Secured Cloud Diary Application

Abstract

The objective of this paper is to present a personal diary application, which implements Google Drive API for saving app data. Every entry made to this project is secured using encryption algorithms. The users are first brought to sign up to store their credentials. The users can then make as many entries which are stored in Android's SQLite database encrypted. These entries are then created as individual files on the user's cloud account.

Introduction

It is often necessary for someone to maintain a journal to record life's highs and lows only to remember later how they have been and though and embrace where they are at the moment. This necessity can only be served by a personal diary, which also serves to secure one's thoughts. The cloud diary is an application where one can save their thoughts. Users can make entries every day and their entries are encrypted. These entries are stored into Google Drive, which is noted as a reliable cloud service. The encryption cipher used is AES and the user entries are encrypted before they are inserted into the database. To view these entries, they are decrypted before presenting them to the user.

Background

There are many applications on play store that implements a diary application, but there are a limited number of applications that store the user data into to cloud. Some of the journaling applications also include image journaling which makes it convenient to journal on the go. Several journaling applications have their own proprietary cloud storage which sometimes takes away user's control over their data. They can be made better if the application were made more secure and perhaps made available across various cloud platforms. A multitude of APIs can be made use of to make the app more flexible to be used with other applications.

Methodology

➢ Initially, the application was modeled so as to identify what components should be created and where they would go. It started with the Android activity (Sign-Up Activity) that takes the user credentials.

➢ The database was created as the backend for the application with the one table holding the user credentials and another table to store user entries with the primary key being user's email address, which is most probably a Gmail address.

➢ The user's credentials are then stored in the user tables, so are the user entries stored in the entry table.

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- ➤ The entries from the database are stored as individual files in the cloud, where the user is prompted for the Google credentials to access to their cloud drive.

- ➤ The entries are encrypted while they are stored in the database.

Experiments

- ➤ Most of the trials were made to verify if the data is being stored in the database. Android's ADB shell was used to gain access to the database files and lookup data stored in the tables using general SQL queries.

- ➤ Furthermore, there were several attempts to create files from individual entries in the entry table so that the files can be pushed to the cloud through the Google Drive API.

- ➤ When the query data was retrieved, significant effort was made to make this data available to all intents (Activity) so that they were operable throughout the application.

Discussion

Using the ADB shell to verify the tables enabled to progress toward creating the user login activity and authenticate users against their credentials. This also ensured that the user was able to make entries so that they are recorded as is in the entries table. When the database is well populated with user data, the application was able to create files from the individual entries from the entries table.

The only further requirement is the encrypt the data being stored in the database. Also, when the users make attempts to view the entries, they are to be decrypted from the database and then presented a readable data. Furthermore, there is yet to push the local app data to the cloud through the Google Drive API. Certain methods to create files from the database also need to be implemented so that they can be pushed to the cloud.

Conclusion

A habit of journaling is a fun way to record blissful events, which can help connect pieces of clues to an answer one's journey of life. And these personal records must be kept safe, secure and conveniently accessible. The cloud diary app serves these necessities. The algorithm used to encrypt user entries is AES. This algorithm is used to encrypt user entries and is then stored in the database. The app stores the user data in Android's default database SQLite. The entries make the individual files in the local directory which is then pushed to the cloud. All entries made by the user is encrypted and stored in the database. While the user views the entries, the respective encrypted copy of the entry is brought in to be decrypted before presenting to the user. The cloud diary makes use of Google Drive to store user data so that it can be accessed across devices.

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References

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