Jaypee Institute of Information Technology, Noida

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING AND INFORMATION TECHNOLOGY

Major Project Title**: FACE-ATM:Cardless Transaction System**

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Course Name: MAJOR PROJECT PART-2
Course Code: 22B12CS413
Program: B. Tech. CSE
4nd Year 8th Sem

2023 - 2024

4. MODELLING & IMPLEMENTATION DETAILS

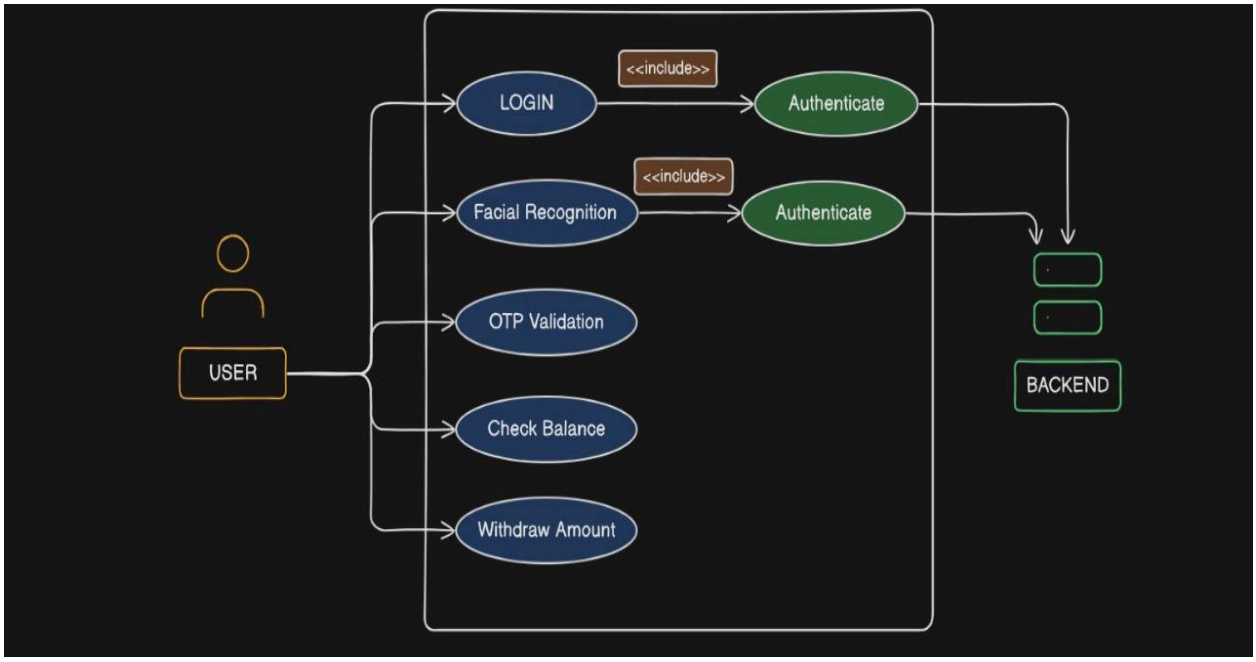

Figure 4.1.1: Use Case Diagram

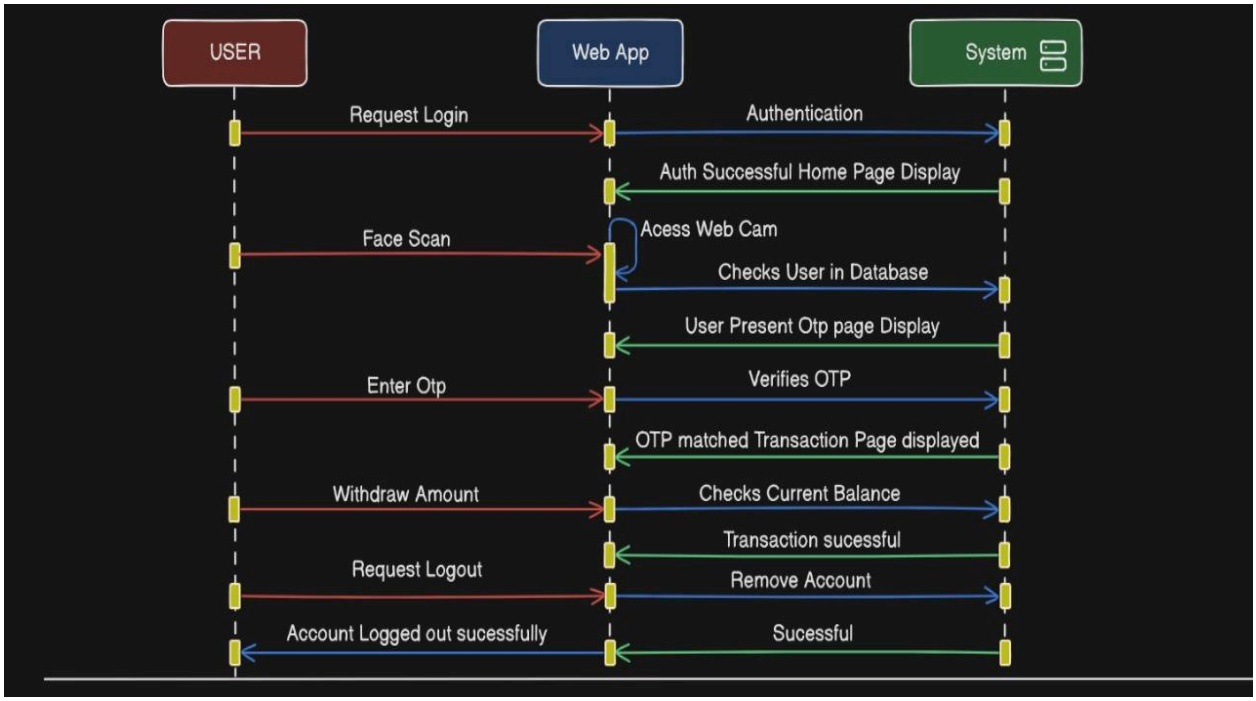

Figure 4.1.2: Sequence Diagram

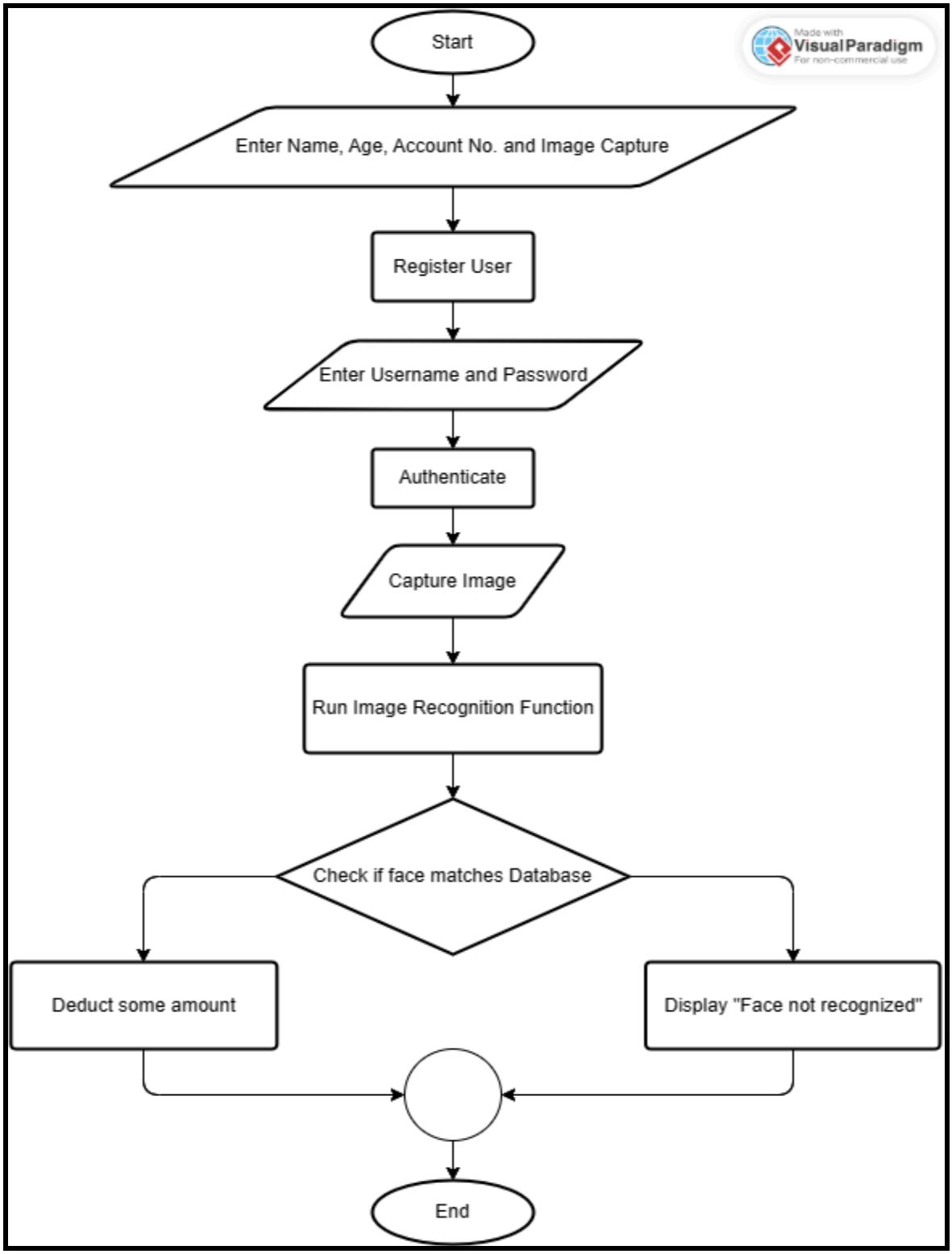

