



College of Software
Masters in Software Engineering
Intelligent Mobile Development
Practical Report
Note Sharing App - Android

Name : Canon Cleoplace Ngirwa
ID : 2120196034
Github : <https://github.com/cngirwa/notes-sharing.git>

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1 Introduction

This App(Note Sharing) will enable its users to write notes and save them locally on their devices. Then if user wants to share notes with his family or friends, he or she can do so by inside the App. The App has capabilities to share notes stored inside it via different communication channels such as Bluetooth, social media apps(WeChat,WhatsApp), cloud drive apps(OneDrive,Google Drive) and so many apps which are installed on user's device.

The App is simple to use and all features are easily accessible. Considering material design by Google, Note Sharing App is running smoothly and very responsive also good quality design of colors and widgets makes it a must to have App for daily usage.

Unlike other notes apps, this App require user to sign-in using their Google accounts. This is to ensure privacy of notes written inside the App.

The main flow of App is as follows;

1. User sign-in the App using Google account.
2. User write a note and save it.
3. User share the note.

2 Solutions

Tools used to develop this App are;

1. Android Studio 4.1.1
2. SQLite database.
3. Firebase realtime database.

Android studio is configured with minimum software development kit(SDK) 16 and set target SDK to 30, which is the maximum SDK available in time of development.

The App uses SQLite database to store data locally, and firebase real-time database to store/authenticate users' login credentials. The App will ask only once, the user to sign-in and then automatically sign-in a user next time he/she opens the App unless the user decided to sign-out.

Material design is used as the theme, hence the interactions and operations are smooth and easy to operate.

3 Solutions

The design and implementation of Note Sharing App is broken down into three parts;

1. User Interface
2. User Experience
3. Database Interactions

3.1 User Interface

User Interface also known as UI is developed in such that users of the App will not have hard time interacting(using) it. UI is based on material design by Google, the icons, buttons and all other widgets are clearly visible and easy to access.

The homepage of the App has app logo, welcome text and a single button for sign-in. This is page can be seen only once if user decided not to sign-out. The main page after successful sign-in consists of

floating button at bottom right of the page and App bar menus are located at top right.

For notes, they are shown in form of card view and each note has;

1. Title
2. Descriptions
3. Edit button
4. Share button

Note are ordered vertically and there is a tiny space between one note and another.

3.2 User Experience

Also known as UX it is sometimes confused to UI. UX of App refers to the way users interact with features inside the App and how features respond to user interactions. It is related to UI because the experience is measured or observed on top of UI.

Note Sharing App follows Google Material design theme and it has good UX. The alignment of buttons, text and other widgets are as expected by users and their response is common. For example the floating button for adding new note. It is aligned at bottom right and when clicked, user expects a pop-up window which it is indeed given to him/her. The pop-up window has widget to enable user to enter details(title and description of note), once clicked to enter title, the keyboard shows up. User has no need to click on description, rather he/she will click 'next' button on keyboard and the cursor will shift to description page. To avoid accidental saving of note when entering description, the 'next' button on keyboard is no longer visible and it is replaced with return functionality. The return functionality will enable user to enter note's description in lines. When user has done entering description, he/she can click save button to save the note or back button on the device controls to quit note saving operations. This operation is same when user wants to edit the note.

Most devices nowadays have large displays, ranging from 5inch display to more than 6inch, hence to use on one hand is becoming difficult. If App doesn't consider good alignment of widget and operations, users are likely to stop using the App. By considering this fact, Note Sharing App has aligned right the menu widget and floating button to give user ease of use even by one hand. The menu is dropped down a bit to enable user to reach to menu by one hand.

3.3 Database Interactions

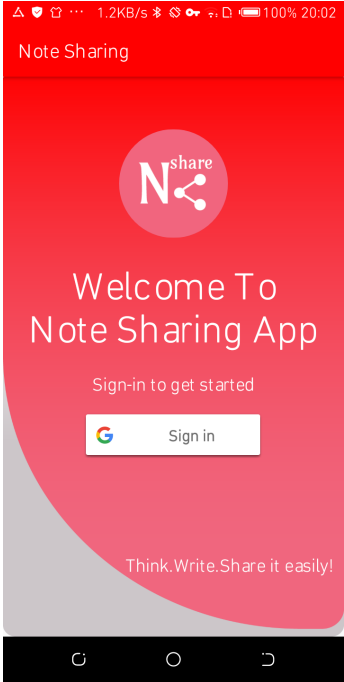
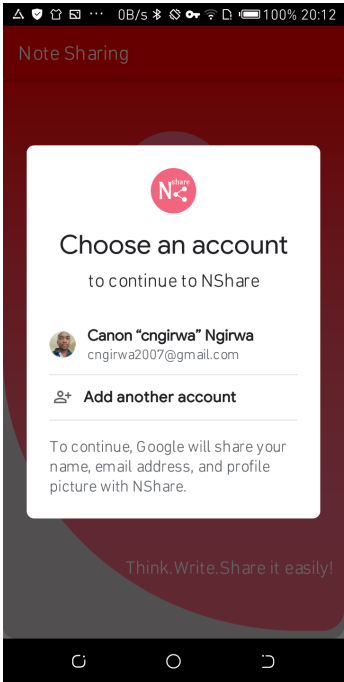
Note Sharing App uses storage techniques;

