



SECD2613: SYSTEM ANALYSIS AND DESIGN

Project 2: Phase 2 - Information System Gathering and Requirement

BUDGET TRACKER APPLICATION

PROJECT TITLE: BUDGET BUDDY

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**MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF
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1.0 Overview of the Project

The Budget Buddy project aims to develop a simple yet comprehensive budget-tracking application to help users manage their finances effectively. This mobile application is designed for individuals, families, and students, providing a user-friendly platform to track expenses, categorize spending, and visualize financial patterns using pie charts. The app will support the management of multiple accounts, including cash, bank cards, and other financial instruments, offering users a holistic view of their financial status. Key features include predefined and customizable expense categories, such as Food, Social Life, Transportation, and Health & Beauty, enabling users to tailor the app to their specific needs. Additionally, the application will feature an account management section where users can access transaction history, manage accounts, and set budget limits, fostering enhanced financial control and accountability. This project underscores our organization's dedication to promoting financial literacy and empowering individuals to make informed financial decisions, ultimately simplifying the complexities of financial management in a fast-paced world.

2.0 Problem Statement

As Malaysia transitions toward a cashless society, managing daily expenditures has become increasingly complex. Research indicates that people tend to spend more when using digital forms of payment as opposed to physical cash, leading to potential financial mismanagement. This situation poses a significant challenge, especially for individuals, families, and students who need to maintain a tight grip on their budgets within a multitude of digital transactions. The lack of tangible cash makes it difficult for many to visualize their spending patterns, leading to overspending and financial instability. Thus, there is a pressing need for a comprehensive solution that enables effective financial management in a digital age. A thorough analysis of the current environment reveals the complex interplay between various stakeholders including consumers, financial institutions, and regulatory bodies :

2.1. Consumers

Consumers are increasingly prioritizing financial management tools that align with their personal financial goals. They also bring along certain difficulties that need to be addressed.

- Consumers are the primary stakeholders.
- Need tools for clear visibility into spending habits.
- Require features for budgeting and expense tracking.
- Desire a user-friendly interface for ease of use.

2.2. Financial Institutions

- Interested in promoting financial literacy among clients.
- Support tools that integrate with existing financial services.
- Aim to encourage responsible spending.

2.3. Regulatory Bodies

- Ensure compliance with local data protection laws.
- Promote the overall financial health of the populace.
- Oversee the security and integrity of digital financial tools.

2.4. Individuals

With the eve of being a cashless society looms over Malaysia it has been increasingly important to manage daily expenditure. A study has shown that especially for individuals, families, and students are more likely to spend when the cash is not in a physical tangible form like cash.

- Increased tendency to overspend with digital payments.
- Difficulty in tracking expenses due to the intangible nature of electronic transactions.
- Diverse spending patterns and economic behaviors in Malaysia.
- Need for comprehensive tools that cater to various demographics and financial literacy levels.

3.0 Proposed Solutions

To address the challenges posed by a cashless society, the proposed solution is the development of a mobile application, "Budget Buddy", designed to help users manage their finances comprehensively. This application will offer a suite of features aimed at providing users with greater control and insight into their spending patterns.

3.1. User-Friendly Interface

Budget Buddy will prioritize an intuitive and engaging user interface to ensure ease of use across various demographics. This includes clear visualizations of spending patterns through pie charts and other graphical elements.

- Intuitive and engaging design for ease of use.
- Visualizations such as pie charts to depict spending patterns.

3.2. Expense Tracking and Categorization

Users will be able to log their expenses manually or automatically through linked bank accounts and categorize them into predefined and customizable categories such as Food, Transportation, and Health & Beauty. This granular tracking will help users identify areas where they can reduce spending.

- Ability to log and categorize expenses automatically or manually.
- Customizable categories to reflect diverse spending habits.

3.3. Multiple Account Management

The app will support the management of multiple financial accounts, including bank cards and e-wallets, providing users with a consolidated view of their financial status.

- Support for managing multiple financial accounts (e.g., bank cards, e-wallets).
- Provide a consolidated view of financial status.

3.4. Budget Setting and Monitoring

Users can set monthly budgets for different categories and receive alerts when they are close to exceeding these limits. This proactive feature aims to promote disciplined spending habits.

- Set and monitor budget limits for different categories.
- Receive alerts when approaching or exceeding budgets.

3.5. Data Security and Compliance

Robust security measures will be implemented to protect user data, ensuring compliance with Malaysian data protection regulations. This includes encryption, secure authentication methods, and regular security audits.

- Robust security measures to protect user data.
- Compliance with Malaysian data protection regulations.

3.6. Stakeholder Engagement and Feedback Loop

Continuous engagement with stakeholders, including users and financial institutions, will be crucial. Regular updates and enhancements based on user feedback will be prioritized to keep the app relevant and effective.