Figure 4.1.3: Flow Chart Diagram

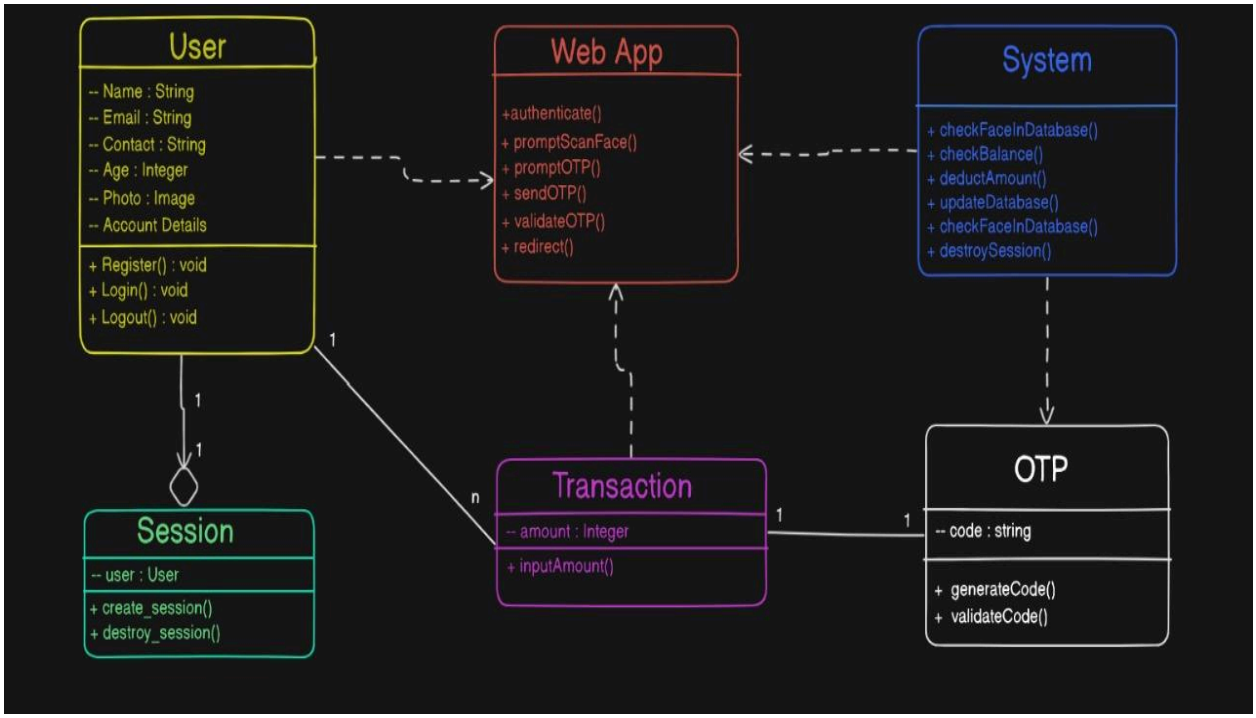

Figure 4.1.4: Class Diagram

4.2 Implementation Details and Issues

Technology Stack:

The Face-ATM system leans on a powerful combination of technologies to deliver a secure and user-friendly experience:

- **Django (Backend Development):** As the foundation for the system's backend, Django offers a robust and high-level Python framework. Django streamlines development by providing pre-built functionalities for common web application needs.
- **Python (Backend Programming Language):** Python serves as the primary programming language for the backend logic of the Face-ATM system.
