# PT Kaleb Makmur Adhigana

# Code Challenge

## A. Requirement Analysis

This section outlines the requirements for the application development of PT Kaleb Makmur Adhigana Code Challenge. The web-based application will have user registration and login features. The registration process requires inputs of name, username, and password, while the login process requires inputs of username and password. The application should implement clean code architecture and design pattern.

### a. Primary Feature

#### i. Registration

1. Input Fields
   - Name (required)
   - Username (required, unique)
   - Password (required, minimum 8 characters, include at least one uppercase letter, one lowercase letter, and one number)
2. Functionality
   - Validate all input fields
   - Store user data in the database.
   - Redirect to the login page after successful register

#### ii. Login

1. Input Fields
   - Username (required)
   - Password (required)
2. Functionality
   - Validate username and password.
   - Authenticate the user by verifying credentials against the database.
   - Redirect to the user dashboard upon successful login.
   - Display the user's name on the dashboard.

### b. Technology Stack

i. **Backend:** Express.js
ii. **Frontend:** React.js (with TypeScript)
iii. **Database:** PostgreSQL

### c. Architectural Design

i. **Clean Code Architecture:** The application will follow Clean Code Architecture principles. Reference: Complete Guide to Clean Architecture on GeeksforGeeks
ii. **MVC Design Pattern:** This application will use the Model-View-Controller (MVC) design pattern to separate the application into three main interconnected components which are Model, View, and Controller. Reference: General introduction to MVC on GeeksforGeeks

