Hackathon : Online Library Management System

Features By Role :

Seller :

Using the Online Library application, the seller will be able to

1. Book Management System
    a. Add books into the book inventory
    b. Edit books into the book inventory
    c. Delete books from the inventory
    d. View the book details
2. Download books
3. Track sales
    a. View sold book list
    b. Track book units
        i. Total number of units of a book
        ii. Remaining units of the book
        iii. Sold units of the book
    c. View Invoice list overview
        i. Invoice ID
        ii. Book Title
        iii. Price
    d. View invoice details
        i. Invoice ID, OrderId, Platform(this application), purchaseDate, quantity, orderId
        ii. Book details(Title, quantity)
        iii. Payment Details(Price , GST, Payment Mode)
        iv. Buyer details,
        v. Seller details

Buyer :

Using the Online Library application, the buyer will be able to

1. Book Management System
    1. View the book details
2. Browse and Search books
    1. Simple Search
        1. You can enter text in the search box. It will search in the book details for the search text.
    2. Advanced Search
        1. When selected, you will be prompted to enter individual fields for title, author and genre individually.
        2. The compound results of three fields will be delivered.
3. Purchase the books
4. Select the payment method from available options, Pay via
    1. Already added credit / debit card
    2. UPI
        1. You will be able to add your upi id
    3. Add new credit card
    4. Netbanking
5. View purchased books
6. Download purchased books
7. My orders
    1. View purchased book list
    2. View Invoice list overview
        1. Invoice ID
        2. Book Title
        3. Price
    3. View invoice details
        1. Invoice ID, OrderId, Platform(this application), purchaseDate, quantity, orderId
        2. Book details(Title, quantity)
        3. Payment Details(Price , GST, Payment Mode)
        4. Buyer details,
        5. Seller details

Admin :

Using the Online Library application, the admin will be able to

1. User/Seller Management System
    a. Add sellers into the user inventory
    b. Edit sellers into the user inventory
    c. Delete sellers from the inventory
    d. View the seller details

Technology :

Programming Languages : Kotlin, Java

Database : Firestore Database (Firebase) - NoSQL DB

1. Books
2. Users
3. Sales and Invoices
4. Payment Info

Storage : Storage (Firebase)

1. PDF files of books

Libraries :

1. Picasso for rendering images of books
2. Gson for logging data in Json format

Design Patterns used :

1. Singleton DP
    a. All db connection classes (UserNetwork, InvoiceNetwork, BookNetwork, SearchBooksNetwork)
    b. Loggers
2. Singleton DP with Double Lock mechanism
    a. All Manager classes
        i. UserMgr
        ii. Payment Gateway Manager

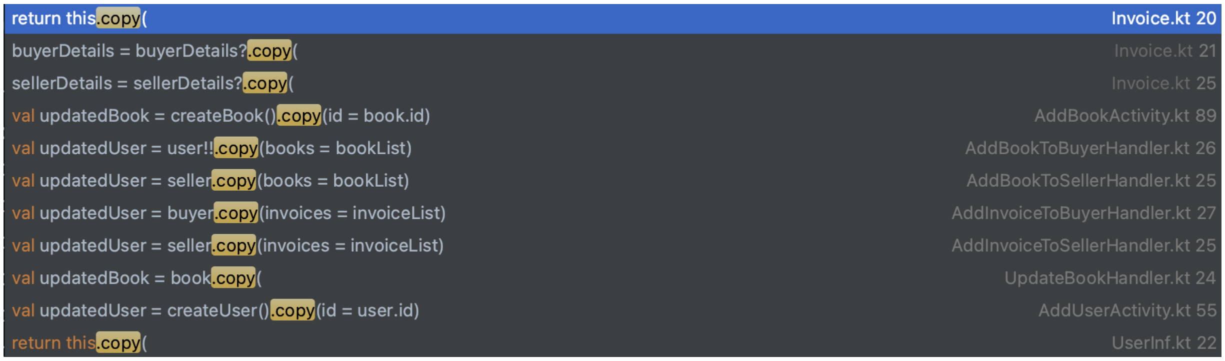
3. Factory DP
    a. Creating Payment Strategy (PaymentStrategyFactory)

4. Factory Method
    a. Listener classes for callbacks, asynchronous communication from the firestore db (Book Management Listener, Invoice management Listener, User management Listener)

5. Builder DP
    a. Invoice creation (InvoiceBuilder, Create Invoice - Line 23-37)

6. Prototype DP

   a. Cloning existing objects (Book clone, Buyer Details, Seller Details, User clone, Invoice clone)



```
return this.copy(                                                           Invoice.kt 20
buyerDetails = buyerDetails?.copy(                                          Invoice.kt 21
sellerDetails = sellerDetails?.copy(                                        Invoice.kt 25
val updatedBook = createBook().copy(id = book.id)                    AddBookActivity.kt 89
val updatedUser = user!!.copy(books = bookList)               AddBookToBuyerHandler.kt 26
val updatedUser = seller.copy(books = bookList)              AddBookToSellerHandler.kt 25
val updatedUser = buyer.copy(invoices = invoiceList)       AddInvoiceToBuyerHandler.kt 27
val updatedUser = seller.copy(invoices = invoiceList)     AddInvoiceToSellerHandler.kt 25
val updatedBook = book.copy(                                     UpdateBookHandler.kt 24
val updatedUser = createUser().copy(id = user.id)                    AddUserActivity.kt 55
return this.copy(                                                           UserInf.kt 22
```

7. Chain Of Responsibilities DP

   a. Post payment steps have multiple handlers

      (Order Handler,
      Update book Handler
      AddBookToBuyer Handler
      Add book to Seller Handler
      Create Invoice Handler
      Add Invoice to Buyer Handler
      Add Invoice to Seller Handler
      ProcessingChain Lines 57-67)

8. Iterator DP

   a. Simple Search(Search by Query Lines 64-76)
   b. Advanced Search (Separately by
      i. title lines 108-122,
      ii. author lines 93-106,
      iii. genre lines 78-91)

9. Strategy with Factory DP
    a. Payment Mode Strategy (Payment Strategy, PaymentStrategyFactory, PaymentProcessor, NetBankingPayment, UPIPayment, CreditCardPayment)

10. Template DP
    a. Processing Payment steps using template (PaymentStrategy.processPayment lines 5 - 9)

11. Adapter DP
    a. Converting data into ui components (Books Adapter, Users Adapter, Invoices Adapter)

12. Facade DP
    a. Communicated with facades of external SDKs like
        i. Picasso Line 84,
        ii. Firebase Firestore in all Network classes UserNetwork, InvoiceNetwork, BookNetwork, SearchBooksNetwork,
        iii. Firebase storage Upload PDFs Line 63
        iv. Gson Logging data queried from db Eg : Current user Line 48