



NM1051-SERVICENOW ADMINISTRATOR

CALCULATING FAMILY EXPENSES USING SERVICENOW

A PROJECT REPORT

Submitted By

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Family Expense Calculation System using ServiceNow

Abstract

This project aims to develop a **Family Expense Calculation and Management System on the ServiceNow platform. The system provides a centralized solution to record, categorize, and analyze family expenses efficiently. It helps family members manage their monthly budgets, visualize spending patterns, and make data-driven financial decisions. Leveraging ServiceNow's powerful reporting and automation capabilities, this project enables seamless expense tracking, dynamic report generation, and scheduled notifications for financial management. The system is scalable, user-friendly, and accessible through the ServiceNow interface and mobile app.

1. Introduction

Managing household expenses effectively is vital for financial stability. Traditional methods such as spreadsheets or manual records are time-consuming and prone to errors. ServiceNow, known for its enterprise workflow and reporting capabilities, provides an ideal platform to automate and digitize this process.

The Family Expense Calculation System is designed to record, categorize, and calculate family expenses while providing analytical reports and insights. Each family member can log expenses under different categories (e.g., food, utilities, education), and the system will automatically generate reports showing total spending, category-wise breakdowns, and monthly trends.

2. Objectives

The primary objectives of this project are:

1. To design and develop a digital expense tracking system using ServiceNow.
2. To create automated reports for analyzing family expenditure.
3. To categorize expenses by type, date, and family member.
4. To provide a user-friendly dashboard for budget tracking.
5. To generate alerts or notifications when expenses exceed predefined limits.
6. To enhance financial transparency and planning among family members.

3. Methodology

The project follows a System Development Life Cycle (SDLC) approach using the Agile methodology to ensure iterative development and user feedback incorporation.

Phases:

1. Requirement Analysis – Gather and analyze user needs (expense tracking, reports, etc.).
2. System Design – Design the database schema and UI forms in ServiceNow.
3. Development – Implement tables, forms, workflows, and reports in ServiceNow.
4. Testing – Conduct unit and system testing to validate data accuracy and performance.
5. Deployment – Deploy the solution in a ServiceNow instance for family use.
6. Maintenance – Regular updates and improvements based on feedback.

4. System Requirements

4.1 Hardware Requirements

Component	Minimum Specification
Processor	Dual-Core 2.0 GHz or higher
RAM	4 GB or higher
Storage	20 GB
Internet	Broadband connection

4.2 Software Requirements

Software	Description
ServiceNow Platform	Cloud-based development and reporting platform
Web Browser	Chrome, Edge, Firefox
Operating System	Windows / macOS / Linux
Scripting	JavaScript (for ServiceNow scripting)

5. System Design

5.1 System Architecture

The system consists of:

User Interface Layer – Family members interact through ServiceNow forms.

Application Layer** – Business rules and workflows handle logic for expense entry, validation, and calculation.

Database Layer** – Stores expense details and report data.

5.2 Database Design (Table Structure)

Field Name	Type	Description
Expense ID	Auto Number	Unique identifier for each expense
Date	Date	Date of expense
Category	Choice	Food, Housing, Utilities, etc.
Amount	Currency	Expense amount
Description	String	Details of the expense

Expense Type	Choice	Fixed / Variable
Family Member	Reference (User)	Person who made the expense
Payment Method	Choice	Cash / Credit / Bank Transfer

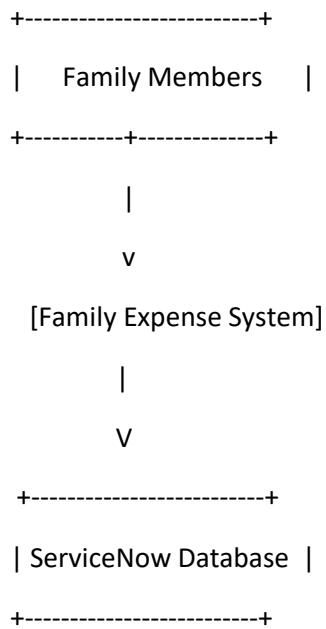
6. Workflow

Workflow Steps:

1. Expense Submission: Family member logs into ServiceNow and submits an expense entry.
2. Data Storage: Expense data is saved in the u_family_expenses table.
3. Validation: Business rules ensure valid data entry (e.g., no negative amounts).
4. Calculation: The system aggregates data to calculate monthly totals and category-wise spending.
5. Reporting: Automated reports generate charts, summaries, and budget comparisons.
6. Notifications If spending exceeds the budget, a notification is sent via email or ServiceNow alert.

