

# **CSI3007 - ADVANCED PYTHON PROGRAMMING**

## **LAB ACTIVITY – 20**

### **Web Deployment (Streamlit Cloud)**

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**Goal:** To deploy a Streamlit-based Blockchain Authentication App on the Streamlit Community Cloud, enabling public web access to a secure blockchain ledger-backed authentication system built using Python and Dockerized locally for consistent runtime.

#### **Project Overview**

**Title – Blockchain-Based Password Strength Classifier and Authentication Using MD5**

**Aim:**

The aim of this project is to implement a secure, blockchain-integrated user authentication system that classifies password strength, validates credentials, and securely stores hashed passwords within an immutable blockchain ledger, ensuring transparency and protection from tampering.

**Framework Suitability: Streamlit**

- **Web-Ready Python Framework** – Streamlit allows instant conversion of Python scripts into interactive web apps.
- **Fast Development Cycle** – Enables real-time updates and UI changes with minimal coding
- **Secure Integration** – Allows use of environment variables (via .env or Streamlit Secrets Manager) for secret keys.
- **Direct Cloud Hosting** – Native support for free web deployment on Streamlit Community Cloud.

**Project Structure**

```
BLOCKCHAIN_AUTH_APP/
|
├── app.py          # Main Streamlit application
├── Dockerfile      # Docker configuration for local containerization
├── requirements.txt # Dependencies for Streamlit and dotenv
├── .env            # Secret key (not uploaded to GitHub)
└── .gitignore      # Ignored files (ledger, users, secrets)
```

```
|--- ledger.txt      # Blockchain ledger (auto-generated)  
└── users.json      # User credentials (auto-generated)
```

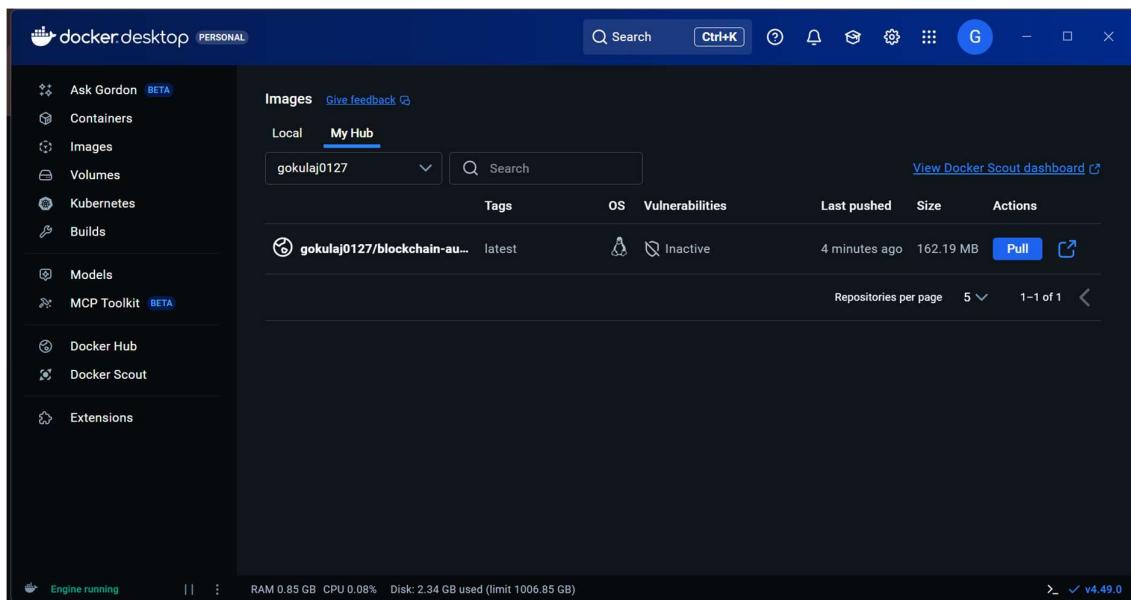
## Build & Deployment Process

```
docker build -t blockchain-auth-app .  
docker run -p 8501:8501 blockchain-auth-app
```

## 2. Push Image to Docker Hub

```
PS C:\Users\gokul\goku> docker tag blockchain-auth-app gokulaj0127/blockchain-auth-app:latest  
PS C:\Users\gokul\goku> docker push gokulaj0127/blockchain-auth-app:latest  
The push refers to repository [docker.io/gokulaj0127/blockchain-auth-app]  
a09dc670095e: Pushed  
46a77618dad: Pushed  
cfba6d6670cc: Pushed  
d7ecded7702a: Pushed  
015555d8e1a3: Pushed  
cf7d6e6c517a: Pushed  
64d66d63dc1d: Pushed  
03b7f5f69b04: Pushed  
latest: digest: sha256:6fce2e258a2535bdf90aeb2fbedaeba5c0c50df17ad0aee24bf0f8168fda85f size: 856  
PS C:\Users\gokul\goku>
```

## DOCKER HUB SNAPSHOT WITH LOADED IMAGE:



## 3. Streamlit Cloud Deployment

The screenshot shows a Streamlit app dashboard titled "gokula-127's apps". It features four main sections:

- GDP over time:** A line chart showing GDP over time with multiple colored lines.
- Chatbot:** A simple chat interface asking "What is AI?"
- Existing tickets:** A table of tickets with columns: ID, Status, Type, Priority, and Date Submitted. One ticket is highlighted: TICKET-1234 - Mobile performance degradation.
- My new app:** A placeholder section with the text "Let's start building the app and improving, head over to [docs.streamlit.io](#)".

