

# Solution Architecture Document

Date:	November 02, 2025
Team ID:	NM2025TMID05019
Project Name:	Calculating Family Expenses using ServiceNow
Maximum Marks:	4 Marks

## 1. Architecture Overview

The Family Expense Automation System (FEAS) is a ServiceNow-native solution that automates the tracking and calculation of family expenses. It uses dynamic tables, relationships, and Business Rules to capture daily expenses, aggregate totals, and provide real-time dashboards for complete financial transparency.

## 2. Core Components & ServiceNow Modules

Component	ServiceNow Object	Purpose
Daily Expense Form	u_daily_expenses	Captures individual family member's expense entries
Family Expense Table	u_family_expenses	Aggregates all expenses per date
Business Rule	Custom Script	Updates Family Expense totals automatically
Relationship	Table Relationship	Links Daily Expenses to Family Expenses
Number Maintenance	Auto-number (MFE)	Ensures unique expense IDs
Dashboard	Performance Analytics	Displays expense summaries and trends

## 3. Data Model (Key Fields)

### u\_family\_expenses

Field	Type	Purpose
Number	String (Auto)	Unique identifier
Date	Date	Expense entry date
Amount	Integer	Total amount for that date
Expense Details	String(800)	Aggregated comments and breakdown

### u\_daily\_expenses

Field	Type	Purpose
Number	String (Auto)	Unique expense ID
Date	Date	Transaction date
Family Member Name	Reference	Links to family member
Expense	Integer	Amount spent
Comments	String(800)	Description or purpose

## 4. Processing Logic (Pseudocode)

### Business Rule: onInsert/onUpdate (u\_daily\_expenses)

```
(function executeRule(current, previous) {
  var fe = new GlideRecord('u_family_expenses');
  fe.addQuery('u_date', current.u_date); fe.query();
  if (fe.next()) {
    fe.u_amount += current.u_expense;
    fe.u_expense_details += '>' + current.u_comments + ': Rs.' +
current.u_expense + '/-';
    fe.update();
  } else {
```

```
var newFe = new GlideRecord('u_family_expenses');
newFe.u_date = current.u_date;
newFe.u_amount = current.u_expense;
newFe.u_expense_details = '>' + current.u_comments + ': Rs.' +
current.u_expense + '/-';
newFe.insert();
}
})(current, previous);
```

5. Integration Points

Integration	Direction	Protocol	Use Case
Excel Export	Outbound	CSV / XLS	Export monthly summaries
Email Notification	Outbound	SMTP	Send expense reports
Google Sheets (Optional)	Outbound	API	Sync daily entries
Dashboard	Internal	OOB	Visualize totals and trends

6. Non-Functional Requirements

NFR	Target	Validation
Performance	<3 sec update	ServiceNow logs
Scalability	1,000 entries/day	Stress test
Availability	99.9%	Instance uptime
Security	Role-based access	ACL validation
Maintainability	Low-code	Minimal scripting
Upgrade Safety	100% compatible	Update set review

7. Deployment & CI/CD

Environment	Instance	Deployment Method
Dev	dev-family-expenses-01	Update Set
Test	test-family-expenses-01	ATF + Clone
Prod	prod-family-expenses	Release Management

**Rollback Plan:** Disable Business Rule and revert to manual entry.

8. Monitoring & Observability

Tool	Metric	Alert Threshold
Performance Analytics	Expense Aggregation Time	>5 sec
System Logs	Script Errors	>5/hr
Instance Health	CPU/Memory Usage	>80%
Reports	Expense Data Integrity	Missing fields

9. Conclusion

The Family Expense Automation System (FEAS) provides a scalable, low-code ServiceNow architecture that automates expense tracking, ensures data accuracy, and delivers transparent financial insights. Recommendation: ■ Proceed with full implementation and reporting integration.