Midterm Report

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Project Title: Comparative Analysis of Mobile Application Architectures

Introduction

The choice of a suitable architectural paradigm is crucial for the success of mobile application development. Different architectural paradigms, such as Model-View-Controller (MVC), Model-View-ViewModel (MVVM), and Clean Architecture, provide guidelines and patterns for organizing code, separating concerns, and creating scalable and maintainable applications. However, the implementation of these architectures can vary depending on factors such as the platform, programming language, and frameworks used.

This research paper aims to conduct a comparative analysis of mobile application architectures, with a specific focus on MVC, MVVM, and Clean Architecture. The objective is to explore and evaluate the strengths and weaknesses of each architectural paradigm, identify their suitability for various use cases, and propose a hybrid approach that combines the advantages of multiple paradigms.

Research Strategy

Assessment Dimensions: This research will identify and define the key dimensions on which each architectural paradigm will be assessed. These dimensions may include but are not limited to modularity, separation of concerns, testability, scalability, maintainability, and performance. By evaluating each paradigm along these dimensions, a comprehensive understanding of their strengths and weaknesses will be obtained.

Hybrid Approach: Based on the assessment results, this research will propose a hybrid approach that combines the most beneficial aspects of each architectural paradigm. The hybrid approach will be designed to address the limitations of individual paradigms and provide a more efficient

and maintainable codebase for mobile applications. This will involve customizing the architectural components and adapting them to fit the specific requirements of the project.

Evaluation of the Hybrid Architecture: To evaluate the effectiveness of the hybrid architecture, appropriate drivers and metrics will be established. These may include development time, code complexity, ease of maintenance, performance benchmarks, and user satisfaction.

Progress Overview:

I've read papers and articles to understand how mobile app architectures work. It's important to choose the right architecture to make sure apps work well and are easy to maintain. I've also figured out the main things to look at when comparing these architectures like how the code is organized, how easy it is to test, and how well it can handle lots of users. By looking at these factors, I'll be able to compare the different architectures and see which ones are the best for different situations. I plan to take my research a step further by developing a simple mobile app that showcases the differences between various design patterns in a visual and practical manner. This approach will allow me to demonstrate the impact of different architectural paradigms on the app's structure, behavior, and user experience. The app will be developed for a specific use case, such as a wallet or a weather forecasting application, to ensure a clear demonstration of the design pattern differences in a practical context. Each version of the app will be implemented using a different design pattern, allowing users to switch between the patterns and observe the resulting changes in the app's behavior and structure.