- **OpenCV (Facial Recognition):** OpenCV, a free and open-source library, takes center stage for the crucial facial recognition tasks.

Figure 4.2.1.1: Register Page - User Details

Figure 4.2.1.2: Register Page - User Details

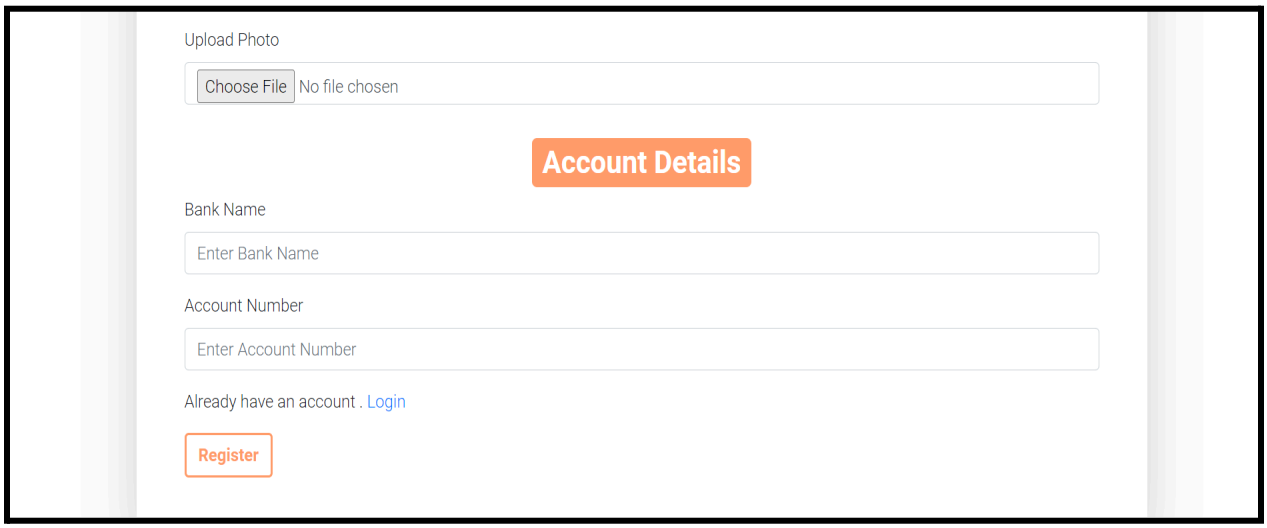

Figure 4.2.1.3: Register Page - Account Details

4.2.2. Login and Authentication Process:

Email and Password Authentication:

a. Email: Users enter the email address associated with their Face-ATM account.

b. Password: Users input their secure password chosen during registration.