7. Data Flow Diagram (DFD)

Level 0 DFD (Context Diagram)



Level 1 DFD

```
Family Member --> (Enter Expense) --> [Expense Form]  
[Expense Form] --> (Store Data) --> [Expense Table]  
[Expense Table] --> (Generate) --> [Expense Reports]  
[Expense Reports] --> (View / Export) --> Family Member
```

8. Application Implementation

Modules Implemented in ServiceNow:

1. Custom Table: `u_family_expenses` for storing expense records.
2. Form Design: A form for users to input expense data.
3. Business Rules: Validate entries and trigger alerts when the budget exceeds.
4. Reports:
 - * Monthly Expense Summary Report
 - * Category-wise Expense Chart
 - * Family Member Spending Comparison
5. Dashboard: Centralized visualization using bar and pie charts.
6. Scheduled Jobs: Automatically generate monthly reports and email summaries.

9. Implementation

TASK INITIATION:

MILESTONE 1: Setting up ServiceNow Instance

ACTIVITY 1: Setting up ServiceNow Instance

- 1.Sign up for a developer account on the ServiceNow Developer site "<https://developer.servicenow.com>".
- 2.Once logged in, navigate to the "Personal Developer Instance" section.
- 3.Click on "Request Instance" to create a new ServiceNow instance.
- 4.Fill out the required information and submit the request.
- 5.You'll receive an email with the instance details once it's ready.
- 6.Log in to your ServiceNow instance using the provided credentials.
- 7.Now you will navigate to the ServiceNow.

MILESTONE 2: Creation of New Update Set

MILESTONE 3: Creation of Table

ACTIVITY 1: Creation of New Update Set

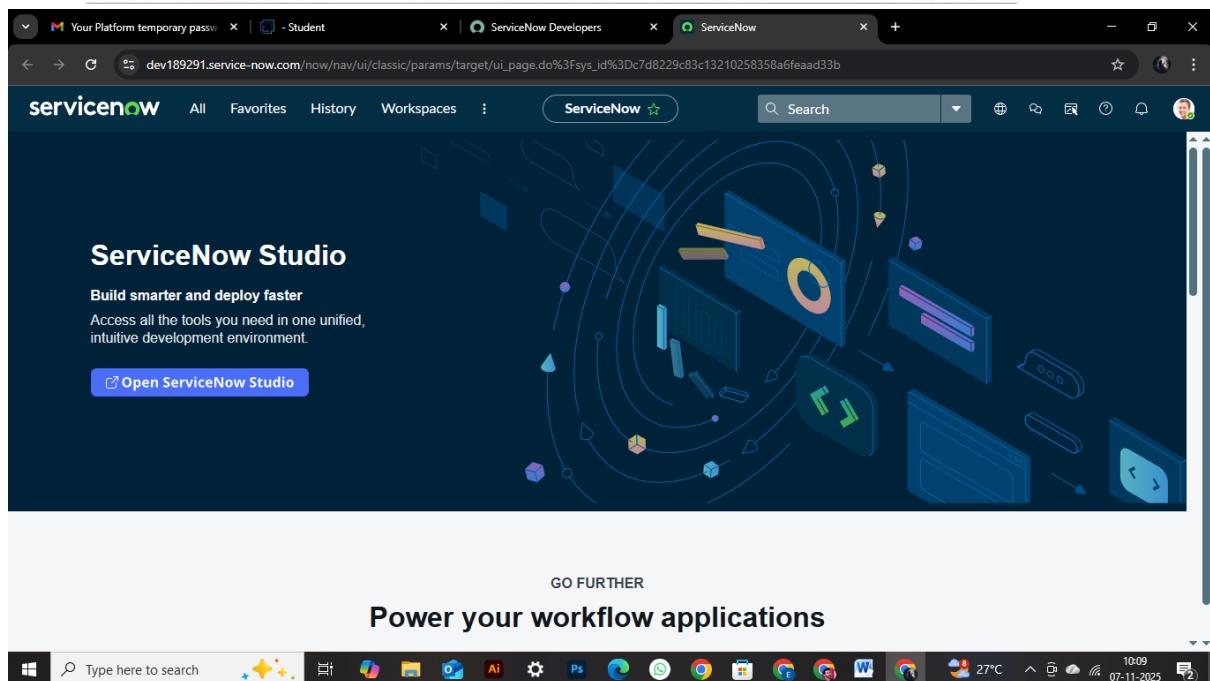
1. Go to All >> In the filter search for Local Update set > click on New.



2. Enter the Details as:

Name: Family Expenses

3. Then click on Submit and Make current.



ACTIVITY 1: Creation of New Update Set

1. Go to All >> In the filter search for Local Update set > click on New.



2. Enter the Details as:

Name: Family Expenses

3. Then click on Submit and Make current.

A screenshot of the ServiceNow "Update Sets" form. The title bar shows the URL "dev189291.service-now.com/now/nav/ui/classic/params/target/sys_update_set_list.do". The form has two columns of fields:

* Name: Family Expenses	Application: Global
State: In progress	Created: 2025-11-06 20:44:00
Parent: (dropdown)	Created by: admin
Release date: (date picker)	Merged to: (dropdown)
Install date: (date picker)	
Installed from: (text input)	
Description: (text area)	

At the bottom of the form, there's an "Update" button and a "Related Links" section with links to "Merge With Another Update Set" and "Scan Update Set". The status bar at the bottom shows the Windows taskbar with various icons and the date/time "07-11-2025 10:14".