- Continuous feedback loop with users and financial institutions.
- Regular updates and enhancements based on feedback.

3.7. Support and Resources

To foster user adoption, Budget Buddy will include extensive support resources such as FAQs, tutorials, and customer service channels. This ensures users can effectively leverage all features of the app.

- Comprehensive support resources, including FAQs, tutorials, and customer service channels.
- Educational materials to enhance financial literacy.

4.0 Information gathering process

The information-gathering process is a critical phase in system analysis, where data is collected from relevant stakeholders to understand their needs, expectations, and current system limitations. The objective is to gather comprehensive information to ensure that the system being developed addresses all user requirements and operates efficiently within the given constraints. This process typically involves interactive and unobtrusive methods to minimize disruption while ensuring thorough data collection.

4.1. Method used

To gather information effectively, a combination of interactive and unobtrusive methods was employed. Interactive methods included interviews and questionnaires, allowing direct communication with stakeholders to gather detailed insights. Unobtrusive methods involved observation and document analysis, providing an objective view of existing processes and systems without interfering with regular activities. This multi-faceted approach ensures a well-rounded understanding of the requirements.

4.2. Summary from method used

4.2.1. Interviews

Interviews were conducted with key stakeholders such as system users, managers, and technical staff. This method allowed for in-depth discussions to uncover detailed requirements, pain points, and suggestions for improvements. For example, during an interview with a system user, it was discovered that the current system's user interface was unintuitive, leading to frequent errors and inefficiencies. This information was crucial for designing a more user-friendly interface.

Interview Questions Using Pyramid Structure for Budget Buddy Survey

A. Introduction (Broad Questions)

1. Can you describe your general approach to managing your daily expenses?

2. How comfortable are you with using digital payments compared to cash?
3. What are some of the challenges you face with managing your finances in a digital environment?

B. Intermediate Questions (Focused Questions)

1. Have you ever used any financial management tools or applications? If so, which ones?
2. What features do you find most useful in the financial management tools you have used?
3. How important is it for you to have a clear visualization of your spending patterns?
4. Do you find it difficult to categorize your expenses? Why or why not?
5. Would you prefer an application that allows manual expense logging or one that automates this through bank integration?

C. Specific Questions (Detailed Questions)

1. What types of expense categories would you find most helpful in a financial management app?
2. How beneficial would it be for you to manage multiple accounts (e.g., bank cards, e-wallets) within a single application?
3. Would you find budget setting and monitoring features helpful in maintaining disciplined spending? How so?
4. How would you prefer to be alerted if you are close to exceeding your budget?
5. How concerned are you about data security when using financial management apps?
6. What security features would you expect in a financial management app to feel confident in its use?

D. Engagement and Feedback (In-depth Questions)

1. How often would you be willing to provide feedback on the app's features and usability?

2. What kind of support resources (e.g., FAQs, tutorials, customer service) would you find most helpful?
3. Would educational materials on financial literacy be of interest to you? If so, what topics would you like to see covered?
4. Can you suggest any additional features or improvements that would make a financial management app more useful for you?
5. How do you feel about the potential integration of financial management tools with services provided by financial institutions?
6. Would compliance with local data protection laws influence your decision to use a financial management app? How important is this to you?

4.2.2. Questionnaires

Questionnaires were distributed to a broader audience of stakeholders to collect quantitative data on system usage, satisfaction levels, and specific feature requests. This method provided a wide range of data that could be easily analyzed for common trends and requirements. For instance, the questionnaire results revealed a high demand for mobile access to the system, which was not initially considered in the project scope.

Questionnaire for Budget Buddy Application Survey

Section 1: General Information

1. What is your age group?
 - Under 18
 - 18-25
 - 26-35
 - 36-45
 - 46-55
 - 56 and above
2. What is your occupation?
 - Student
 - Employed
 - Self-employed
 - Unemployed
 - Retired
3. What is your monthly income range?
 - Below RM 2,000
 - RM 2,000
 - RM 5,000
 - RM 5,001 - RM 10,000
 - Above RM 10,000

Section 2: Current Financial Management

4. How do you currently track your expenses?
 - Manually (notebook, spreadsheet)
 - Using a financial management app
 - Not tracking
 - Other (please specify)
5. How often do you review your spending habits?
 - Daily
 - Weekly
 - Monthly
 - Rarely
 - Never
6. What are the biggest challenges you face with your current method of financial management?
 - Lack of time
 - Complexity of tools
 - Inability to track all expenses
 - Lack of clear visualization
 - Other (please specify)

Section 3: Features and Usability of Budget Buddy

7. How important is a user-friendly interface to you in a financial management app?
 - Very important
 - Important
 - Neutral
 - Not important
 - Not at all important
8. Which feature do you find most useful in a financial management app?
(Select all that apply)
 - Expense tracking and categorization

