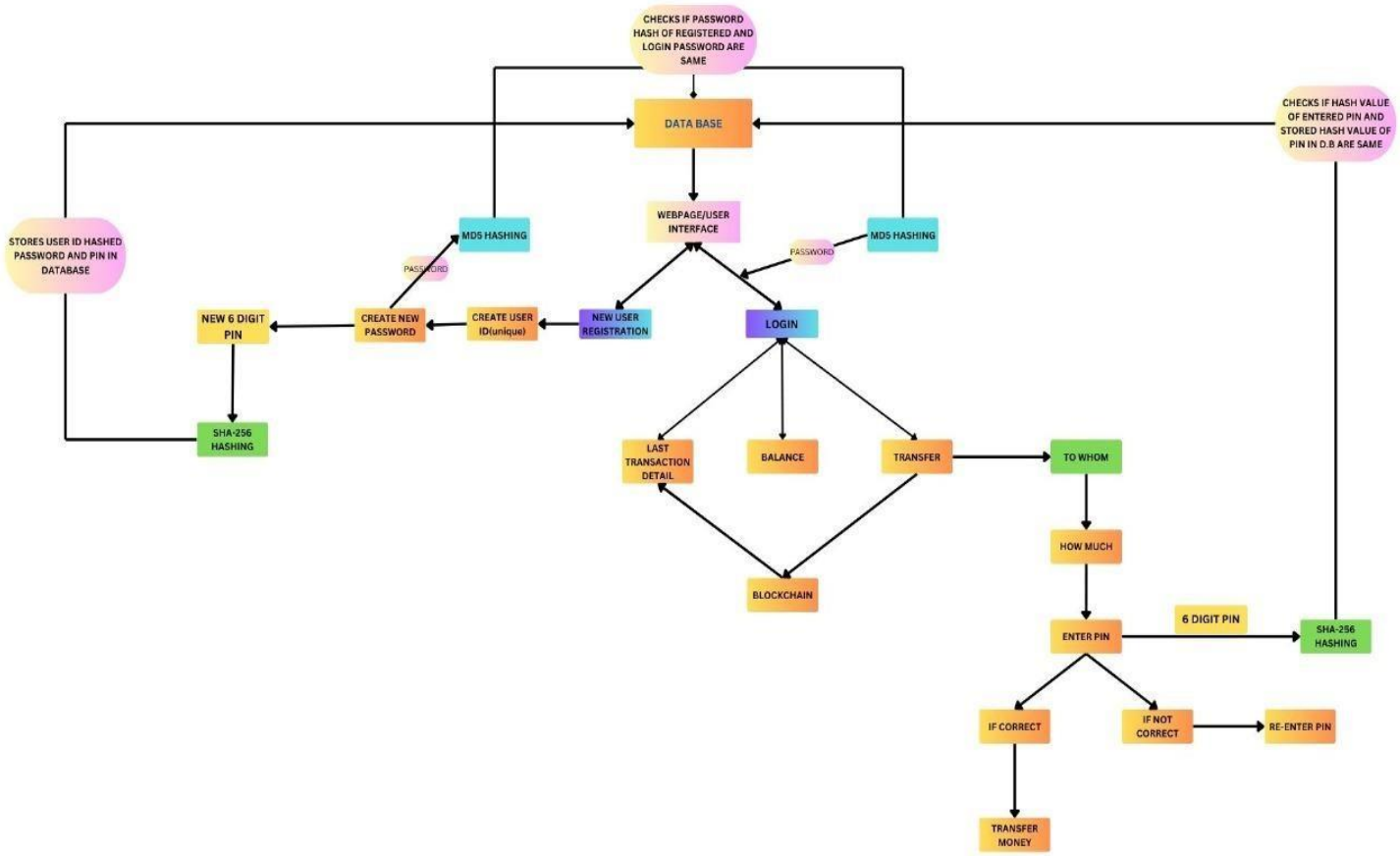
Block Diagram



User Interface and Blockchain Transactions

We have created a friendly User Interface for our bank users to register and login to our banking system.

The users can create an account in the bank that are facilitated with features like Balance Checking, Last Transaction and Funds Transfer. These are encrypted with our implemented MD5 and SHA-256 algorithms.

When transferring money, users are constrained to keep a minimum balance of 2000 so as to never run out of money. SQL is used as a backend data storage database to keep track of our users and their transactions along with their hashes.