Below the sections are links: "View demo", "Support tickets", "View demo", "Blank app", and "View demo".

The screenshot shows a GitHub repository page for "blockchain-auth-app" owned by "GOKULA-127".

**Code tab:** Shows the main branch with 1 branch and 0 tags. Recent commits include:

- GOKULA-127 Add files via upload (1370fe3 · 8 minutes ago)
- .gitignore (Add files via upload · 8 minutes ago)
- app.py (Add files via upload · 8 minutes ago)
- requirements.txt (Add files via upload · 8 minutes ago)

**About section:** No description, website, or topics provided.

**Activity:** 0 stars, 0 watching, 0 forks.

**Releases:** No releases published. [Create a new release](#)

**Packages:** None listed.

share.streamlit.io/deploy

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Back Deploy an app

Repository: GOKULA-127/blockchain-auth-app

Branch: main

Main file path: app.py

App URL (optional): blockchain-app-app-ccrgabax5nupdfuskyhzy.streamlit.app

Domain is available

Advanced settings

PUBLIC URL LINK: <https://blockchain-app-app-ccrgabax5nupdfuskyhzy.streamlit.app/>

blockchain-app-app-ccrgabax5nupdfuskyhzy.streamlit.app

Select Action: Register

## 🔑 Password strength classifier & Secure Password Validation

### User Registration

Enter Username: ABCD

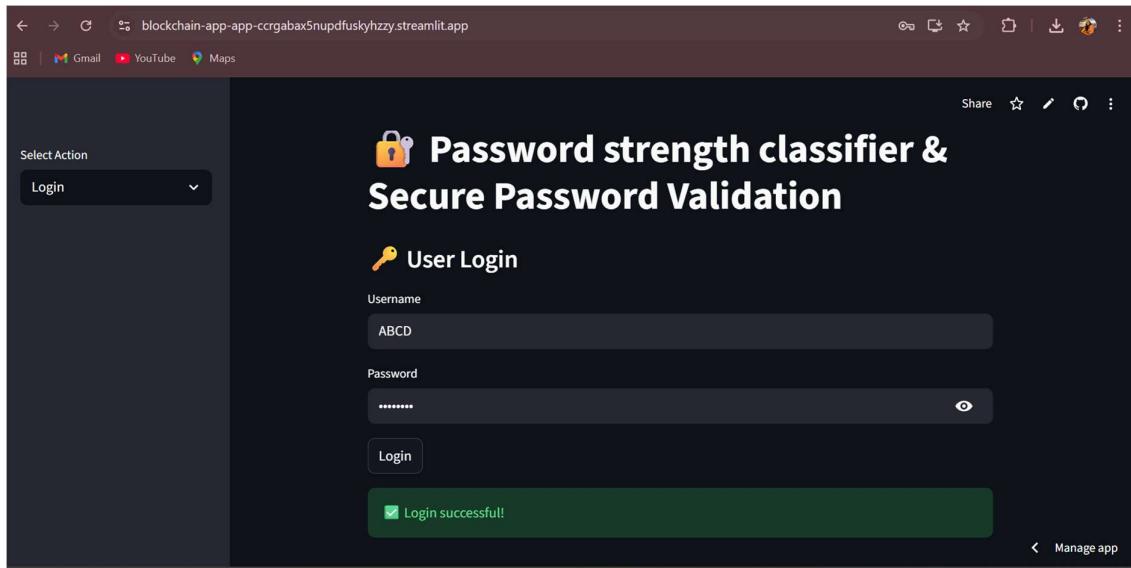
Enter Password:

Register

Registration successful! Password stored securely in blockchain.

Manage app

The screenshot shows a Streamlit application titled "Password strength classifier & Secure Password Validation". On the left, there's a sidebar with a dropdown menu set to "Register". The main area has a dark background with white text. It features a title "User Registration" with a lock icon. Below it are two input fields: "Enter Username" containing "ABCD" and "Enter Password" containing a masked password. A "Register" button is below the password field. At the bottom, a green bar displays a success message: "Registration successful! Password stored securely in blockchain." with a checkmark icon.



## Conclusion

The deployment of the **Blockchain-Based Password Strength Classifier** on Streamlit Cloud demonstrates a complete, secure, and scalable development-to-deployment cycle.