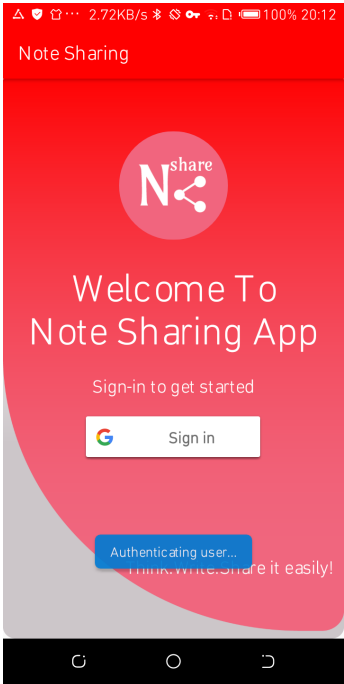
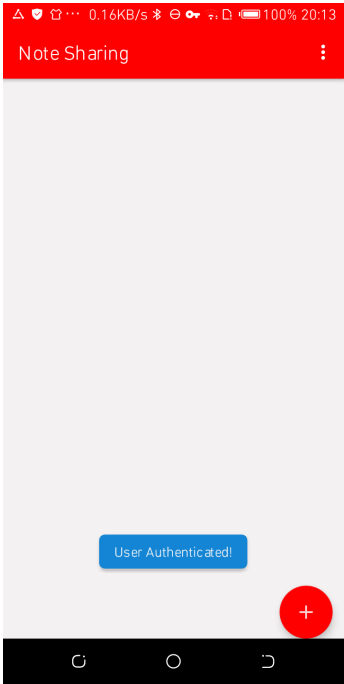
1. Firebase real-time database
2. SQLite database

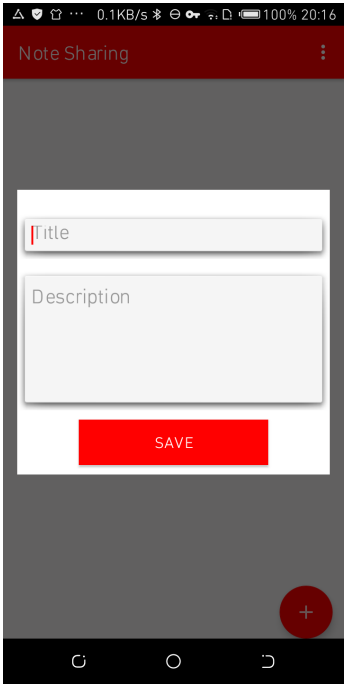
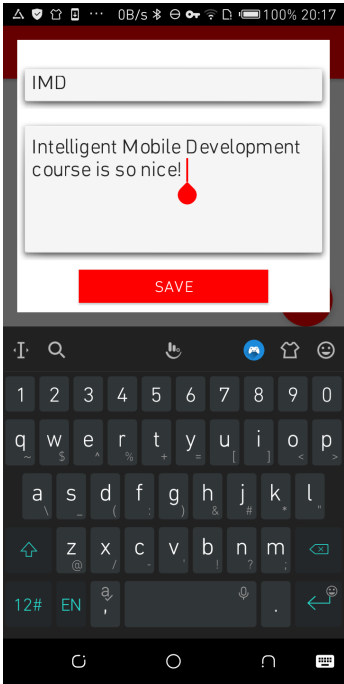
Firebase database is used to authenticate users of the App while SQLite database is used to store notes on user's device. The purpose of using two database technologies is to secure the login operations. Once user has sign-in successfully, he/she can continue to use the App offline without a glitch of performance.

