

AURA - Simple Cryptocurrency with Python & Flask

This project is a basic cryptocurrency simulation inspired by Bitcoin.

It includes a Proof-of-Work blockchain, transaction signing, mining rewards with halving, and a Flask web interface.

Features

- Blockchain with Proof-of-Work consensus (adjustable difficulty)
- Transactions signed with ECDSA keys (using `ecdsa` Python library)
- Mining rewards with halving every 10 blocks
- Wallet key pair generation (private/public keys)
- Web GUI for:
 - Viewing blockchain
 - Creating wallets
 - Sending transactions
 - Mining blocks

Installation

Make sure you have Python 3 installed.

Install dependencies:

```
pip install flask ecdsa
```

Usage

Run the Flask app:

python app.py

Open your browser and visit: `http://127.0.0.1:5000`

Pages

- `/` : Home page with navigation
- `/create_wallet` : Generate a new wallet key pair (private/public keys)
- `/wallet` : Create and sign new transactions
- `/mine` : Mine a new block and receive rewards
- `/chain` : View the entire blockchain

Important Notes

- Keep your private key secure! It is required to sign transactions.
- This is a simple educational project, not intended for real-world use.
- Mining is CPU-intensive and may take some time depending on the difficulty.