## ****Use Case Document: Banking Application – Loan Recommendation****

### ****Domain****:

Banking and Financial Services

### ****Use Case Name****:

Manage Banking Transactions and Loan Recommendations

### ****Use Case Description****:

### This use case outlines how **users** interact with the banking application for core services like deposits, withdrawals, and viewing loan recommendations, while **bank admins** manage transaction oversight, approve large or suspicious transactions, and configure loan criteria.

### ****Use Case Goal****:

To enable users to perform essential banking transactions (deposit, withdrawal), view transaction history, and receive loan recommendations based on transaction patterns, account activity, and credit rating (CR).Enable **bank admins** to monitor transactions, approve flagged activities, manage user accounts, and update loan rules/criteria.The system should provide real-time updates, secure processing, and a responsive UI.

### ****Actors****:

* **Customer**
* **Bank Admin**
* **Loan Recommendation Engine**
* **Credit Rating API (3rd Party)**

### ****Pre-Conditions****:

* Customer is registered and logged into the system.
* Bank admin is authenticated with admin rights.
* Active bank account is linked.
* Valid credit rating exists (or fetched via API).
* Bank servers are online and accessible.

### ****Post-Conditions****:

* Deposits/Withdrawals are recorded in the transaction history.
* Account balance is updated.
* Notifications are sent for each transaction.
* Loan recommendations are generated and shown.
* Credit rating is updated periodically.
* Admin actions(approval, modifications) logged.

## ****Main Flow (Basic Path)****

****User Side:****

1. **Login & Dashboard Access**

* User logs into the app and views their account dashboard.

1. **Deposit Funds**

* User selects the deposit option, enters the amount and mode (Bank transfer, UPI, cheque)
* System confirms deposit and updates balance.

1. **Withdraw Funds**

* User chooses withdrawal, enters the amount.
* If sufficient balance, amount is debited and balance updated.

1. **Transaction Logging**

* All deposits and withdrawals are logged and visible in transaction history.

1. **Loan Recommendation Process**

* The system periodically evaluates the user’s transaction patterns and credit rating.
* If eligible, loan options are shown with type, limit, tenure, and interest rates.
* User can click “Know More” or “Apply Now.”

1. **Notifications & History**

* Push/email notifications sent after transactions.
* Loan recommendation history stored.

**Bank admin side:**

**1 **Login & Admin Dashboard****

* Admin logs in to admin portal

**2 **Monitor Transactions:****

* View all transaction logs
* Approve/decline flagged, large, or suspicious transactions

**3 Manage Users**

* View, update or deactivate customer accounts

**4 Loan Policy Management**

* Configure recommendation rules (e.g. credit score thresholds, income levels, max loan limits)
* Approve/decline loan applications

**5 View Reports**

* View transaction summaries, user activity, and loan approvals

## ****Alternative Flows****

* **Insufficient Funds**:  
  Show "Insufficient Balance" warning and abort withdrawal.
* **Invalid Credit Rating**:  
  If CR API fails, show fallback: "Loan Recommendation not available at the moment."
* **Suspicious transaction( Admin):**Flag transaction for review
* **Loan Already Active**:  
  If a loan is already in progress, system doesn’t show new recommendation or allow if income & CR permit second loan .
* **Multiple Loan Types Requested:** Recommend both if eligible or ask user to choose one if not eligible for both
* **No Transactions Yet (User Just Signed Up):** Show prompt: "Start using your account to get personalized loan options."

## ****Exception Handling****

* **API Timeout (CR or Transaction API)**:  
  Retry mechanism or notify user.
* **Unauthorized Access**:  
  Redirect to login if session expires.
* **Double Submission Prevention**:  
  Use request locking to prevent double deposits/withdrawals.

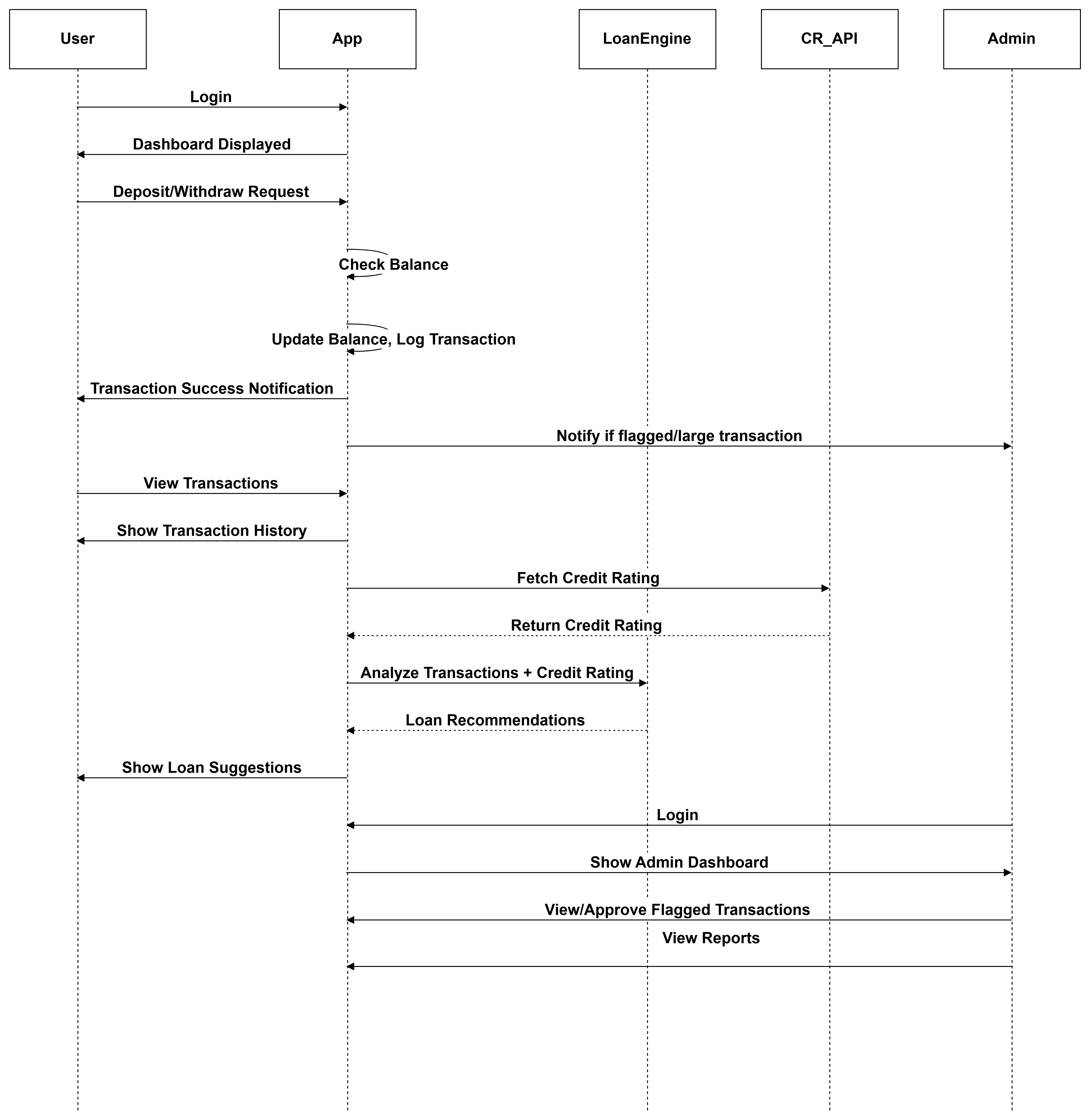
## ****Possible Test Cases****

| **Test Case ID** | **Description** | **Input Data** | **Expected Outcome** |
| --- | --- | --- | --- |
| TC001 | Register new customer | Name, Email, Password | User account created |
| TC002 | Login valid user | Email, password | Login successful |
| TC003 | Deposit funds | Valid amount | Balance updated, success message |
| TC004 | Withdraw funds (sufficient balance) | Valid amount | Withdrawal complete |
| TC005 | Withdraw funds (low balance) | Amount > balance | Error: Insufficient funds |
| TC006 | View transactions | Account ID | Show full transaction history |
| TC007 | API failure during loan recommendation | N/A | Show fallback message |
| TC008 | Valid transaction history triggers loan suggestion | Pattern detected | Show eligible loan details |
| TC009 | Logout | Click logout | User logged out |
| TC010 | View loan recommendation | Logged-in user | Personalized loan card shown |
| TC011 | Approve flagged transcation(Admin) | Trasaction id | Approval complete |
| TC012 | View reports | N/A | Report displayed |
| TC013 | Manage users | User details | Updated or blocked |

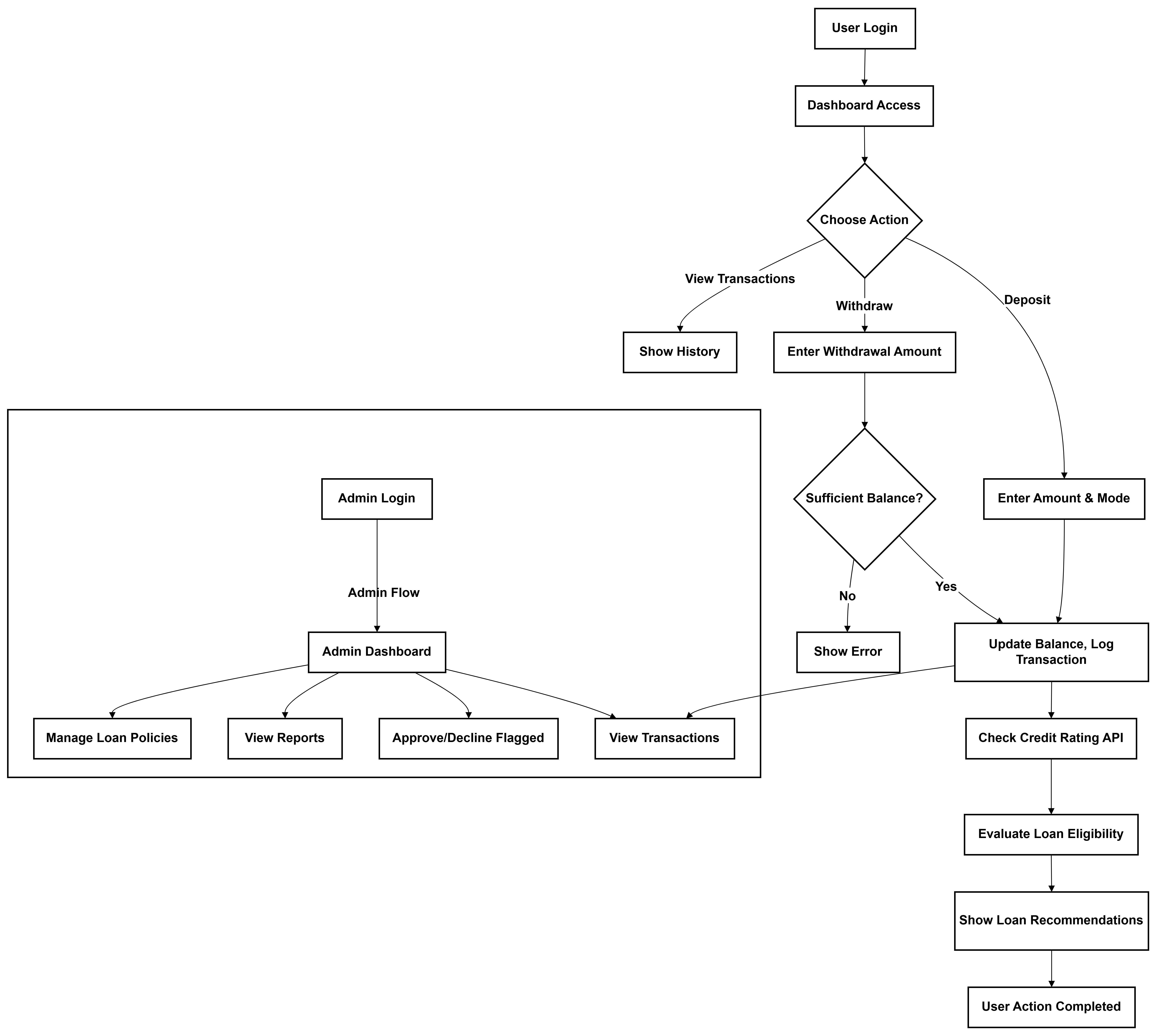
## ****Expected Outcome****

* Users can securely deposit and withdraw funds.
* A loan suggestion is generated automatically based on real-time transactional behavior and credit rating.
* Responsive UI with modern UX allows seamless interaction.
* APIs ensure real-time processing and smart decision-making.

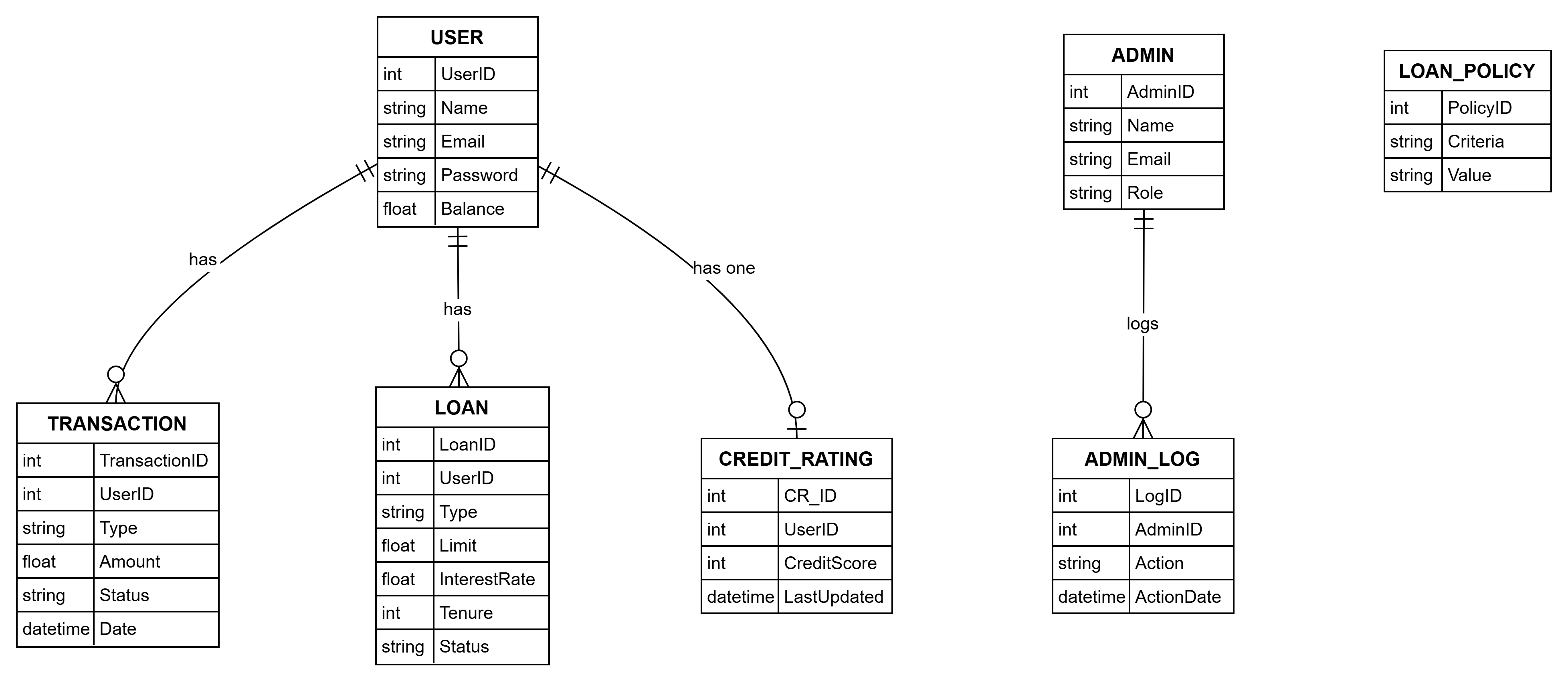
## ****Sequence diagram****



****Workflow diagram****



## ****Database diagram****



## ****Functional architecture diagram****

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