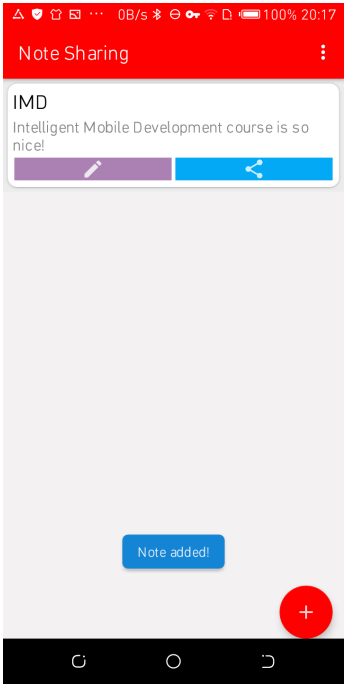
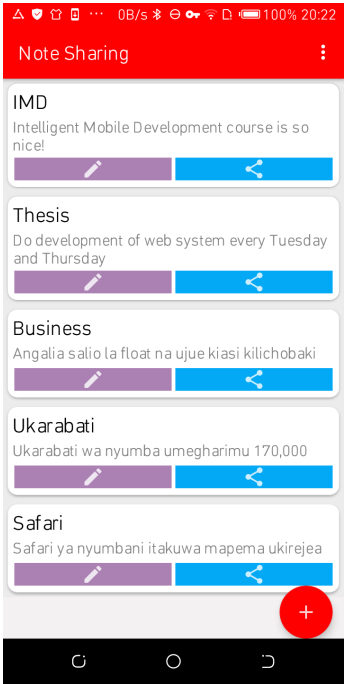
The App interacts with SQLite database via a helper class which consists of connections to database and several methods containing database operations such as create, read, update and delete.

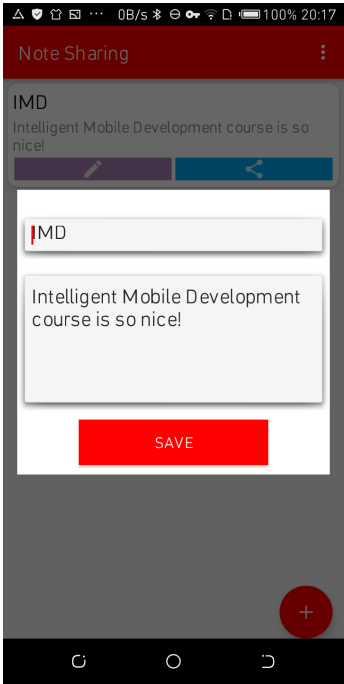
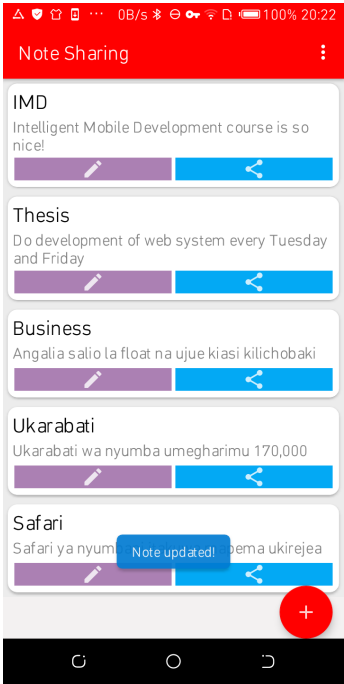
4 Screenshots and descriptions

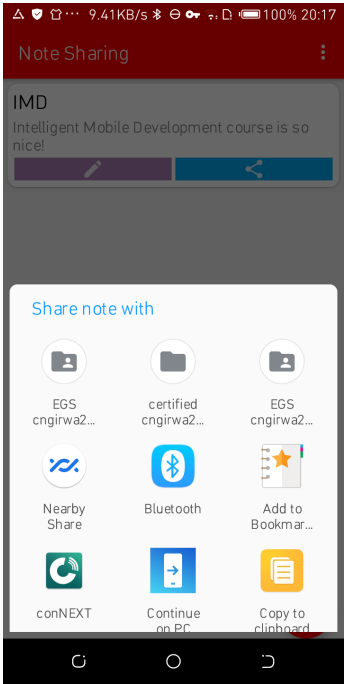
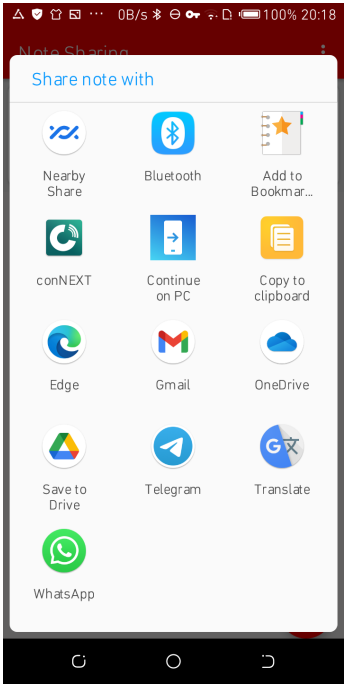
Screenshot	Descriptions
	<p>This is the landing page of the App. It consists of;</p> <ol style="list-style-type: none"> 1. App logo. 2. Welcome text. 3. App slogan. 4. Sign-in button
	<p>When user click Sign-in button from homepage, the dialog appears with previous logged in account at top followed by other accounts or/and option to choose another another account last.</p>