Authentication:

Upon submission of email and password, Face-ATM verifies the credentials against the stored data in its database. If the provided credentials match, authentication is successful.

Session Creation:

Upon successful authentication, a session is created for the user. This session allows the user to access Face-ATM services without the need for repeated authentication during the session duration.

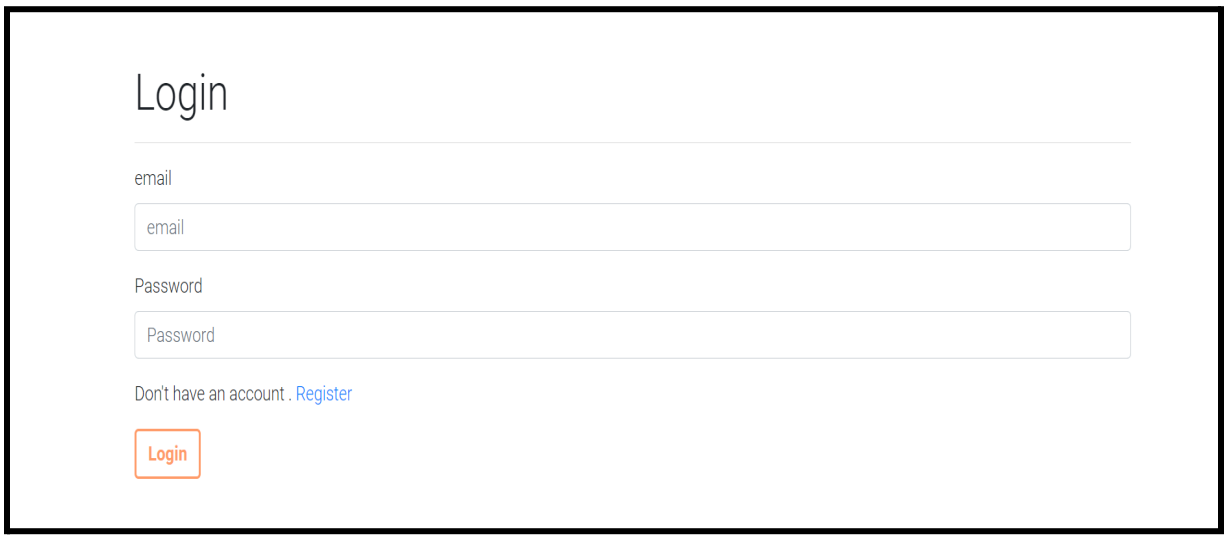

Figure 4.2.2.1: Login Page - Authentication

4.2.3 Face Scan Process:

Home Page Display:

Upon login, users are directed to the Home page where their personal information, such as name and account details, are prominently displayed for easy reference.

Initiation of Withdrawal:

Users navigate to the withdrawal section and click on the "Withdraw" button to initiate a withdrawal request.

Face Scan:

Upon clicking the "Withdraw" button, the system prompts the user to allow access to the camera. Once permission is granted, the camera interface pops up, and the user's face is scanned.

Facial Recognition:

The scanned facial image is processed by the Face-ATM system to extract facial features and generate facial encodings. These encodings are compared against the database of registered users to verify the user's identity.

User Verification:

If the user's facial features match those stored in the database, the system proceeds to the next step. Otherwise, an error message is displayed indicating that the user was not found in the database.

OTP Page:

Upon successful facial recognition and user verification, the system directs the user to the One-Time Password (OTP) page to proceed with the withdrawal transaction. An OTP is generated and sent to the user's registered mobile number or email address for additional security.

