

CAMPUS EXPENSE MANAGER

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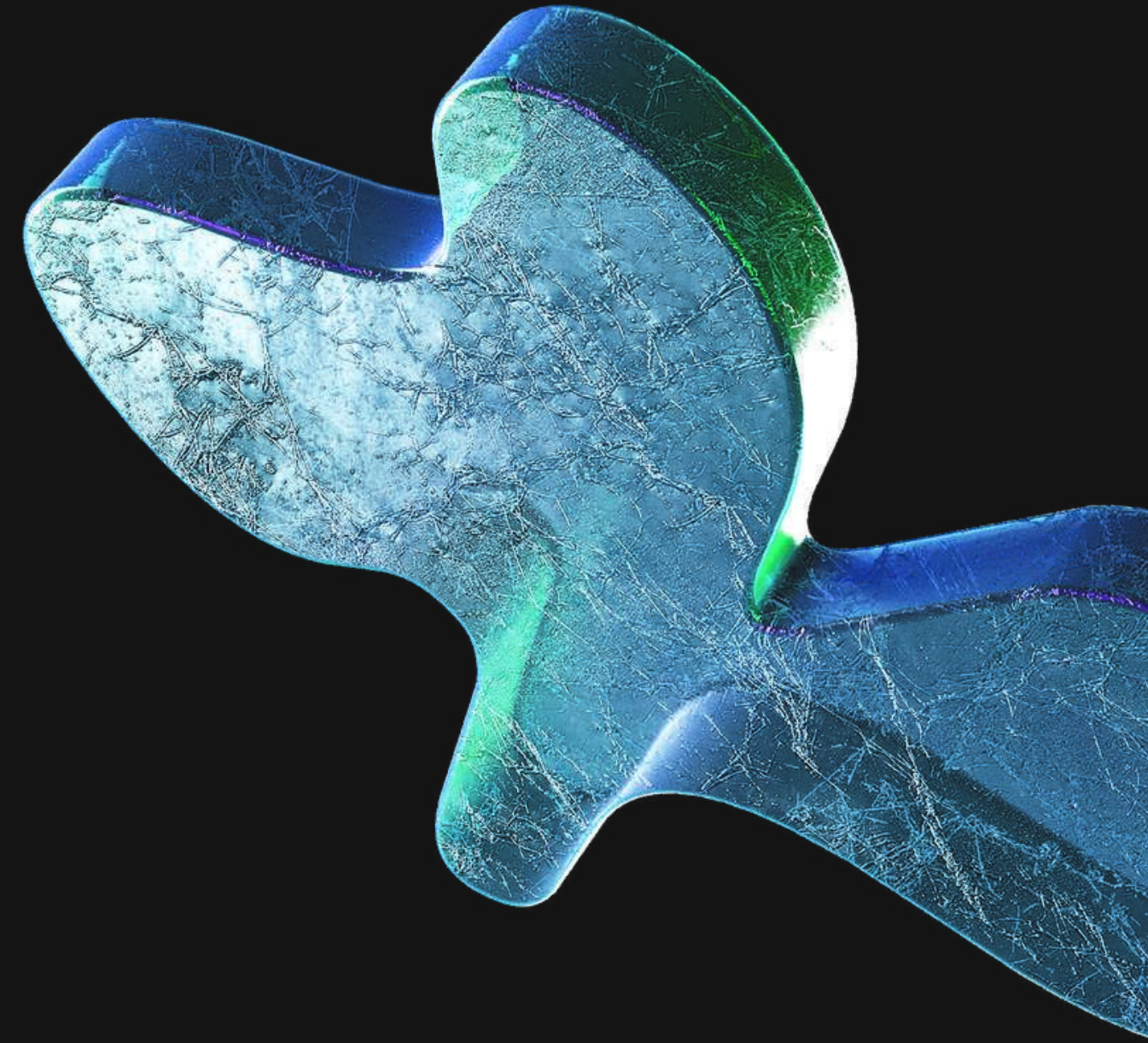
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Project Overview

The "CampusExpense Manager" mobile application aims to provide students with a user-friendly platform for tracking expenses, setting budgets, and gaining financial insights during their academic journey. The system will empower students to manage their finances effectively, promoting financial literacy and responsible spending habits.

Target audience: University students



Objectives of the App

It enables users to track their daily expenses, set budgets, and receive notifications to stay within their financial limits. The app aims to promote financial literacy and responsibility among students, making it easier for them to monitor their spending habits and manage their resources.

User Requirements

Expense Tracking:

- Users can add, edit, and categorize expenses (rent, groceries, transportation).
- Each expense entry includes a description, date, amount, and category.