- 1.Near Columns Double click near insert a new row.
- 2.Give the details as:
Column label: Number
Type: String
- 3.Double clicks on insert a new row again
- 4.Give the details as:
Column label: Date
Type: Date
- 5.Double clicks on insert a new row again
- 6.Give the details as:
Column label: Amount
Type: Integer
- 7.Double clicks on insert a new row again
- 8.Give the details as:
Column label: Expense Details
Type: String
Max length: 800

MILESTONE 4: Creation of Table

ACTIVITY 1: Creation of Family Expenses Table

1. Go to All > In the filter search for Tables > click on New.

2. Enter the Details:

Label: Family Expenses

Name: Auto-Populated

New menu name: Family Expenditure

The screenshot shows the ServiceNow interface for creating a new table named 'Family Expenses'. The table structure is as follows:

Column label	Type	Reference	Max length	Default value	Display
Created by	String	(empty)	40		false
Sys ID	Sys ID (GUID)	(empty)	32		false
Created	Date/Time	(empty)	40		false
Updated by	String	(empty)	40		false
Updates	Integer	(empty)	40		false
Updated	Date/Time	(empty)	40		false
Number	String				false
Date	Date				false
Amount	Integer				false
Expense Details	String		800		false

At the bottom of the table configuration, there are buttons for Delete, Update, and Delete All Records. The Windows taskbar at the bottom of the screen shows various open applications and the date and time (10:49, 07-11-2025).

3. Go to the Header and right click there>>
click on Save.

ACTIVITY 2: Creation of Columns (Fields)