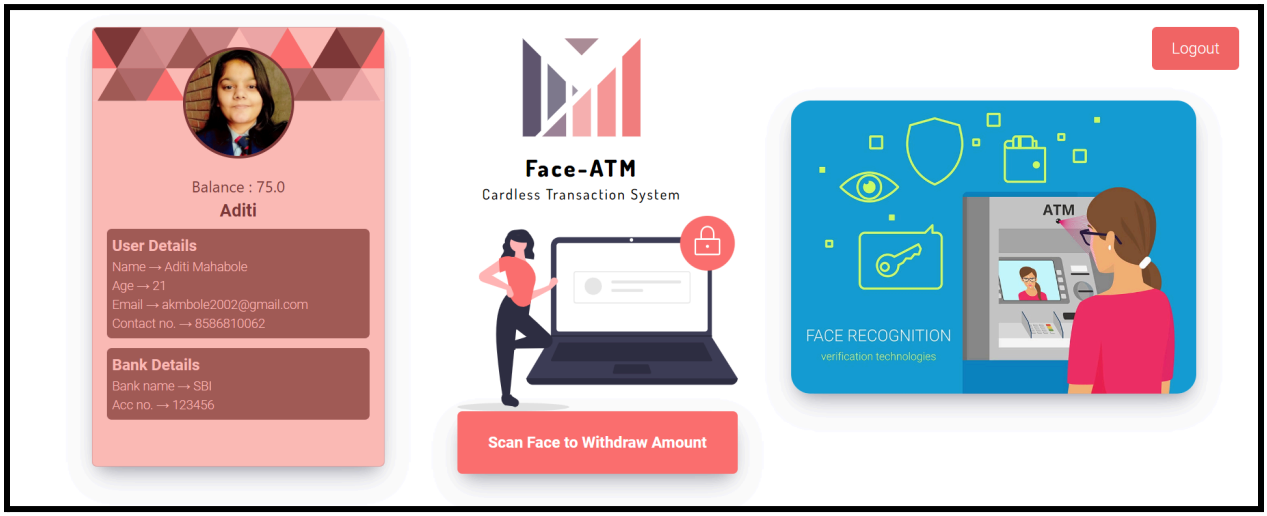

Figure 4.2.3.1: Home Page

4.2.4 OTP Verification and Transaction Process:

OTP Page:

Upon successful facial recognition, users are directed to the OTP page where they are prompted to verify their identity using a One-Time Password (OTP).

OTP Generation Options:

Users are presented with two options for receiving the OTP:

a. Get OTP by Email: Users click on this option to receive the OTP via email.

b. Get OTP by Phone: Users select this option to receive the OTP via SMS on their registered phone number.

OTP Generation and Delivery:

Depending on the selected option, the OTP is generated and delivered to the user's preferred communication channel (email or phone) securely.

OTP Input: Users input the received OTP into the designated input field on the OTP page.

OTP Verification:

The entered OTP value is compared against the OTP generated and sent to the user. If the entered OTP matches the generated OTP, verification is successful. Otherwise, an alert is triggered indicating "Invalid OTP."

Transaction Page Access:

Upon successful OTP verification, users are granted access to the transaction page, where they can proceed with their desired transaction securely.