Budget Setting:

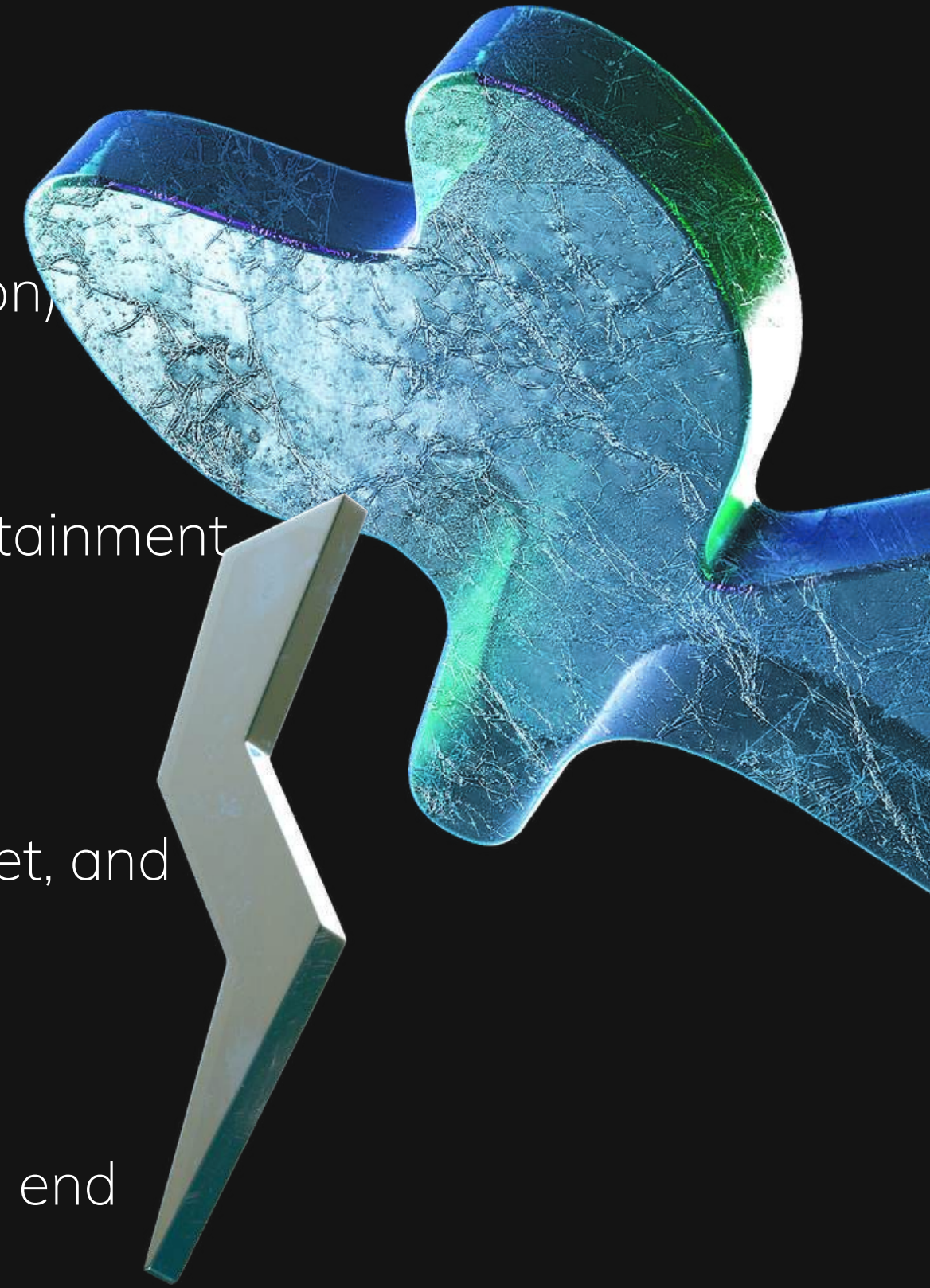
- Users can set monthly budgets for various expense categories (food, entertainment, education).
- Flexibility to adjust budget amounts as needed.

Expense Overview:

- Provides a summary of monthly expenses, total spending, remaining budget, and category breakdown.
- Users can view expense trends over time.

Recurring Expenses:

- Ability to add recurring expenses (e.g., monthly rent) with defined start and end dates.
- Automatic inclusion of recurring expenses in the monthly budget.



Systems Investigation and Research

- **FINANCIAL AWARENESS:** MANY STUDENTS EXPRESSED A DESIRE TO IMPROVE THEIR FINANCIAL LITERACY AND BUDGETING SKILLS. THEY OFTEN STRUGGLE WITH MANAGING LIMITED BUDGETS AND TRACKING EXPENSES EFFECTIVELY.
- **USER EXPERIENCE:** A SIGNIFICANT NUMBER OF STUDENTS REPORTED FRUSTRATION WITH THE COMPLEXITY OF EXISTING FINANCIAL APPS, HIGHLIGHTING THE NEED FOR A MORE INTUITIVE AND USER-FRIENDLY INTERFACE.
- **MOBILE ACCESSIBILITY:** STUDENTS PREFERRED MOBILE APPLICATIONS, AS THEY PROVIDE CONVENIENCE AND FLEXIBILITY TO MANAGE FINANCES ON-THE-GO.
- **REAL-TIME TRACKING:** THERE WAS A DEMAND FOR REAL-TIME EXPENSE TRACKING, ALLOWING STUDENTS TO LOG EXPENSES IMMEDIATELY RATHER THAN WAITING UNTIL LATER.