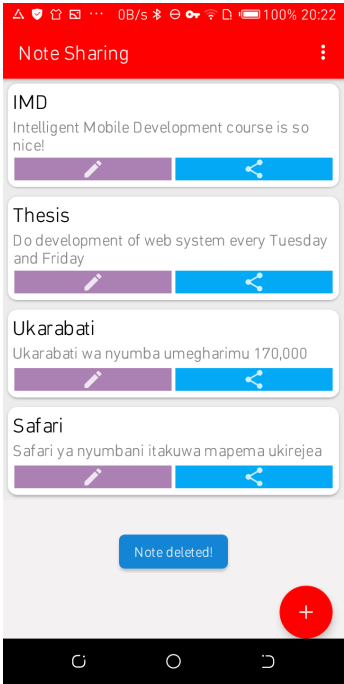
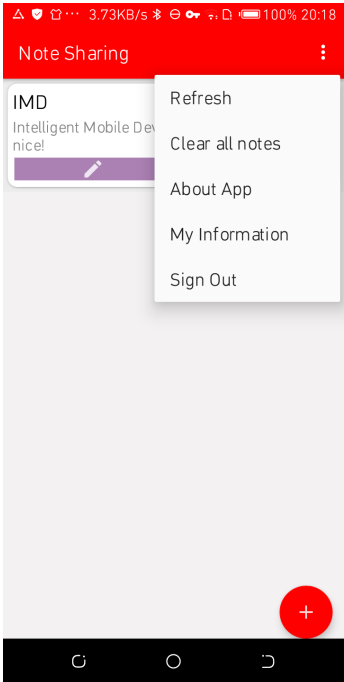
Screenshot	Descriptions
	<p>After user choose account and grant permission for App to use that account, the authentication process starts.</p>
	<p>Upon success authentication, the App shows a main page for writing and managing notes.</p>

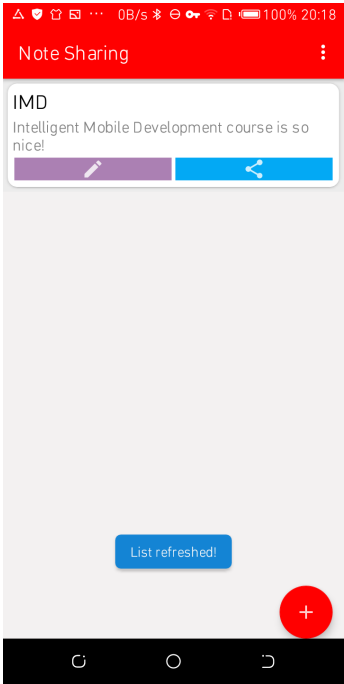
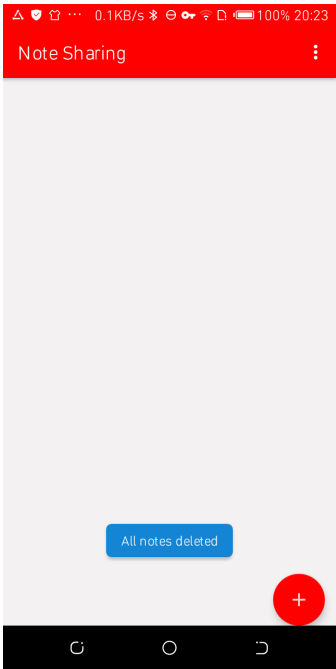
Screenshot	Descriptions
 <p>The screenshot shows the 'Note Sharing' app interface. At the top, there's a red header bar with the text 'Note Sharing'. Below it, a white dialog box is centered on the screen. The dialog box contains two input fields: 'Title' and 'Description'. Below these fields is a red button labeled 'SAVE'. The background of the app is a dark gray. At the bottom right of the screen, there is a red circular floating action button with a white plus sign. The Android navigation bar is visible at the very bottom.</p>	<p>User starts by clicking floating icon. The dialog asking for title and description of note appears.</p>
 <p>This screenshot shows the same 'Note Sharing' app dialog box, but now it's filled with text. The 'Title' field contains 'IMD' and the 'Description' field contains 'Intelligent Mobile Development course is so nice!'. A red cursor is visible at the end of the description text. Below the dialog box, a red 'SAVE' button is visible. At the bottom of the screen, a virtual keyboard is displayed, showing the text input process. The app's header and floating action button are also visible.</p>	<p>User enter title and description of note then click save.</p>

