Full Stack Development with MERN

Project Documentation format

1. INTRODUCTION

Project Title: Calculating family expenses
Team ID : LTVIP2026TMIDS66350

Team Size : 4

Team Leader : Syed Abdul Subhan

Team member : Kammari Srikanth Achari

Team member : Nagamuthi Sashi Ram

Team member : Thuggali Nagaraju

1.1 Project Overview

The Family Expense Management System is a web-based application developed on the **ServiceNow platform** to track, categorize, and report daily and monthly family expenses. The system allows family members to log expenses, automatically aggregates totals, and generates detailed reports.

1.2 Purpose

- To help families track their spending accurately and efficiently.

- To provide automated expense summaries by date, member, and category.

- To enable better budgeting and financial decision-

making for family households.

---

2. IDEATION PHASE

2.1 Problem Statement

- Family members often lose track of daily expenses due to manual recording in notebooks.

- Head of the family cannot monitor overall spending in real-time.

- Difficulty in generating accurate reports for budgeting and analysis.

2.2 Empathy Map Canvas

- Family members feel **disorganized and worried** about overspending.

- Parents want **control and visibility** over each member's spending.

- System should provide **real-time updates** and **easy reporting**.
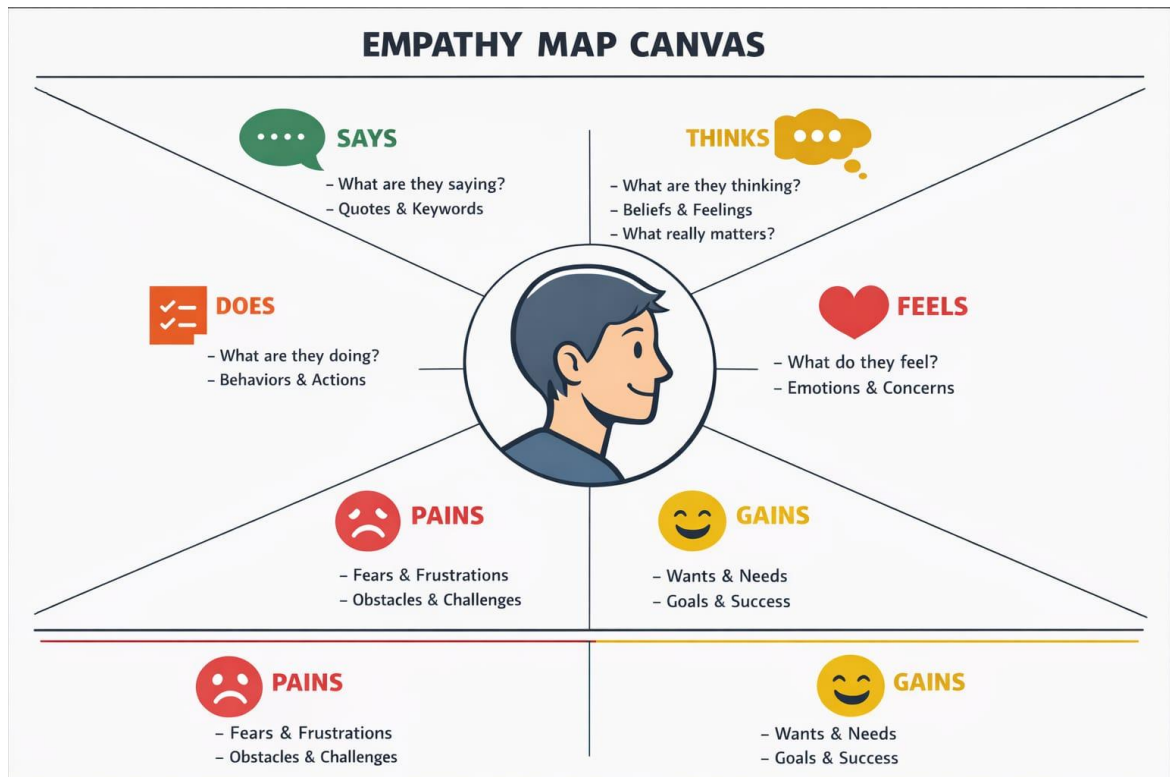
2.3 Brainstorming

- Centralized expense tracking database.

- Auto-calculation of daily and monthly totals.

- Member-wise categorization of expenses.

- Dashboard with charts and filters.