Project Scope and Constraints

Core Features:

- User registration and authentication
- Expense tracking (add, edit, delete)
- Budget management and alerts
- Expense categorization
- Summary reports and recurring expenses

Platform: Mobile app for Android and iOS

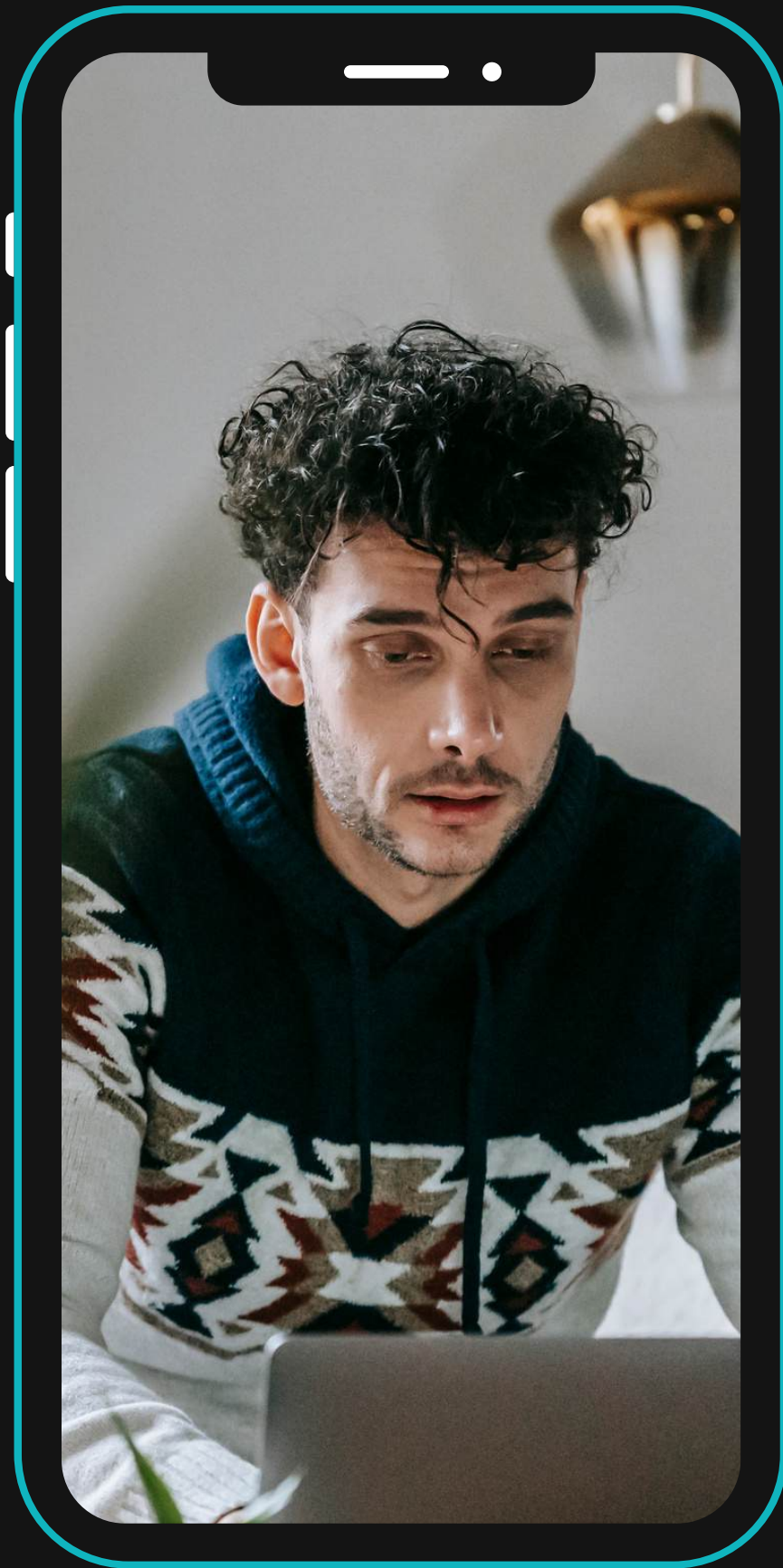
User Support: FAQs and tutorials

Data Security: Secure authentication and encryption

Testing and Deployment: User testing before launch

Lack of experience and skills:

The team may lack specialized skills in mobile app development, which can lead to mistakes during development, delays, or product quality issues.



Tools and Technologies Used

ANDROID STUDIO: ANDROID STUDIO IS THE OFFICIAL INTEGRATED DEVELOPMENT ENVIRONMENT (IDE) FOR ANDROID APPLICATION DEVELOPMENT. IT IS A POWERFUL TOOL THAT ALLOWS DEVELOPERS TO BUILD HIGH-QUALITY APPLICATIONS FOR THE ANDROID PLATFORM.

MICROSOFT PROJECT: MICROSOFT (MS) PROJECT IS A PROJECT MANAGEMENT SOFTWARE DEVELOPED AND SOLD BY MICROSOFT. IT IS DESIGNED TO ASSIST PROJECT MANAGERS IN DEVELOPING PLANS, ASSIGNING RESOURCES TO TASKS, TRACKING PROGRESS, MANAGING BUDGETS, AND ANALYZING WORKLOADS.

DRAW IO: DRAW.IO, NOW KNOWN AS DIAGRAMS.NET, IS A COMPREHENSIVE, FREE, WEB-BASED DIAGRAMMING APPLICATION THAT PROVIDES USERS WITH THE ABILITY TO CREATE A VAST ARRAY OF VISUAL REPRESENTATIONS, RANGING FROM SIMPLE FLOWCHARTS TO COMPLEX NETWORK DIAGRAMS AND ORGANIZATIONAL CHARTS.

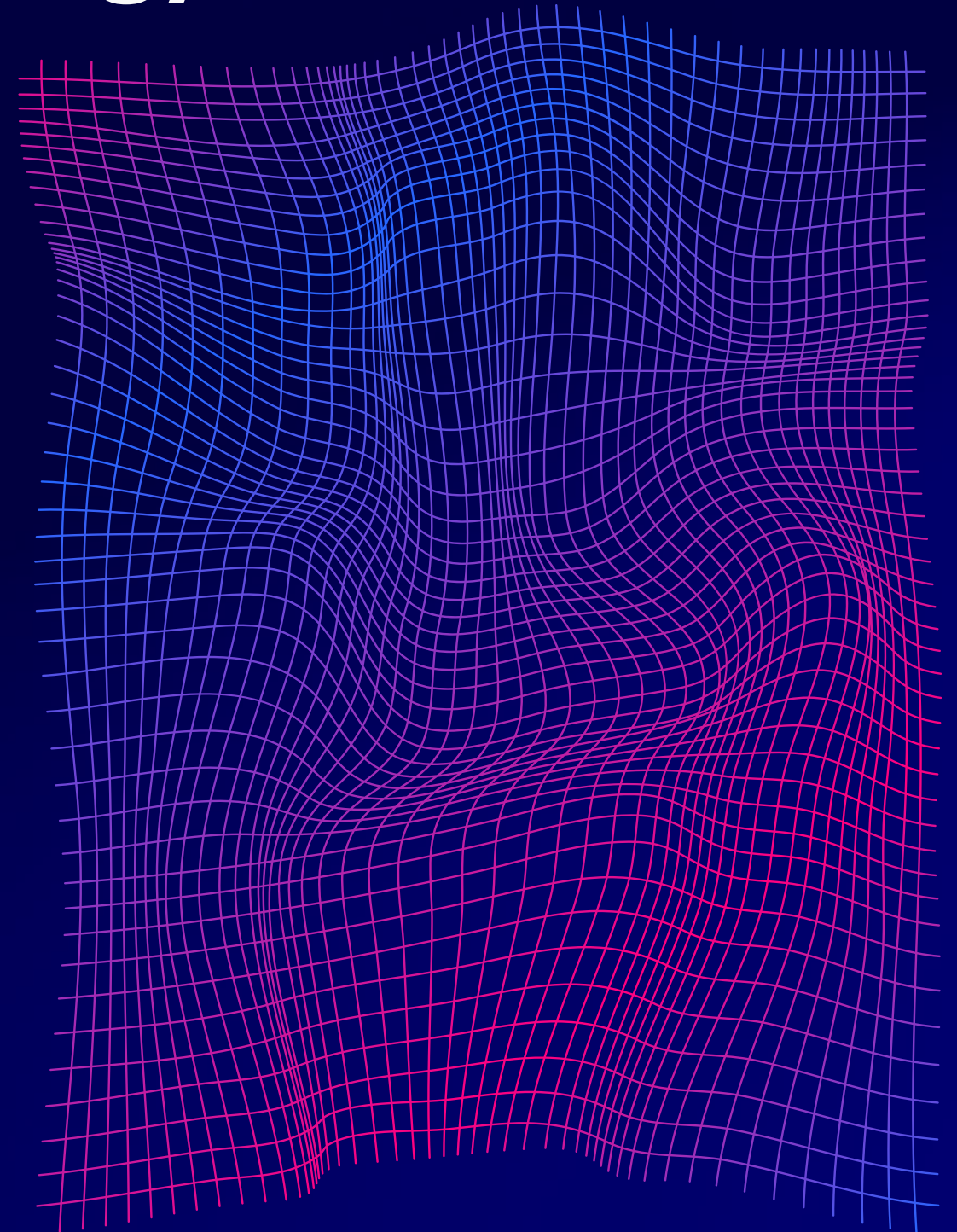




Development Methodology

AGILE METHODOLOGY

AGILE METHODOLOGY IS A PROJECT MANAGEMENT APPROACH THAT ALLOWS SUCCESSFUL AND EFFICIENT EXECUTION OF THE PROJECT WHILE EMPHASIZING THE IMPROVEMENT OF A PROJECT AND TEAM COLLABORATION. THE APPROACH IS APPLICABLE IN SOFTWARE DEVELOPMENT FOR FLEXIBILITY, CUSTOMER SATISFACTION, AND COLLABORATION. IT REFERS TO THE APPLICATION OF A SET OF PRINCIPLES THAT FUNCTIONS THROUGH AN INTERACTIVE AND INCREMENTAL APPROACH.



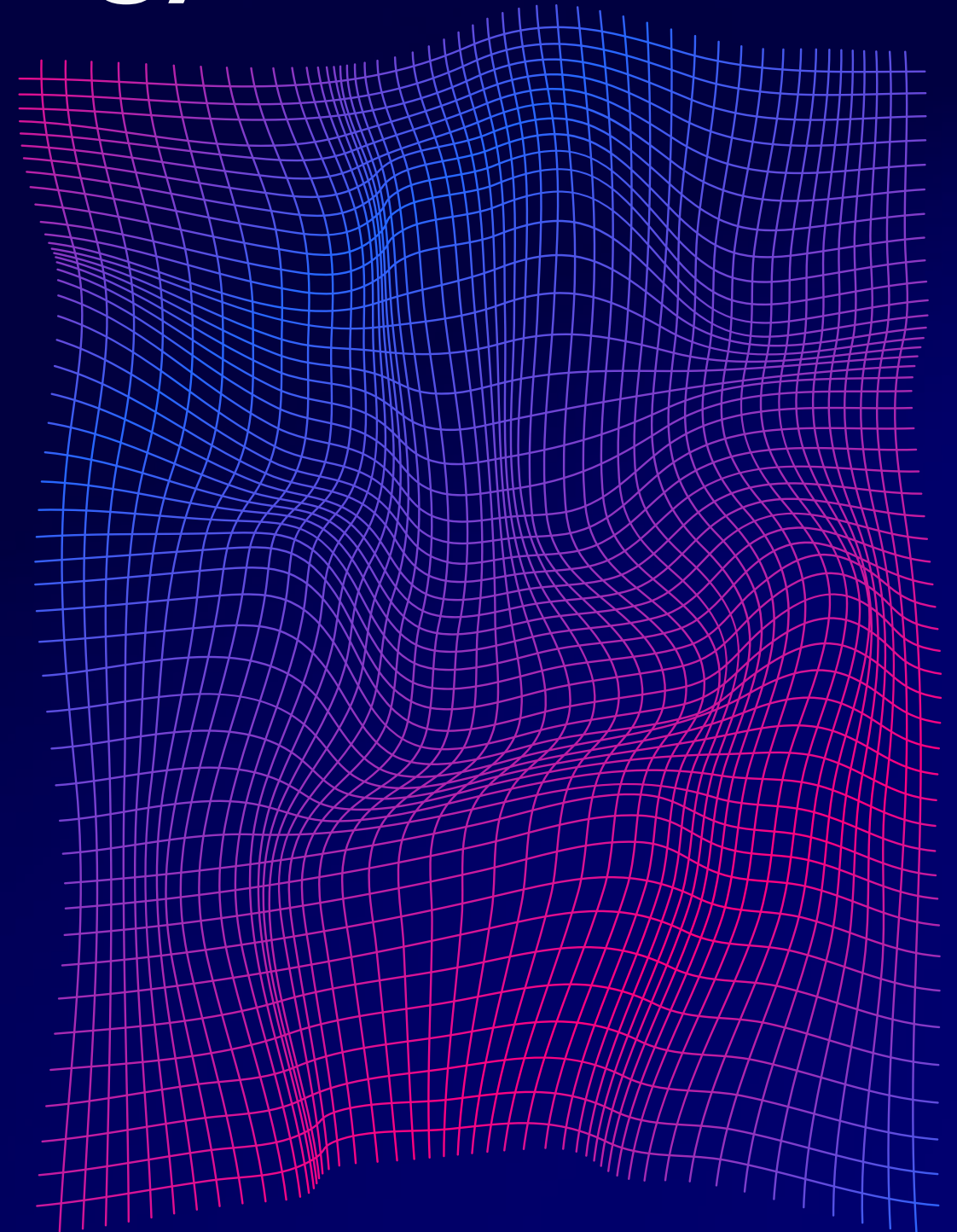


Development Methodology


AGILE METHODOLOGY

THE KEY REASONS FOR SELECTING AGILE:

- **USER-CENTRIC FOCUS**
- **FLEXIBILITY TO ADAPT**
- **FREQUENT DELIVERABLES**
- **RISK MITIGATION**
- **ENCOURAGEMENT OF COLLABORATION**



User Interface (UI) Design



Campus Expense

Student ID

Password

[Login](#) or [Register](#)

[Forgot Password?](#)

Register

Full Name

Student ID

Email

Password

[Create Account](#)