5. Go to All >> In the filter search for Number Maintenance >> select Number Maintenance

6. Click on New.

7. Enter the below Details:

Table: Family Expenses

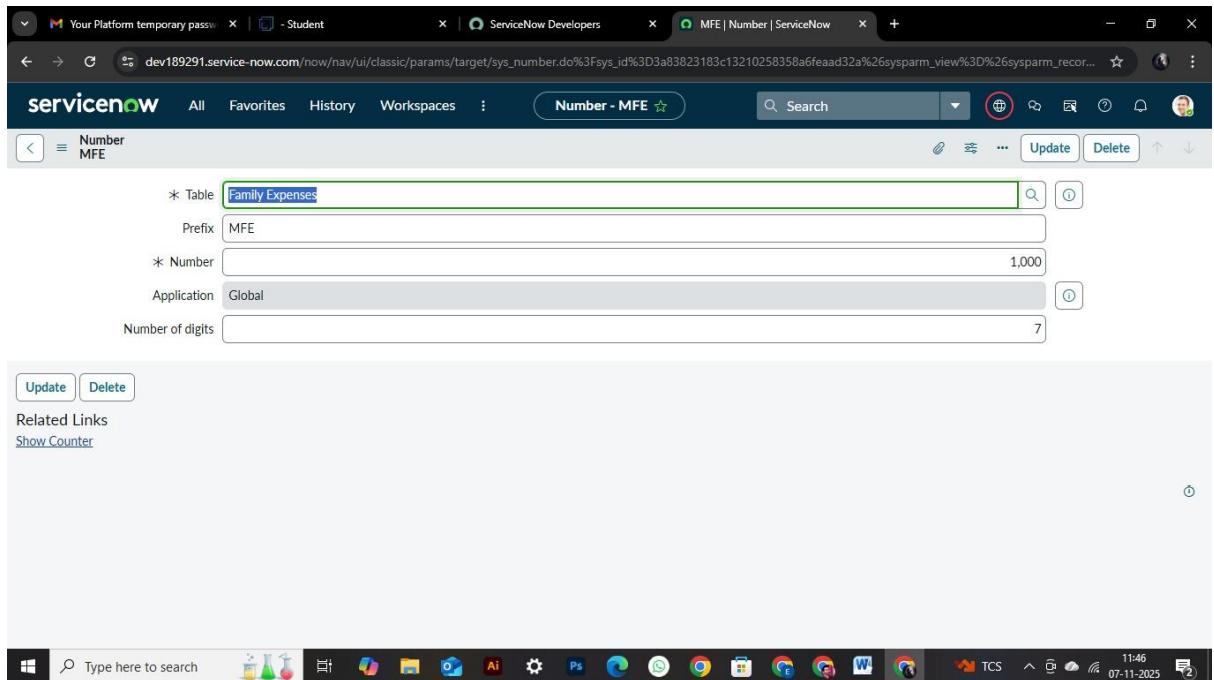
Prefix: MFE

The screenshot shows the ServiceNow Developers interface for creating a new table. The table is named "Family Expenses" with a label of "Family Expenses" and a name of "u_auto_populated". It is set to extend the "Global" application. Module creation checkboxes for "Create module" and "Create mobile module" are checked. The "Add module to menu" dropdown is set to "-- Create new --" and the "New menu name" field is empty. The "Remote Table" checkbox is unchecked. Below the table creation form, the table structure is shown with columns for "Column label", "Type", "Reference", "Max length", "Default value", and "Display". The columns listed are "Created by" (String, empty), "Sys ID" (Sys ID (GUID), empty), and "Created" (Date/Time, empty). The "Display" column shows values "false", "false", and "false" respectively. At the bottom of the screenshot, the Windows taskbar is visible with various icons and the date/time "07-11-2025 10:20 27°C".

9. Click on Submit.

ACTIVITY 4: Configure the Form

1. Go to All >> In the filter search for Family Expenses >> Open Family Expenses



- 2.Click on New
- 3.Go to the Header and right click there>> click on Configure >> Select Form Design
- 4.Customize or Drag Drop the form as per your requirement.

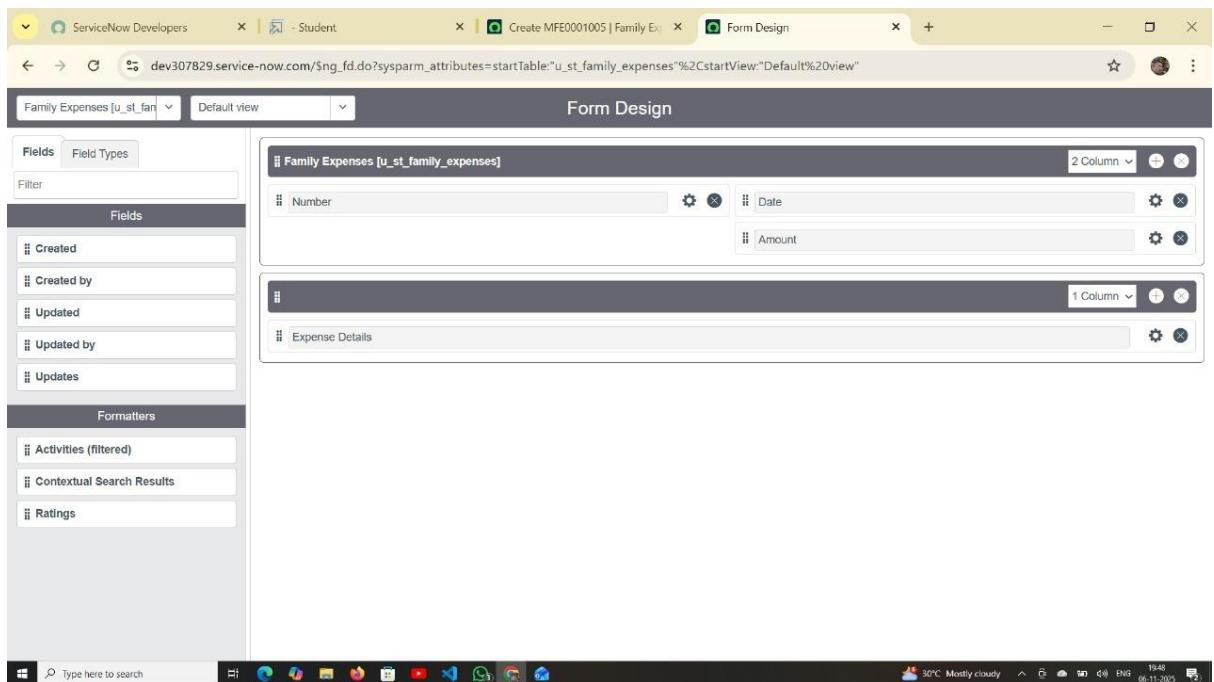
The screenshot shows the Oracle APEX Form Designer interface. It displays two sections of a form. The top section is titled 'Family Expenses [i_family_expenses]' and contains three fields: 'Number' (radio button), 'Date' (radio button), and 'Amount' (radio button). The bottom section is titled 'Expense Details' and contains one field. Both sections are configured with a '2 Column' layout.

- 5.Make Number Read-Only Field by clicking on the gear icon and checking Read-Only
- 6.Make Date, Amount Mandatory Field by clicking on the gear icon and checking Mandatory
- 7.Click on Save.