- Budget setting and monitoring
- Multiple account management
- Visualizations of spending patterns
- Alerts for budget limits
- Data security and compliance
- Support resources (FAQs, tutorials)

9. How likely are you to use the following features in Budget Buddy?

- Expense tracking and categorization
- Budget setting and monitoring
- Multiple account management
- Visualizations of spending patterns
- Alerts for budget limits
- Data security and compliance
- Support resources (FAQs, tutorials)

Section 4: Feedback and Suggestions

10. What improvements would you suggest for financial management apps you have used before?

11. How do you feel about integrating your bank accounts and e-wallets with Budget Buddy for automated expense tracking?

- Very comfortable
- Comfortable
- Neutral
- Uncomfortable
- Very uncomfortable

12. How important is it for you that Budget Buddy complies with Malaysian data protection regulations?

- Very important
- Important
- Neutral
- Not important

- Not important at all

13. Would you be interested in participating in beta testing for new features of Budget Buddy?

- Yes

- No

- Any additional comments or suggestions for Budget Buddy?

4.2.3. Observation

Observation involved watching users interact with the current system in their natural environment. This method helped identify inefficiencies and potential areas for improvement that might not be reported through interviews or questionnaires. For example, it was observed that users spent significant time navigating through multiple screens to complete simple tasks, highlighting the need for a more streamlined workflow in the new system.

By utilizing these methods, a comprehensive and detailed understanding of stakeholder needs and system requirements was achieved, laying a solid foundation for the system design and development process.

5.0 Requirement Analysis (based on AS-IS analysis)

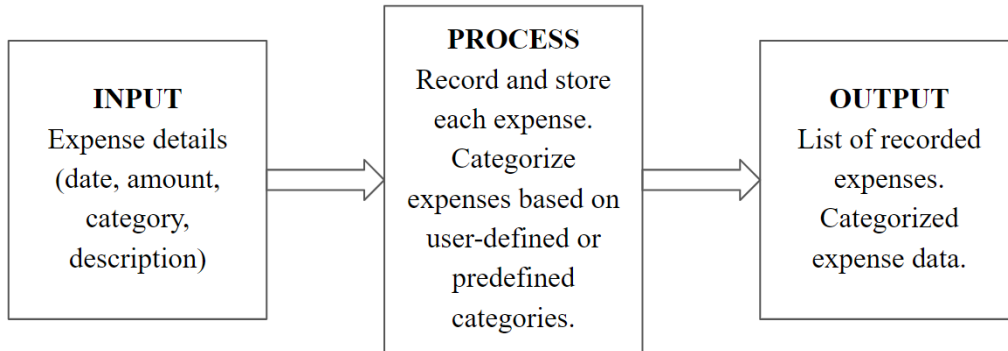
5.1 Current business process (scenarios, workflow)

The current process involves manual tracking of expenses using spreadsheets or basic financial apps that lack comprehensive features. Users face challenges in maintaining consistency and gaining insights into their spending patterns.

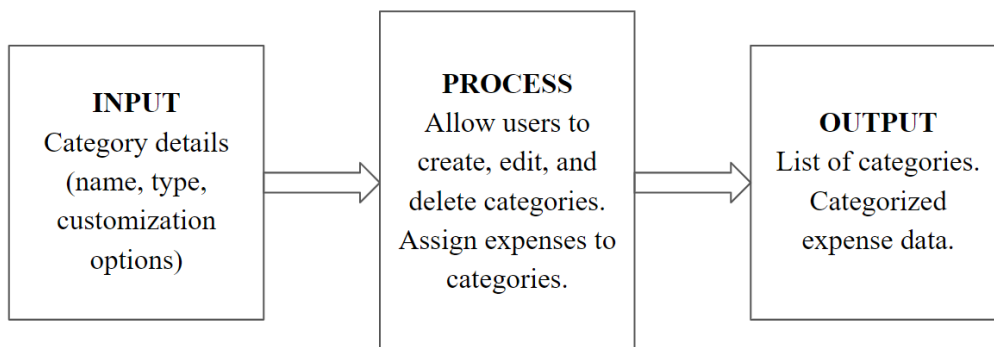
Scenario	AS-IS Process	Workflow
Expense Tracking	Users manually record expenses in notebooks or spreadsheets. Some use basic financial apps, but these often lack customization and visual tools.	The user identifies an expense. User manually enters expense details (date, amount, category) into their chosen tracking method. The user reviews and categorizes expenses periodically (weekly/monthly).
Expense Categorization	Users create their categories in spreadsheets or use pre-defined categories in basic apps. Customization is limited and often requires manual adjustments.	The user creates categories based on common expenses. The user assigns each recorded expense to a category. User updates categories manually if new types of expenses arise.
Financial Summaries and Visualizations	Users compile data from spreadsheets or basic apps to create summaries. Visualizations, if created, are typically basic charts in spreadsheet software.	The user compiles monthly expense data. The user creates charts (e.g., pie charts) manually to visualize spending patterns. The user interprets the visual data to make financial decisions.