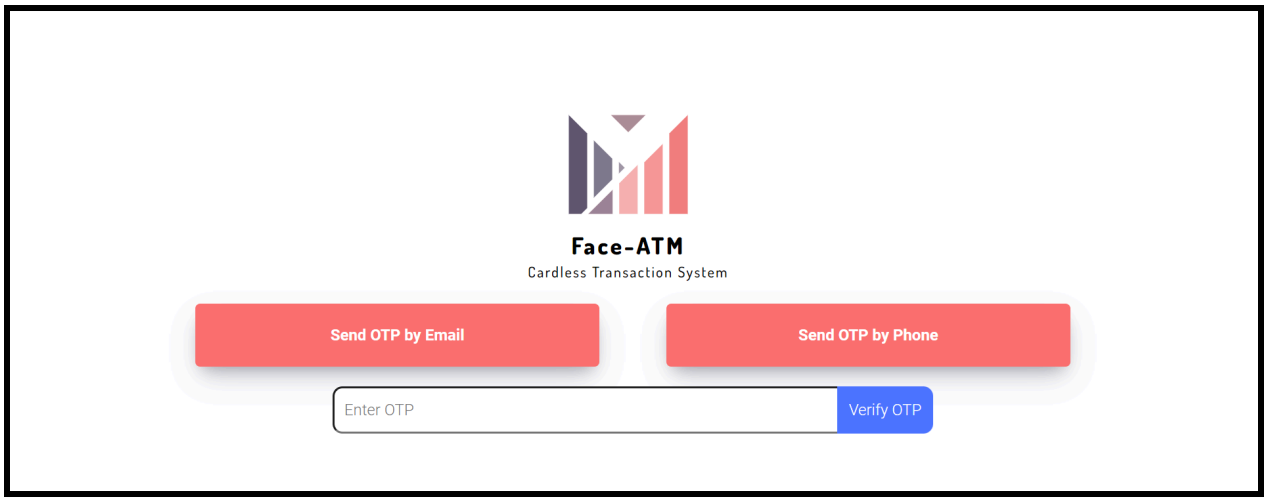

Figure 4.2.4.1: Otp Page

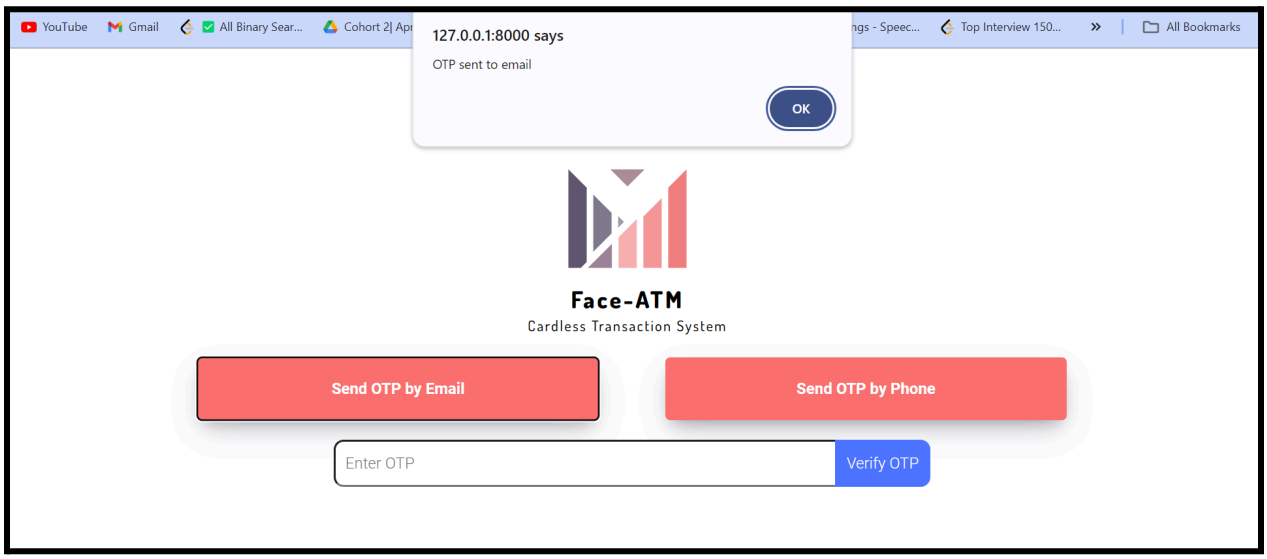

Figure 4.2.4.2: Otp Page - OTP sent Successfully

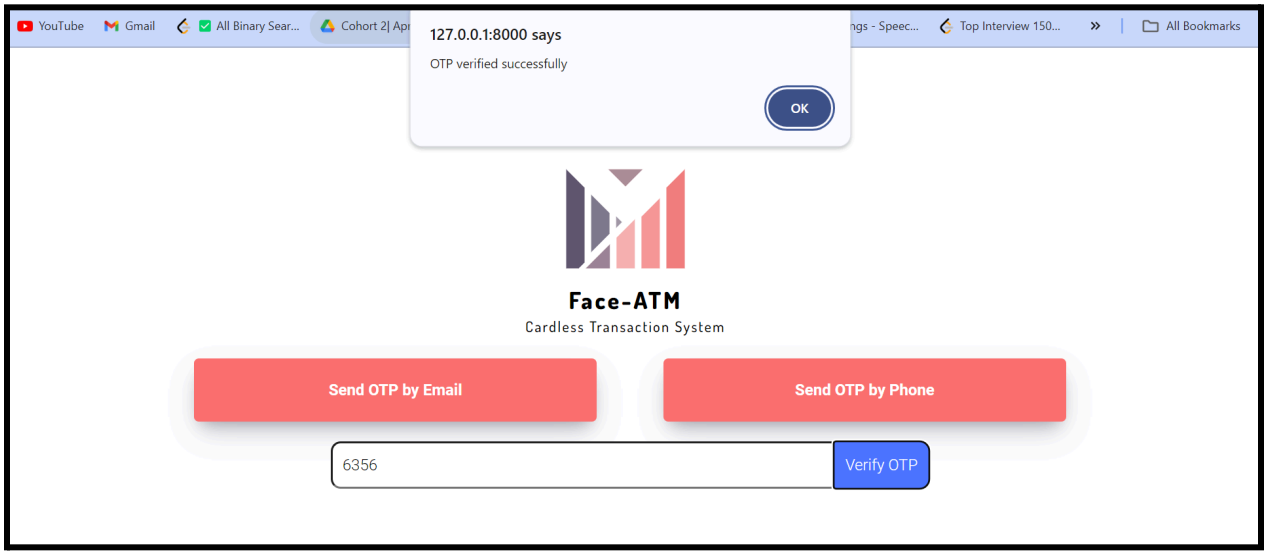

Figure 4.2.4.3: Otp Page - OTP Verification

4.2.5 Transaction Process:

Transaction Page:

Upon OTP verification, users are redirected to the transaction page where they can input the amount they wish to withdraw.

Amount Input:

Users input the desired withdrawal amount into the designated field on the transaction page.

Balance Validation: The entered withdrawal amount is compared against the user's current account balance retrieved from the database. If the withdrawal amount exceeds the available balance, an alert is triggered, indicating "Amount exceeds the current balance. Please enter a lower amount."

Database Update: If the entered withdrawal amount is within the available balance, the transaction is processed. The deducted amount is subtracted from the user's account balance in the database.

Transaction Success: Upon successful deduction of the withdrawal amount from the database, users are redirected to the Home page.

Personal Info Update: On the Home page, users' personal information, including their account balance, is updated to reflect the deducted amount.