MILESTONE 5: Creation of Table (Daily Expenses)

ACTIVITY 1: Creation of Daily Expenses Table

- 1.Go to All > In the filter search for Tables > click on New.
- 2.Enter the Details:



The screenshot shows the ServiceNow Developers interface with the following details:

- Title Bar:** Daily Expenses | Table | ServiceNow
- Header:** servicenow All Favorites History Workspaces Table - Daily Expenses
- Table Definition:**
 - * Label: Daily Expenses
 - * Name: u_auto_populated2
 - Application: Global
 - Remote Table: (empty)
- Table Columns:** A grid showing six columns with their labels, types, references, max lengths, default values, and display settings.

Column label	Type	Reference	Max length	Default value	Display
Created by	String	(empty)	40	false	
Created	Date/Time	(empty)	40	false	
Updated by	String	(empty)	40	false	
Updates	Integer	(empty)	40	false	
Sys ID	Sys ID (GUID)	(empty)	32	false	

- System Status:** 11:54 07-11-2025

5.Double clicks on insert a new row again

6.Give the details as:

Column label: Expense

Type: Integer

7.Double click on insert a new row again

8.Give the details as:

Column label: Family Member Name

Type: Reference

Max length: 800

9.Double clicks on insert a new row again

10.Give the details as:

Column label: Comments

Type: String

Max length: 800

11.Go to the Header and right click there>>
click on Save.

ACTIVITY 3: Making Number Field an Auto-Number

1.Double clicks on the Number Field/Column.

2.Go down and double click on Advanced view

3.In Default Value:

Screenshot of ServiceNow interface showing two windows side-by-side.

Top Window: Table - Daily Expenses

Dictionary Entries

Column label	Type	Reference	Max length	Default value	Display
Created by	String	(empty)	40	false	
Created	Date/Time	(empty)	40	false	
Updated by	String	(empty)	40	false	
Updates	Integer	(empty)	40	false	
Sys ID	Sys ID (GUID)	(empty)	32	false	
Updated	Date/Time	(empty)	40	false	
Number	String				false
Date	Date				false
Expense	Integer				false
family Member Name	Reference		800		false
comments	String		800		false

Bottom Window: Dictionary Entry - Number

The Default value specifies what value the field has when first displayed.

Use dynamic default

Dynamic default value

Access Controls

Name	Decision Type	Operation	Type	Active	Updated by	Updated
------	---------------	-----------	------	--------	------------	---------

The image shows two screenshots of the ServiceNow interface. The top screenshot is titled 'Number - New Record' and shows a form for creating a new record. It includes fields for 'Table' (Family Expenses), 'Prefix' (MFE), 'Number' (1.000), 'Application' (Global), and 'Number of digits' (7). A 'Submit' button is at the bottom. Below the form is a section for 'Related Links' with a 'Show Counter' link. The bottom screenshot is titled 'Form Design' and shows the structure of a 'Daily Expenses [u_auto_populated2]' form. It features a 2-column grid with fields for 'Number' and 'Date'. Below this is a 1-column grid with fields for 'comments' and 'Expense'. On the left side of the design screen, there are tabs for 'Fields' and 'Field Types', and a sidebar with sections for 'Fields' (Created, Updated, etc.) and 'Formatters' (Activities, Contextual Search Results, Ratings).

6. Make Date, Family Member Name
Mandatory Field by clicking on the gear icon
and checking Mandatory
7. Click on Save.

MILESTONE 6: Creation of Relationship

ACTIVITY 1: Creation of Relationship between Family Expenses and Daily Expenses table

1. Go to All >> In the filter search for
Relationships >> Open Relationships
2. Click on New.
3. Enter the details:

Name : Daily Expenses

Applies to table : Select Family Expenses

Daily Expenses : Select Daily Expenses
4. Click Save.

MILESTONE 7: Configuring Related List on Family Expenses

Screenshot of the ServiceNow interface showing the configuration of a relationship named "Daily Expenses".

Relationship - Daily Expenses

Name: Daily Expenses

Application: Global

Advanced:

Applies to table: Family Expenses [u_auto_populate...]

Queries from table: Daily Expenses [u_auto_populated...]

This script refines the query in current that will populate the related list. For more information about it, its parameters and control variables, see [the documentation](#). See also the article about the [recommended form of the script](#).

Query with: Turn on ECMAScript 2021 (ES12) mode

```
1 (function refineQuery(current, parent) {
5 })(current, parent);
```

