailed summary report.
 - An Analytics dashboard will also be provided for better visualization of expenses.
6. Mobile Accessibility:
 - Mobile-first web development will be taken for this project.
 - The platform will ensure cross-browser compatibility on both desktop and mobile devices.

7. Notification Services:

- Implement email notification when a user adds expenses to a group.
- Email notification for user invite to the group.

8. Data Security and Privacy:

- The platform will ensure that various security measures are taken to ensure the confidentiality of users' data.
- Data protection via a secure authentication system is one of the many measures that will be taken.

9. Dependencies:

- Third-party services for authentication will be used. For example, Google Auth.
- Email notification services will be implemented using a secure third-party API like SMTPLib or Mailgun.

Target Users

This application targets a wide range of individuals and organizations who would be interested in a one-stop financial management platform, and these include but are not limited to:

1. Individual Users: Any individual interested in personal financial management. This includes wide demographics of users ranging from various age groups to users from various financial backgrounds.
2. Corporate Usage: The platform is lucrative for professionals to be used by companies to manage their expenses with an array of features it provides.
3. Group Usage: The application will also cater to a group of people, family, and friends who plan to go on an outing/trip or even day-to-day expense sharing. The group management features make financial tracking a breeze.

Technical Approach:

We plan to use modern web development technologies which include but are not limited to the following:

- **Front-End:** React.js, HTML, CSS, JavaScript
- **Back-End:** Python: Django
- **Database:** MongoDB as NoSQL database and MySQL/Postgres as SQL database. (May vary depending on technical changes, performance, and complexities.)
- **Cloud Hosting:** AWS (using the AWS Educate plan) or Google Cloud Platforms. (Subject to change as the project progresses in varying needs and capabilities.)

Team Members, Roles, and Responsibilities:

We have split all the different tasks into teams to ensure that every team member is hands-on during the different stages of development. We are making sure that there is an equal division of labor, keeping in mind the different challenges each sub-team will face.

Members	Roles	Responsibilities
Abhishek Gupta	Team Lead, Full Stack developer.	Design and develop the architecture of the product. Development of product features and functionalities. Reviews codes and configurations.
Julia Peterson	Configuration Lead, QA, UI-UX Design,	Quality assurance and testing. Creates user experience design. Manages the whole team's progress. Creates software documents like design, plan, requirements, and analysis.
Siddharth Krishnakumar	Scrum Master, UI-UX, Security, Documentation	Schedules team huddle. Manages Jira stories and tasks. Creates user experience design. Ensures a secure application development process. Creates software documents like design, plan, requirements, and analysis.
Haolong	Back-End developer,	Implements robust backend APIs and functionalities in Python.
Jiuzhou	Front-End developer	Implements a responsive web interface in React.js.

Documentation - The whole team would work on the documentation report based on the work done by them for the week. This includes all required software engineering documents such as design, plan, requirements, and analysis.

Software Configuration Management Plan(SCM):

SCM plan outlines our approach to manage, control, and track various components of configuration items in the project. Proper SCM techniques will be followed so that it provides an efficient environment for team members working on the same project. These plans will ensure that project development is well-managed, and tracked and risks are mitigated as much as possible.

1. Configuration Items:

- **Code (Production and Test):**
The source code will be managed via Git and will be organized in a git repository. The project will follow various code management techniques like version control and branching strategies.
- **Specification Documentation:**
All documents will be stored in Google Drive with appropriate names and revision history clearly specifying changes done in case of any revisions. This includes all documents such as design, requirements, plan, and analysis to user-specific documents such as guidelines and tutorials.
- **User Documentation:**
This includes all documents specific to the end user such as guidelines and tutorials. With proper updates based on changing products.
- **Supporting Software:**
In case of any third-party software usage, we will document the versions of all the software used in the project. All the dependencies will be documented, and their versions will be tracked to maintain uniformity across the project.

2. Source code version control:

- We will use git version controlling architecture to maintain our code base. Appropriate branching techniques will be followed. The naming convention will be defined.
- Each change will be submitted in the form of a pull request which will be reviewed and merged if expectations are met.
- No one will be allowed to work at the main branch directly.
- The project owner/lead will have access to the repository and will be responsible for reviewing the pull request and merging it.

3. Change Management:
 - Changes requested will follow a process of request, review, and approval.
 - Each change request should be documented with revised plans taking into consideration possible delays.
4. Progress Tracking:
 - Jira will be used to create epics and user stories which will then be assigned to a member to work on.
 - Members can log the number of hours taken to complete a user story.
5. Build and Release Management:
 - Build will be released at decided intervals which will go through approvals from various stakeholders.
 - The build must be approved by the Quality assurance team, Product Owner, and higher management before the final send-off is done.
 - The build from the testing phase will now be released to production.
6. Audits and Reviews:
 - Before any release, various audits will be done on the configuration to maintain SCM compliance.
7. Tools and Resources:
 - Git: Source code management.
 - Jira: Tracking work progress and issues.
 - Slack: Communication among team members.

Risk Identification

- Developmental delays: Due to any unforeseen technical issues or complexities there can be possible delays.
- Scope Creep: Any additional features or requirements added at the time of development might add to possible delays.
- Team member Unavailability: The team members' unavailability due to any circumstances might affect the progress of the project.
- Data Loss: Loss of codebase scripts and other configuration data.
- Data Breach: Exposure of expense data due to weak security configurations.
- Unauthorized access: Unauthorized changes made to code scripts and other configuration data.
- Inefficient deployment process: Issues that come from inconsistencies in deployment environments.

Risk Mitigation strategies

- Developmental delays: Thorough research and understanding should be done to avoid any such risk.
- Scope Creep: Our design and requirements must be made in a way that accommodates as many details as possible. A thorough market study should be done to point out all the requirements in the first place. This will reduce the risk by many folds.
- Team member Unavailability: The Project Manager should make sure the team members are available and appropriate replacements should be made in human resources in case of any absence.
- Data Loss: Scheduling backups of the configuration data would reduce the occurrence of data loss.
- Data Breach: Sensitive configuration data such as the API keys and database credentials must be encrypted securely.
- Unauthorized access: Regular review of access logs and implementation of strong access controls can reduce unauthorized access.
- Inefficient deployment process: Usage of automated deployment scripts and tools can mitigate inefficient deployment processes.

Conclusion:

Our team is excited to take on this project and intends to deliver a high-quality product Expense Monitoring System that meets the market standards. We are committed to transparent communication, on-time delivery, and ongoing support.