Personal Project Report

- Mobile Application Lab 2023 -

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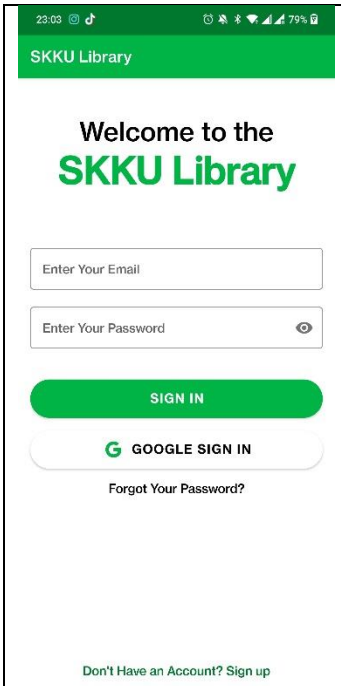
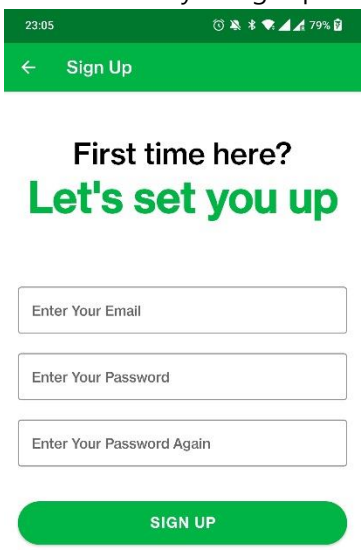
Application Name
SKKU Library
Application Explanation - What your application? - App usage scenario
My application has authentication system. User can create an account and login into his account. My application also sends email verification letters to all newly signed up users. Upon proceeding to the link in the letter user can verify his account and login into it, but without verification he cannot sign in. There is also "Forgot Password" function that send a letter for creating a new password. There is also Google Sign in to make Sign in process more comfortable. User can find the book he wants to borrow, the list of books will be shown to him. He can scroll the books and more books will be loaded and shown. User press on the book to see its details. User can also see rating of the book based on his and other users' evaluation. He can rate the book if he ever borrowed that book. But he can rate the book only once. He can preview the book to see its online page in google books. He can borrow the book. He will have to return the book 2 weeks from the borrowing date. User can see the books that he borrowed and return them if he wants. All ever borrowed books can be seen in borrowing history page. User can sign off from his account. User can also see recommended books based on the last borrowed book. Password change is also available. Therefore, this application is a library management system. It can be used by students to borrow books from the library. Also, once user logs into application he is kept signed in, until he signs out so the user will not have to sign in to his account all the time.
Activity Explanation - What activities is in your application? - Role of each activity - Design of each activity in aspect of UI/UX
All my activities are made using mostly ConstraintLayouts. There is MainActivity which is a sign in page.

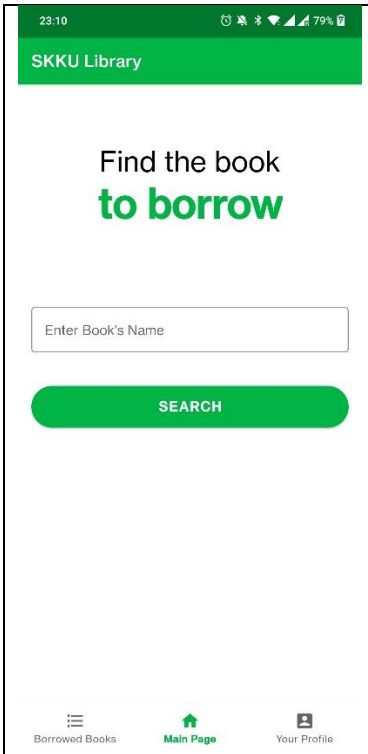


Another activity is SignUpActivity which is used to register a user.

