A Major Project-1
On

"EXPENSE MANAGER & ANALYSIS SYSTEM"

SUBMITTED TO

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA
(M.P.)

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CANDIDATE DECLARATION

We **AMAN AGRAWAL**, **ANIKET JAIN**, **ARTH SINGHAL** AND **CHETAN SHARMA** students of B.Tech. (Computer Science) VII semester **Roll No 0905CS211017, 0905CS211021, 0905CS211031 and 0905CS211044** hereby declare that the Project entitled **"EXPENSE MANAGER & ANALYSIS SYSTEM"** which is being submitted to department of computer science & engineering in ITM Gwalior, is our authenticwork carried out in our VII semesters.

We declare that our work has not been submitted in part or in full to any other university or institution for the award of any degree or diploma.

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CERTIFICATE

This is to certify that the project entitled **"EXPENSE MANAGER & ANALYSIS SYSTEM"** being submitted by **Aman Agrawal (0905CS211017), Aniket Jain (0905CS211021), Arth Singhal (0905CS211031) and Chetan Sharma (0905CS211044)** in partial fulfillment of the requirement for the award of B. Tech. degree in Computer Science & Engineering to Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal (M.P.) is a record of bonafide work done by them, under my guidance.

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1. Introduction

1.1 Aim

The primary aim of this project is to create a comprehensive platform that addresses the expense management needs of employees. By providing a centralized system, the project seeks to simplify financial tracking, making it easier for users to monitor income, expenses, and transaction history. The platform is designed to support employees in making informed financial decisions, ultimately improving their money management skills.

1.2 Objective

This project is built with the objective of delivering a user-friendly interface that enables seamless tracking of financial activities. The platform emphasizes offering detailed analytics of income and expenditure patterns through visual tools like graphs, reports, and trend analyses. Additionally, the integration of complementary features such as access to hostel, paying guest (PG) accommodations, and mess services is targeted at addressing the unique needs of employees who work across different locations. These features enhance the platform's usability and provide value beyond basic expense management.

1.3 Vision

The vision of this project is to empower employees by fostering better financial habits and promoting cost-effective lifestyles. By delivering actionable insights and personalized suggestions, the platform aims to encourage users to adopt strategies to reduce unnecessary spending. The broader vision is to create a tool that not only helps individuals manage their expenses but also improves their overall financial well-being, offering them peace of mind and greater control over their resources.

2. Problem Statement

Employees working across multiple regions often face significant challenges in managing their finances effectively. High living costs, difficulties in finding affordable lodging such as hostels or paying guest (PG) accommodations, and irregular meal options from messes add to their financial strain. The current methods available for tracking expenses, securing lodging, and organizing meals are disjointed and lack integration, making financial management more cumbersome and time-consuming.

