UTM

UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF TECHNOLOGY

SECJH – BACHELOR OF COMPUTER SCIENCE (SOFTWARE ENGINEERING)

SECD2613 – SYSTEM ANALYSIS & DESIGN

PROJECT

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1. Project Overview: Expense Tracking System (ETS)

Project Title:

Expense Tracking System (ETS)

Project Team:

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Executive Summary:

The Expense Tracking System (ETS) is an innovative solution designed to help users manage their finances effectively. This project aims to create a user-friendly platform where individuals can effortlessly record, categorize, and analyse their expenses. With the increasing importance of financial management in both personal and business contexts, ETS addresses a critical need for a comprehensive and accessible tool that promotes financial literacy and decision-making.

Objectives:

1. **User-Friendly Interface:** Develop an intuitive platform for recording and categorizing expenses.
2. **Advanced Analytics:** Implement robust reporting and analytics features to provide insights into spending habits and financial trends.
3. **Multi-Platform Accessibility:** Ensure the system is accessible on various devices, including smartphones, tablets, and desktops.
4. **Budget Management:** Offer features for setting and tracking budgets across different expense categories.
5. **Empower Financial Stability:** Support users in achieving financial stability and well-being through practical financial management tools.

Budget:

- **Personnel Costs:** RM90,000 per month
- **Equipment Costs:** RM8,000 (development computers), RM3,000 (testing devices), RM5,000/year (servers)
- **Software Costs:** RM2,000 (IDE), RM1,500/year (project management tools), RM1,000 (design tools), RM500 (testing tools)
- **Miscellaneous Costs:** RM2,000 (training materials), RM1,000 (user documentation), RM3,000 (marketing)
- **Contingency Fund:** RM9,800
- **Total Estimated Budget:** RM106,800

Measurement and Reporting:

- **Progress Updates:** Weekly progress meetings
- **Milestone Tracking:** Identify and track key milestones (system design completion, development sprints, testing phases, deployment)
- **Performance Metrics:** Adherence to timeline, budget variance, quality of deliverables, user satisfaction

Risks and Mitigation:

1. **Technical Complexity:** Mitigate through feasibility studies and prototype testing.
2. **Resource Constraints:** Monitor resource utilization and adjust plans; consider outsourcing.
3. **Scope Creep:** Define clear project scope and objectives; establish change management procedures.
4. **Security Vulnerabilities:** Implement robust security measures; conduct regular security audits.
5. **User Adoption:** Conduct user research and usability testing; provide comprehensive training.
6. **External Dependencies:** Document dependencies early; establish communication channels with external stakeholders.
7. **Regulatory Compliance:** Stay informed about regulations; conduct compliance assessments; engage legal experts.

2. PROBLEM STATEMENT

In today's fast-paced and increasingly digital world, effective financial management is a critical skill for both individuals and businesses. Despite the availability of various tools and resources, many people still struggle to track their expenses accurately, leading to poor financial decision-making and instability. Traditional methods of expense tracking, such as manual entry in spreadsheets or using basic budgeting apps, often prove to be cumbersome, time-consuming, and prone to errors. Additionally, these methods typically lack advanced features that provide comprehensive insights into spending patterns and financial health.

The lack of an efficient, user-friendly, and comprehensive expense tracking solution has significant implications:

1. **Financial Mismanagement**: Without proper tools to monitor and analyze their expenses, individuals and businesses often face difficulties in managing their budgets, leading to overspending and financial strain.
2. **Lack of Financial Literacy**: A gap in understanding personal spending habits and financial trends hinders users from making informed decisions, ultimately affecting their financial stability and growth.
3. **Inefficiency and Inconvenience**: Existing expense tracking methods are often not integrated with modern technology, resulting in inefficiencies and inconvenience for users who need real-time access to their financial data across multiple devices.
4. **Limited Accessibility**: Many existing solutions do not offer multi-platform accessibility, restricting users from accessing their financial information seamlessly across different devices, which is crucial in today's mobile-centric environment.
5. **Inadequate Reporting and Analytics**: Basic expense tracking tools fail to provide robust reporting and analytics capabilities, leaving users without meaningful insights into their financial behavior and trends.