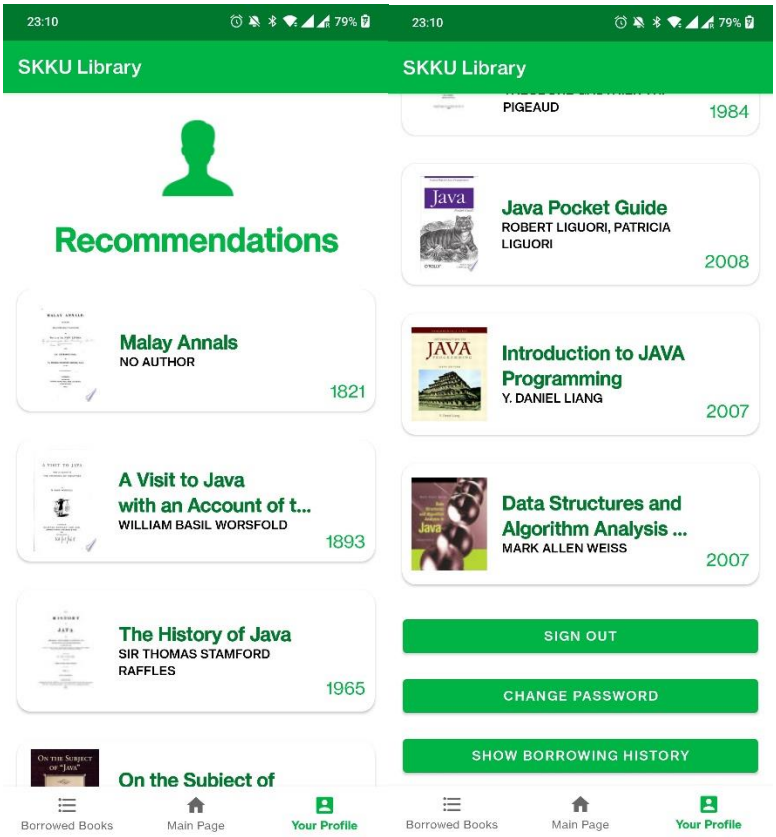


Next activity contains a FrameLayout and bottom navigation view. This activity is called UserMain and user is sent there if he is signed in into his account. Since it has a frame layout, the activity by itself is empty, so I will describe its fragments.

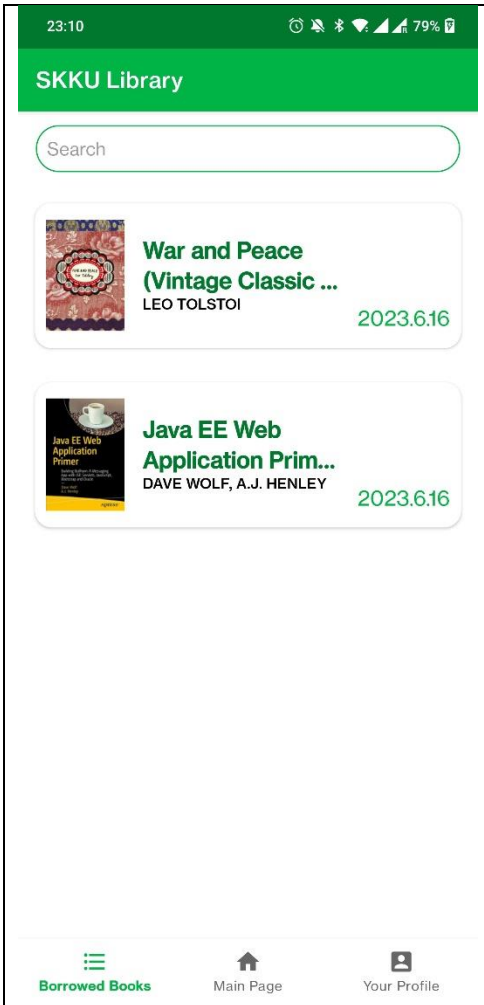
Let's start with HomeFragment, here user can enter his query and search the book he wants. He will be redirected to search activity upon pressing the button.