Run Query Diagnostics | Update | Delete

Related Links

Configuring related lists on Family Expenses form

Available: Attachments

Selected: Daily Expenses

View name: Default view

Cancel | Save

Related Links

Show versions | Related list performance diagnostics

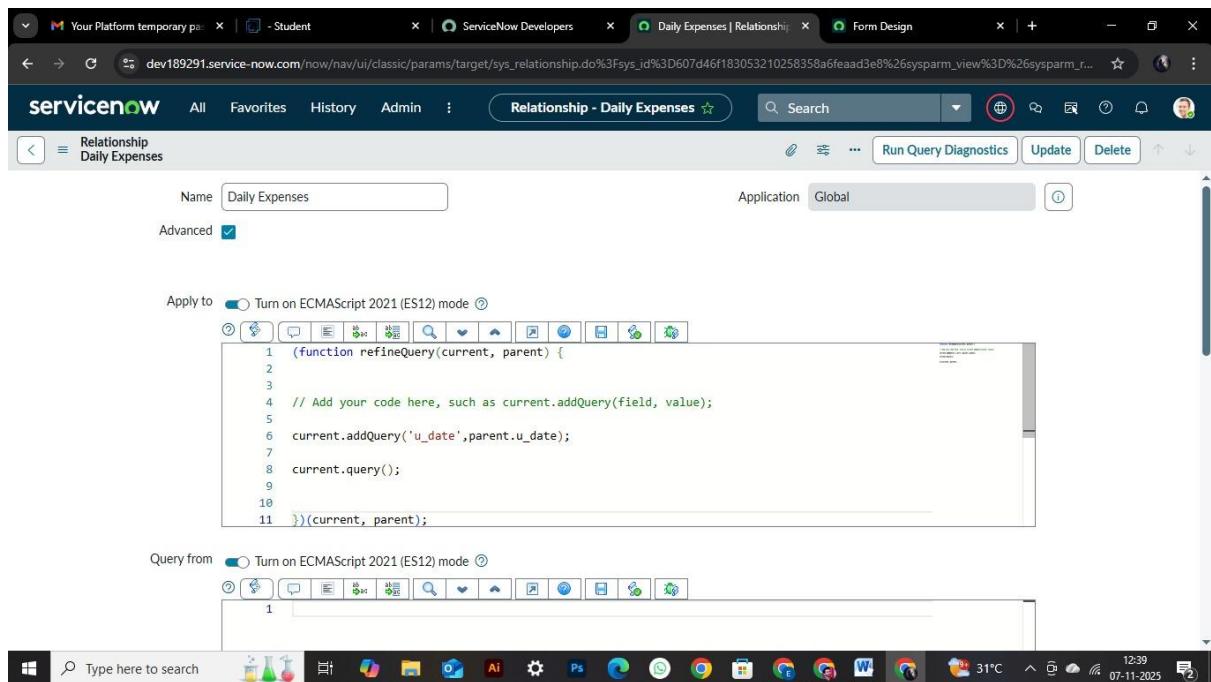
Business Rule - Family Expenses BR

Condition

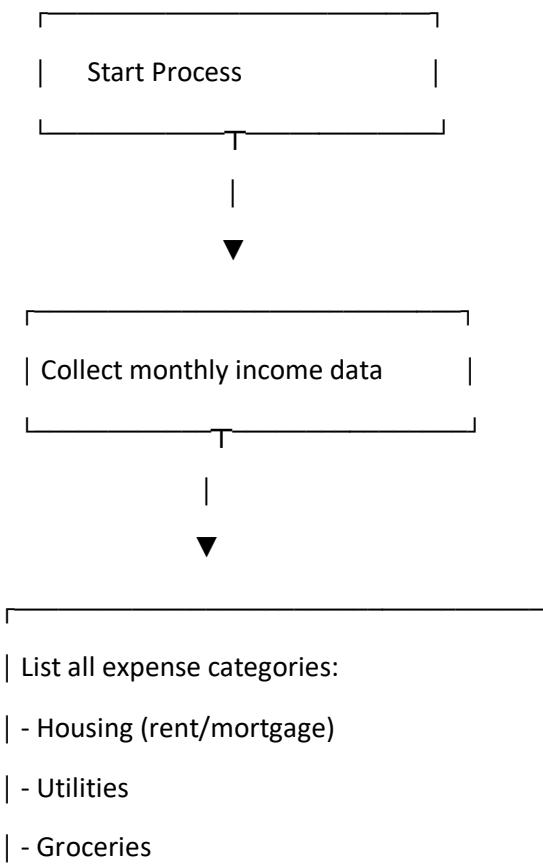
Script Turn on ECMAScript 2021 (ES12) mode