Given these challenges, there is a clear need for a sophisticated expense tracking system that addresses these pain points. The proposed Expense Tracking System (ETS) aims to fill this gap by offering a user-friendly, technologically advanced platform that enables users to record, categorize, and analyze their expenses effortlessly. With features such as cloud computing, mobile accessibility, robust reporting, and budget management functionalities, ETS will empower users to take control of their finances, enhance their financial literacy, and achieve financial stability and well-being.

3. Proposed Solutions

To address the identified problems in expense tracking and financial management, the development of a comprehensive Expense Tracking System (ETS) is proposed. The ETS aims to provide a user-friendly, technologically advanced platform that will enable users to effectively manage their finances. The proposed solutions include the following key components:

1. **Centralized Expense Recording and Categorization**:
    - **User-Friendly Interface**: Develop an intuitive and easy-to-navigate interface that allows users to quickly record their expenses. The system will support various expense categories and enable users to customize categories according to their needs.
    - **Automated Data Entry**: Implement features such as receipt scanning and OCR (Optical Character Recognition) to automate the entry of expense data, reducing manual input and errors.
2. **Advanced Reporting and Analytics**:
    - **Comprehensive Reports**: Provide users with detailed reports on their spending habits, including monthly summaries, category-wise breakdowns, and trend analysis. These reports will be generated in real-time and can be customized based on user preferences.
    - **Data Visualization**: Incorporate visual aids such as graphs and charts to help users easily understand their financial data and identify patterns or anomalies in their spending behavior.
3. **Multi-Platform Accessibility**:
    - **Cross-Device Compatibility**: Ensure the ETS is accessible across multiple platforms, including web, iOS, and Android, allowing users to manage their finances on any device, anytime, anywhere.
    - **Cloud Synchronization**: Implement cloud computing to enable real-time synchronization of data across all devices, ensuring users always have up-to-date financial information at their fingertips.
4. **Budget Management Features**:
    - **Budget Setting and Tracking**: Allow users to set budgets for different expense categories and track their spending against these budgets. The system will provide alerts and notifications when users are close to exceeding their budgets.
    - **Goal Setting**: Enable users to set financial goals (e.g., saving for a vacation, reducing debt) and track their progress towards achieving these goals within the ETS.
5. **Enhanced Security and Data Privacy**:
    - **Secure Data Storage**: Implement robust security measures, including encryption and secure servers, to protect user data from unauthorized access and breaches.
    - **Privacy Controls**: Provide users with control over their data, allowing them to manage permissions and decide what information they wish to share.
6. **User Education and Support**:

- **Financial Literacy Resources**: Integrate educational resources within the ETS to help users improve their financial literacy. This can include articles, videos, and tutorials on budgeting, saving, and investment strategies.
- **Customer Support**: Offer comprehensive customer support through various channels (e.g., chat, email, phone) to assist users with any issues or questions they may have.

7. **Continuous Improvement and Iteration**:
    - **User Feedback Mechanism**: Establish a system for collecting user feedback to continuously improve the ETS. Regular updates and enhancements will be made based on user input and emerging technological trends.
    - **Agile Development**: Adopt agile development methodologies to ensure flexibility and responsiveness to changing user needs and market conditions.

By implementing these solutions, the Expense Tracking System will provide a robust, user-centric platform that addresses the current challenges in expense tracking and financial management. The ETS will empower users to take control of their finances, make informed decisions, and achieve their financial goals with greater ease and confidence.

4. Information Gathering Process

4.1 Method Used

Developing an effective Expense Tracking System (ETS) involves a structured approach to gathering requirements, designing the system, and ensuring it meets user needs. Here are the methods used that we used to gathering process for an Expense Tracking System (ETS):

QUESTIONNAIRES:

- Distribute surveys or questionnaires to a broader audience to collect quantitative and qualitative data.
- Objective is to understand specific features, usability preferences and requirements for the Expense tracking System (ETS)..

