

PROJECT TITLE – Capstone Project

Banking Application

SUBMITTED BY:

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Date: November 20, 2024

Introduction:

The Banking Application is an advanced, user-focused application made to handle and simplify essential banking services. This program provides a complete solution designed to satisfy the requirements of both users and administrators, including everything from account setup to transaction processing and balance management.

The application, which was created as a capstone project, uses contemporary technology to retain a highly scalable and secure backend architecture while offering a smooth and user-friendly experience. Its modular design guarantees strong integration capabilities, ease of maintenance, and flexibility for future improvements.

This application is a dependable tool for efficiently managing administrative and personal banking operations because it concentrates on essential banking features, showcasing the ideal fusion of state-of-the-art technology and useful financial solutions.

Objectives:

- To design and develop a scalable banking application using **Spring Boot** (backend), **ReactJS** (frontend).
- To provide a modular structure with **at least four core modules** including user authentication.
- To demonstrate backend and frontend integration using RESTful APIs.
- To ensure data integrity with **MySQL database** and to document the application's architecture, features, and endpoints.

Technologies Used:

- **Frontend:** ReactJS, Bootstrap, Axios
- **Backend:** Spring Boot, REST APIs
- **Database:** MySQL
- **Version Control:** GitHub

CASE STUDY

Title:

Features of the Application:

1. **User-Authentication:** It ensures that users can securely access their accounts. This module includes secure registration and login.
 - User Registration: Collects user details like name, email, password, and other relevant information. Implements validation to ensure the data is accurate and secure.
 - Login System: Authenticates users using email and password and uses hashing for password security.
 - Session Management: Allows users to stay logged in securely during their session.
 - Includes logout functionality.
 - Key Benefits:
 - Protects user data with robust security protocols.
 - Provides a seamless and user-friendly login experience.
 - Prevents unauthorized access with proper authentication mechanisms.
2. **Admin Management:** The Admin Management module allows administrators to oversee, manage, and maintain the system. It provides them with the tools to monitor users, transactions, and system activities.
 - User Monitoring: View and manage all registered users and deactivate accounts if necessary.
 - Transaction Oversight: Monitor all user transactions for security and compliance.
 - Key Benefits:
 - Ensures system integrity and smooth operation.
 - Allows proactive monitoring to prevent fraud or misuse.
 - Enhances control over user and transaction data.
3. **User Account Management:** The User Account Management module lets users view and manage their account details. It enhances user autonomy and ensures the accuracy of stored information.
 - Profile Management: View and update personal details like name, email, phone number, and address.
 - Account Summary: Display account details such as account number, balance, and account type.
 - Account Settings: Change password or configure preferences and view activity logs to track recent actions.
 - Key Benefits
 - Empowers users to maintain their account data.
 - Ensures accurate and up-to-date information for better service.
 - Provides transparency and control over personal data.

4. **Transaction Management:** The Transaction Management module enables users to manage their financial activities, including deposits, withdrawals, and transaction history.
- Transaction Processing: Supports real-time deposits and withdrawals and categorizes transactions as credit or debit.
 - Transaction History: Displays a detailed history of all transactions, including date, amount, and type.
 - Includes search and filter options for easier navigation.
 - Balance Overview: Real-time display of account balance based on transaction activity.
 - Key Benefits
 - Provides a clear and concise view of financial activity.
 - Ensures accurate balance calculation for better financial planning.
 - Offers transparency and accountability for all transactions.
 - How These Modules Integrate

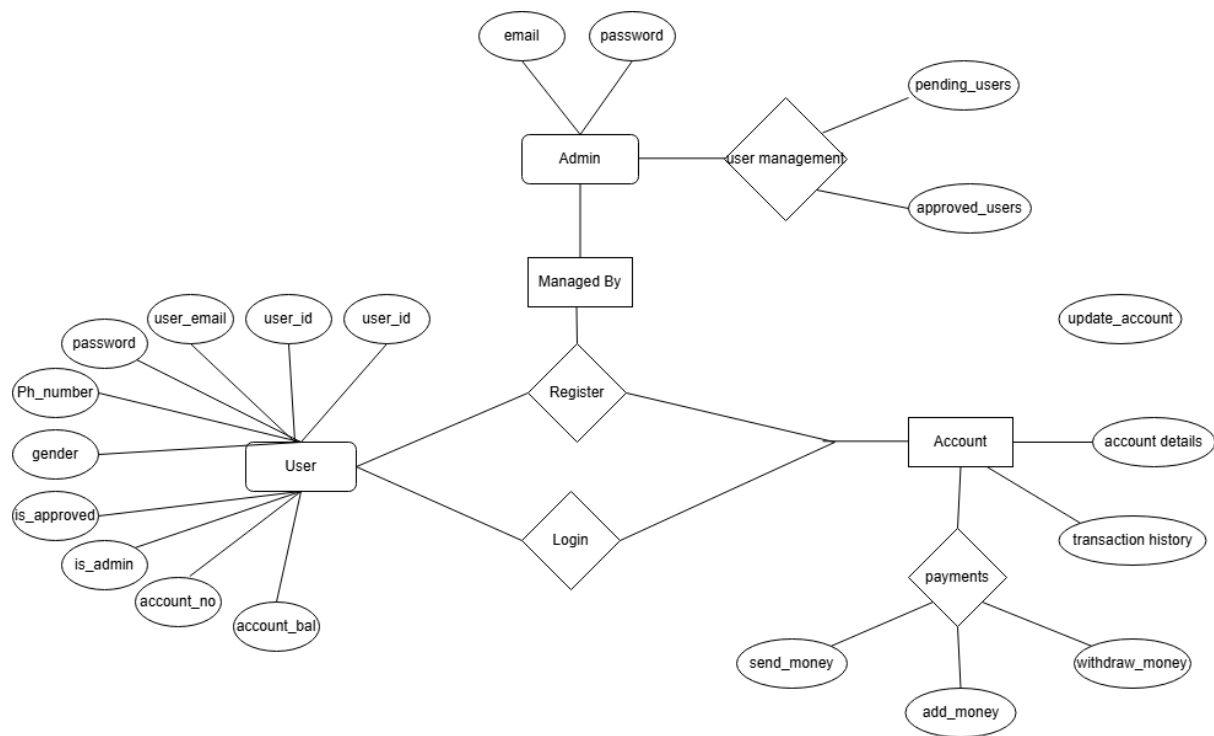
Implemented Backend Endpoints:

Endpoint URL	HTTP Method	Description
/user/register	POST	Registers a new user by accepting user details in the request body.
/user/login	POST	Logs in a user by verifying their credentials (email and password) and approval status.
/user/dashboard	GET	Fetches the dashboard details for a user (excluding admins), showing username and balance.
/user/account-details	GET	Fetches detailed account information of a user (email, name, phone, account balance).
/user/update	PUT	Updates the details of an existing user (name, phone number).
/user/delete	DELETE	Deletes the user based on their email.
/user/payments/add-money	POST	Adds money to the user's account, updates balance, and records the transaction.
/user/payments/send-money	POST	Sends money from one user to another, updates both users' balances, and records the transaction.
/user/payments/withdraw-money	POST	Allows a user to withdraw money from their account, updates the balance, and records the transaction.
/user/transactions/history	GET	Fetches the transaction history for a user, based on their email.

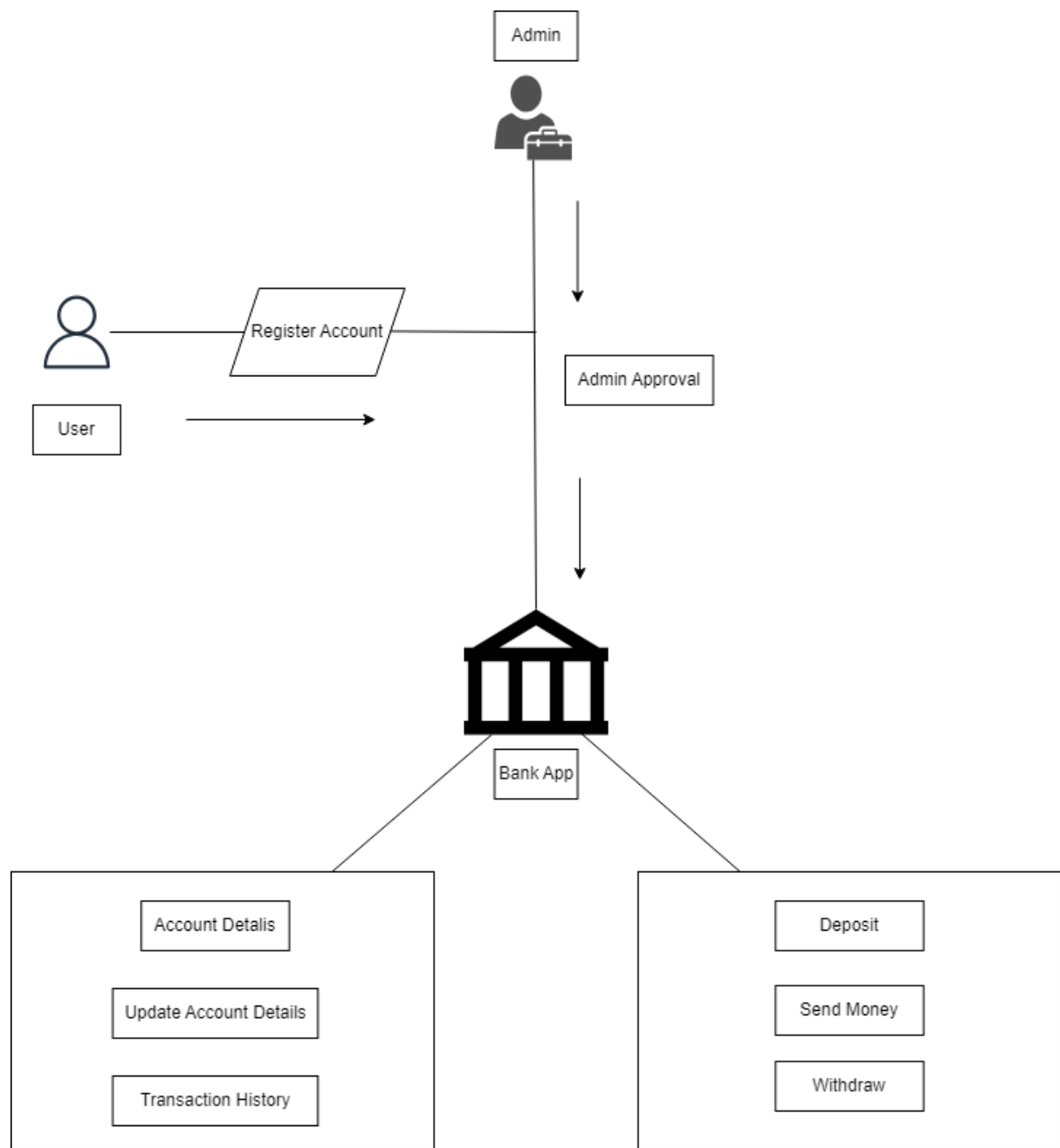
Frontend URLs and Pages:

Action	Frontend URL	Description
Home	/	Homepage for all users
Sign In	/user/login	User login page
Admin Login	/admin/login	Admin login page
Approved Users (Admin)	/admin/dashboard	Admin dashboard for managing approved users
Approved Users (Admin)	/admin/user-management	Admin user management page for viewing approved users
Pending Users (Admin)	/admin/dashboard	Admin dashboard showing pending users when clicked
Sign Out	/	Logs the admin or user out and redirects to homepage

ER Diagram:



Flow Diagram:



Wire framing:

HomePage

Vauecorp

Sign In Admin Login

Simple and Safe Banking

255/15, Wall st, NY

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Register User

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Sign In Admin Login

Registration Form

Account Name

email

Gender

Phone Number

Password

Register

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User Sign in

Vauecorp	Sign InAdmin Login
<div>Bank Logo</div>	<div>Sign in</div> <div>Email</div> <div>Password</div> <div>Sign in</div>
255/15, Wall st, NY	2024 Vauecorp All rights reserved

Admin Login

Vauecorp
<div>Admin login</div> <div>Email</div> <div>Password</div> <div>Login</div>
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Admin Dashboard

Vauecorp

Approved Users

Sign out

Pending Users

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Admin Dashboard

Vauecorp

Pending Users

Sign out

Approved Users

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User Dashboard

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Account Details

Payments

Transactions

Sign out

Welcome User

Account Balance: #####

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Payments

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Back to Dashboard

Sign Out

Add Money

Send Money

Withdraw

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Transactions

Vauecorp

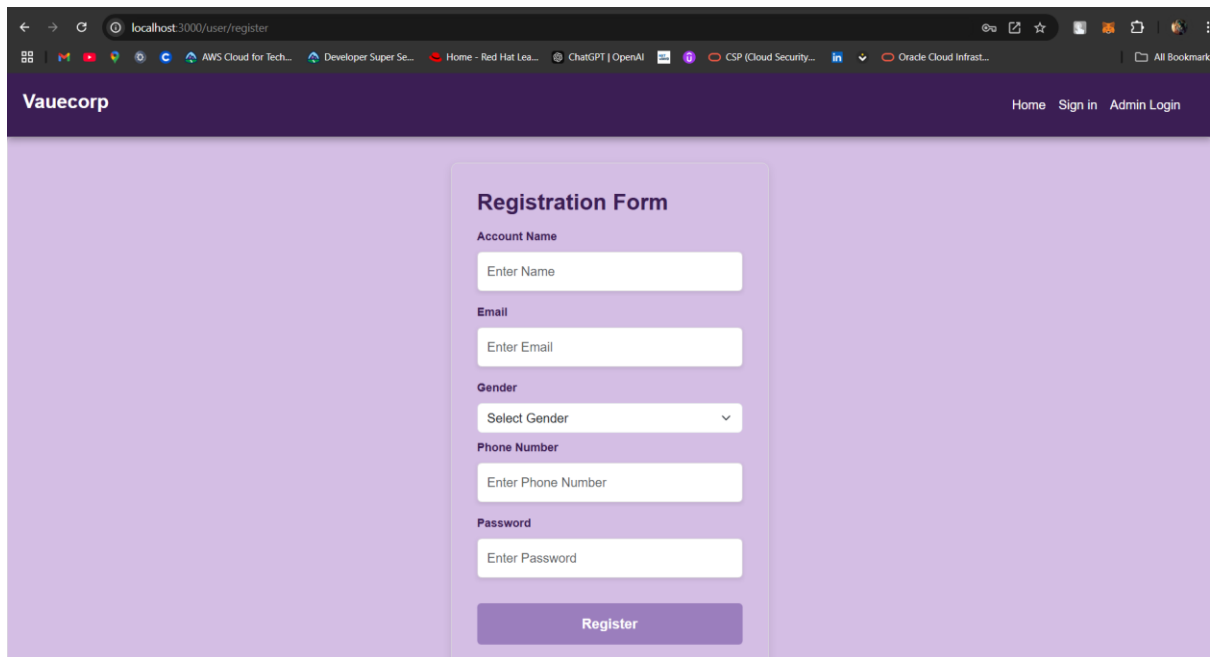
[Back to Dashboard](#)

[Sign Out](#)

Transaction History

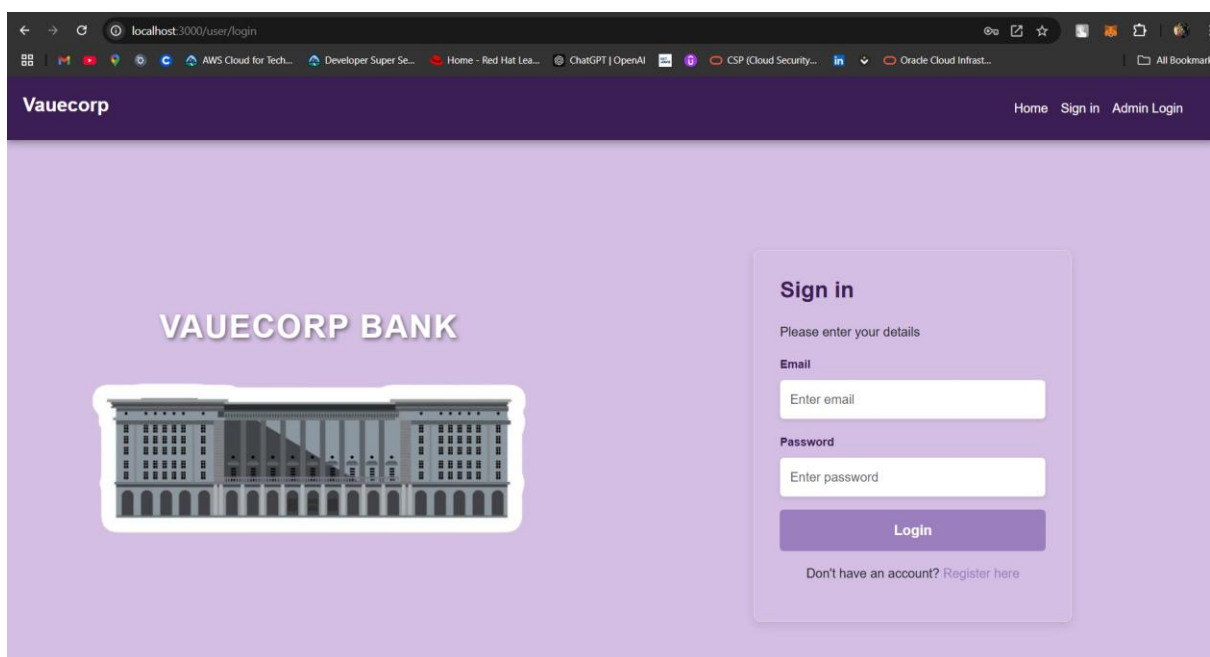
Screenshots:

/user/register



A screenshot of a web browser showing the registration page for Vauecorp. The browser's address bar displays 'localhost:3000/user/register'. The page has a dark purple header with the 'Vauecorp' logo on the left and navigation links 'Home', 'Sign in', and 'Admin Login' on the right. The main content area has a light purple background. Centered on the page is a white 'Registration Form' box. The form includes fields for 'Account Name' (with a placeholder 'Enter Name'), 'Email' (with a placeholder 'Enter Email'), 'Gender' (a dropdown menu with 'Select Gender'), 'Phone Number' (with a placeholder 'Enter Phone Number'), and 'Password' (with a placeholder 'Enter Password'). A purple 'Register' button is located at the bottom of the form.

/user/login



A screenshot of a web browser showing the login page for Vauecorp. The browser's address bar displays 'localhost:3000/user/login'. The page has a dark purple header with the 'Vauecorp' logo on the left and navigation links 'Home', 'Sign in', and 'Admin Login' on the right. The main content area has a light purple background. On the left side, there is a large image of a classical building with the text 'VAUECORP BANK' above it. On the right side, there is a white 'Sign in' box. The box contains the text 'Please enter your details', followed by 'Email' and 'Password' labels, each with a corresponding input field (placeholders: 'Enter email' and 'Enter password'). A purple 'Login' button is at the bottom of the box. Below the button, there is a link that says 'Don't have an account? Register here'.

/admin/dashboard (Newly registered users will be approved by admin)

The screenshot shows a web browser at localhost:3000/admin/dashboard. The page has a dark purple header with the Vauecorp logo on the left and 'Approved Users' and 'Sign Out' links on the right. The main content area has a light purple background with the title 'Pending Users' centered. Below the title is a table with the following data:

Name	Email	Gender	Account Number	Approval
Kishore	kishore@gmail.com	Male	973712377809	<button>Approve</button>

The footer of the page is dark purple and contains the address '255/15 Wall Street, NY, 10005, USA' and the copyright notice '© 2024 Vauecorp. All rights reserved.'

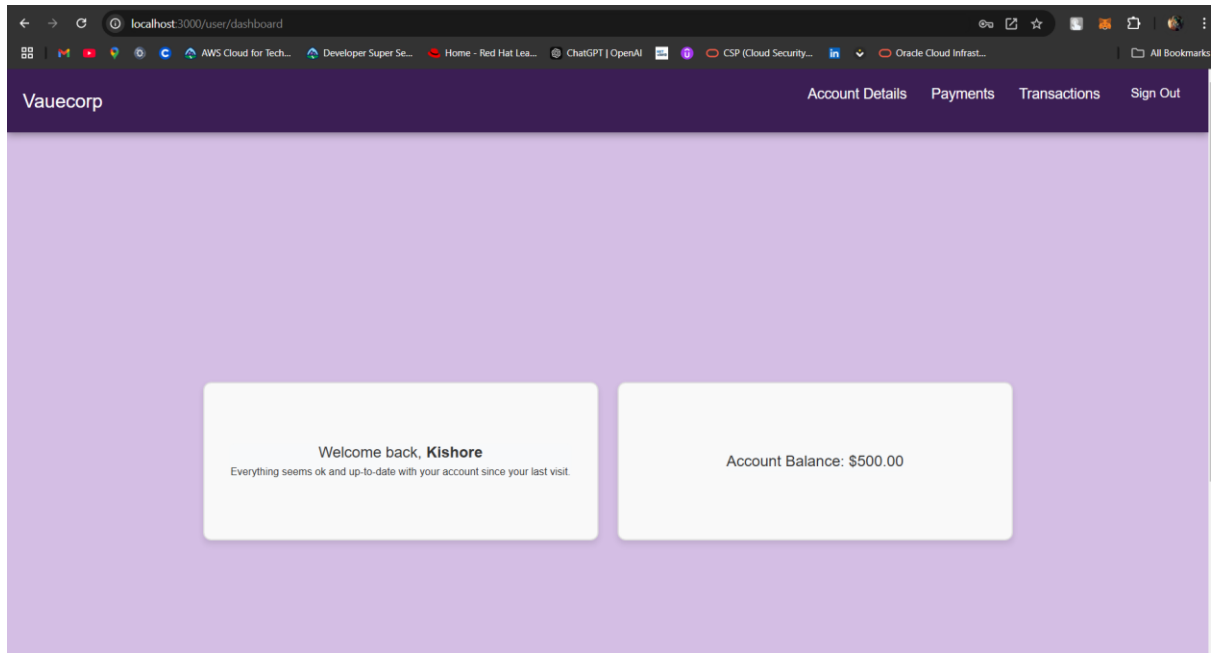
/admin/user-management (Admin have the right to delete the user)

The screenshot shows a web browser at localhost:3000/admin/user-management. The page has a dark purple header with the Vauecorp logo on the left and 'Pending Users' and 'Sign Out' links on the right. The main content area has a light purple background with the title 'Approved Users' centered. Below the title is a table with the following data:

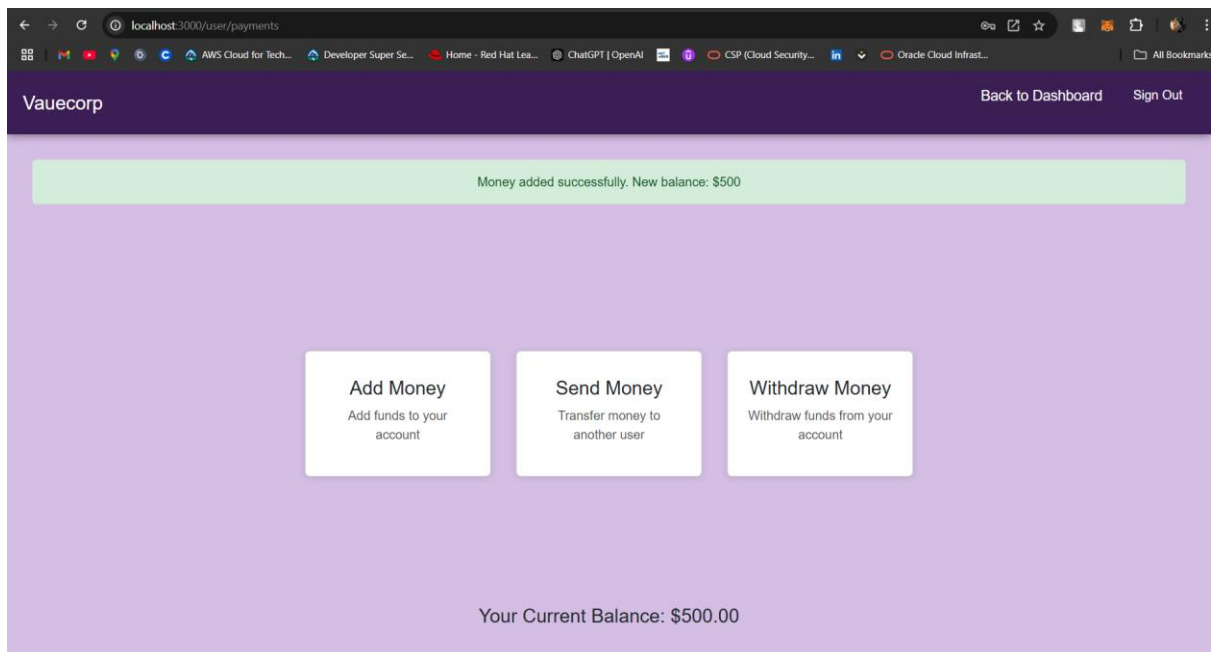
Name	Email	Gender	Account Number	Remove
Kishore	kishore@gmail.com	Male	973712377809	<button>Remove</button>

The footer of the page is dark purple and contains the address '255/15 Wall Street, NY, 10005, USA' and the copyright notice '© 2024 Vauecorp. All rights reserved.'

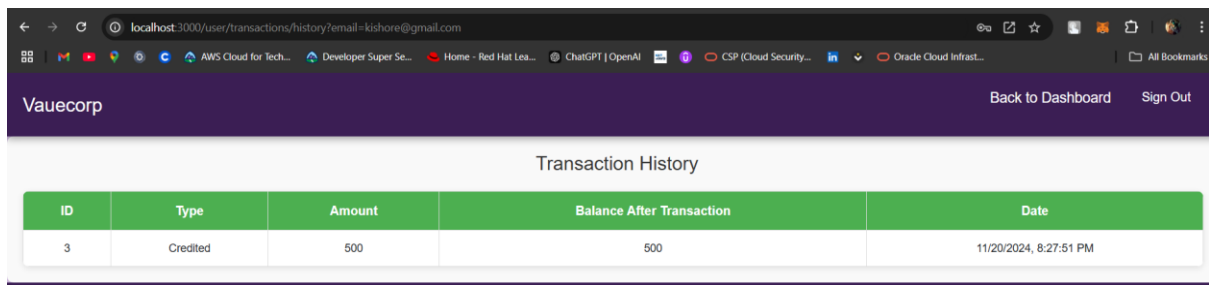
/user/dashboard



/user/payments

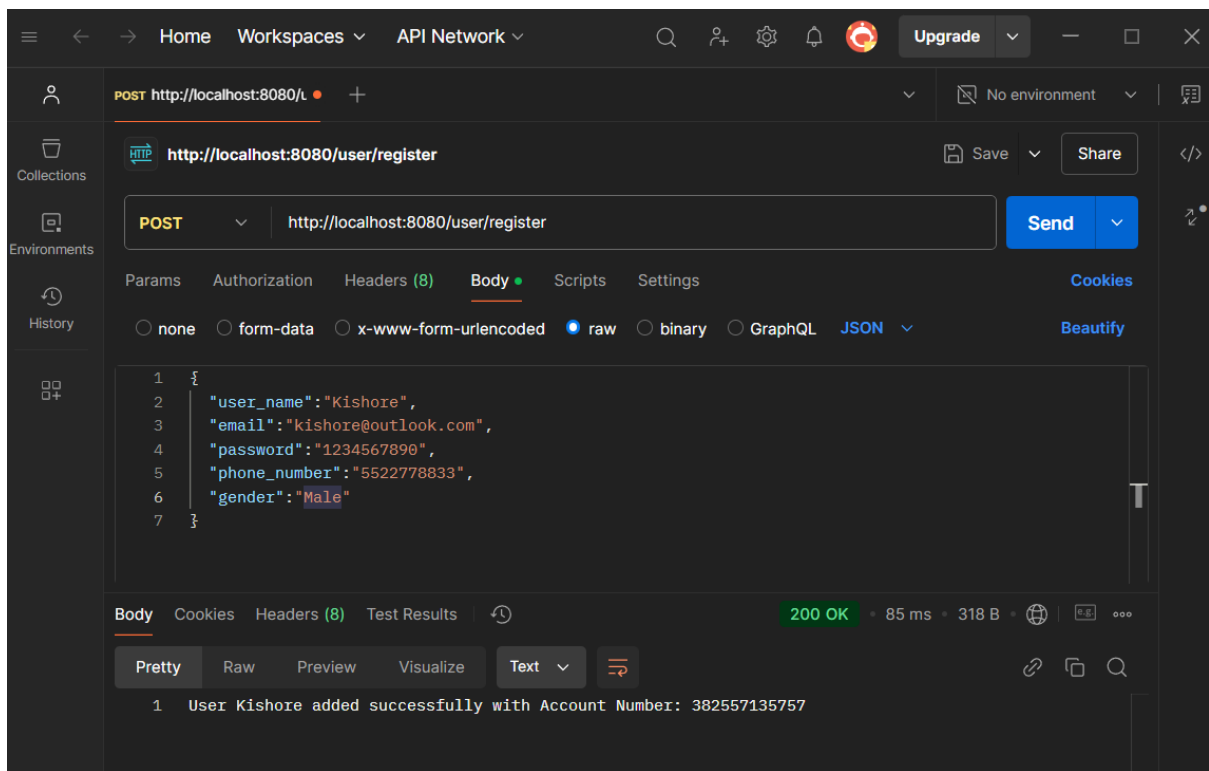


/user/transactions/history



ID	Type	Amount	Balance After Transaction	Date
3	Credited	500	500	11/20/2024, 8:27:51 PM

Endpoints:



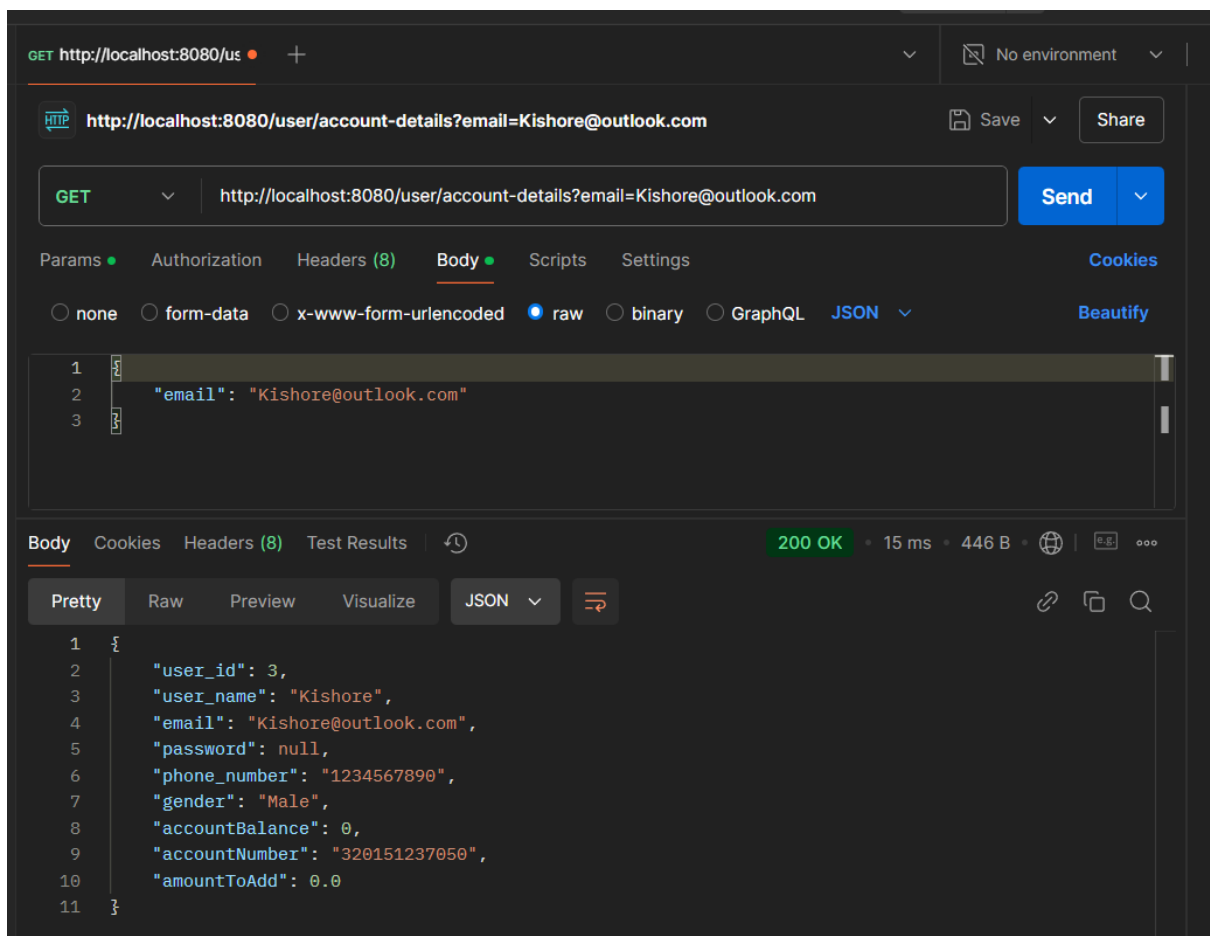
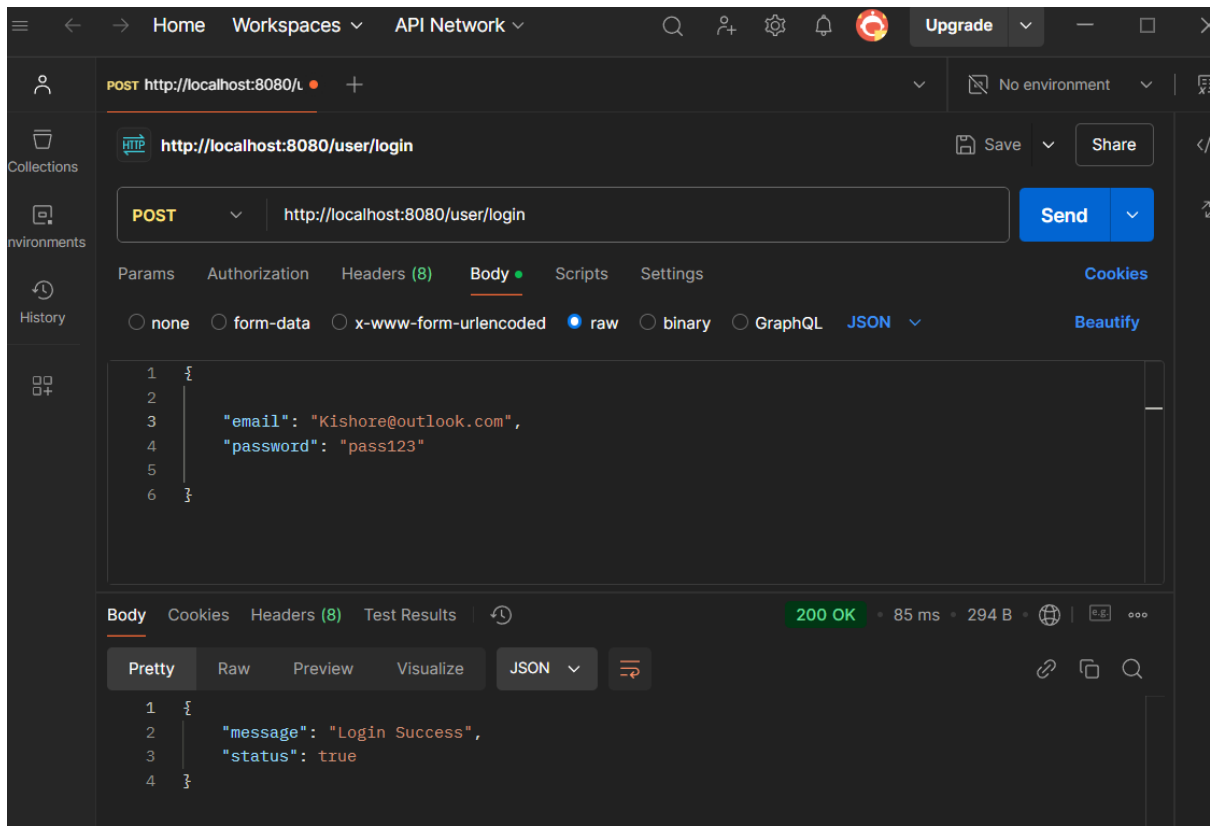
POST http://localhost:8080/user/register

Body

```
{
  "user_name": "Kishore",
  "email": "Kishore@outlook.com",
  "password": "1234567890",
  "phone_number": "5522778833",
  "gender": "Male"
}
```

200 OK • 85 ms • 318 B

1 User Kishore added successfully with Account Number: 382557135757



GET http://localhost:8080/us + No environment

HTTP http://localhost:8080/user/transactions/history?email=Kishore@outlook.com Save Share

GET http://localhost:8080/user/transactions/history?email=Kishore@outlook.com Send

Params Authorization Headers (8) Body Scripts Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
1 {
2   "email": "Kishore@outlook.com"
3 }
```

Body Cookies Headers (8) Test Results 200 OK • 9 ms • 749 B

Pretty Raw Preview Visualize JSON

```
3   "id": 1,
4   "userEmail": "kishore@outlook.com",
5   "transactionType": "Credited",
6   "amount": 500.0,
7   "balanceAfterTransaction": 500.0,
8   "transactionDate": "2024-11-20T21:35:53.600025"
9 },
10  {
11   "id": 2,
12   "userEmail": "kishore@outlook.com",
13   "transactionType": "Withdraw",
14   "amount": 500.0,
15   "balanceAfterTransaction": 0.0,
16   "transactionDate": "2024-11-20T21:36:53.467821"
17 }
```