

# Perpustakaanku 0.1-BETA

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# 1 Introduction

Perpustaaanku is a Library Book Administration application developed in Java Programming Language. Perpustakaanku follows a minimalistic approach by using TUI (Terminal User Interface) and MVVM Software Architecture Pattern. Besides the minimalistic approach, Perpustakaanku is also developed using Agile Software Development Cycle with TDD (Test-Driven-Development) powered by JUnit 5, furthermore the CI/CD of the application was powered by CircleCI to ensure agile and robust delivery of each iteration.

## 2 Design and Architecture

### 2.1 Use Case

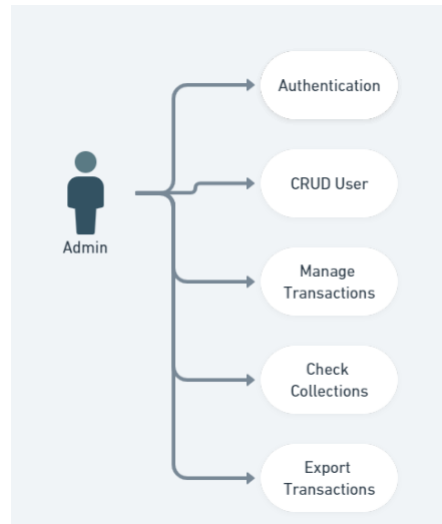


Figure 1: Use Case Diagram

As shown in Figure 1 The Administrator could use 5 main features in this application which are Authentication, CRUD User, Manage Transactions, Check Collections, Export Transactions.

#### 2.1.1 Authentication

The authentication features consists of login, register, and logout functionality. The authentication was powered by BCrypt encryption to ensure user's password would be safe. Every authentication features would be overloaded by User

### 2.1.2 CRUD User

Admin could create new user, reset the password, and also delete a user.

### 2.1.3 Manage Transactions

This feature enables admin to record every book lending and returning transactions based on existing collections.

### 2.1.4 Check Collections

In this feature admin could check remaining stock of book collections.

### 2.1.5 Export Transactions

Some business process needs an excel document for auditing purposes, and Perpustakaanku provide that feature for those in need.

## 2.2 Entity Relationship

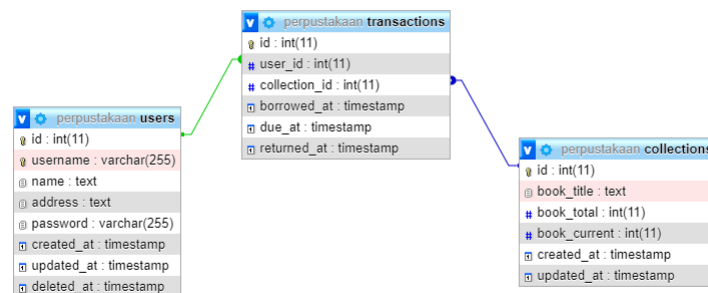


Figure 2: Entity Relationship Diagram

As Shown in Figure 2 that there are 3 interconnected tables with transactions as the central table as it was related with both users and collections table

#### 2.2.1 users

Users table handles directly every model.Users activities which are CRUD activities for authentication purposes, there are also timestamps for every auth actions. Structure:

id: int Primary Key AUTO.INCREMENT username: varchar 255 name: text address: text password: varchar 255 containing BCrypt encryption with random salts timestamps

### 2.2.2 collections

Act as storage for books, it's quantity and titles, Book total means total of the book in the library, and current is the current stock of the book. Structure:

id: int Primary Key AUTO\_INCREMENT book\_title: text book\_total : int  
book\_current: int timestamps

### 2.2.3 transactions

Logs every transactions (borrow and return) for the library.

Structure: id: int Primary Key AUTO\_INCREMENT user\_id: int Foreign  
Key for users table collection\_id: int foreign key for collections table timestamps

## 2.3 Terminal User Interface

The Terminal User Interface was Bootstrapped by ASCII Table for rendering beautiful pages

### 2.3.1 Login Page and Admin Area

```
==== Library in Terminal ====
1. Login
2. Register
3. Delete user
4. Exit
Selection: 1
Username: admin123
Password: admin123
Successfully Logged In!
==== Admin Zone ====
1. Borrow a Book
2. Return a Book
3. Borrowing List
4. Reset Password
5. Export Transactions
6. Log out
Pilihan: |
```

Figure 3: Admin Zone

### 2.3.2 Collections and Transactions

id	Title	Current Stock
1	Harry Potter and the Philosopher's Stone	5
2	Harry Potter and the Chamber of Secrets	5
3	Harry Potter and the Prisoner of Azkaban	10
4	Harry Potter and the Goblet of Fire	7
5	Harry Potter and the Order of the Phoenix	3
6	Harry Potter and the Half-Blood Prince	8
7	Harry Potter and the	5

Figure 4: Collections and Transactions

```
Choose book id: 4
Borrowed. Don't forget to return it on time!
==== Admin Zone ====
1. Borrow a Book
2. Return a Book
3. Borrowing List
4. Reset Password
5. Export Transactions
6. Log out
Pilihan: 1
```

id	Title	Due
4	Harry Potter and the Deathly Hallows - Part 1	2021-07-01 21:20:12.0

```
==== Admin Zone ====
```

Figure 5: Collections and Transactions

## 3 Source Code Documentation

### 3.1 Model

#### 3.1.1 model.Authentication

Abstract Class Interface for Authentication purposes

```
boolean login (String username, String password)
void      register (String username, String password,
                  String name, String address) throws SQLException
void      delete (String username) throws SQLException
void      update (int userId, String newPassword) throws SQLException
```

For Complete and Interactive Documentation:  
<https://jerrylasama.github.io/perpustakaanku/>

## 4 External Links

GitHub Repository: <https://github.com/jerrylasama/perpustakaanku>