

# 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

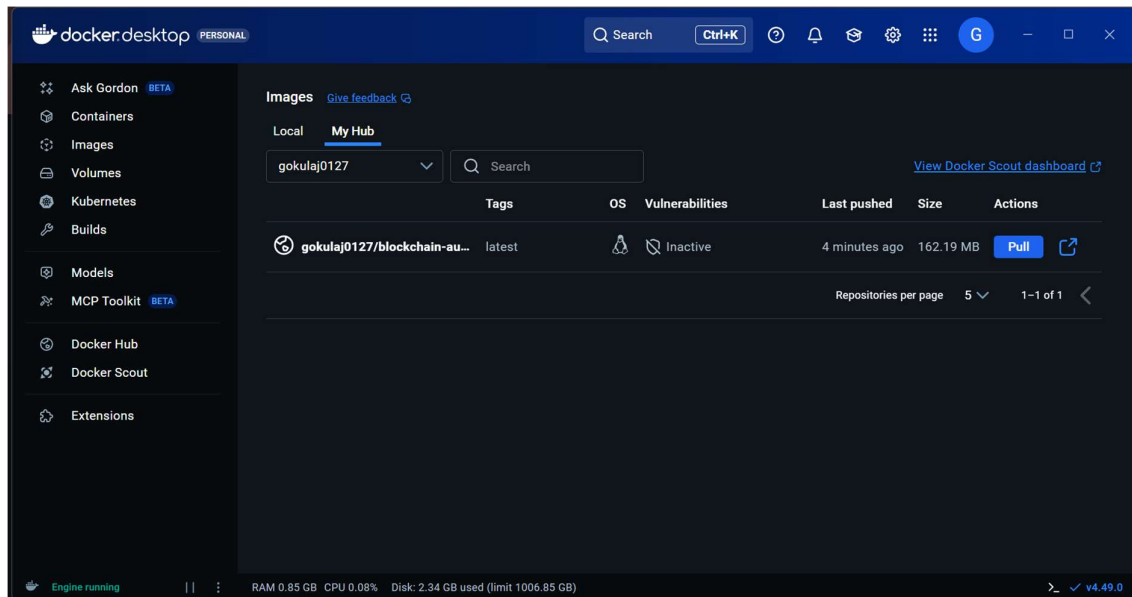
`docker build -t blockchain-auth-app .`

`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: sha256:6fcee2e258a2535bdf90aeb2fbdaeba5c0c50df17ad0aee24bf0f8168fda85f size: 856
PS C:\Users\gokul\goku>
```

DOCKER HUB SNAPSHOT WITH LOADED IMAGE:



## 3. Streamlit Cloud Deployment

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## gokula-127's apps

blockchain-auth-app · main · app.py

### Get started from a template

View all templates →

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View demo

**Chatbot**

View demo

**Support tickets**

View demo

**Blank app**

View demo

github.com/GOKULA-127/blockchain-auth-app

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main 1 Branch 0 Tags

Go to file Add file Code

GOKULA-127 Add files via upload 1370fe3 · 8 minutes ago 1 Commit

.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

README

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Packages

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## Deploy an app

Repository ⓘ [Paste GitHub URL](#)

GOKULA-127/blockchain-auth-app

Branch

main

Main file path

app.py

App URL (optional)

blockchain-app-outhkbcdf9efeybtkvkv .streamlit.app

Domain is available

[Advanced settings](#)

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

← → ↻ blockchain-app-app-ccrgabax5nupdfuskyhzy.streamlit.app

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Select Action

Register


## Password strength classifier & Secure Password Validation

### User Registration

Enter Username

ABCD

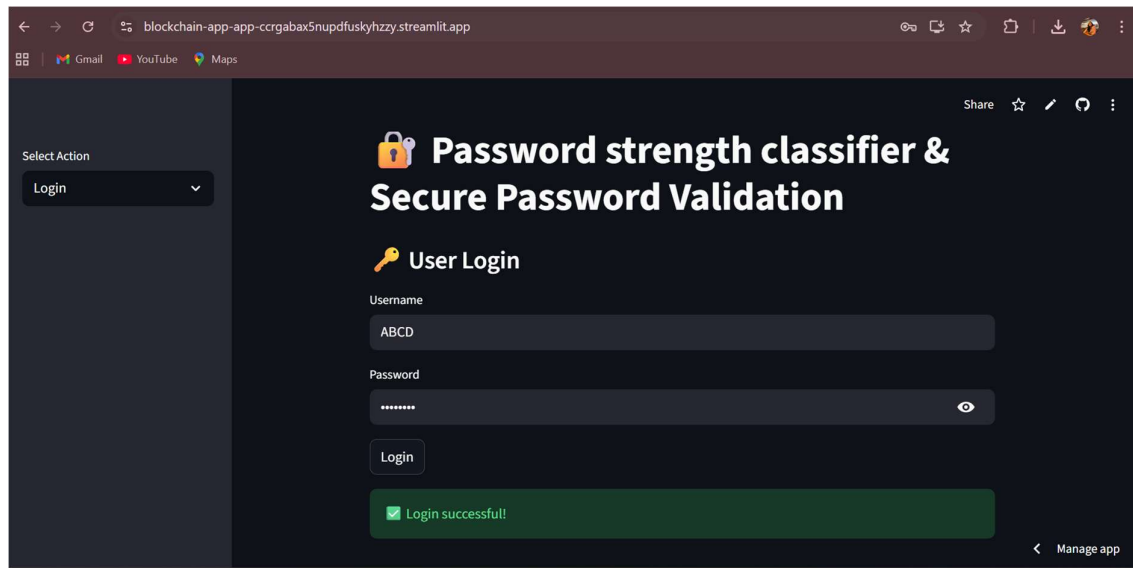
Enter Password

\*\*\*\*\* 

Register

✓ Registration successfull! Password stored securely in blockchain.

← Manage app



## Conclusion

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