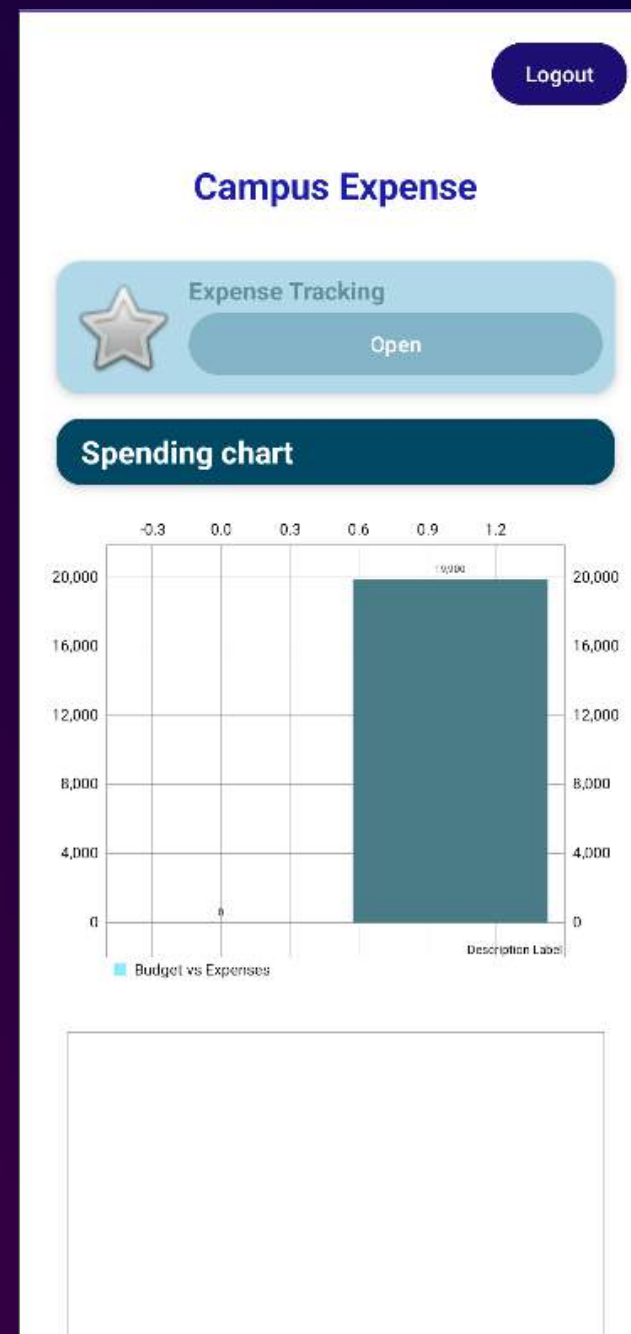
Reset Password

Email

New Password

[Reset Password](#)

User Interface (UI) Design



Back Add Expense

Expense Tracking

Lunch
03/12/2024 12:11
Food

\$1000.0
Delete

Total: \$1000.0

Balance: \$18900.0

Set balance

Set Budget Add Money

Expense Saved

Back

Add Expense

Description

Category

Select Date and Time

Amount

Add

Backend Architecture

Firestore

User Authentication: Secure sign-up/login with multiple methods (email/social media).

Real-time Database: Instant data synchronization across devices for seamless user experience.

Cloud Firestore: Supports complex data structures and robust querying.

Scalability:

- **Automatic Scaling:** Serverless architecture adjusts to varying loads, ensuring consistent performance.
- **Global CDN:** Improves load times and user experience across locations.
- **Flexible Pricing:** Cost-effective scaling based on usage.

Security:

- **Data Security:** Built-in encryption and fine-grained access control.
- **User Privacy:** Secure data storage with compliance to regulations.



CORE FEATURES IMPLEMENTED



Expense Logging

- **Description:** Users can add, edit, and delete expense entries quickly.
- **User Requirement Fulfillment:** This feature addresses the need for effective expense tracking, allowing users to maintain an accurate record of their spending in real time.

Category Selection

- **Description:** Users can categorize expenses into predefined categories (e.g., food, transportation) and create custom categories as needed.
- **User Requirement Fulfillment:** This fulfills the requirement for categorization of expenses, helping users organize their finances and identify spending patterns easily.

Summary View

- **Description:** Users can generate summary reports displaying spending trends over selected periods, complete with visual graphs and charts.
- **User Requirement Fulfillment:** The summary view meets the requirement for comprehensive reporting, allowing users to analyze their financial habits and make informed decisions.

Data Management and Security

Firestore Realtime Database and Cloud Firestore:

- **Structure:** User data, including expenses and budgets, is organized in a hierarchical format, allowing for efficient data retrieval and management.
- **Real-Time Sync:** Changes made by users are instantly updated across all devices, ensuring users always access the most current information.

User Authentication:

- **Firestore Authentication:** Provides secure sign-up and login processes, supporting multiple methods (email/password, social media logins).
- **Token-Based Security:** Utilizes token-based authentication to ensure that user sessions are secure and that data access is controlled.

User Testing and Feedback

Survey Participants

- University Students
- Young Adults and Millennials
- Parents of University Students
- Financially Conscious Individuals
- Education Institutions



Survey Questions

- Which of the following is a primary user group targeted by the CampusExpense Manager app?
- What is a key functionality provided by the CampusExpense Manager app for users?
- Which platform compatibility is a priority for the CampusExpense Manager app?
- What is a critical non-functional requirement for the CampusExpense Manager app?
- Who might also be interested in promoting the use of financial management tools like the CampusExpense Manager app?