- Automated reporting to generate insights.

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

- Family members submit expenses → Expenses stored in Daily Expenses table → Automated aggregation in Family Expenses table → Reports/dashboard provide

insights.

3.2 Solution Requirement

Functional Requirements (FRs)

| FR No	Functional Requirement	Sub Requirement
FR-1	User Registration	Register via Form, Gmail
FR-2	User Authentication	Email & OTP verification
FR-3	Expense Management	Add, Update, Delete Expenses
FR-4	Expense Viewing	View daily/monthly totals
FR-5	Reporting	Generate member-wise/category-wise reports

Non-Functional Requirements (NFRs)

NFR No	Non-Functional Requirement	Description
NFR-1	Usability	Simple, user-friendly interface
NFR-2	Security	Protect sensitive data and ensure integrity
NFR-3	Reliability	Consistent performance without failures
NFR-4	Performance	Fast updates and calculations
NFR-5	Availability	Accessible at all times during

		use
NFR-6	Scalability	Can handle multiple family members and large datasets

3.3 Data Flow Diagram (DFD)

- Family members → Input daily expense → Processed by Business Rules → Aggregated totals in Family Expenses table → Dashboard / Reports
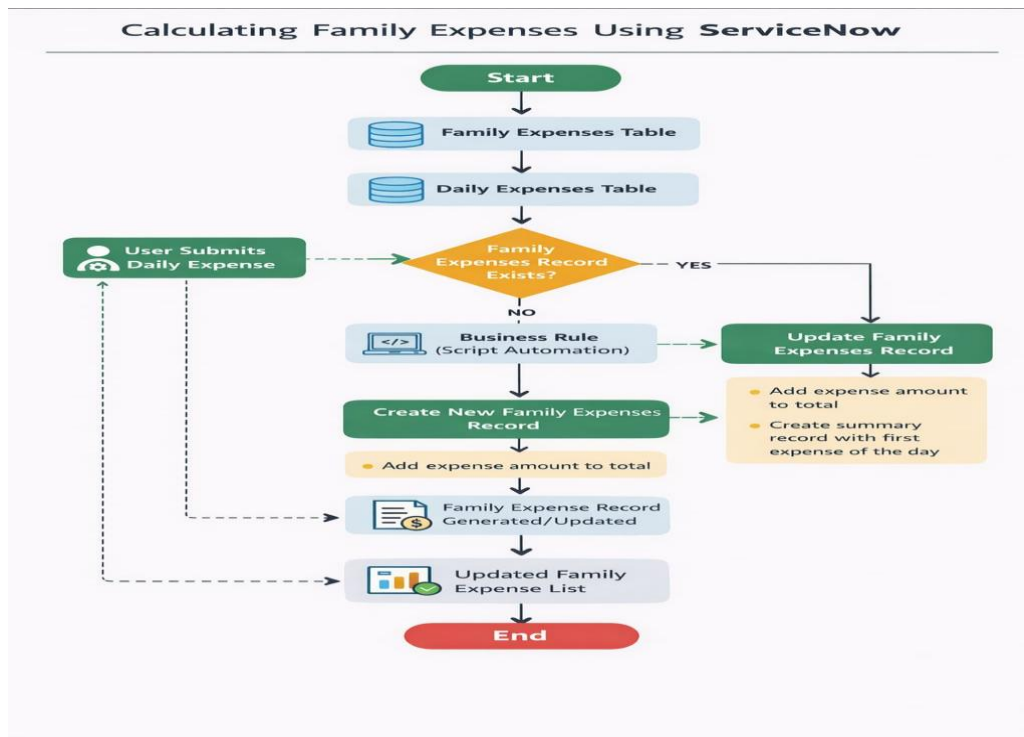
3.4 Technology Stack

Component	Technology
Platform	ServiceNow
UI	ServiceNow Forms & List Views
Database	ServiceNow Tables: Daily Expenses, Family Expenses
Logic	Business Rules & GlideRecord Scripts

---

4. PROJECT DESIGN

4.1 Problem-Solution Fit

Traditional manual tracking causes errors, missing records, and lack of insight. The proposed system provides **real-time, automated aggregation, member-wise tracking, and reporting**, reducing errors and improving financial visibility.

4.2 Proposed Solution

- **Daily Expenses Table**: Records each expense with member, amount, category, and comments.