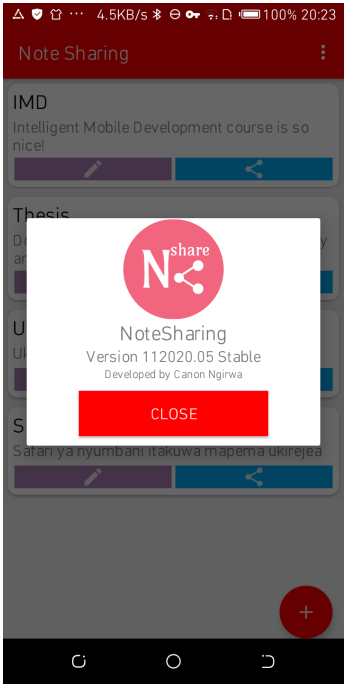
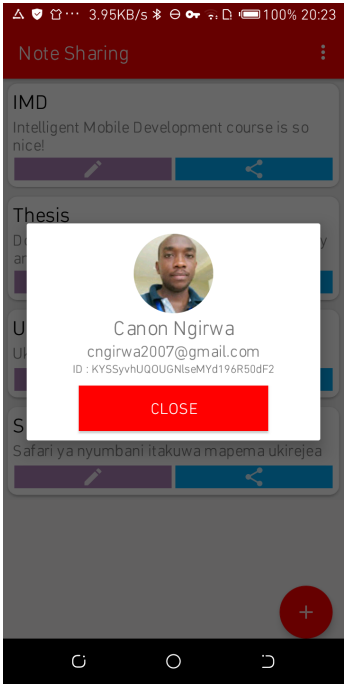
Screenshot	Descriptions
	<p>Upon success saving of note, the toast notification appears at the bottom of app.</p>
	<p>User can store as many notes as he want.</p>

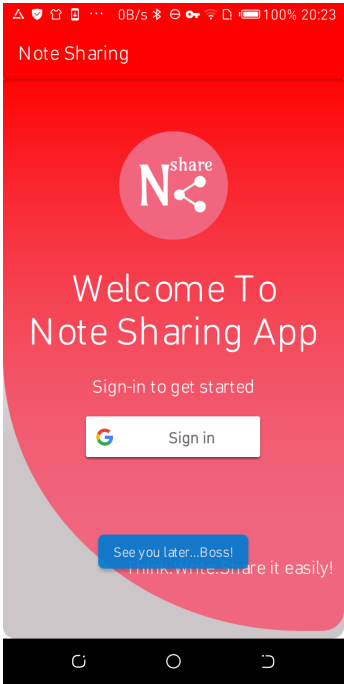
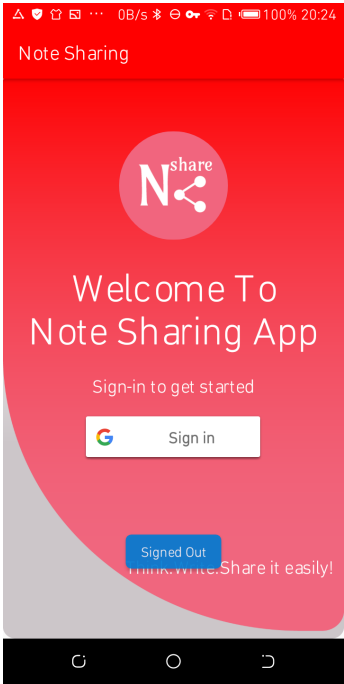
Screenshot	Descriptions
 <p>The screenshot shows the 'Note Sharing' app interface. At the top, there's a red header with the app name and a menu icon. Below it, a note titled 'IMD' with the text 'Intelligent Mobile Development course is so nice!' is displayed. A dialog box is open over the note, containing a text input field with 'IMD', the same note text, and a red 'SAVE' button. The background is dimmed, and a red circular button with a plus sign is visible at the bottom right.</p>	<p>When user click edit button, a dialog appears with details of note. User can then make modifications and click save.</p>
 <p>The screenshot shows the 'Note Sharing' app interface with a list of notes. The notes are: 'IMD' (Intelligent Mobile Development course is so nice!), 'Thesis' (Do development of web system every Tuesday and Friday), 'Business' (Angalia salio la float na ujue kiasi kilichobaki), 'Ukarabati' (Ukarabati wa nyumba umegharimu 170,000), and 'Safari' (Safari ya nyum). Each note has an edit icon (pencil) and a back icon (arrow). A blue toast notification with the text 'Note updated!' is displayed over the 'Safari' note. A red circular button with a plus sign is visible at the bottom right.</p>	<p>When update operation succeeds, user is notified with a toast.</p>

