RAT COIN

A Blockchain-based Cryptocurrency Platform

Computer Science and Engineering

Software Development II – CSE2291

Section: 6A

Fall -2024

Project Title: Blockchain-Based Cryptocurrency Platform

Project Members:

1. Al-Amin Islam
   41230100639

2. Alvi Hasan Emon
   41230100821

3. Tahmid Hasan Rafi
   41230100808

4. Tanha Zaman
   41230100815

5. Abida Hossain Shrabonti
   41230100800

Blueprint of the Report

Blueprint of the Report

- ## Project Prologue

This project is a blockchain-based cryptocurrency platform that allows secure transactions, coin mining, and user interaction through a dynamic web interface.

- ## Project Layout

This platform includes a Python-powered backend for blockchain functionality, a MySQL database for data management, and a user-friendly front end using HTML, CSS, and JavaScript. Blockchain mining is enhanced by user challenges, with project deployment on a localhost setup.

In this project, the Fetch API enables real-time data exchange between the frontend and backend for seamless transactions, balance updates, and mining.

• Technology Used:

Languages:	Framework:	Database:	API:

IDE:	Development Stack:	Testing OS:	Design Using:

- Collective Strategy

  - **Team Lead/Project Coordinator** –
  - **Assigned To**: Al-Amin Islam (41230100639)

  Objectives: Oversees project progress, ensures deadlines are met, and consolidates weekly reports for faculty.

  - **Backend Developer** –
  - **Assigned To**: Tahmid Hasan Rafi (41230100808)

  Objectives: Focuses on blockchain logic and Python-based cryptocurrency platform enhancements.

  - **Frontend Developer** –
  - **Assigned To**: Alvi Hasan Emon (41230100821)

  Objectives: Builds and styles the *UI* using *HTML*, *CSS*, and *JavaScript*.

  - **Database Manager** –
  - **Assigned To**: Tanha Zaman (41230100815)

  Objectives: Manages *MySQL* setup, user account handling, and integration with the backend.

  - **Quality Assurance (QA) and Documentation** –
  - **Assigned To**: Abida Hossain Shrabonti (41230100800)

  Objectives: Handles testing, debugging, and preparing documentation. This member also a

  ssists in preparing the final presentation and video.

- Execution Timeline

The execution timeline throughout the semester covers initial project setup, development of core blockchain and frontend functionalities, integration with MySQL, iterative testing, and UI polishing. In the final weeks, comprehensive testing, documentation, and presentation preparations ensure a complete and user-friendly platform for showcasing.

- ## Revenue Streams

Revenue streams for this project could include transaction fees on each coin transfer and premium memberships offering enhanced mining rewards or exclusive access to advanced features. Additionally, ad placements or partnerships with financial services could generate passive income.

- ## Societal Ripple

This project has the potential to promote financial inclusion by providing a decentralized platform for secure transactions and mining. It can empower individuals with limited access to traditional banking systems, offering them an opportunity to participate in the digital economy.

- ## Shadows of Innovation

Shadows of this innovation include potential misuse for illicit transactions due to decentralization and the energy demands of blockchain mining, which can impact environmental sustainability. Additionally, users may face risks if robust security measures aren't maintained.

- ## Weekly Trajectory

Week 1: Initial Setup and Planning

- **All Members:** Understand the project scope, requirements, and assign roles.

- Project Coordinator: Establish milestones and reporting structure.

- Backend Developer: Set up basic blockchain structure using Python.

- Frontend Developer: Develop basic UI mockups in Figma.

- Database Manager: Plan database schema (user credentials, transactions, balances).

- QA: Begin documentation outline and test basic code for setup.

Week 2: Basic System Implementation

- Backend Developer: Refine the mining and transaction functionalities; add more robust blockchain logic.
- Frontend Developer: Begin building initial HTML/CSS structure.
- Database Manager: Create MySQL database, integrate XAMPP, and start backend-DB integration.
- QA: Test early components, document issues, and help with UI/UX considerations.
- Weekly Report: Progress on system setup, initial blockchain functions, and UI.

Week 3: Blockchain and Backend Enhancements

- Backend Developer: Add difficulty adjustment, hash calculation improvement, and transaction verifications.
- Frontend Developer: Implement basic UI with CSS styling.
- Database Manager: Connect blockchain transactions to the MySQL database.
- QA: Test backend interactions, report bugs, and update documentation.
- Weekly Report: Status on backend improvements, UI setup, and database connections.

Week 4: Advanced Functionality and Frontend Integration

- Backend Developer: Implement user authentication and secure transaction handling.
- Frontend Developer: Begin integrating JavaScript (possibly with Fetch API) to connect front and backend.
- Database Manager: Test data flows from frontend to backend via the database.
- QA: Run preliminary end-to-end tests; review and document frontend-backend interactions.
- Weekly Report: Completed backend features, database integration, and early UI interactivity.

Week 5: Testing and Feedback

- **All Members:** Group testing and troubleshoot major issues.

- Backend Developer: Optimize code and resolve logic issues.

- Frontend Developer: Adjust UI based on feedback.

- QA: Record findings, track bugs, and finalize documentation for the first half.

- Weekly Report: Summary of tests, identified issues, and planned fixes.

Week 6: Expanding Features (Optional Additions)

- Backend Developer: Add security measures like encryption on transactions and password handling.

- Frontend Developer: Create additional UI enhancements based on testing.

- Database Manager: Optimize database queries and refine data structure.

- QA: Review new features and ensure smooth performance.

- Weekly Report: New features added, remaining issues, and resolutions.

Week 7: Final System Testing and Documentation

- **All Members:** Comprehensive testing of all features.

- QA: Ensure documentation is complete for all functionalities.

- Backend Developer: Finalize code and perform security checks.

- Weekly Report: Project status update, final tests, and documentation completeness.

Week 8: Presentation and Video Production

- **All Members:** Prepare for the showcase presentation.
- Project Coordinator: Finalize project video.
- Weekly Report: Final update and project completion.

- End Note

This project marks an innovative step in creating a decentralized, accessible financial platform. By combining blockchain security with an interactive user experience, it aims to bridge gaps in financial inclusion. With careful attention to security and responsible design, this cryptocurrency platform can positively impact the digital economy and foster wider blockchain adoption.