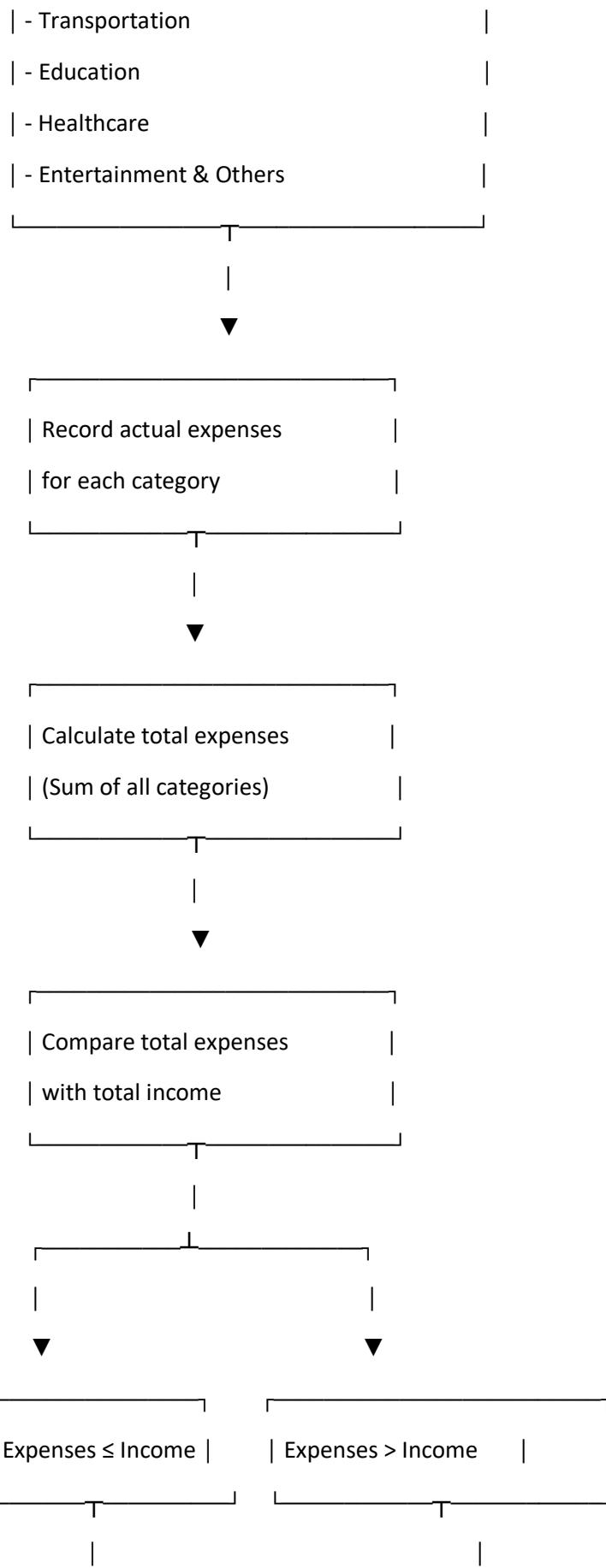
```
1 (function executeRule(current, previous /*null when async*/){  
10 if(FamilyExpenses.next())  
11 {  
12  
13 FamilyExpenses.u_amount += current.u_expense;  
14 FamilyExpenses.u_expense_details += ">" + current.u_comments + ":" + "Rs." + current.u_expense + "/";  
15 FamilyExpenses.update();  
16 }  
17 else  
18 {  
19 var NewFamilyExpenses = new GlideRecord('u_family_expenses');  
20 NewFamilyExpenses.u_date = current.u_date;  
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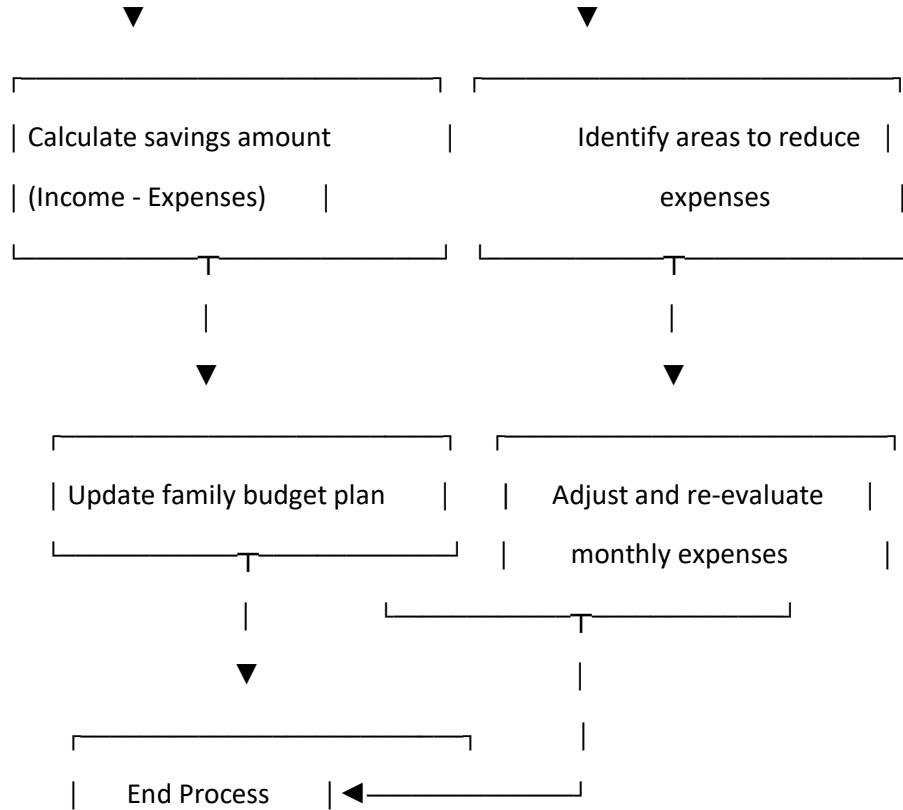
```



