Project Design Phase

Solution Architecture

Date	2 November 2025
Team ID	NM2025TMID07923
Project Name	Calculating Family Expenses using ServiceNow
Maximum Marks	4 Marks

Solution Architecture

Goals of the Architecture:

The primary objective of the Family Expense Tracker architecture is to leverage the capabilities of the **ServiceNow** platform to streamline and automate family expense management. The architecture is designed to minimize human intervention, eliminate calculation errors, and provide transparent, real-time financial insights. The goals include:

- **Automation:** Automate the calculation of daily and monthly family expenses to save time and ensure accuracy.
- **Data Consistency:** Maintain accurate and consistent relationships between the *Family Expenses* and *Daily Expenses* tables.
- **Error Reduction:** Minimize manual data entry and eliminate calculation errors through built-in automation and validation.
- **Real-time Insights:** Offer real-time summaries and dashboards for better visibility into financial health.
- **Scalability:** Provide a structure that can be expanded in the future to include budgeting, forecasting, and category-based spending analysis.
- **User Efficiency:** Simplify the user experience through intuitive forms and automated updates, reducing administrative overhead.

Key Components:

The Family Expense Tracker consists of several key ServiceNow components that work together to automate the process of expense tracking and reporting.

- **Family Expenses Table:**
  Stores summarized monthly expense records, including total amount, month, and remarks. It serves as the parent table that reflects overall financial performance for each period.
- **Daily Expenses Table:**
  Contains detailed records of individual daily transactions such as date, amount, category, and comments. This table feeds data into the Family Expenses table automatically.
- **Business Rule:**
  A core automation component that triggers whenever a new *Daily Expense* record is added or updated. It recalculates totals and updates the *Family Expenses* table in real time, ensuring data accuracy without manual input.

- **Number Maintenance:**
  Automatically generates unique identifiers for both tables — *MFE (Monthly Family Expense)* for Family Expenses and *DFE (Daily Family Expense)* for Daily Expenses — ensuring traceability and preventing duplication.
- **Relationships:**
  Establishes a relational link between the two tables using the **Date** field as a key identifier, enabling synchronized data updates and reporting consistency.
- **Form Design:**
  Custom-designed forms provide an intuitive interface for entering and viewing expense records. Mandatory field enforcement and read-only number fields improve data quality and user experience.
- **Validation Rules and Security:**
  Ensures data integrity by enforcing correct field formats, mandatory entries, and appropriate access controls so that only authorized users can modify expense records.

Development Phases:

The project development process follows a structured and modular approach to ensure accuracy, maintainability, and scalability.

1. **ServiceNow Setup:**
   Create a Developer Account and request a **Personal Developer Instance** for testing and development.
2. **Update Set Creation:**
   Define an **Update Set** named *Family Expenses* to track all changes and configurations made during development.
3. **Table Design:**
   Build two custom tables — *Family Expenses* and *Daily Expenses* — with fields such as Date, Amount, Category, Comments, and Total.
4. **Auto Numbering Configuration:**
   Set up **Number Maintenance** rules to automatically generate unique IDs (MFE#### for Family and DFE#### for Daily) for clear record identification.
5. **Business Rule Implementation:**
   Develop a **Business Rule** that triggers on record insertion or update in the Daily Expenses table to recalculate totals and push updates to the Family Expenses table.
6. **Relationship Definition:**
   Configure a relationship between both tables using the **Date** field to ensure linked and synchronized data management.
7. **Form Customization:**
   Design user-friendly forms with proper field layout, mandatory validations, and read-only configurations for system-generated fields.
8. **Testing & Validation:**
   Test the functionality by adding sample daily expenses and verifying automatic total updates in the Family Expenses table. Validate data accuracy and performance.
9. **Enhancements & Deployment:**
   Add optional enhancements like expense category filters, dashboards, and monthly summary reports before deploying to the production instance.

1. **Form Customization:** Configure forms, make fields mandatory, and set Number fields to read-only.
2. **Testing:** Add new daily expenses and verify that totals are automatically updated in Family Expenses.

Solution Architecture Description:

The **solution architecture** for the *Family Expense Tracker* is built on the **ServiceNow** platform, utilizing its automation and data management features to simplify expense tracking. It consists of two interlinked tables — *Daily Expenses* and *Family Expenses* — connected via a relationship based on the *Date* field.

Whenever a new daily expense record is created, a **Business Rule** triggers automatically to update the total expense and details in the *Family Expenses* table. This design eliminates the need for manual calculation and ensures that all expenses are summarized accurately in real time.

The architecture also includes auto-number generation through **Number Maintenance** and validation rules to make data entry more reliable.
By combining automation, data relationships, and form customization, the architecture delivers a robust and efficient system for managing household financial data.

This solution demonstrates how **ServiceNow's enterprise-level features** can be adapted to real-world use cases, reducing manual effort while enhancing accuracy and usability.

Solution Architecture Diagram: