

Application Development

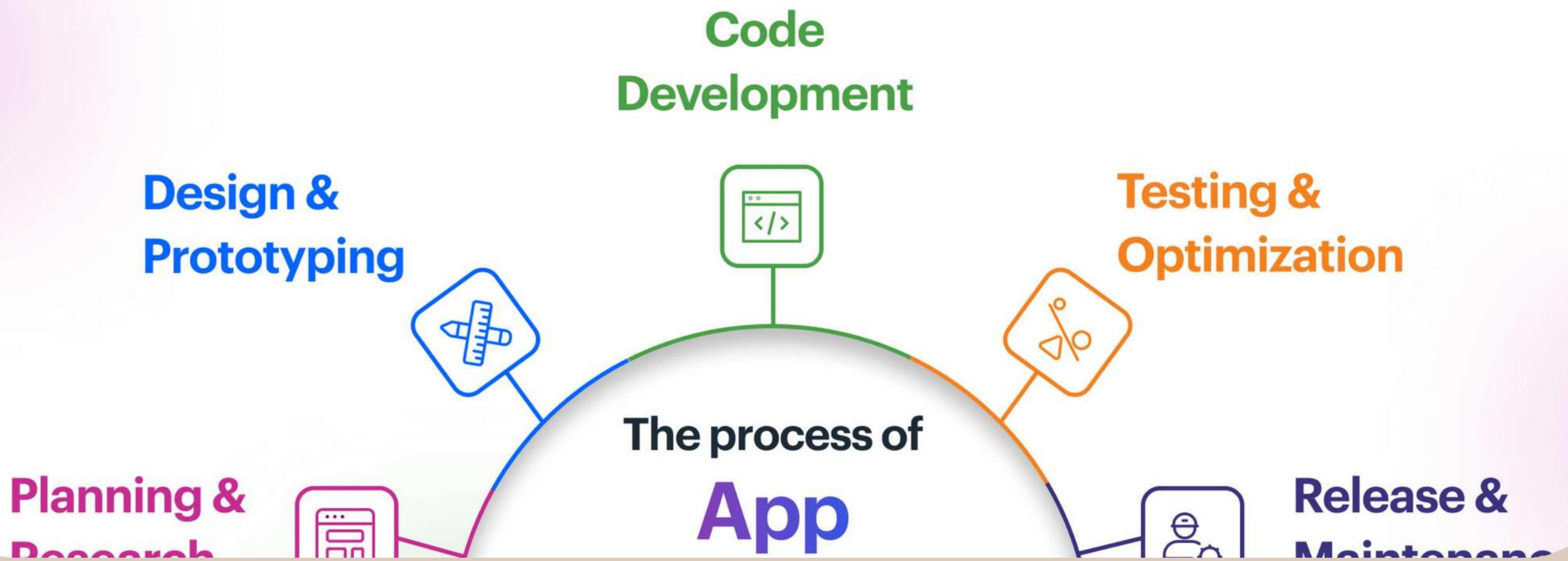





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Project Overview

Develop an intuitive mobile application, CampusExpense Manager, to help university students manage their expenses effectively and stay within their budgets.

Functional Requirement

- User Registration and Authentication
- Expense Tracking
- Budget Setting.
- Expense Overview.
- Recurring Expenses.
- Expense Reports
- Expense Notifications

Non-Functional Requirement

- Performance.
- User-Friendly Interface.
- List an accomplished objective.
- Platform Compatibility.
- Data Security
- Monetization (Optional)

Stakeholders

- Student
- BudgetWise solution team
- University management

Requirement

- User registration and authentication
- The account creation and login process is secure
- Expense TrackingAdd, edit and categorize expenses
- Set a budgetSet monthly budgets for various categories
- Cost overview
- Summary of monthly expenses and budget situation
- Recurring expenses
- Manage recurring expenses with start and end dates
- Expense report
- Generate detailed reports over time
- Cost notifications: Reminders when budget limits are about to be reached or exceeded

Stakeholder requirements

- Student:
 - Track expenses visually
 - Set and adjust budgets easily
 - Detailed expense reports
 - Reliable notifications
- BudgetWise solution group:
 - Successful application development within time and budget
 - Full resource management and skills development
- University management board:
 - Promote financial management among students
 - Support responsible financial behavior



Potential Difficulties Overview



Challenges

- Limited development experience
- Strict timeline and budget
- Ensuring data privacy

Limited Development Experience * * *

Introduction	Impact
Junior Team: The development team mainly consists of junior developers with limited expertise.	Poor Performance: The application may face performance issues and software bugs due to a lack of experience in optimizing the code.
	Longer Development Time: Inexperience can lead to prolonged development as the team encounters and solves unforeseen problems.