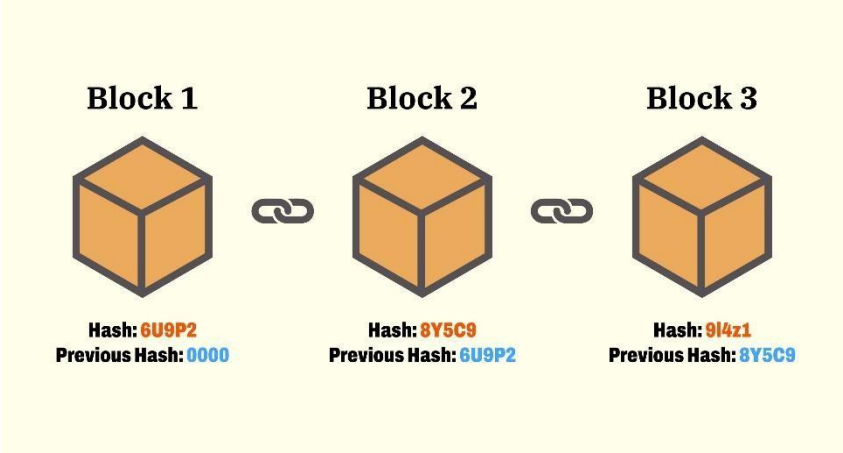
Blockchain

All the transactions that are performed by the users are created and referenced as blockchain's blocks. Every transaction is Hashed securely with SHA-256 and referenced with newer transactions as their "*Previous_Hash*". A block's hash is created with its variables: *previous_hash, senders_name, receiver's_name, timestamp, transaction_details, nonce*.

So, an attempt to tamper with data will cause the hash value of the block to be changed. Thus, our blockchain is secured from unauthorized change.

Last Transaction shows us the last transaction made by that user, extracted from the Database. This way we create a simple Blockchain Application for User Wallet Banking System.

Key



Technologies in Blockchain:

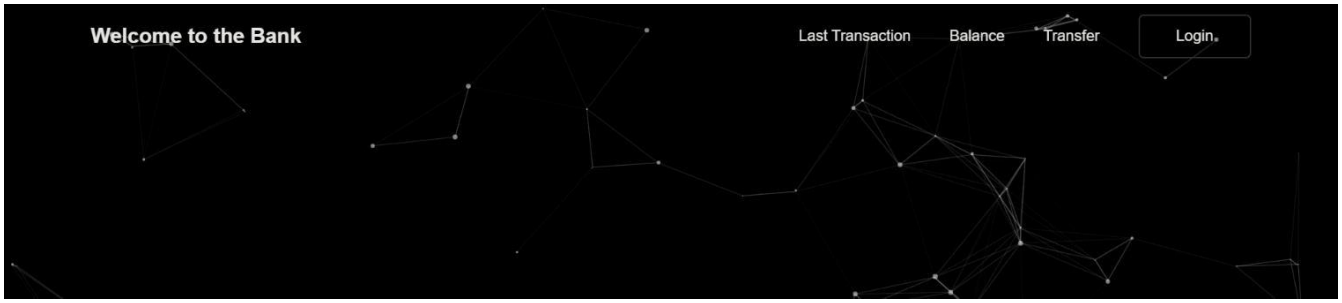
1. **Distributed Ledger Technology (DLT):** Enables decentralized and synchronized ledger access.
2. **Consensus Mechanisms:** Ensures agreement on transaction validity (e.g., PoW, PoS, PBFT).
3. **Smart Contracts:** Self-executing contracts automating agreement terms without intermediaries.
4. **Peer-to-Peer (P2P) Networking:** Direct communication and data sharing between blockchain participants.