10. Flow chart

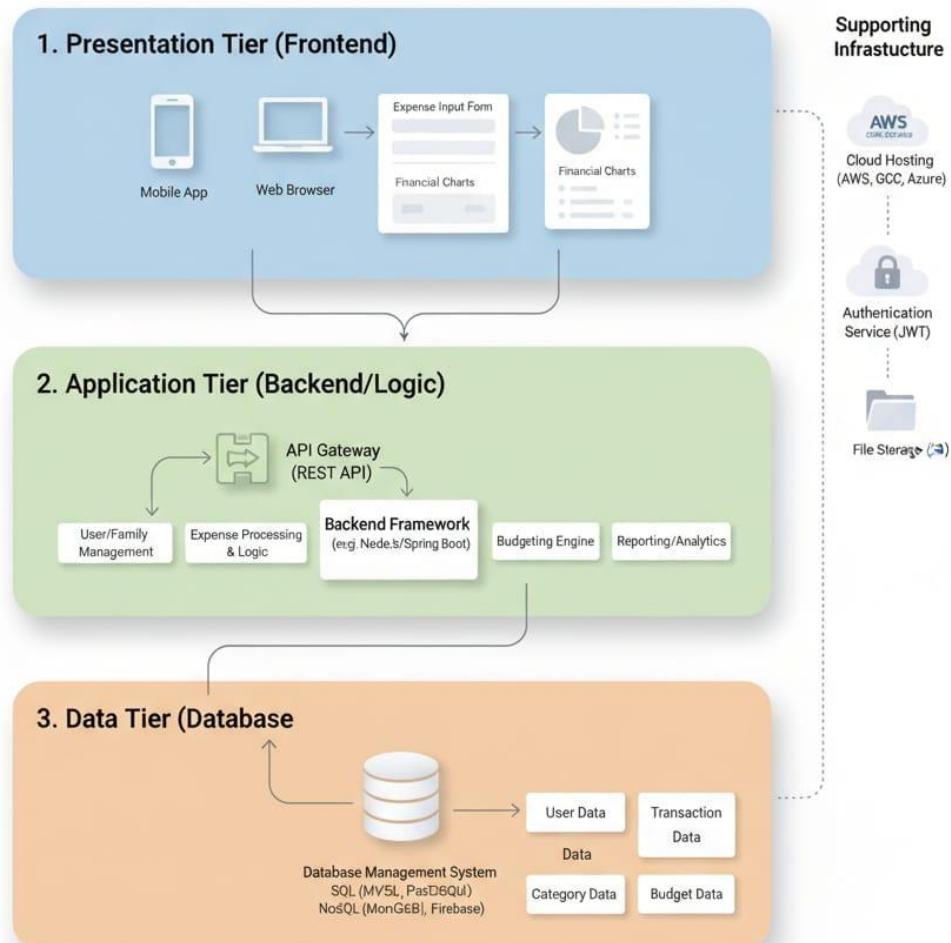






11. System architecture

System Architecture: Family Expense Tracker (Three-Tier)



12. Testing

Testing Types:

Test Type	Description	Result
Unit Testing	Tested each form and script individually	Passed
Integration Testing	Verified interaction between table, reports, and notifications	Passed

System Testing	Ensured full workflow operates correctly	Passed
User Acceptance Testing	Validated with sample family users	Passed

Sample Test Case:

Test Case	Input	Expected Output	Result
Add Expense	\$100, Category=Food	Record added successfully	Pass
Invalid Amount	-\$50	Error: Invalid Input	Pass
Report Generation	Monthly Filter	Report displays total expenses	Pass

13. Conclusion

The Family Expense Calculation System developed on the ServiceNow platform successfully automates the process of tracking and analyzing family expenses. It provides an efficient, transparent, and user-friendly approach to financial management. The solution offers real-time expense monitoring, visual insights, and reporting, making it a practical tool for household budgeting and decision-making. Future enhancements could include integration with bank APIs, mobile notifications, and predictive analytics for smarter budgeting.

14. Future Scope

- * Integration with Google Sheets or Excel for export.
- * Incorporation of AI-based budget recommendations
- * Development of a mobile app for on-the-go expense entry.
- * Voice-based expense logging using virtual assistants.

Final Deliverables

- * ServiceNow application: *Family Expense Management*
- * Reports: Monthly and Category-wise Expense Summary

- * Dashboard: Visual analytics and charts
- * Documentation: Project Report (this document)