5.2 Functional Requirement (input, process, and output)

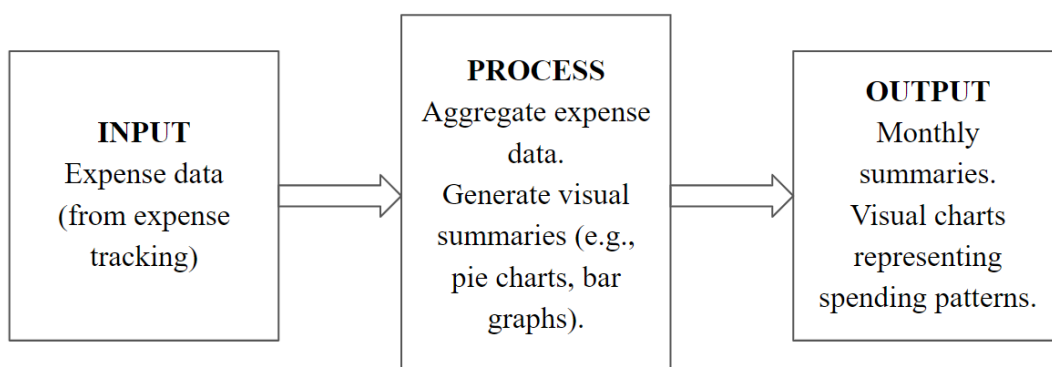
Expenses Tracking



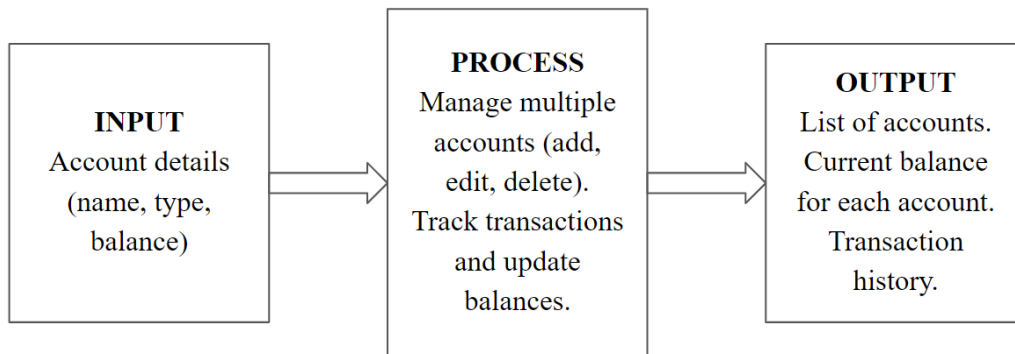
Expense Categorization



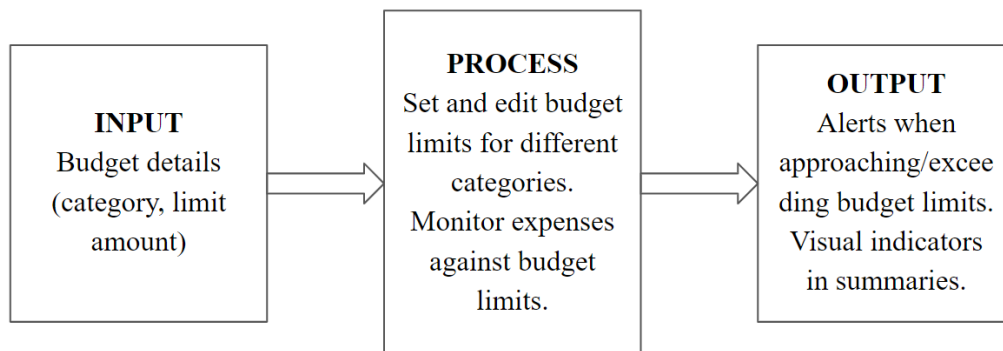
Financial Summaries and Visualizations



Account Management



Budget Limits



5.3 Non-functional Requirement (performance and control)

Performance Requirements:

The application must load within 2 seconds.

Expense tracking and categorization operations must be completed within 1 second.

Visualization and summary generation should take no longer than 3 seconds.