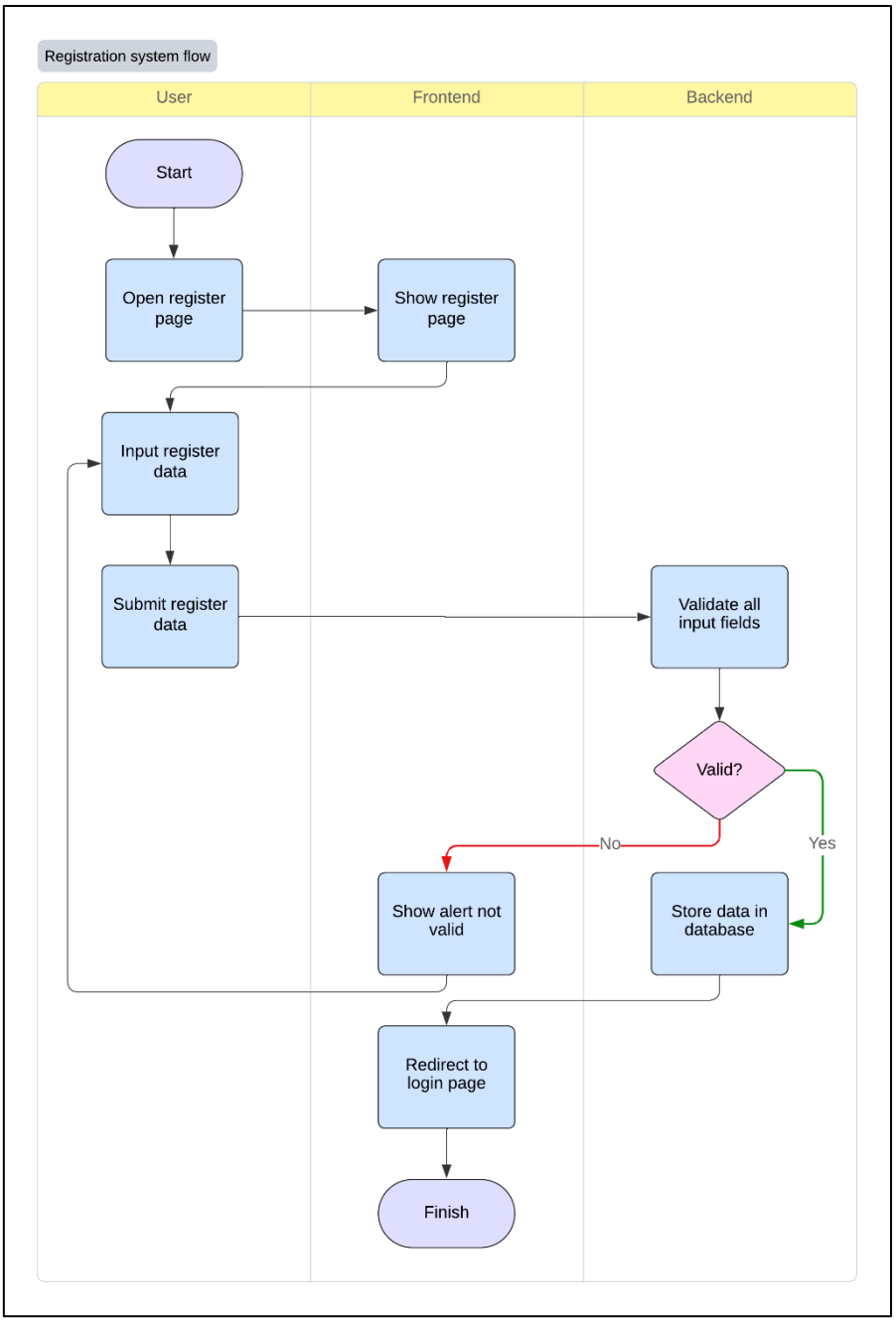
## B. System Design

### a. Database Design

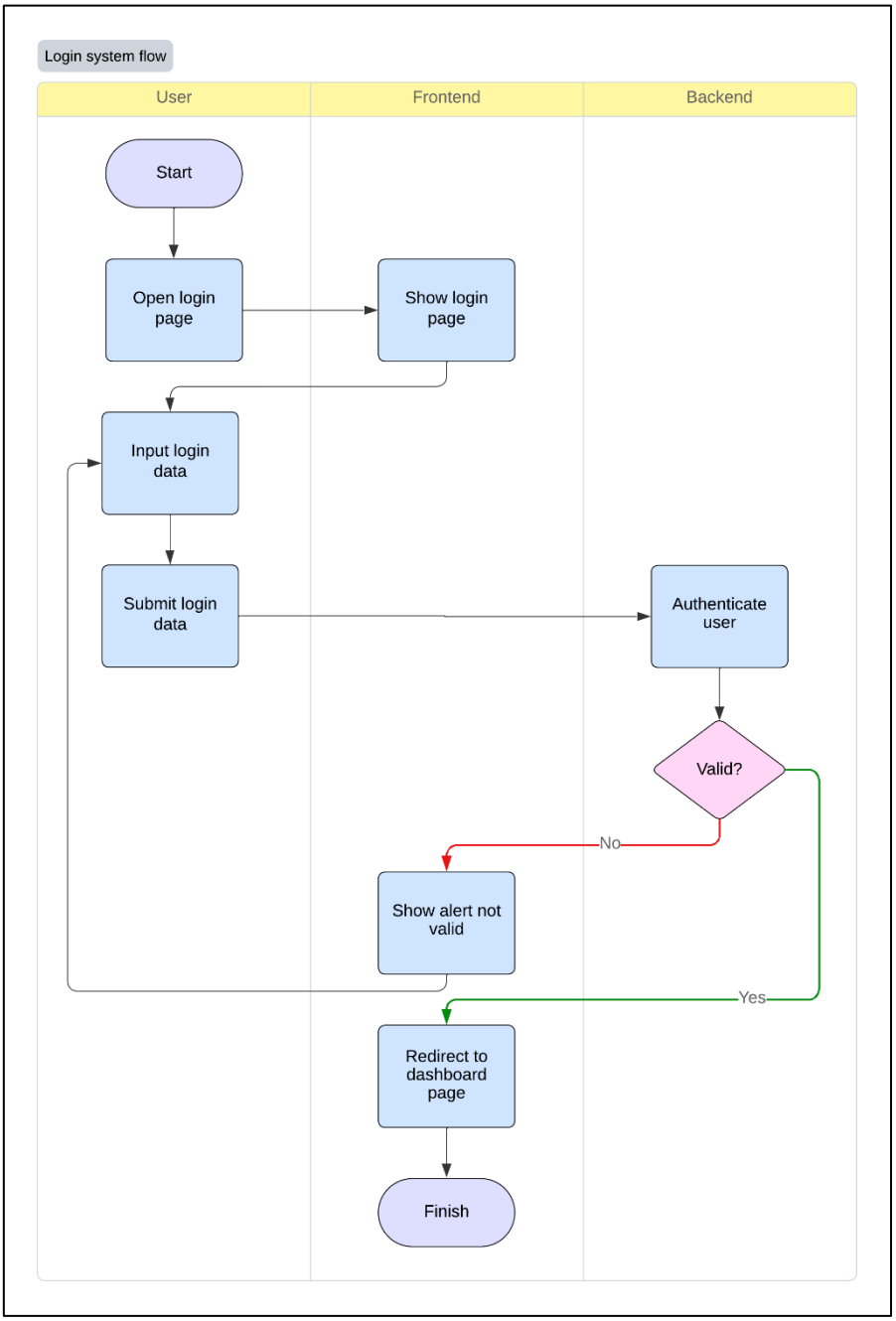
| User | |
|---|---|
| Username | PK, VARCHAR(50) |
| Name | VARCHAR(100) |
| Password | VARCHAR(255) |

### b. System Flow

#### i. Registration



## ii. Login


Login system flow
User
Frontend
Backend
Start
Open login page
Show login page
Input login data
Submit login data
Authenticate user
Valid?
No
Show alert not valid
Yes
Redirect to dashboard page
Finish