Development Timeline Constraints

Timeline:

- **Strict Timeline:** The project has a rigid 12-week timeline from concept to launch. Adhering to this tight schedule can be challenging, especially given the team's limited experience.
- **Training Needs:** Junior developers will need training and skill development throughout the project. This additional time requirement could strain the already tight schedule.

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Budget Constraints

Budget:

- Limited Funds: The project has a constrained budget for both development and marketing. Managing resources effectively is crucial to avoid budget overruns.
- Additional Costs: Ensuring data privacy and platform compatibility may incur extra expenses that need to be accounted for in the budget.

Data Privacy Compliance

Regulations:

- Compliance Requirements: The app must adhere to stringent data privacy regulations to ensure the security and confidentiality of user data.
- Complexity: Implementing robust data protection measures can be technically complex and time-consuming.

Others



Offline Capability

- **Functionality:** The app must operate effectively without an internet connection to cater to students in areas with limited connectivity.
- **Data Syncing:** Efficiently syncing data when connectivity is restored, without causing data loss or duplication.

Platform Compatibility

- **Platforms:**
 - **Multiple Platforms:** The app needs to be developed for Android platforms to reach a broader user base.
 - **Development Effort:** Ensuring compatibility across different platforms requires additional development and testing effort.

Highlighting and describing the issues that need to be addressed in the given scenario:

User Registration and Authentication

Issues:

- User Account Creation: Ensuring users can easily create accounts with a username and password.
- Secure Authentication: Implementing secure authentication methods to protect user data and ensure only authorized access.

Solutions:

- Account Creation: Implement a simple and intuitive registration form with validation.
- Secure Authentication: Use industry-standard authentication mechanisms, such as OAuth or JWT, and incorporate two-factor authentication for added security.

Expense Tracking

Issues:

- Adding and Editing Expenses: Allowing users to efficiently add, edit, and categorize their expenses.
- Detailed Expense Entries: Ensuring each expense entry includes a description, date, amount, and category.

Solutions:

- User Interface: Design a user-friendly interface for adding and editing expenses with dropdown menus for categories.
- Data Entry Validation: Implement validation to ensure all required fields are filled out correctly.

Highlighting and describing the issues that need to be addressed in the given scenario:

Budget Setting

Issues:

- Setting Monthly Budgets: Enabling users to set and adjust monthly budgets for different expense categories.
- Flexibility: Allowing users to adjust budget amounts as needed.

Solutions:

- Budget Interface: Provide a simple interface for setting and adjusting budgets.
- Notifications: Include notifications to alert users when they adjust their budgets.

Expense Overview

Issues:

- Summary of Expenses: Providing a comprehensive summary of monthly expenses.
- Expense Trends: Allowing users to view expense trends over time.

Solutions:

- Dashboard: Create a dashboard that summarizes total spending, remaining budget, and a breakdown by category.
- Graphs and Charts: Use visual aids like graphs and charts to display expense trends.

Highlighting and describing the issues that need to be addressed in the given scenario:

Recurring Expenses

Issues:

- Adding Recurring Expenses: Allowing users to add recurring expenses with start and end dates.
- Automatic Inclusion: Ensuring recurring expenses are automatically added to the user's monthly budget.

Solutions:

- Recurring Expense Feature: Implement a feature to add recurring expenses with flexible start and end dates.
- Automatic Updates: Ensure the app automatically includes these expenses in the monthly budget.

Expense Reports

Issues:

- Generating Reports: Allowing users to generate detailed expense reports for specific time periods.
- Category Breakdown: Including a breakdown of expenses by category in the reports.

Solutions:

- Report Generation: Implement a feature to generate detailed reports for monthly, quarterly, or annual periods.
- Detailed Breakdown: Ensure reports include a clear breakdown by category.