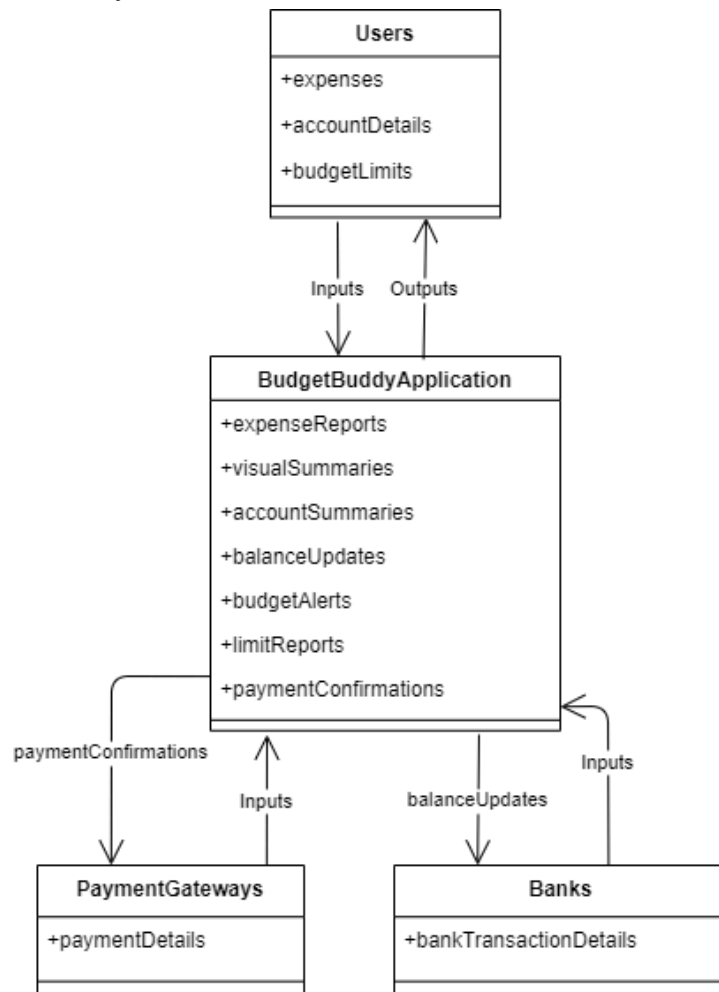
Control Requirements:

1. Security:
 - Data encryption for user data in transit and at rest.
 - Compliance with data protection regulations (e.g., PDPA).
2. Usability:
 - Intuitive interface design for ease of navigation.
 - Consistent user experience across different devices (responsive design).
3. Reliability:
 - 99.9% uptime for backend services.
 - Regular backups to prevent data loss.
4. Scalability:
 - Ability to handle up to 100,000 active users simultaneously.
5. Maintainability:
 - Modular codebase for easy updates and feature additions.
 - Comprehensive documentation for developers.

5.4 Logical DFD AS-IS system (Context Diagram, Diagram 0, Child)

Context Diagram

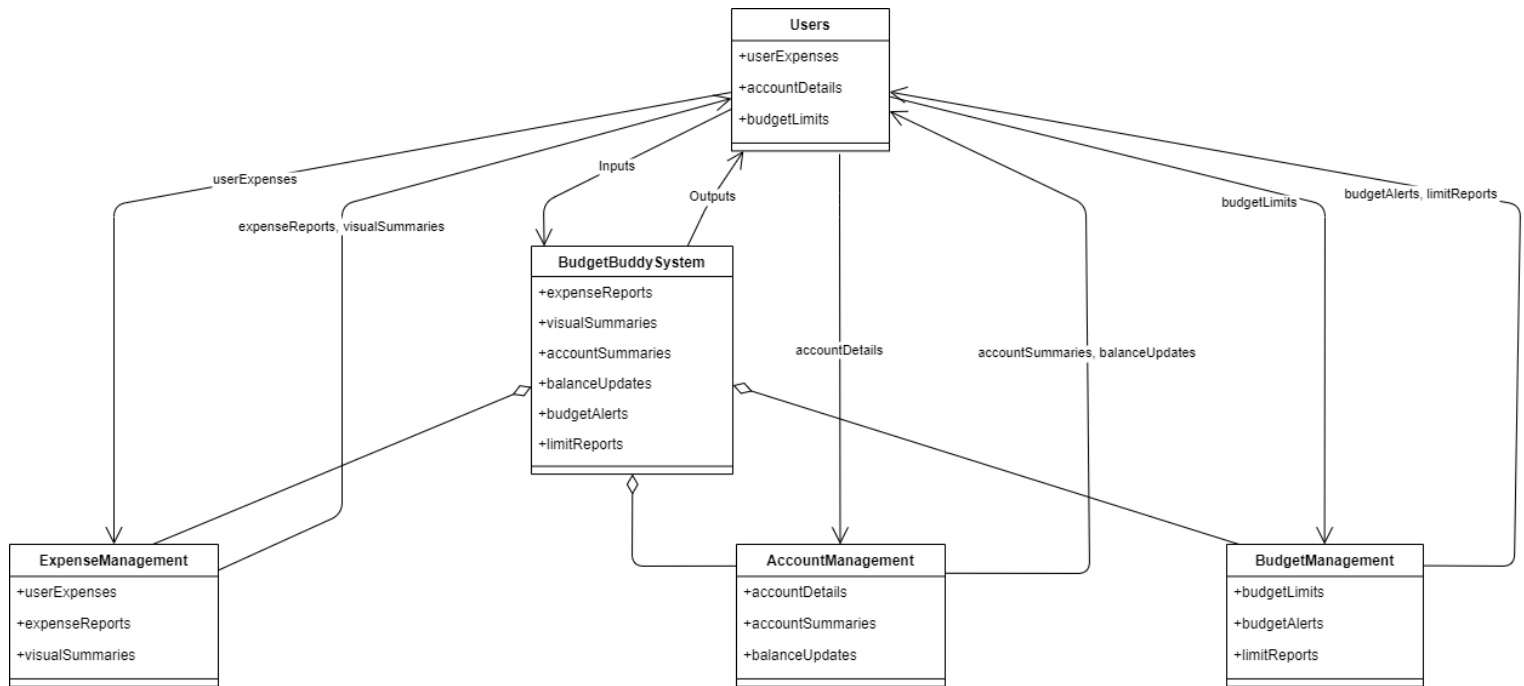
The Context Diagram shows the interaction between external entities (Users, Payment Gateways, Banks) and the Budget Buddy system. It represents the high-level view of how data flows between the system and external entities.