The Responses



Question	Options	Count	Percentage
1. Primary User Group	A) High school students	1	10%
	B) University students	8	80%
	C) Working professionals	1	10%
	D) Retirees	0	0%
2. Key Functionality	A) Social media integration	0	0%
	B) Fitness tracking	0	0%
	C) Expense tracking and budget management	10	100%
	D) Recipe suggestions	0	0%
3. Platform Compatibility	A) Android only	0	0%
	B) iOS only	0	0%
	C) Both Android and iOS	9	90%
	D) Web browsers	1	10%
4. Critical Non-Functional Requirement	A) Real-time location tracking	0	0%
	B) Advanced gaming features	0	0%
	C) Data security and privacy	10	100%
	D) Music streaming integration	0	0%
5. Promoters of Financial Management Tools	A) Grocery stores	2	20%
	B) Clothing brands	0	0%
	C) University administrators	7	70%
	D) Travel agencies	1	10%

Challenges Faced

Risks to People

- **Lack of team experience and skills in mobile app development**
- **High time pressure and productivity demands leading to burnout and reduced efficiency**
- **Lack of engagement and feedback from target users**

Risk Control Strategy

- **Provide additional training on mobile development technologies.**
- **Ensure adequate rest and organize regular team meetings to maintain morale.**
- **Organize user testing sessions and gather feedback to adjust features as needed.**

Challenges Faced

Technical Risks

- Performance issues in the app, potentially causing a poor user experience
- Difficulty in integrating with external systems or third-party services
- Lack of multi-platform testing, leading to compatibility issues across different operating systems

Risk Control Strategy

- Optimize code and performance from the early stages.
- Choose reputable APIs with strong documentation.
- Establish a testing process across multiple devices and platforms.

Challenges Faced

Budget Spending Risk

- **Unplanned Cost Increases:** New requirements or unforeseen technical issues may lead to budget overruns.

Risk Control Strategy

- **Conduct a thorough project risk assessment to identify potential additional costs early.**
- **Allocate a contingency budget for unforeseen costs such as extra security measures or infrastructure upgrades..**

Quality Assurance and Testing

Unit Testing

- **Explanation:** Unit testing involves verifying individual components or modules in isolation to ensure they function as expected.
- **Application in Project:** For "CampusExpense Manager," unit tests focus on key modules like user authentication, expense tracking, and report generation.



Quality Assurance and Testing

ID	Description	Precondition	Test Steps	Expected Result
TC-Auth-01	Verify login with correct credentials	User account is registered	1. Open login page. 2. Enter valid username and password. 3. Click "Login" button.	User is redirected to the dashboard.
TC-Auth-02	Verify login with incorrect password	Email already exists in the system	1. Open login page. 2. Enter valid username and incorrect password. 3. Click "Login" button.	"Invalid credentials" error message is displayed.
TC-Auth-03	Ensure password encryption on storage	User account is registered	1. Register a new user. 2. Check password in the database.	Password should be encrypted.

Expense Tracking Module

Authentication Module

ID	Description	Precondition	Test Steps	Expected Result
TC-Exp-01	Add a new expense entry	User is logged in and on expenses page	1. Click "Add Expense". 2. Enter details. 3. Click "Save".	Expense is saved and displayed in the list.
TC-Exp-02	Edit an existing expense entry	User is logged in and has an expense entry	1. Click on an existing expense. 2. Modify details. 3. Click "Save".	Updated expense is displayed in the list.
TC-Exp-03	Delete an expense entry	User is logged in and has an expense entry	1. Click on an existing expense. 2. Click "Delete". 3. Confirm deletion.	Expense is removed from the list.

Quality Assurance and Testing



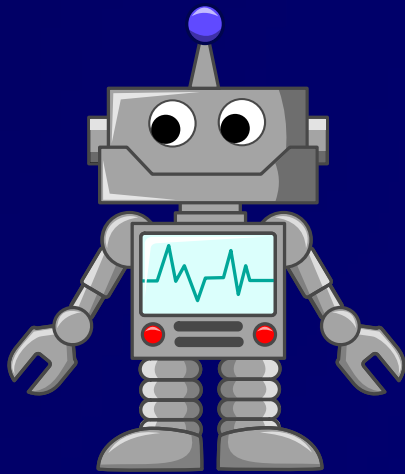
Integration Testing

- **Explanation:** Integration testing verifies interactions between different software modules, ensuring they work seamlessly together.
- **Application in Project:** Integration tests in "CampusExpense Manager" focus on data synchronization between the expense tracker and report generator, and user data management between authentication and profile settings.

Quality Assurance and Testing

ID	Description	Precondition	Test Steps	Expected Result
TC-Int-01	Verify synchronization after adding a new expense	User is logged in, and report page is accessible	1. Add a new expense. 2. Navigate to the report page. 3. Generate report.	The new expense should be reflected in the report.
TC-Int-02	Verify synchronization after editing an expense	User is logged in, and report page is accessible	1. Edit an existing expense. 2. Navigate to the report page. 3. Generate report.	The report should reflect the edited expense details.
TC-Int-03	Verify synchronization after deleting an expense	User is logged in, and report page is accessible	1. Delete an existing expense. 2. Navigate to the report page. 3. Generate report.	The deleted expense should not appear in the report.