Results

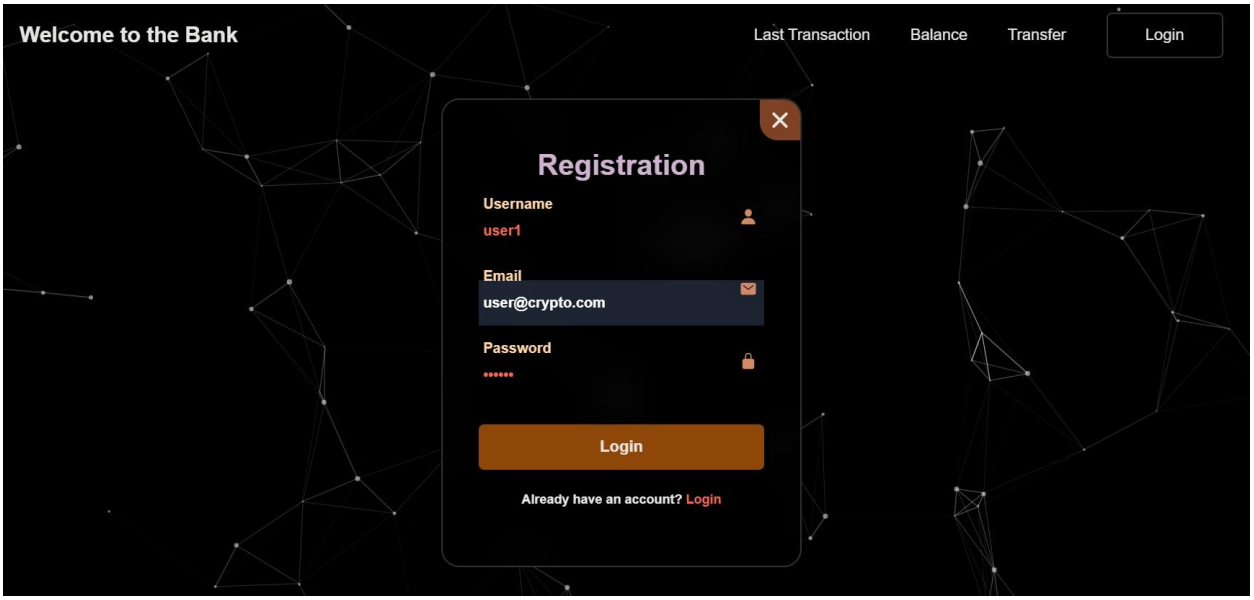
Server Running:

```
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with watchdog (windowsapi)
 * Debugger is active!
 * Debugger PIN: 107-040-127
127.0.0.1 - - [27/Dec/2023 07:08:23] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [27/Dec/2023 07:08:23] "GET /static/style.css HTTP/1.1" 304 -
127.0.0.1 - - [27/Dec/2023 07:08:23] "GET /static/back.js HTTP/1.1" 304 -
127.0.0.1 - - [27/Dec/2023 07:08:23] "GET /static/script.js HTTP/1.1" 304 -
127.0.0.1 - - [27/Dec/2023 07:08:23] "GET /favicon.ico HTTP/1.1" 404 -
```

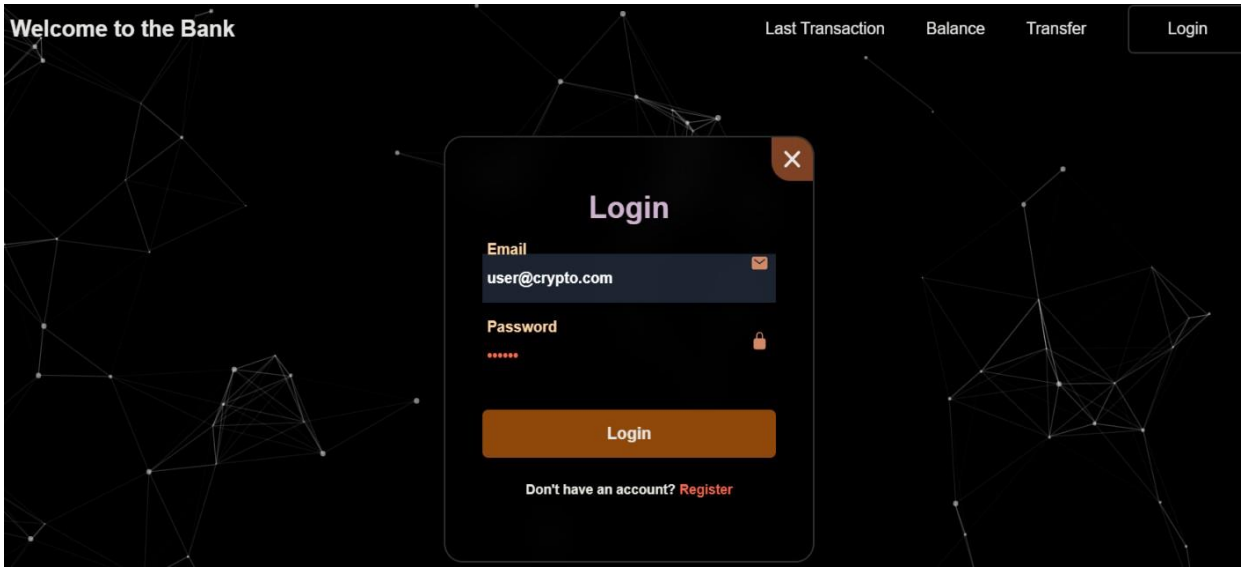
Login Page:



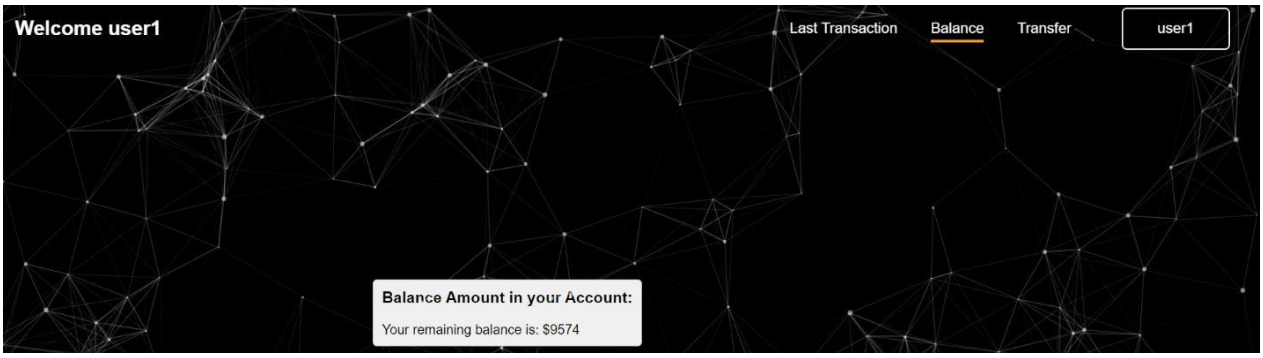
Registration Popup:



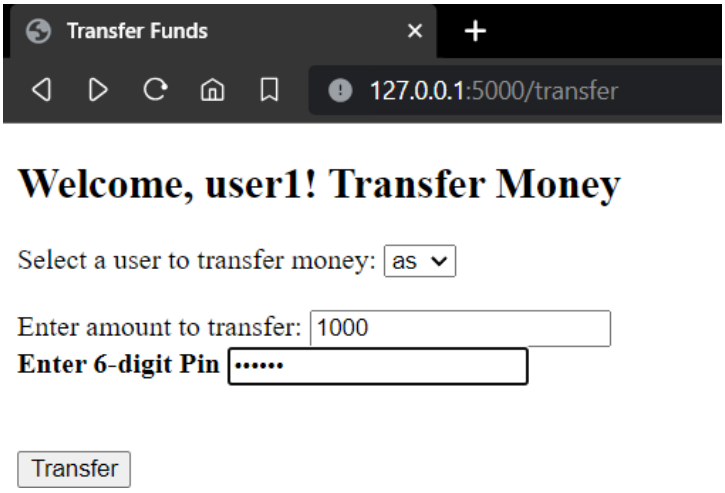
Logging In:



Balance Check:

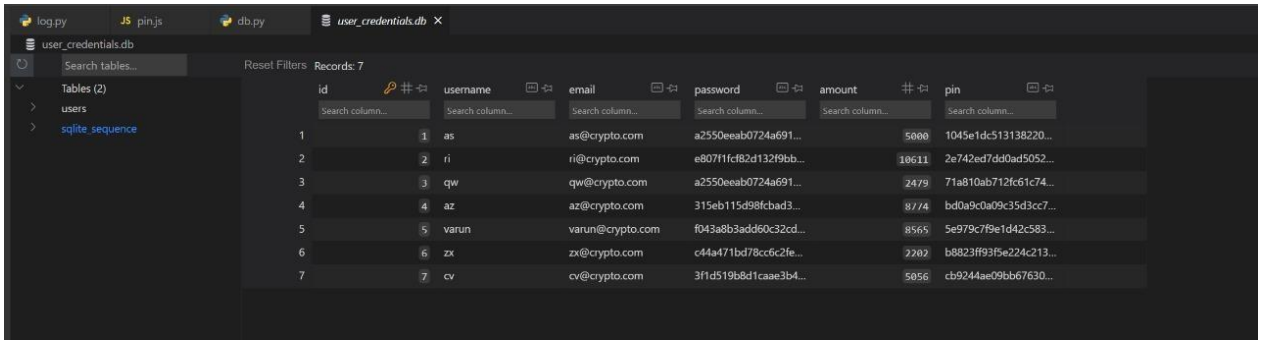


Transfer Funds:

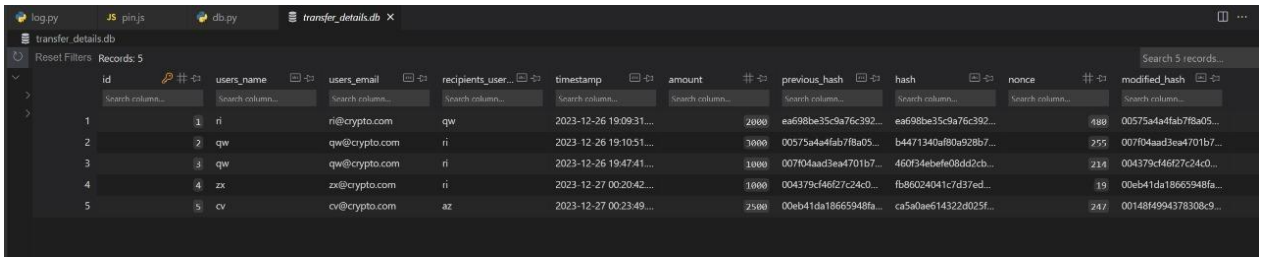


Database:

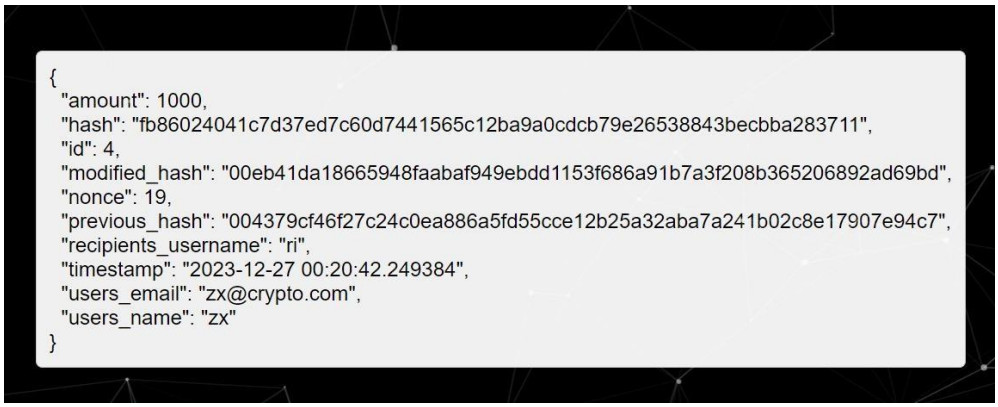
User Credentials DB:



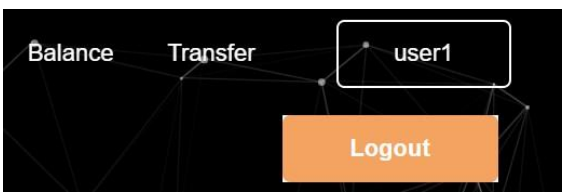
Transfer Details DB:

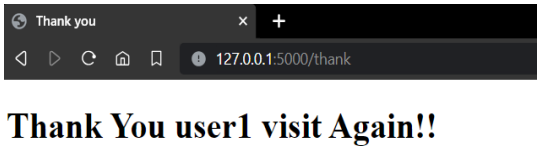


Last Transfer:



Logout Page:





Reference Links:

https://www.simplilearn.com/tutorials/cyber-security-tutorial/sha-256-algorithm

https://blog.passwork.pro/how-sha256-works/

https://builtin.com/blockchain/create-your-own-blockchain