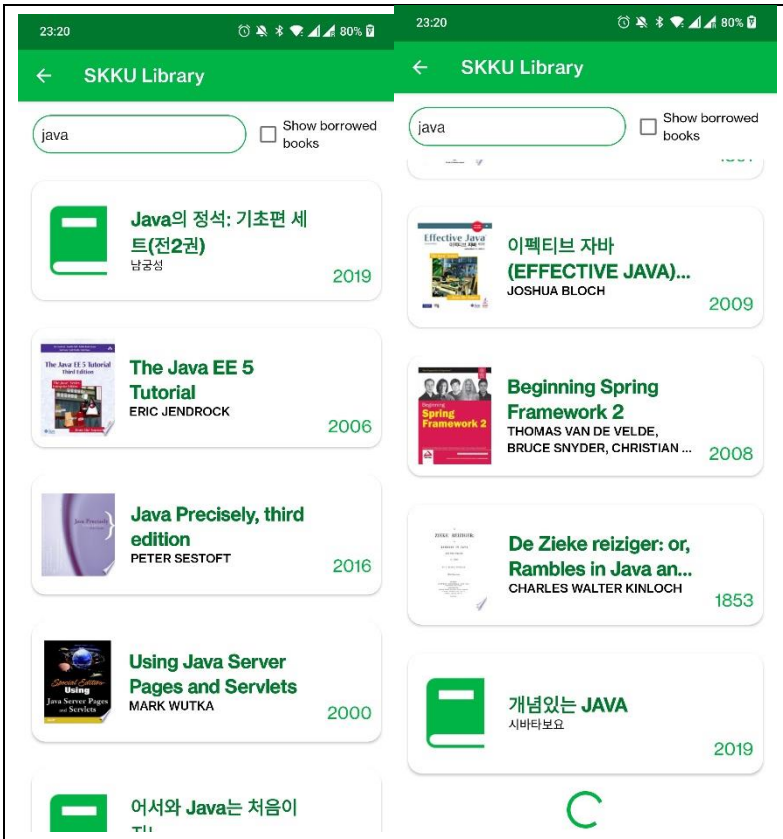
Next fragment is UserFragment, here user can see recommended books based on the last borrowed book and he also can sign off, see borrowing history and change his password.



In the BorrowedFragment user can see the list of the books that he borrowed. He can also search through them. On the right bottom corent user can see the return date.



Next activity is BookSearch activity and its being opened when user presses the button on HomeFragment. Here user can search again and he can check checkbox to see books that are unavailable (borrowed). It shows 20 books at a time, and downloads more if user scrolls down.



Next important activity is BookPage activity. Here user can see information about the book, rate it, preview it and borrow it.

There are another activities for showing borrowing history, showing borrowed book, changing password and so on. My Application has a decent number of activities.

API Usage

- From which point your application connect with Open API(or your own server)?
- Why you used it?

Google says that Firebase is your server, your API and your datastore. So I will consider Firebase as API too. From the very first MainActivity I use Firebase Authenticate to enable authentication in my application. When user searches books Google Books API is doing its job. I send requests to it and fetch data from it. I wanted to imagine that SKKU Library has all books available on the planet so I decided to use Google Books API, also this way there is no need to create books myself. When user borrows a book, rates it, returns it all gets saved in Firebase Database. Without a database there is no online library since borrowings and returnings would not be saved on the server.

Implementation Challenge

- From where you took time while implementing your application?
- What is your special-care-point?
  (code optimization, user-friendly UI, ... / specify code file&line or activity name)

Google Books API can only return up to 20 books for one query, but I wanted more so In BookSearch I had to make sure that when user reaches the end of the recyclerview I load more books by changing query's starting index.
My program itself is complicated so almost everything gave me a challenge, But rating system was especially complicated.

Application Design

- Overall design of your android application
- It can be design pattern, code separation, or so on.

I provided design of my activities above. I use custom backgrounds to make rounded edittexts, rounded buttons and so on. I use various icons. I also use constrainlayouts with guidelines making the design very comprehensive.

Server Design (Optional)

- (Write only you used your own server like AWS) Overall design of your server
- It can be design pattern, code separation, or so on.

I made my Firebase Database open for tests so I can write and read data from it easily. Here are the rules from it:

```
  "rules": {
    ".read": true,
    ".write": true

}
```