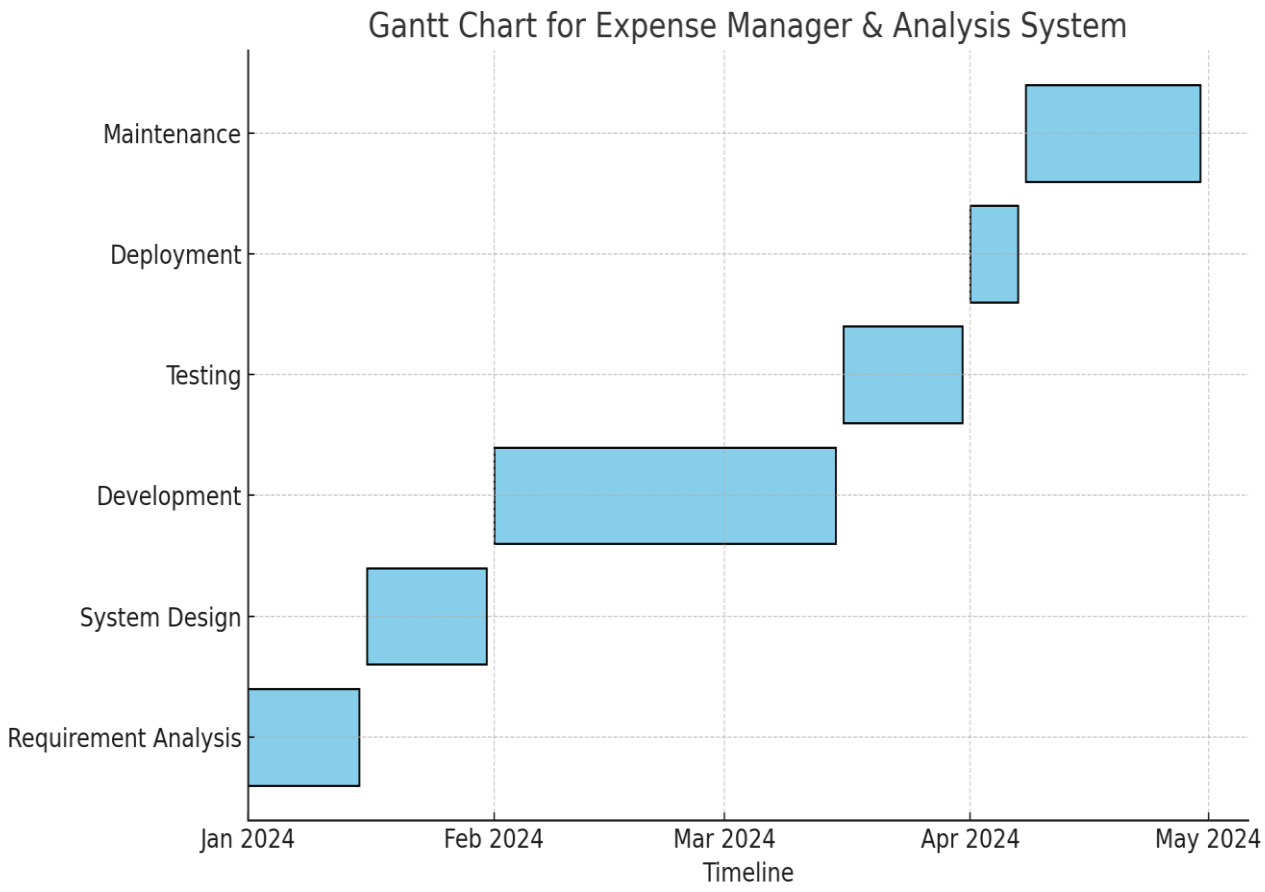
To address these issues, there is a need for a centralized platform that streamlines expense tracking, provides detailed financial analytics, and consolidates options for food and lodging. Such a solution would empower employees to make informed financial decisions, better manage their budgets, and adopt effective cost-saving strategies.

3. Project Monitoring System

A Project Monitoring System tracks and manages project progress, resources, and risks to ensure timely and efficient completion. It includes features like task assignment, milestone tracking, reporting, and real-time dashboards. The system helps improve collaboration, transparency, and accountability, making it ideal for industries like IT, construction, and event management.

