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Calculator Vault: Secure App Vault disguised as Calculator

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Abstract: *With the growing need for digital privacy, securing personal applications has become a priority for users. This paper presents "App Vault," a security-focused Android application that functions as a dual-purpose calculator and hidden app vault. While appearing as a standard calculator, the application discreetly unlocks a secure vault upon entering a predefined secret code, allowing users to hide and access sensitive apps.The system is designed with robust security measures, including a customizable access code, app hiding/unhiding functionality, and Device Admin permissions to prevent unauthorized detection. Developed using Android Studio with Java, App Vault offers a seamless blend of usability and security. This paper discusses the architecture, implementation, security challenges, and potential enhancements, highlighting its significance in safeguarding user privacy in modern mobile environments.*

Keywords: Calculator vault, App hider, Mobile security, Privacy Protection

I. INTRODUCTION

With increasing concerns over digital privacy, users seek secure ways to protect sensitive applications from unauthorized access. Traditional app lockers make it evident that certain apps are restricted, which may attract attention. To solve this issue, we present **"App Vault,"** a mobile application that seamlessly integrates security and usability.app vault appears as a fully functional calculator, allowing users to perform arithmetic operations. However, when a predefined secret code is entered, it transforms into a secure vault, providing access to
Hidden applications. The app includes **A Customizable Access Code, App Hiding/Unhiding Functionality, and Device admin permissions** to prevent detection and unauthorized modifications. This paper explores the **design, development, Security Challenges, and Future Improvements** of app vault. By offering a **discreet and efficient** way to safeguard personal applications, it ensures enhanced privacy and security for users.

II. METHODOLOGY

The development of **App Vault** follows a structured approach to ensure security, usability, and efficiency. Built using **Java** in **Android Studio**, the application does not use a database but instead relies on **shared preferences** to store the secret passcode securely. The system consists of two primary components: a **functional calculator interface** and a **hidden vault system**. The calculator operates normally, performing arithmetic functions, but when a predefined secret code is entered, it unlocks the vault, allowing users to access hidden apps.
The app uses **Device Admin API** to hide/unhide selected applications, ensuring they do not appear in the app drawer or system settings. Additional security features include **misleading error messages** to prevent unauthorized access and **stealth mode**, which disguises the app's true purpose. Testing is conducted in multiple phases, including **functional, security, and user experience testing**, ensuring a seamless and reliable experience. By integrating a **discreet and secure** approach, **App Vault** effectively protects user privacy without requiring complex data management.

III. FUTURE SCOPE

The **App Vault** application has significant potential for future enhancements to improve security, functionality, and user experience. One key area of development is **biometric authentication**, such as fingerprint or facial recognition, to

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provide an additional layer of security beyond the secret code. Another improvement could be **cloud backup and synchronization**, allowing users to restore hidden apps and settings if they switch devices.

Further enhancements include **disguised UI customization**, enabling users to change the app's appearance to blend with other utilities, making detection even harder.

Implementing **intruder detection** with logs or front-camera capture can alert users of unauthorized access attempts. Additionally, **support for file hiding** alongside apps could expand its usability, making it a complete privacy solution.

IV. CONCLUSION

The **App Vault** application provides an innovative solution for securing sensitive applications by disguising itself as a functional calculator. By integrating a **hidden vault mechanism, secure authentication, and app-hiding functionality using the Device Admin API**, it ensures user privacy without drawing attention. The use of **shared preferences** for passcode storage keeps the system lightweight and efficient.

Through **functional, security, and user experience testing**, the app proves to be **reliable and effective** in protecting personal data. With potential future enhancements such as **biometric authentication, cloud backup, and intruder detection**, **App Vault** can further strengthen mobile privacy. This application serves as a **practical and discreet** security tool for users seeking enhanced data protection.

V. ACKNOWLEDGMENT

I would like to express my sincere gratitude to everyone who contributed to the development of **App Vault**. Special thanks to my mentors and instructors for their guidance and valuable insights throughout this project. I also appreciate the support of my peers and testers, whose feedback helped improve the application's functionality and security.

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