Highlighting and describing the issues that need to be addressed in the given scenario:

Expense Notifications

Issues:

- Budget Limit Alerts: Sending reminders or notifications when users approach or exceed their budget limits for specific categories.

Solutions:

- Notification System: Develop a notification system that sends alerts when users approach or exceed their budget limits.
- Customizable Alerts: Allow users to customize their notification preferences.

Consider possible business application solutions which address problem.

Mobile Application

Advantages:

- **Accessibility:** Students can track expenses on the go, which is crucial for managing daily expenses.
- **User Engagement:** Mobile apps generally have higher engagement rates due to push notifications and ease of access.
- **Offline Capability:** Easier to implement offline functionalities.
- **Platform Reach:** Availability on both Android and iOS increases user base.

Disadvantages:

- **Development Complexity:** Requires development expertise for both iOS and Android platforms.
- **Performance Variability:** Needs optimization for different devices and operating systems.
- **Higher Maintenance:** Continuous updates and bug fixes for multiple platforms.

Desktop Application

Advantages:

- **Performance:** Typically offers better performance and handling of large datasets.
- **User Interface:** More space for detailed visualizations and reports.
- **Development Focus:** Can focus on a single platform initially, reducing development complexity.

Disadvantages:

- **Accessibility:** Limited to when users are on their computers, which may reduce engagement for expense tracking.
- **Portability:** Lacks the convenience of mobile apps, especially for real-time expense tracking.

Web Application

Advantages:

- **Cross-Platform: Accessible**from any device with a web browser, reducing the need for separate development for Android and iOS.
- **Ease of Updates: Easier** to roll out updates and fixes compared to mobile apps.
- **Cost-Effective: Can be more budget-friendly** as it requires a single development process.

Disadvantages:

- **Offline Functionality: Harder** to implement offline capabilities compared to native mobile apps.
- **Performance: May not be as responsive or smooth** as native apps, especially with large data sets.
- **Security: Web applications can be more vulnerable** to security threats if not properly secured.

Hybrid Mobile Application

Advantages:

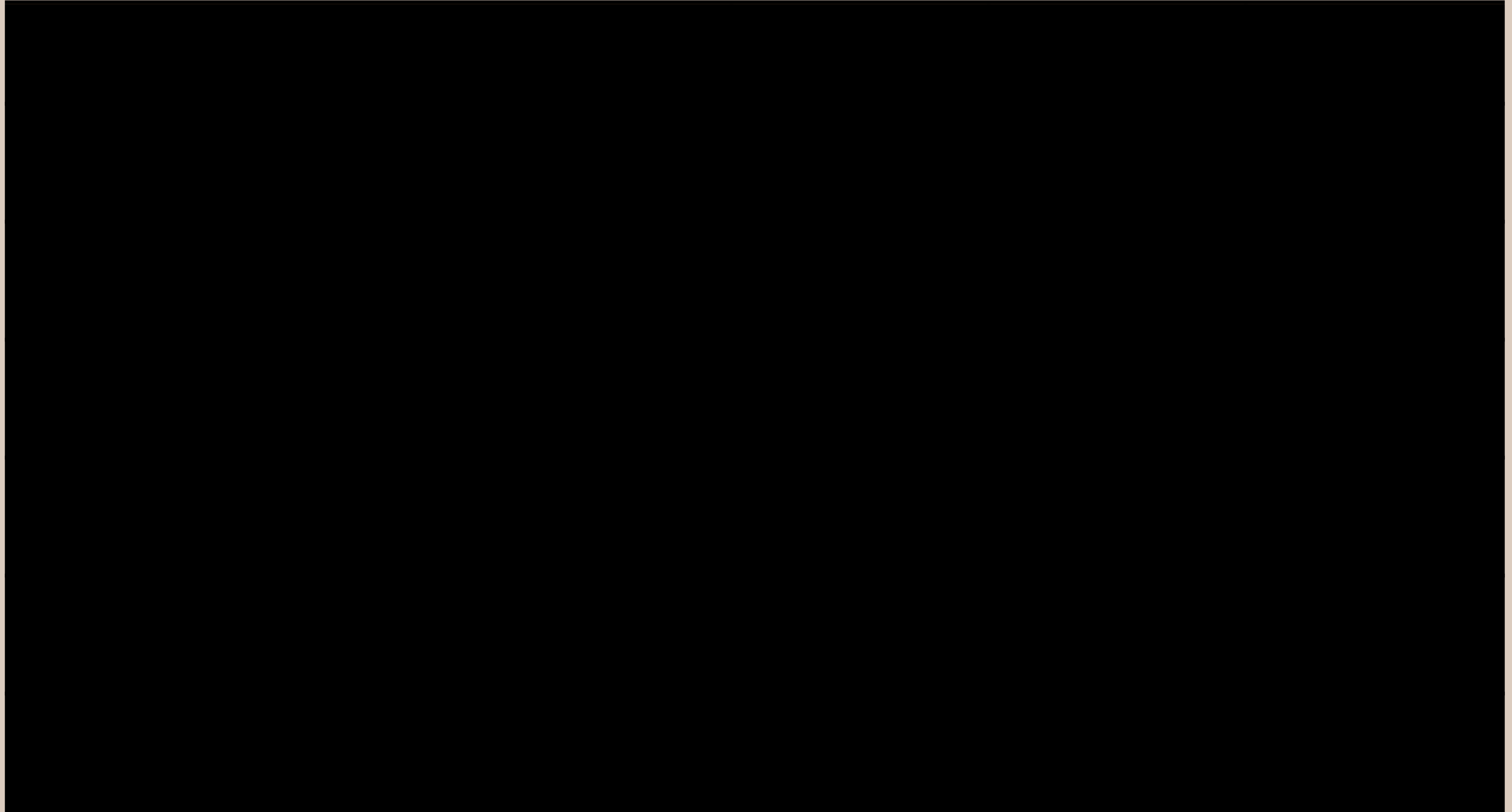
- **Cross-Platform:** Single codebase for both iOS and Android, reducing development time and cost.
- **Offline Capability:** Easier to implement offline features compared to web applications.
- **Faster Development:** Quicker to develop and deploy than native apps for both platforms.