Question to ask:

1. Do you currently use any software for expense tracking?
    a. Yes
    b. No

2. What is your occupation?

    _____

3. What method do you currently use to track expenses?
    - Spreadsheet
    - Mobile App
    - Paper Logs
    - Notebook

4. How Frequently do you record expenses?
    - Daily
    - Weekly
    - Monthly
    - _____

5. What types of expenses do you track?
    - Travel
    - Meals
    - Entertainment
    - Utilities

6. Rate the Security and Data Privacy in your Tracking Expenses?
    a. Very Satisfied
    b. Satisfied
    c. Neutral
    d. Dissatisfied
    e. Very Dissatisfied

7. Rate the Reporting and Analytics in your Tracking Expenses
    a. Very Satisfied
    b. Satisfied
    c. Neutral
    d. Dissatisfied
    e. Very Dissatisfied

8. Would you be willing to participate in a testing new app for the Expense Tracking System?
    a. Yes
    b. No

9. What challenges do you face with your current expense tracking app?

    _____

10. Do you have any specific accessibility needs that should be considered?

    _____

4.2 Summary of Method Used

Method Used: Questionnaires

To develop an effective Expense Tracking System (ETS), a structured approach to gathering requirements and designing the system is crucial. One of the primary methods used in this process is distributing questionnaires. This method helps in collecting both quantitative and qualitative data from a broad audience to understand user needs and preferences. The main objectives are to identify specific features, usability preferences, and requirements for the ETS.

Purpose and Utility:

The questionnaire serves to:

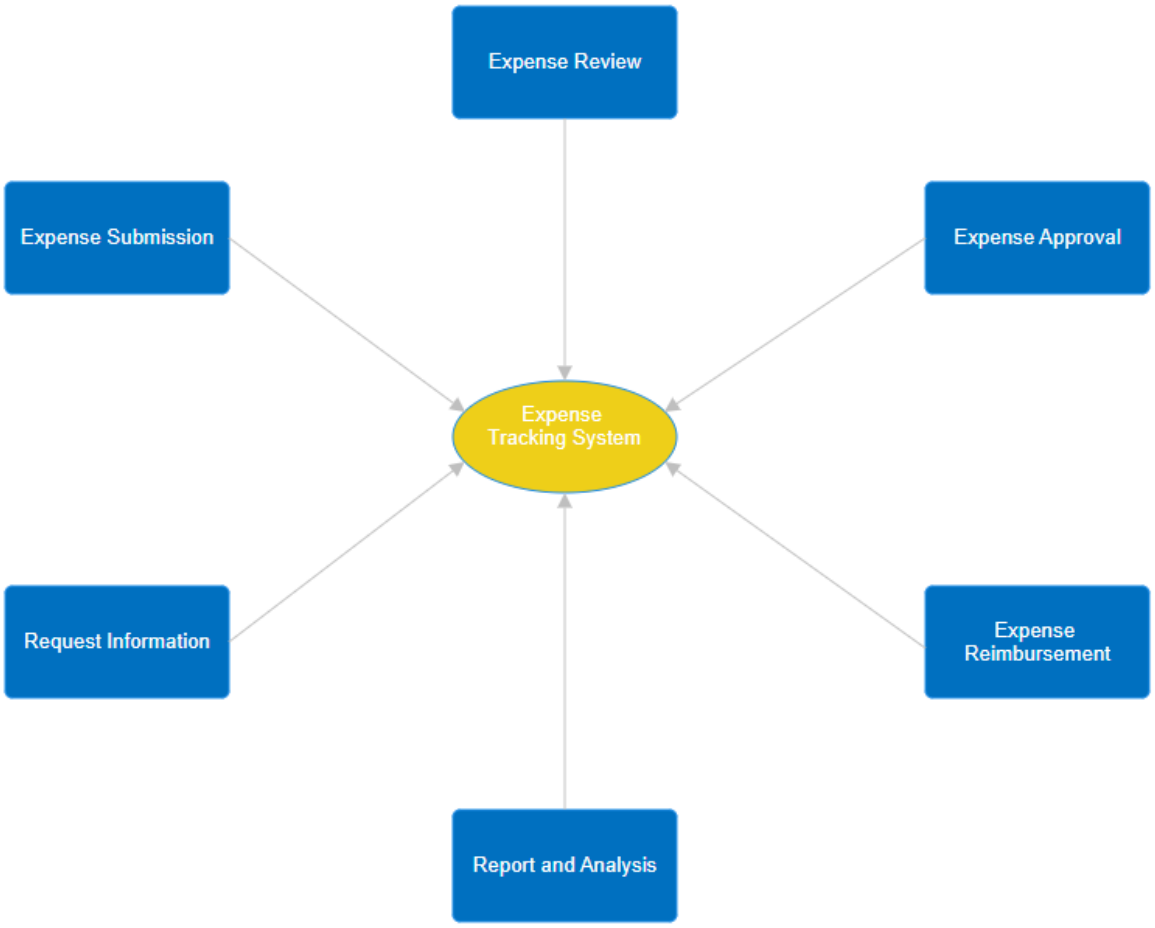
- Identify the current tools and methods users employ for tracking expenses.
- Determine user satisfaction with aspects like security, data privacy, and reporting.
- Understand the frequency and types of expenses tracked.
- Collect information on user occupations to tailor features accordingly.
- Gauge interest in participating in testing the new ETS app.
- Highlight specific challenges and accessibility needs to ensure the system is user-friendly and inclusive.