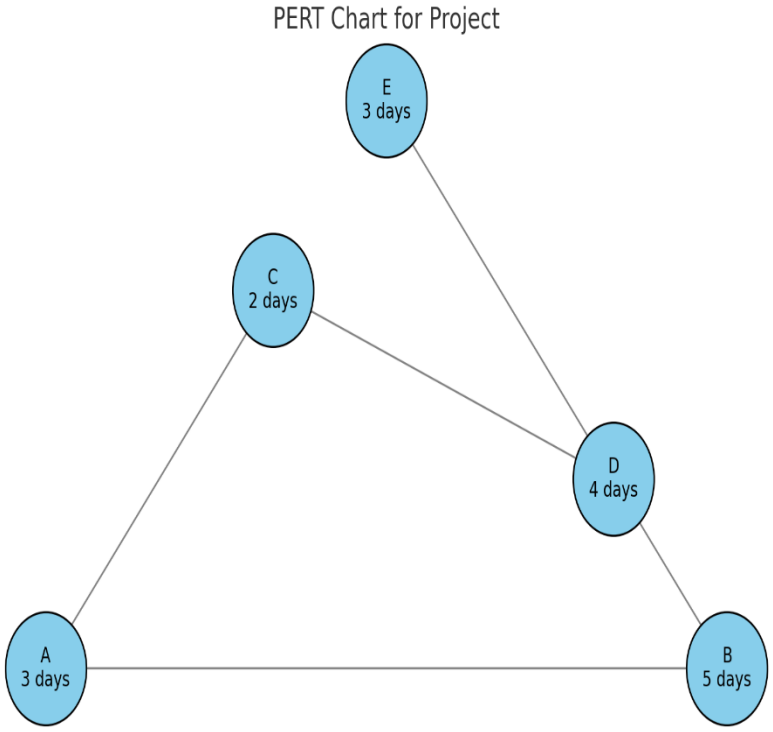
3.1. Gantt Chart

A **Gantt Chart** is a visual tool used in project management to represent tasks or activities over time. It displays tasks on a timeline, with each task shown as a bar, illustrating its start date, duration, and end date.



3.1. Pert Chart

A **PERT Chart** for the *Expense Manager & Analysis System* maps key project tasks, dependencies, and timelines. It identifies critical tasks like **requirements gathering, system design, development (frontend, backend, database), testing, and deployment**. Tasks are represented as nodes connected by arrows showing dependencies. It calculates time estimates (Optimistic, Most Likely, Pessimistic) to predict project duration and highlights the **Critical Path** for timely completion.



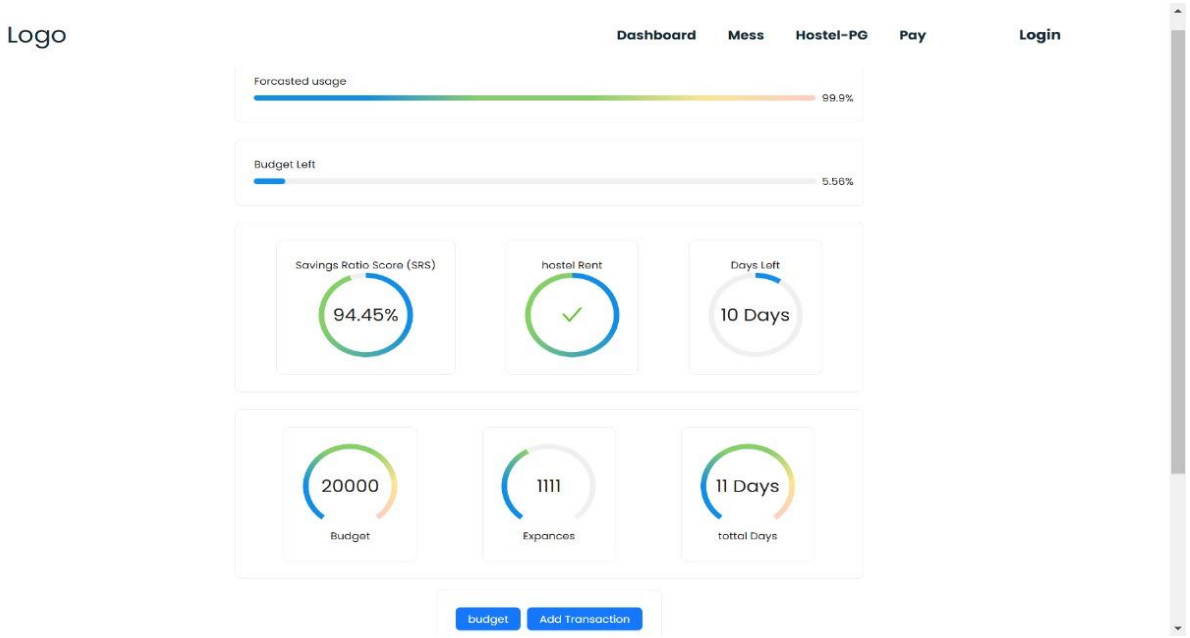
Start Node: Represents the beginning of the project.