- **Users:** Provide expenses, account details, and budget limits to the Budget Buddy Application and receive expense reports, visual summaries, account summaries, balance updates, budget alerts, and limit reports.
- **Payment Gateways:** Provide payment details to the Budget Buddy Application and receive payment confirmations.
- **Banks:** Provide bank transaction details to the Budget Buddy Application and receive balance updates.
- **Budget Buddy Application:** The central system that processes inputs from users, payment gateways, and banks, and provides various reports and updates.

Diagram 0

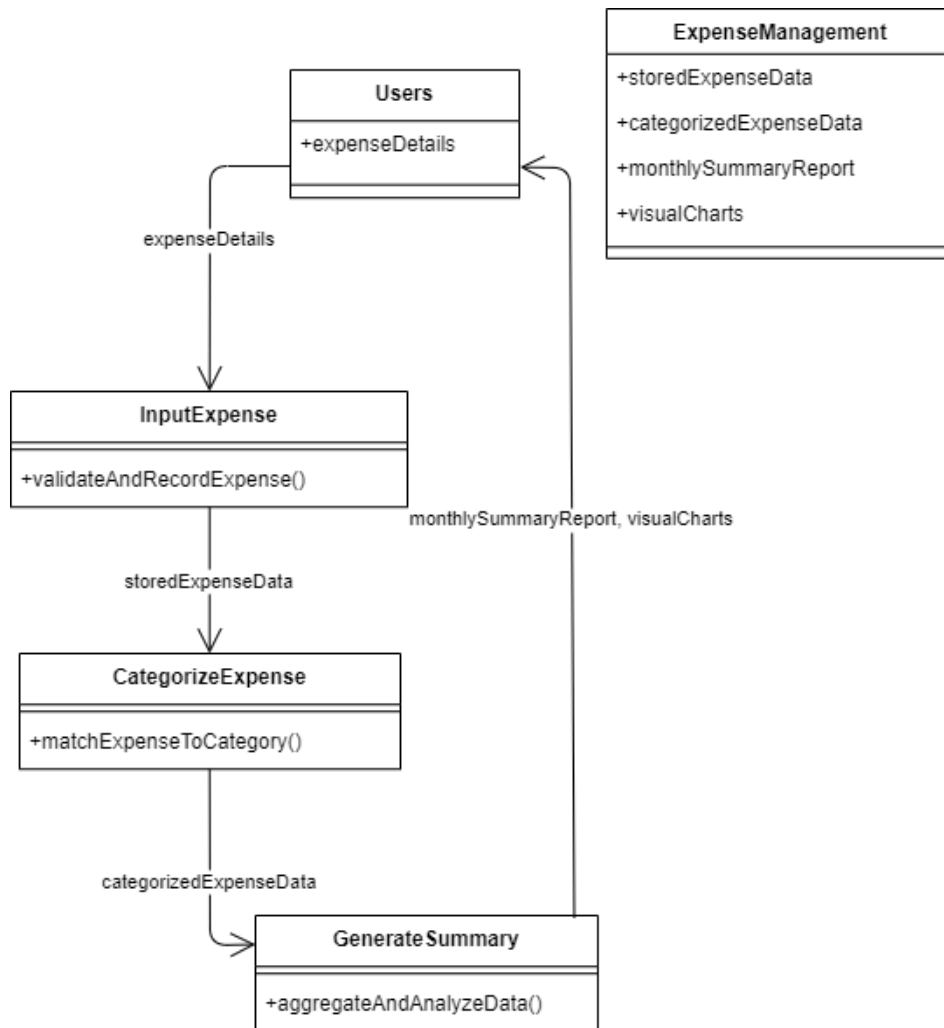
Diagram 0 provides a high-level overview of the major processes within the Budget Buddy system. It breaks down the system into its primary components and illustrates how data flows between them.