Disadvantages:

- **Performance:** May not be as optimized as native apps.
- **User Experience:** Might not provide the same level of user experience as native apps due to limitations in accessing device-specific features.

Areas of risk pertaining to this software project

Risk



Technical Complexity

- Developing features like recurring expenses, real-time expense tracking, and data synchronization across platforms may prove technically challenging for a team with limited experience.

Timeline Constraints:

- The strict 12-week timeline may lead to rushed development, compromising on quality or completeness of features.

Resource Constraints

- Limited budget and a team of junior developers may impact the quality and speed of development.

Data Security and Privacy:

- Mishandling of user data could lead to breaches, compromising user trust and legal compliance.

Platform Compatibility:

- Inconsistencies in app performance between Android and iOS platforms may lead to user dissatisfaction.

User Acceptance and Feedback

- Failure to meet user expectations could result in low adoption rates or negative reviews.

Strategies for managing these risks

Identifying Risk

- Risks can be identified passively or through active tools and processes.
- Proactive risk management is essential for effective risk reduction.
- Regular internal and external risk assessments uncover hidden risks.
- Compliance frameworks often require annual risk assessments.
- Document all risks, assessments, response plans, and resolutions in a formal register.
- Regularly update and review the risk register to ensure it remains current.

Strategies for managing these risks

Assessing Risk

- Assess each identified risk to determine its likelihood and potential impact.
- This assessment helps prioritize risks for effective management.
- Systematic and documented risk assessments are essential.
- Depending on your business, review or redo assessments at least annually.
- Frequency of risk assessments varies based on business size and complexity.

Strategies for managing these risks

Responding to Risks

- Develop and implement treatments and controls after assessing risks.
- Four common ways to treat risks: risk avoidance, mitigation, acceptance, and transference.
- Responding to risks may involve ongoing projects or immediate action.
- Some risks require detailed action plans for effective management.
- Involve affected stakeholders in decision-making about key risks.

Strategies for managing these risks

Monitoring Risks

- Risk monitoring involves ongoing management by tracking risk management execution.
- It includes identifying and managing new risks as they arise.
- The purpose is to take prompt action if a risk's likelihood, severity, or impact exceeds acceptable levels.
- Continuous monitoring and execution of risk plans ensure readiness for various risk types.
- Risks monitored encompass enterprise, financial, strategic, and external categories.
- Vigilant monitoring is crucial to minimize disruptions and losses.