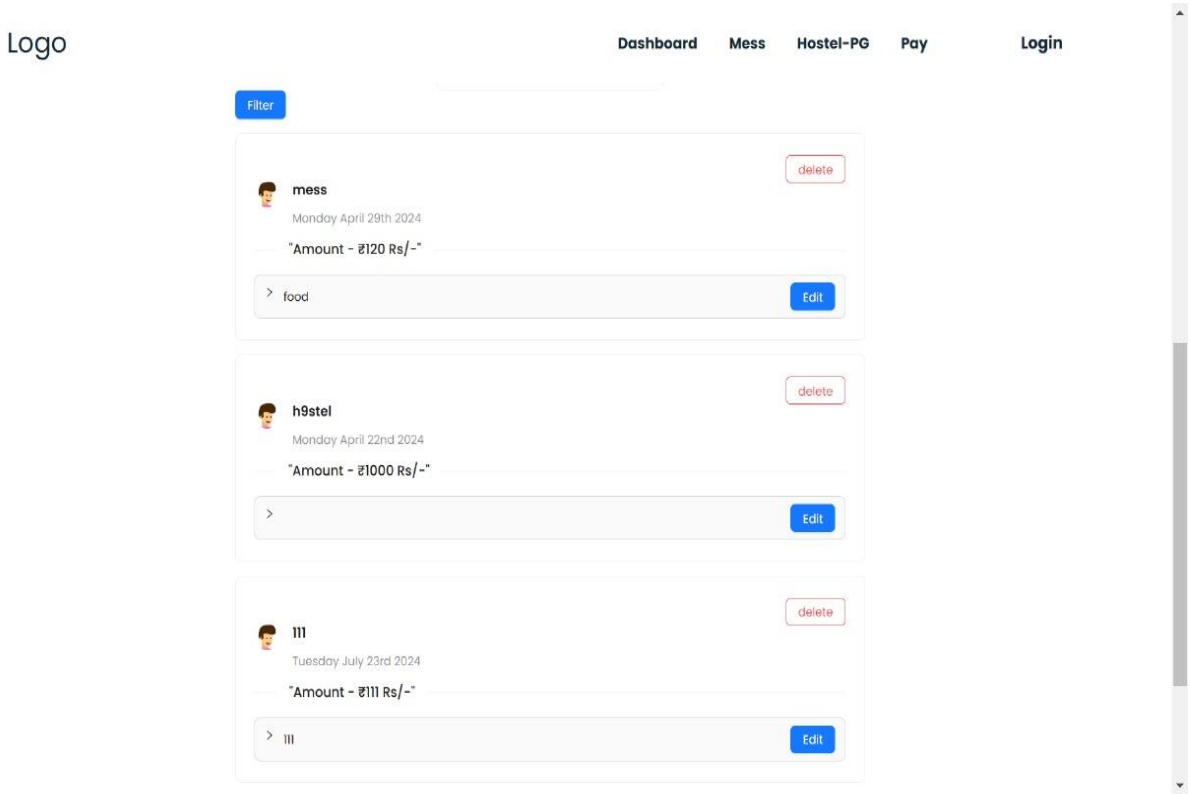
Nodes: Represent tasks (e.g., A, B, C).

Arrows: Indicate task dependencies (e.g., A → B).

Critical Path: Highlight tasks with no slack time (longest path).

4. Images of the Project





5. System Study

5.1. Existing System and Limitations

Currently, individuals and employees often rely on fragmented tools and manual processes for managing their finances. Expense tracking is typically done through spreadsheets, standalone mobile apps, or manual notes, while finding affordable lodging such as hostels or PG accommodations often requires searching multiple platforms. Similarly, organizing regular meal options involves additional effort, often relying on informal arrangements or multiple service providers. These existing methods are disjointed and lack integration, leading to inefficiencies and poor financial decision-making.

Moreover, the lack of detailed analytics and centralized platforms prevents users from gaining actionable insights into their financial habits. Most systems fail to provide features like visualized spending trends, cost-saving suggestions, or combined tracking of income, expenses, and lodging/meal costs in one place. As a result, users face difficulties in optimizing their budgets and reducing unnecessary expenses. These limitations underline the need for a comprehensive and integrated solution that addresses these challenges holistically.