Data Synchronization between Expense Tracker and Report Generator



Feedback Review



User Experience:

- Users appreciated the intuitive design and ease of navigation but requested more customization options for expense categories.

Feature Requests:

Many users expressed a desire for additional features, such as:

- Visual Spending Graphs: To better analyze spending habits.
- Recurring Expense Reminders: To help manage regular payments more effectively.

Performance:

- While the app generally performed well, some users reported occasional lag during peak usage times, particularly when loading reports.

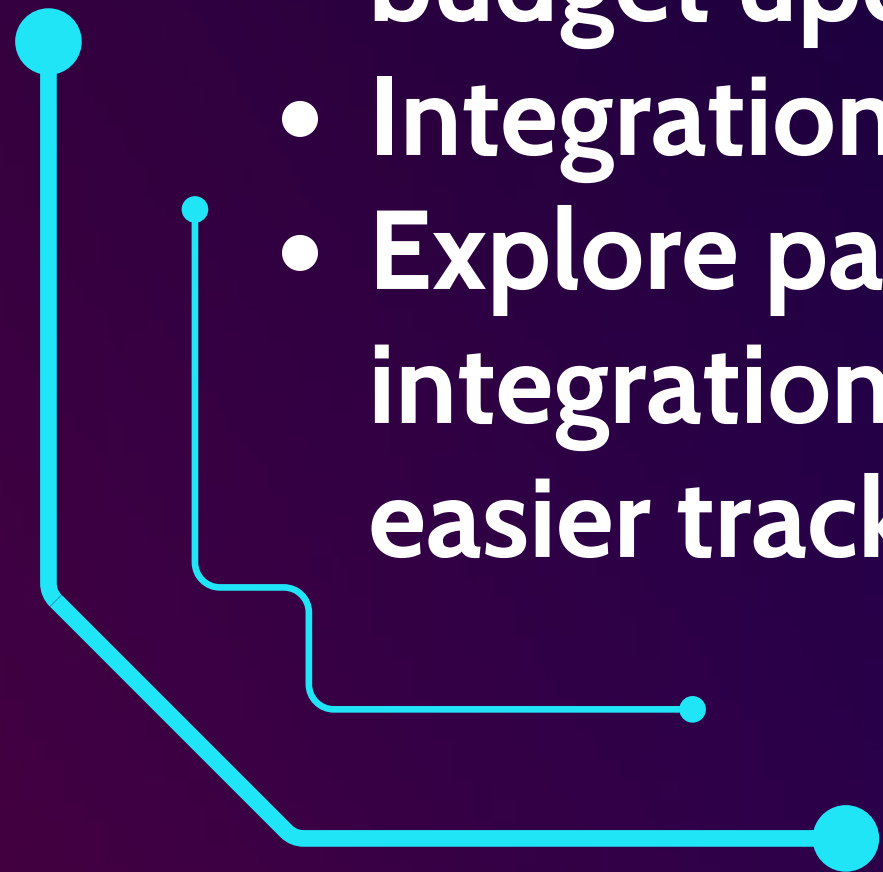
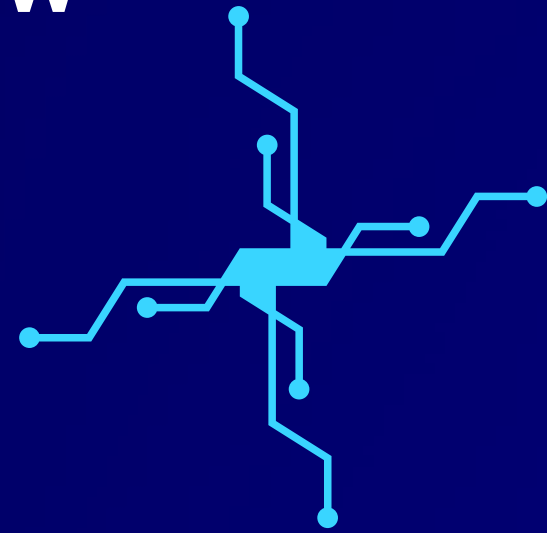


Lessons Learned

- Gained experience in integrating backend services (Firebase) for user authentication and data management.
- Improved abilities in UI/UX design through wireframing and prototyping, effectively translating user requirements into functional designs.
- Team Dynamics: Improved collaboration and communication skills within a diverse team, learning the value of clear roles and responsibilities in achieving project goals.
- Agile Methodologies: Gained experience in agile project management, emphasizing flexible planning and responsiveness to change, which is crucial in a dynamic development environment.

Feedback Analysis and Future Improvements

- **Visual Spending Graphs:** Develop and integrate visual graphs that allow users to visualize their spending trends over time, enhancing financial insights.
- **Enhanced Notifications:** Improve notification settings to allow users to customize alerts based on spending thresholds and budget updates.
- **Integration with Banking Apps:**
- **Explore partnerships with banking institutions for direct integration,** allowing users to automatically import transactions for easier tracking.



Thanks for Watching