Screenshot	Descriptions
	<p>When user click share button, the list of apps which are compatible with note sharing appears.</p>
	<p>More apps to share note</p>

Screenshot	Descriptions
	<p>When user slide the card holding a note either left or right, the note is immediately deleted.</p> <p>This operation is not reversible, user should used it with caution.</p>
	<p>When click three, vertically aligned dots on top right, the menu appears.</p>

Screenshot	Descriptions
	<p>When user click refresh, the App will fetch for all notes in database and display them.</p>
	<p>When user choose to delete all notes, App will delete all notes in the database and inform user upon success. This operation is not reversible, user should use it with caution.</p>

Screenshot	Descriptions
 <p>The screenshot shows the NoteSharing app interface. A white pop-up dialog box is centered on the screen. It features a pink circular logo with a white 'N' and a share icon. Below the logo, the text reads: 'NoteSharing', 'Version 112020.05 Stable', and 'Developed by Canon Ngirwa'. At the bottom of the dialog is a red button labeled 'CLOSE'. The background shows a list of notes with titles like 'IMD' and 'Thesis'.</p>	<p>This pop-up displays information about App.</p> <ol style="list-style-type: none"> 1. App name 2. App version 3. App developer
 <p>The screenshot shows the same NoteSharing app interface. A white pop-up dialog box is centered on the screen. It features a circular profile picture of a man. Below the picture, the text reads: 'Canon Ngirwa', 'cngirwa2007@gmail.com', and 'ID : KYSSyvhU00UGNiseMYd196R50dF2'. At the bottom of the dialog is a red button labeled 'CLOSE'. The background shows the same list of notes.</p>	<p>This pop-up displays your information as per your Google account.</p> <ol style="list-style-type: none"> 1. Display name. 2. Email address. 3. ID stored in Firebase database.

Screenshot	Descriptions
	<p>Notification to inform user about the logout operation.</p>
	<p>Notification to inform user about the logout operation.</p>

5 Conclusion

Though the App is running well and perform as intended, there are some advances need to enhance its usability.

5.1 Advanced UI

The UI for the App is good but more graphics are needed. Example the icons for menus and ability for user to change theme or even add custom theme.

5.2 Custom card design

The App should have ability to change the look and feel of card. For example add colors to card with important notes.

5.3 Improved security

The App has only Google sign in options, but it would be better to support other types of sign in and send immediately notifications when account is used to sign on different device.

The cards holding notes are also not secured, means if user accidentally swipe left or right the card will be deleted. Therefore, a lock of cards is needed to prevent this scenarios.

5.4 More notes details

Currently the App only stores title and description of note which are in format of text. It would be better to support other types of data such as images. Images can be directly taken from camera or gallery. Also App should support usage of hand written notes using pen(if device support) or draw on screen.

5.5 Cloud backup

The App lacks backup functionality. This means users has no means to backup his/her notes and app data. To solve this, cloud backup is suggested. It will save both user data and App data such as settings.

5.6 Collaborative notes sharing

The App has only single user interactions. It could be nice if it could incorporate multi-user note writing and sharing.

References

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- [2] <https://www.forbes.com/sites/sergeiklebnikov/2019/11/11/alibabas-1111-singles-day-by-the-numbers-a-record-38-billion-haul/>
- [3] Saiidi, Uptin (13 November 2017). "Singles Day is not just for China anymore". CNBC. Retrieved 10 January 2018.
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- [5] <https://mp.weixin.qq.com/s/ODfCfvs63L9FN7TY3Y-bRg>