5.2. Proposed System with Objectives

The proposed system, Expense Manager & Analysis System, is designed to provide a centralized and user-friendly platform for managing expenses, income, and other essential financial aspects. This system will integrate features such as expense tracking, financial analytics, and access to affordable lodging (hostels or PGs) and meal options (messes), making it an all-in-one solution tailored to the needs of employees working across different regions.

The platform will offer detailed insights into users' financial habits through visual tools like graphs, trends, and reports, enabling them to identify areas for cost reduction and improve their financial management. Additionally, the system will include features for organizing and accessing lodging and meal services, saving users time and effort while promoting cost-effective living.

5.3. Feasibility Study

5.3.1. Operational

User-Centric Design: The proposed platform focuses on solving key pain points such as fragmented expense tracking and disorganized lodging/meal arrangements.
Ease of Adoption: With its user-friendly interface, employees with varying technical proficiency can easily navigate the system.
Enhanced Productivity: Centralizing expense management, analytics, and accommodation/meal options saves users time and effort, improving decision-making and financial management.

5.3.2. Technical

Frontend: React.js ensures a responsive and interactive user interface.
Backend: Node.js and Express.js provide robust server-side functionality.
Database: MongoDB offers efficient storage and retrieval of large datasets, including expenses, accommodation, and user data.
Skill Requirements: The MERN stack requires expertise in full-stack development, readily available in the market.
Integration: Third-party tools (e.g., Chart.js for analytics, APIs for lodging/meal services) are easy to integrate with the MERN architecture.

5.3.3. Economic

Development Costs:

a) Software development (MERN stack) is cost-effective due to open-source frameworks.
b) Minimal licensing costs, as most libraries and tools used are free or low-cost.

Operational Costs:

a) Hosting on cloud services like AWS or Heroku ensures efficient resource usage at a reasonable cost.
b) Maintenance expenses are manageable, given the simplicity of the architecture.

6. System Analysis

6.1.Requirement Specification

Functional Requirements

These are the core features the system must provide to fulfill its purpose:

a) **User Authentication and Management**:

- Users can register and log in securely (via email, password, or third-party services like Google).
- Password reset functionality.

b) **Expense Tracking**:

- Add, edit, delete, and categorize expenses (e.g., food, travel, rent).
- Record income details.
- View detailed transaction history.

Hardware and Software Requirements

These define the infrastructure necessary to develop and deploy the system.

a) **Hardware Requirements**:

Development Environment:

- Processor: Intel i5 or higher.
- RAM: 8 GB minimum.
- Storage: 500 GB SSD.

Server:

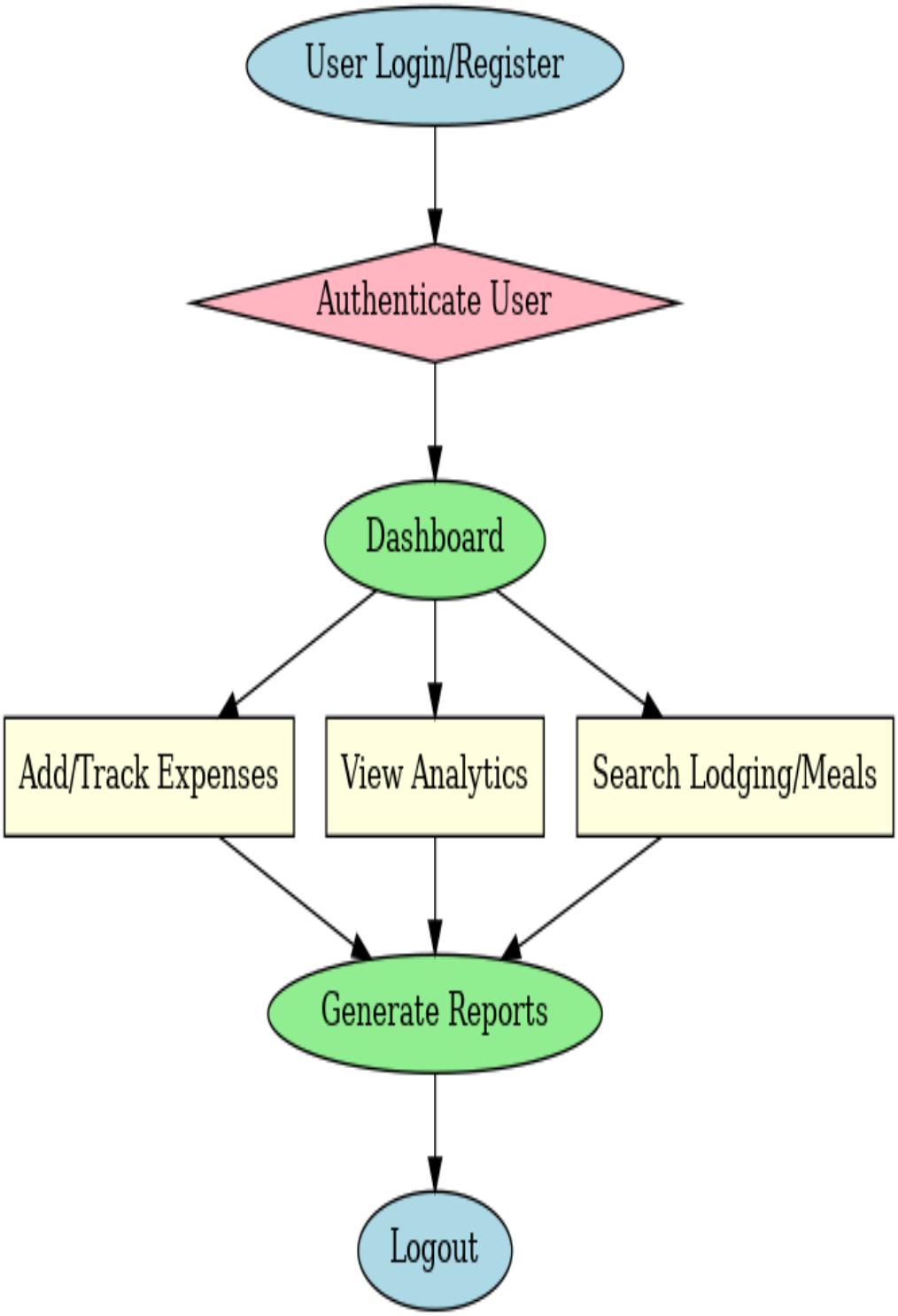
- Cloud server with at least 4 CPUs, 8 GB RAM, and 50 GB storage.
- Client Devices:
- Any device with a modern web browser (mobile, tablet, desktop).

b) **Software Requirements**:

- Frontend: React.js, Redux, Material-UI/Bootstrap for styling.
- Backend: Node.js, Express.js.
- Database: MongoDB (NoSQL database).
- Development Tools: Visual Studio Code, Postman (API testing).
- Hosting Platforms: Heroku, AWS, or Vercel.

- Version Control: Git and GitHub for source code management.

6.2. System flowchart



6.3. DFD

A Data Flow Diagram (DFD) is a visual representation of how data moves through a system.