- **Family Expenses Table**: Aggregates total expenses per day.

- **Business Rules**: Automatically update totals when a new expense is added.

- **Dashboard**: Filters, graphs, and reports for daily/monthly spending.

4.3 Solution Architecture

- **UI Layer**: ServiceNow forms and dashboards

- **Logic Layer**: GlideRecord scripts, Business Rules for automation

- **Data Layer**: Daily Expenses & Family Expenses

tables

- **Reporting Layer**: Real-time dashboards and automated reports

---

5. PROJECT PLANNING & SCHEDULING

5.1 Product Backlog & Sprint Schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Expense Entry & Viewing	USN-1	As a family member, I want to add daily expenses	2	High	Team
Sprint-1	Expense Entry & Viewing	USN-2	View daily totals per member	1	High	Team
Sprint-2	Dashboard & Filtering	USN-3	Apply category and member filters	2	Medium	Team
Sprint-2	Dashboard & Filtering	USN-4	Generate daily/weekly report	3	High	Team
Sprint-3	Admin Control	USN-5	Admin edits/deletes expenses	3	High	Team
Sprint-3	Admin Control	USN-6	View consolidated Family expenses	2	High	Team

Velocity & Burndown

- **Average Velocity:** 16 Story Points per sprint (based on completed tasks).

- Burndown chart tracks remaining story points vs time for sprint progress.

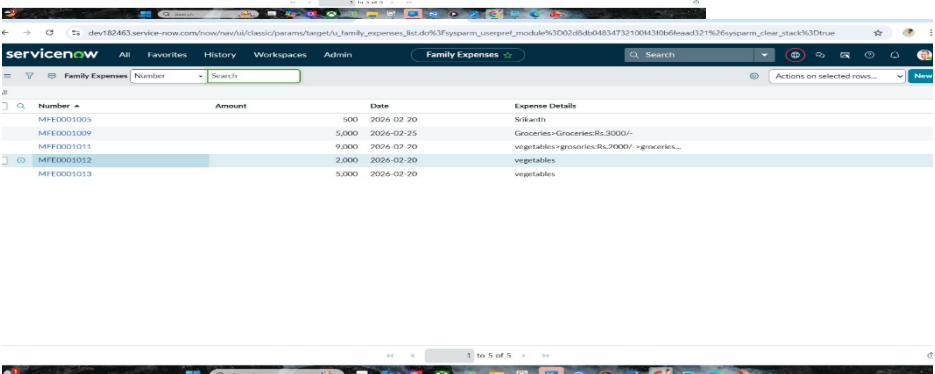# 6. FUNCTIONAL AND PERFORMANCE

TESTING

6.1 Performance Testing

Test Case ID	Test Scenario	Expected Result	Actual Result	Pass/Fail
TC-001	Add Daily Expense	Expense recorded correctly in Daily Expenses	Passed	Pass
TC-002	Auto-aggregation	Family Expenses table updates total automatically	Total updated in 2s	Pass
TC-003	Category filter	Filters display only selected category	Works as expected	Pass
TC-004	Member-wise filter	Filters display only selected member	Works as expected	Pass
TC-005	Report generation	Generates daily/monthly reports accurately	Report matches table totals	Pass
TC-006	Offline resilience	Shows cached data or warning when offline	Offline entry not saved	Fail

7. RESULTS

7.1 Output Screenshots

---

8. ADVANTAGES & DISADVANTAGES

Advantages:

- Real-time expense tracking

- Automated totals and reports

- Member-wise and category-wise filtering

- Reduced human errors

Disadvantages:

- Dependent on network for real-time updates

- Limited offline functionality

- Learning curve for first-time users

---

9. CONCLUSION

The Family Expense Management System improves
financial visibility, reduces errors, and simplifies daily

expense tracking. It empowers family members to make informed financial decisions and plan budgets efficiently.

10. FUTURE SCOPE

- Mobile application integration for easier expense entry

- Predictive analytics for expense forecasting

- Notifications for overspending or budget limits

- Integration with banking apps for automatic expense logging

11. APPENDIX

Source Code (if any): *No*

Dataset Link: *No*

GitHub Link: https://github.com/kanth7137-afk/Calculating-Family-Expenses-

 Project Demo Link:

https://drive.google.com/file/d/1YqG1gwdIke-Cz8TZNoM1ts40ek2i7Evo/view?usp=drivesdk