This structured approach ensures that the developed ETS aligns with user needs and preferences, providing a robust and effective solution for expense tracking.

5. Requirement Analysis

5.1 Current business process

This is the Dataflow of the Expense Tracking System (ETS).



5.2 Functional Requirement

This is the input, process and control of the Expense Tracking System (ETS)

Input:

- User

Process:

- Expense Submission
- Expense Review
- Expense Approval
- Request Information
- Expense Reimbursement
- Report and Analysis

Output:

- System
- Finance Department

5.3 Non-Functional Requirement

Non functional requirements are crucial for defining the quality attributes of the system. These are the requirement for the Expense Tracking System (ETS):

Performance Requirements:-

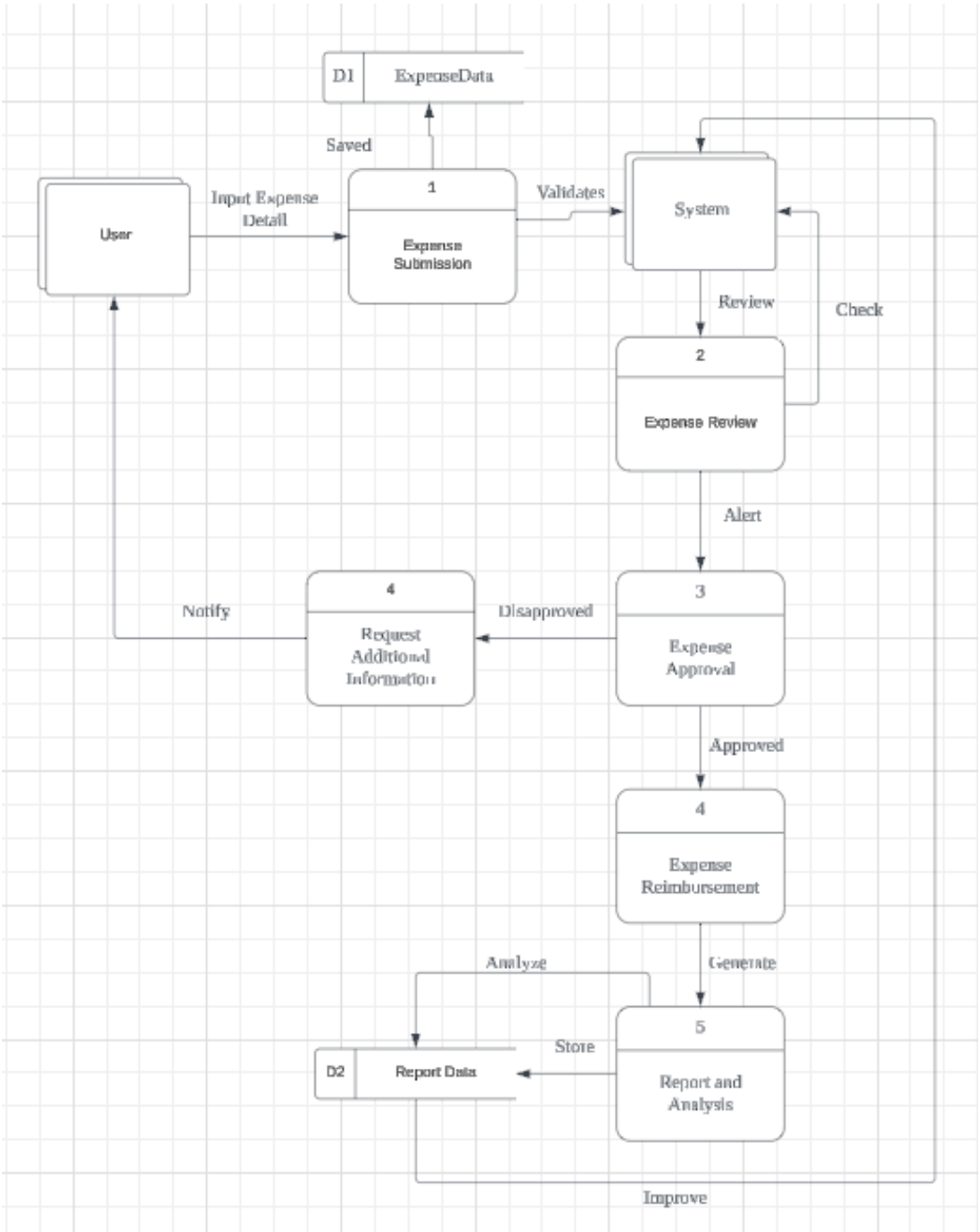
1. System Response Time:
    - The system should respond to user actions, such as submitting an expense, retrieving reports within 2 seconds every time.
2. Scalability:
    - The system should support scaling up to accommodate an increase in user base and transaction volume within a 6 month period without performance degradation.
3. Concurrent Users:
    - The system should support at least 500 concurrent users without performance degradation.
4. Load Handling:
    - The system should maintain optimal performance under a load of 1,000 simultaneous users performing various tasks such as submission, approval, and reporting.