- **Users:** Interact with the Expense Management, Account Management, and Budget Management processes.
- **Expense Management:** Handles user expenses and generates expense reports and visual summaries.
- **Account Management:** Manages account details, provides account summaries, and updates balances.
- **Budget Management:** Manages budget limits, monitors spending, and provides budget alerts and limit reports.
- **Budget Buddy System:** Integrates the processes and facilitates the interaction between users and the system components.

Child Diagram (Expense Management)

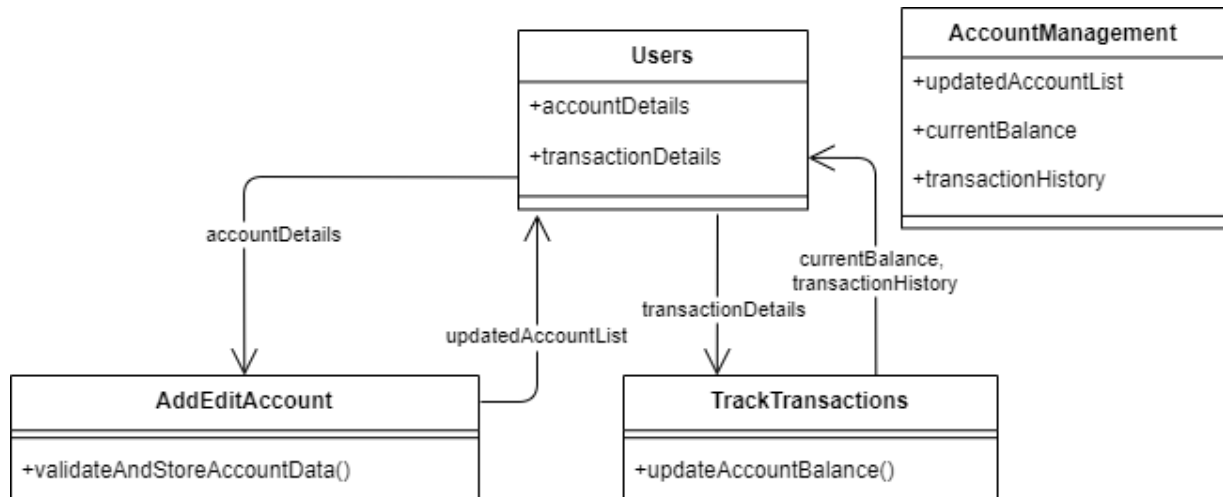
The Expense Management Child Diagram breaks down the Expense Management process into smaller sub-processes: Input Expense, Categorize Expense, and Generate Summary.



- **Users:** Provide expense details to the system.
- **Input Expense:** Validates and records the user-provided expense details.
- **Categorize Expense:** Matches recorded expenses to the appropriate categories.
- **Generate Summary:** Aggregates and analyzes categorized expense data to produce monthly summary reports and visual charts.
- **Expense Management:** Integrates these sub-processes to manage expenses effectively

Child Diagram (Account Management)

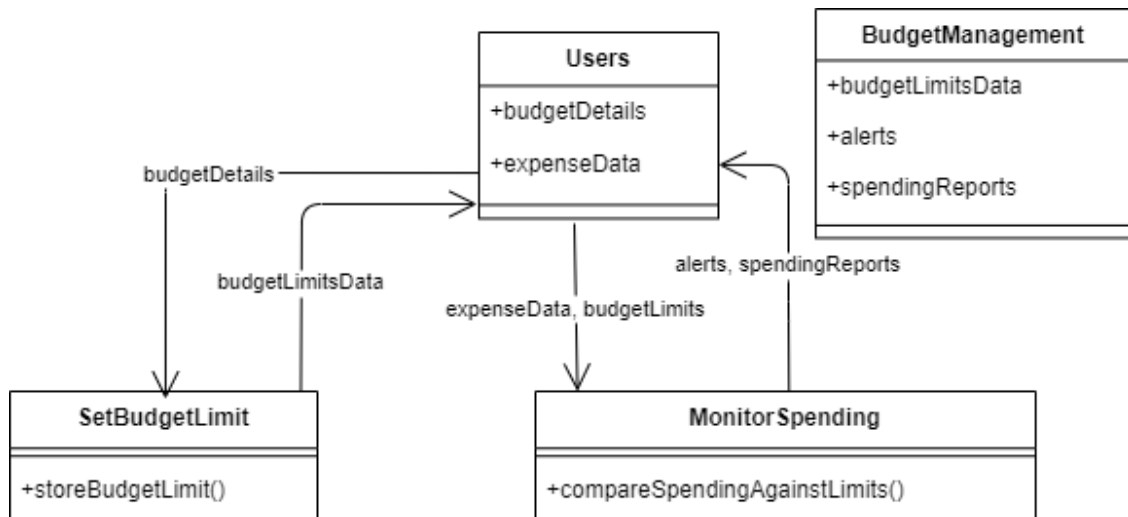
The Account Management Child Diagram breaks down the Account Management process into smaller sub-processes: Add/Edit Account and Track Transactions.