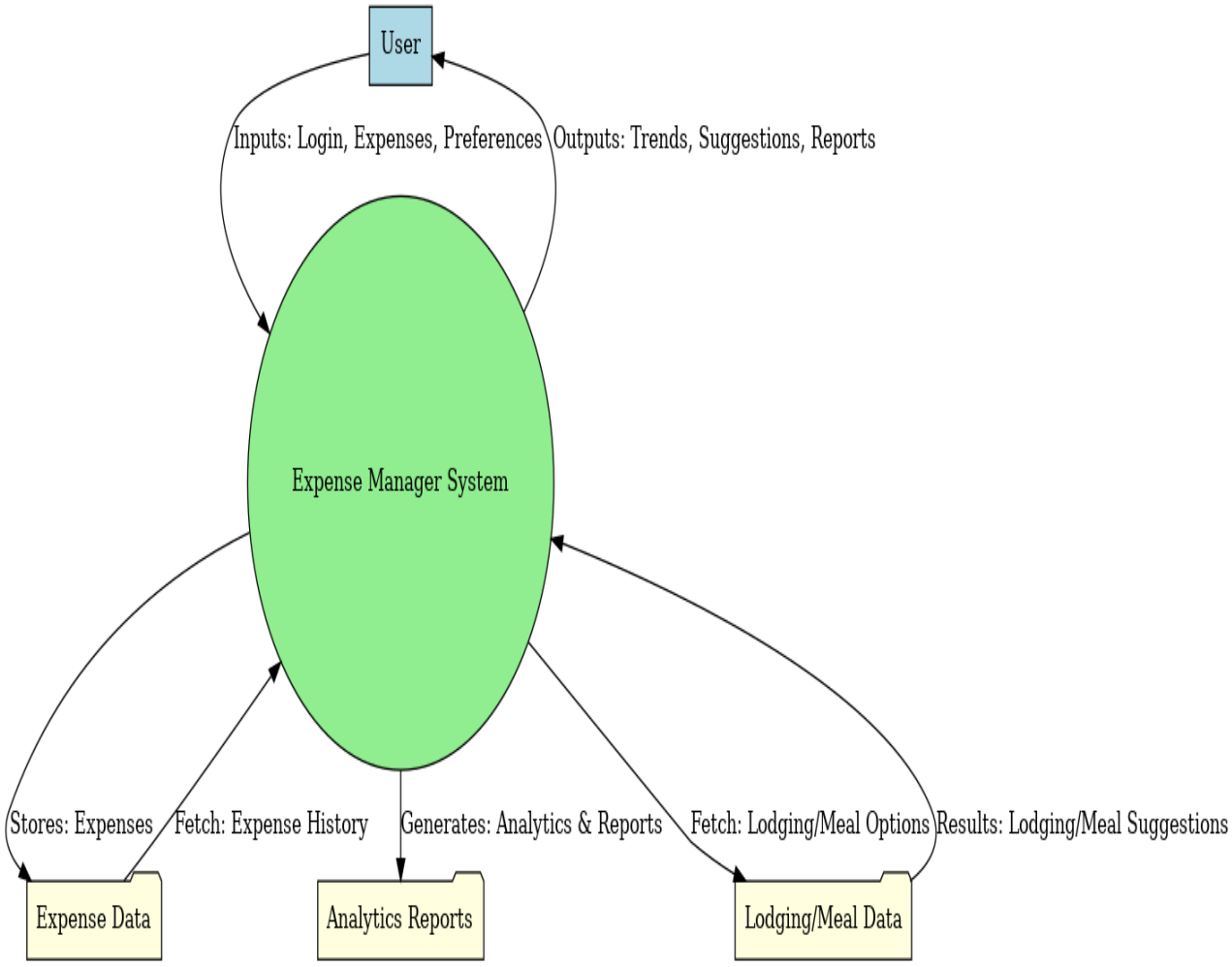
For the *Expense Manager & Analysis System*

Processes: Key actions like *Add Expense*, *Generate Report*, or *Analyze Data*.

Data Stores: Locations where data is stored, such as a *User Database* or *Expense Records*.

External Entities: Interactions with users or external systems like *Users* or *Bank APIs*.

Data Flows: Arrows representing the flow of data (e.g., *Expense Details* sent from users to the database**)**



6.4. Sources of data

a) User-Provided Data
   - Personal Information
   - Expense Entries

b) External Data Sources
   - Financial APIs
   - Payment Gateways

c) System-Generated Data
   - Expense History
   - User Activity Logs

d) Data Storage Locations
   - Database
   - Temporary Caches
   - File System

7. Future Scope of the Project

1. **Google Maps Integration in React**: Include a map component in the React application by utilizing the Google Maps API. Users can view geographic data and explore neighboring sites on an interactive map thanks to this connection.

2. **Useless expenses detection**: Finding wasteful or needless spending can have a big impact on improving financial management and optimizing the budget. Finding expenses that don't add value or that may be cut or eliminated without compromising critical services or quality of life is the goal of this procedure.

3. **Displaying Future Predictive Expenses**: One useful function of budget management platforms is the ability to forecast future costs based on past transaction history. This feature helps customers plan for future expenses and gives them insights into their spending habits.

8. REFERENCES

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