Control Requirement:-

1. Access Control:
    - The system must implement role-based access control (RBAC) to ensure that users can only access features and data relevant to their role.
2. Data Integrity:
    - The system must ensure data integrity through validation checks at every input stage and maintain logs of all data modifications.
3. Security:
    - All data transmitted and stored must be encrypted using industry-standard encryption protocols
4. Audit Logging:
    - The system should log all user actions related to expense submission, approval, and modification, and these logs should be tamper-proof and retained for at least 5 years.
5. User Authentication:
    - The system must support multi-factor authentication (MFA) for all users to enhance security during login.

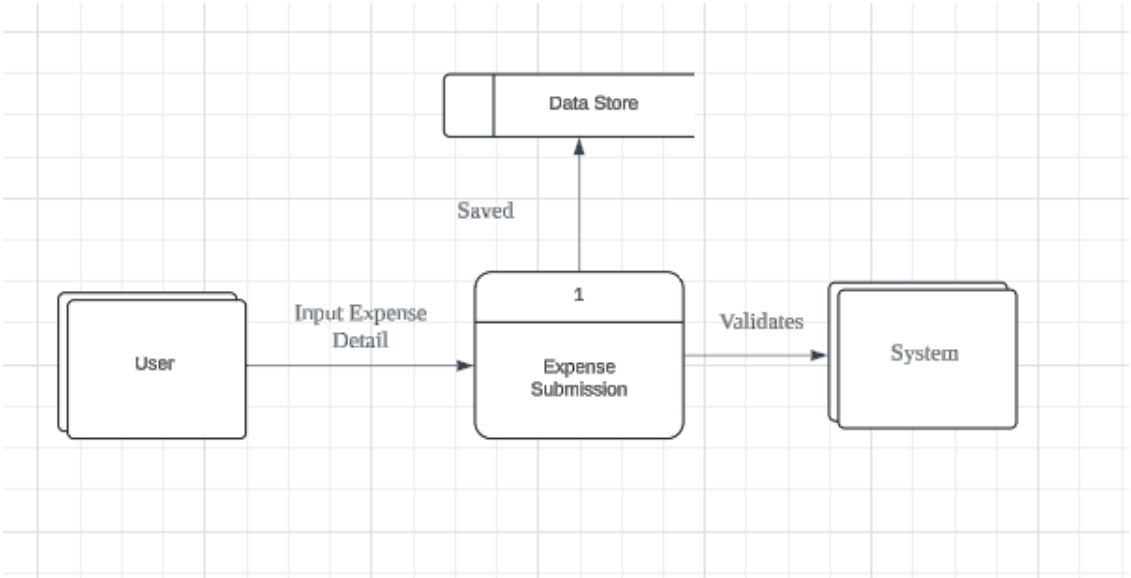
5.4 Logical DFD AS-IS System

This is the Expense Tracking System (ETS) Diagram 0

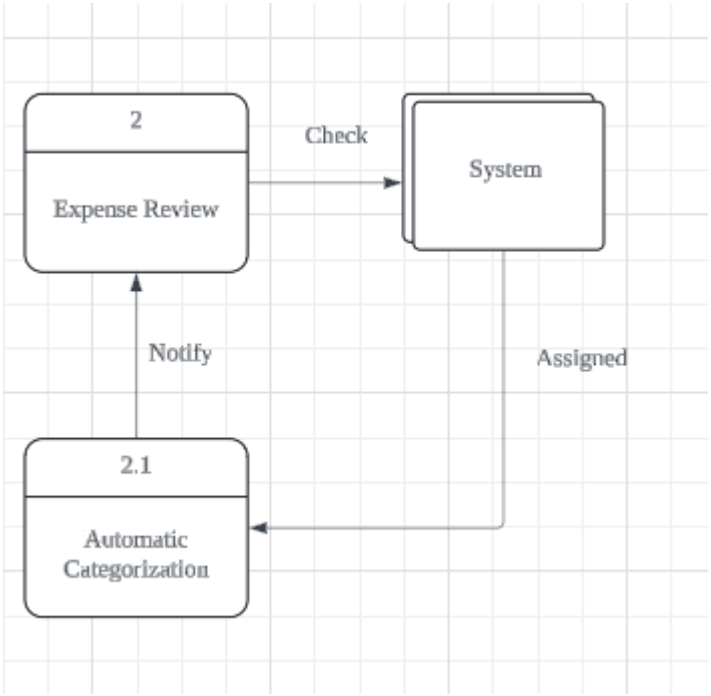


This is the Expense Tracking System (ETS) Child Diagram

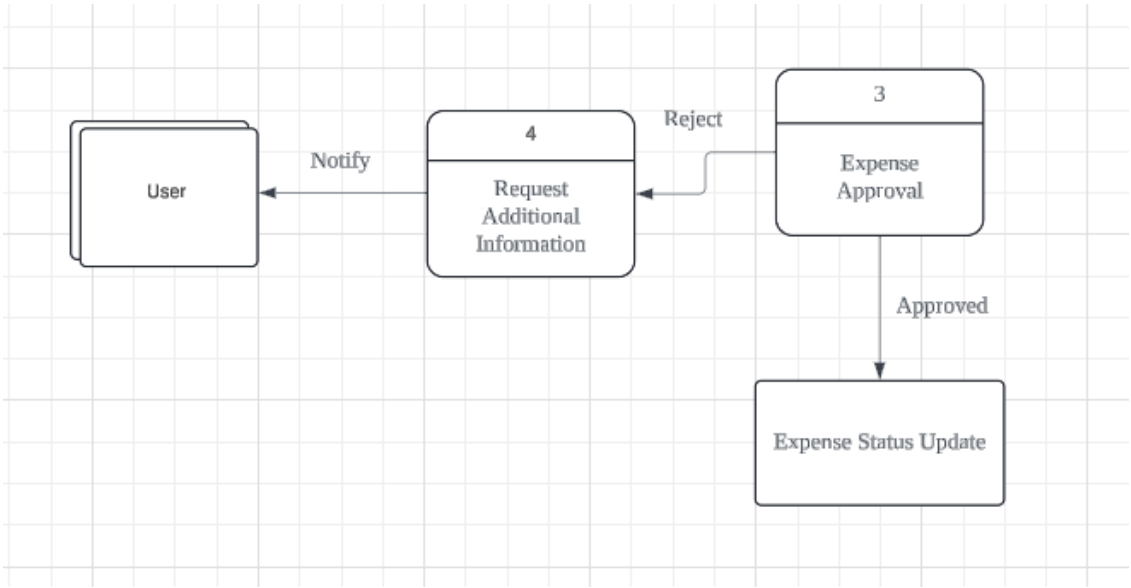
1. Expense Submission



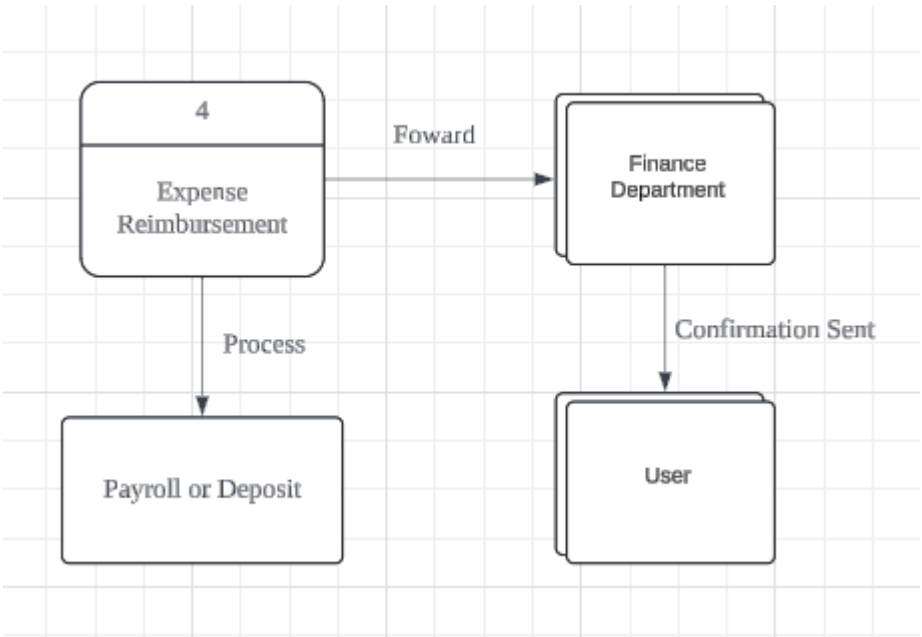
2. Expense Review



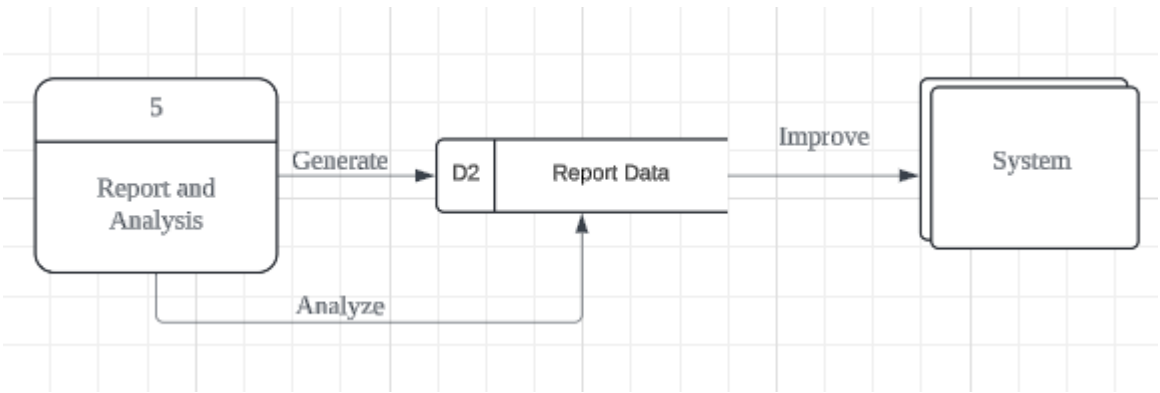
3. Expense Approval



4. Expense Reimbursement



5. Report and Analysis



6. Summary of Requirement Analysis Process

Based on the process that we have, we have 6 processes that need to be done in our project.The input for our DFD is User. While the 6 processes are Expense Submission, Expense Review, Expense Approval, Expense Reimbursement and Report and Analysis.The output is the system and Finance Department.

In our project we also had a non-functional requirement to do in our project which has 2 parts which is performance and control. In performance we have 4 type of performance that need to be done while control has 5 control requirements that are needed in this Expense Tracking System (ETS).