- **Users:** Provide account details and transaction details to the system.
- **Add/Edit Account:** Validates and stores the user-provided account details, updating the account list.
- **Track Transactions:** Updates account balances based on transaction details and maintains the transaction history.
- **Account Management:** Integrates these sub-processes to manage user accounts effectively.

Child Diagram (Budget Management)

The Budget Management Child Diagram breaks down the Budget Management process into smaller sub-processes: Set Budget Limit and Monitor Spending.



- **Users:** Provide budget details and expense data to the system.
- **Set Budget Limit:** Stores the user-provided budget limits.
- **Monitor Spending:** Compares user spending against the stored budget limits and generates alerts and spending reports.
- **Budget Management:** Integrates these sub-processes to manage user budgets effectively.

6.0 Summary of Requirement Analysis process

The requirement analysis process involved gathering detailed user requirements, identifying key functionalities, and mapping out the current and desired business processes. This comprehensive analysis highlighted the need for a user-friendly budgeting tool that effectively addresses the limitations of existing solutions.

Key Activities:

User Requirement Gathering:

- Conducted interviews, surveys, and observations to understand user needs and preferences.

- Collected data on how users currently manage their finances, the challenges they face, and their desired features in a budgeting app.

Functional Requirement Identification:

- Determined the essential functionalities the Budget Buddy application must offer, such as expense tracking, account management, and budget monitoring.
- Identified input, process, and output requirements for each major function.

Current and Desired Business Process Mapping:

- Analyzed the current workflows and user scenarios to identify inefficiencies and gaps in existing financial management practices.
- Designed improved workflows that streamline expense recording, account tracking, and budget monitoring processes.

Key Findings:

Need for Comprehensive Features:

- Users require a comprehensive tool that can handle multiple accounts, categorize expenses, and provide visual summaries.
- Customizable categories and budget limits are essential to cater to diverse user preferences.

Emphasis on User-Friendliness:

- The application must prioritize ease of use, with an intuitive interface and seamless navigation to ensure broad user adoption.
- Visual representations of spending patterns (e.g., pie charts) are critical for enhancing user understanding and engagement.

Performance and Security:

- The system must deliver real-time performance, ensuring that data is processed and displayed without delays.

- Strong security measures are necessary to protect user data, including encryption and regular backups.

Proposed Solutions:

Expense Management:

- Enable users to record, categorize, and visualize their expenses efficiently.
- Provide monthly summaries and visual charts to help users track their spending patterns.

Account Management:

- Allow users to manage multiple accounts, track balances, and access transaction histories.
- Offer tools for users to add, edit, and maintain their account information easily.

Budget Management:

- Facilitate setting and monitoring of budget limits to help users stay within their financial goals.
- Generate alerts and reports when users approach or exceed their budget limits.

Outcome:

The detailed analysis and proposed solutions form a solid foundation for developing the Budget Buddy application. By addressing the identified needs and incorporating user-friendly features, the application aims to empower individuals and families to manage their finances more effectively, ultimately leading to better financial decision-making and control.

Self/Peer Evaluate

	Nur Diyana	Akina Aishah
Communication	Consistently communicated effectively and clearly with the team, actively listened to others, and considered other input, ensuring that everyone was informed about progress and any issues.	Consistently communicated effectively and clearly with the team, actively listened to others, and considered other input, ensuring that everyone was informed about progress and any issues.
Collaboration	Actively contributed to team discussions and decision-making processes, was cooperative and supportive of team members, and helped resolve conflicts constructively when appeared.	Actively contributed to team discussions and decision-making processes, was cooperative and supportive of team members, and helped resolve conflicts constructively when appeared.
Responsibility	Reliably completed all assigned tasks and was dependable throughout the project, helping guide the project toward successful completion.	Reliably completed all assigned tasks and was dependable throughout the project, helping guide the project toward successful completion.
Quality of Work	The work was of high quality and met all project requirements, paid close attention to detail ensured accuracy in my work, and actively sought to improve and learn from feedback.	The work was of high quality and met all project requirements, paid close attention to detail ensured accuracy in my work, and actively sought to improve and learn from feedback.
Overall Contribution	Overall contribution to the project was excellent, consistently went above and beyond to ensure the project's success and supported team members in achieving our goals.	Overall contribution to the project was excellent, consistently went above and beyond to ensure the project's success and supported team members in achieving our goals.