Project Design Phase – II

Technology Stack (Architecture & Stack)

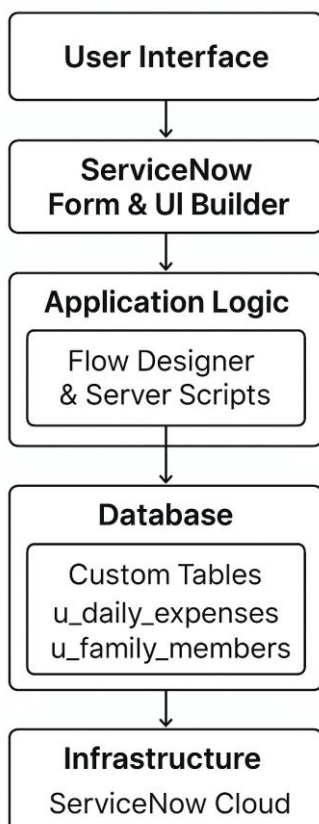| Date	2 November 2025
Team ID	NM2025TMID03101
Project Name	Calculating Family Expenses using Service Now
Maximum Marks	4 Marks

Technical Architecture

Description:

The Family Expense Tracker system is developed entirely on the **ServiceNow Platform** using a **cloud-based SaaS model**.

It allows users to log daily expenses, link them with family members through reference fields, and generate categorized reports. The system architecture ensures modularity, security, and scalability for multiple users and family groups.

The architecture contains the following layers:

- **User Interface Layer** – Custom forms and dashboards created using ServiceNow's UI Builder and Form Designer.
- **Application Logic Layer** – Handles data validation, automation, and calculations through Flow Designer and server-side scripts.
- **Database Layer** – Custom tables (Daily Expenses, Family Members, Expense Categories) managed within the ServiceNow instance.
- **Integration Layer** – Optional APIs for data import/export or connecting to third-party systems (e.g., Excel, analytics tools).
- **Infrastructure Layer** – Entirely hosted on **ServiceNow Cloud Infrastructure**, ensuring availability and data protection.

Components & Technologies:

S. No	Component	Description	Technology
1	User Interface	Users and Admins interact via ServiceNow forms and dashboards.	ServiceNow Web UI, UI Builder
2	Application Logic - 1	Handles creation and update of expense records.	ServiceNow Flow Designer
3	Application Logic – 2	Links each expense with a family member and validates entries.	Glide Record in Server Scripts
4	Application Logic – 3	Generates categorized expense summaries and visual charts.	ServiceNow Reporting & Performance Analytics
5	Database	Stores expense data, family member details, and categories.	Custom Tables (u_daily_expenses, u_family_members)
6	Cloud Database	Hosted on ServiceNow's internal cloud infrastructure.	ServiceNow Cloud Database
7	File Storage	Stores attached bills or receipts (optional).	ServiceNow Attachments & System Logs
8	External API – 1 (Optional)	Can connect to Excel or Google Sheets for exporting reports.	REST API Integration
9	External API – 2	Optional third-party analytics dashboard connection.	REST or Scripted API
10	Machine Learning Model	(Optional) Predictive analysis for future expense trends.	ServiceNow Predictive Intelligence
11	Infrastructure (Server / Cloud)	Fully managed SaaS environment ensuring uptime and scalability.	ServiceNow Cloud (SaaS)

Application Characteristics:

S.NO	Characteristics	Description	Technology
1	Open-Source Frameworks	Not applicable; fully built on ServiceNow proprietary framework.	—
2	Security Implementations	Implements ACLs, scoped application security, and role-based permissions.	Access Control Lists (ACL), Roles, Scoped App Security
3	Scalable Architecture	SaaS-based multi-instance architecture supports multiple users seamlessly.	ServiceNow Cloud Architecture
4	Availability	High availability ensured by ServiceNow's global data centres and redundancy	Load-balanced ServiceNow Instances
5	Performance	Optimized using asynchronous flows, indexed tables, and efficient Glide Record queries.	Flow Designer, Glide Record, Background Scripts
6	Maintainability	Modular table design and reusable UI components for easy updates	Application Studio, Reusable UI Components
7	Data Integrity	Enforces referential integrity between family members and expenses.	Reference Fields, Data Policies