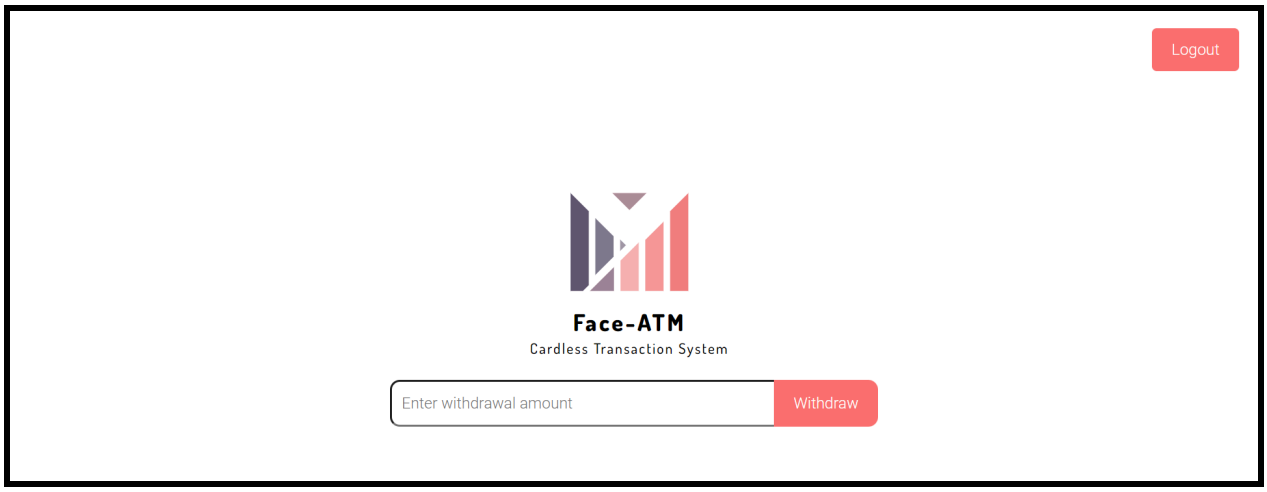

Figure 4.2.5.1: Transaction Page

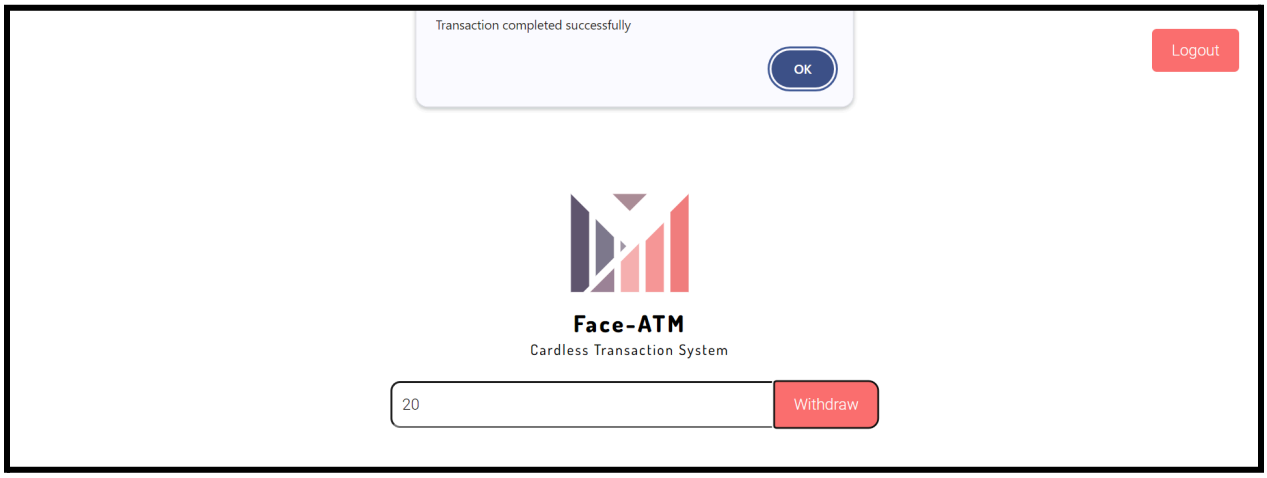

Figure 4.2.5.2: Transaction Page - Successful Transaction

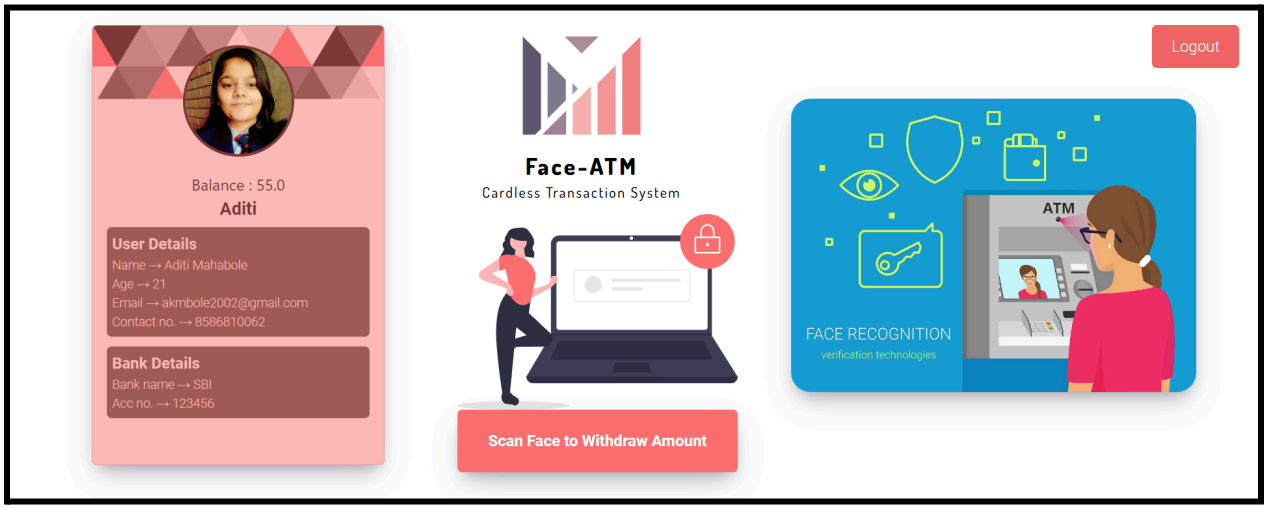

Figure 4.2.5.3: Transaction Page - Updated Balance Display on Home Page

4.2.6 Logout

Upon clicking the Logout button:

- User session is terminated.
- User is redirected to the Login page.

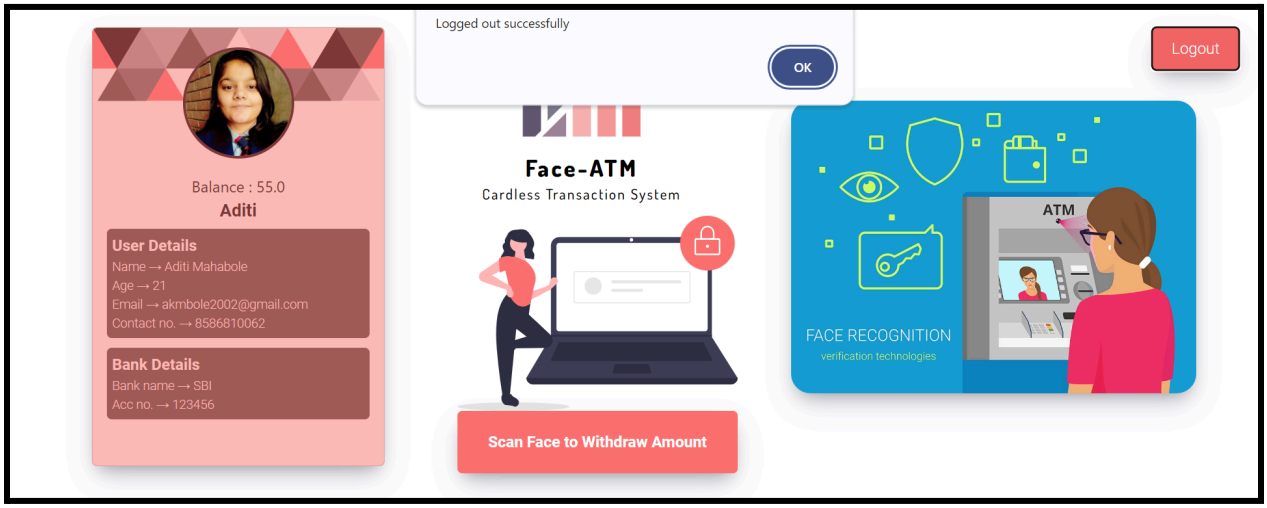

Figure 4.2.6.1: Logout

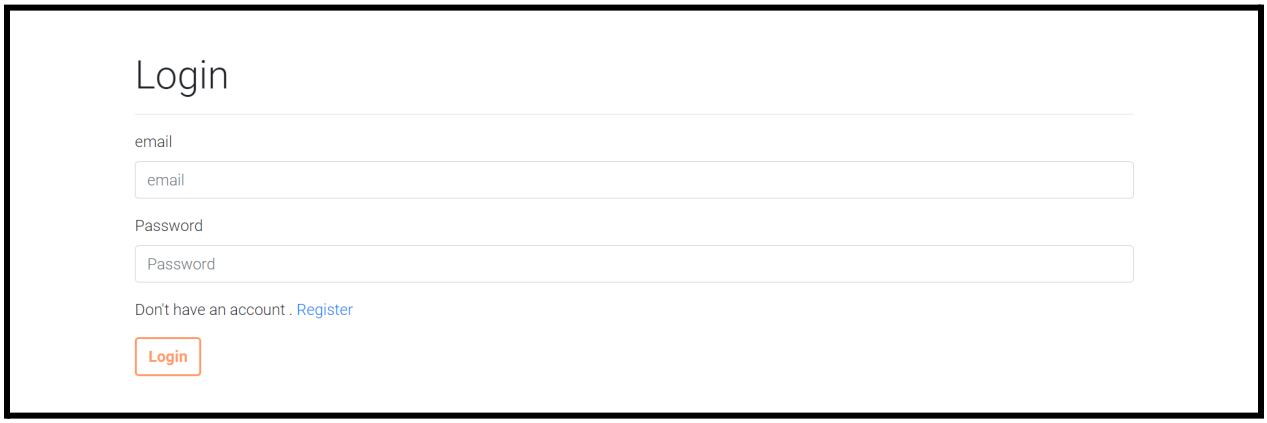

Figure 4.2.6.2: Logout - Redirected to Login Page