Project Title: Blockchain Hash Chain Visualizer

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CONTENTS

1. INTRODUCTION

This project demonstrates the core concept of blockchain technology using a simple visual web application. The main goal was to understand how hash functions are used to link blocks together, and how blockchain ensures immutability through hashing.

2. TOOLS AND TECHNOLOGIES USED

- HTML: For page structure
- CSS: For styling and layout
- JavaScript: For blockchain logic and interactivity
- CryptoJS: For applying SHA-256 hashing
- GitHub Pages: For deployment

3. CONCEPT OVERVIEW

A blockchain is a chain of blocks, where each block contains data, a timestamp, and a hash. Each block also stores the hash of the previous block, forming a secure chain. If even one block is modified, the hash changes and the chain breaks, showing that the data was tampered with.

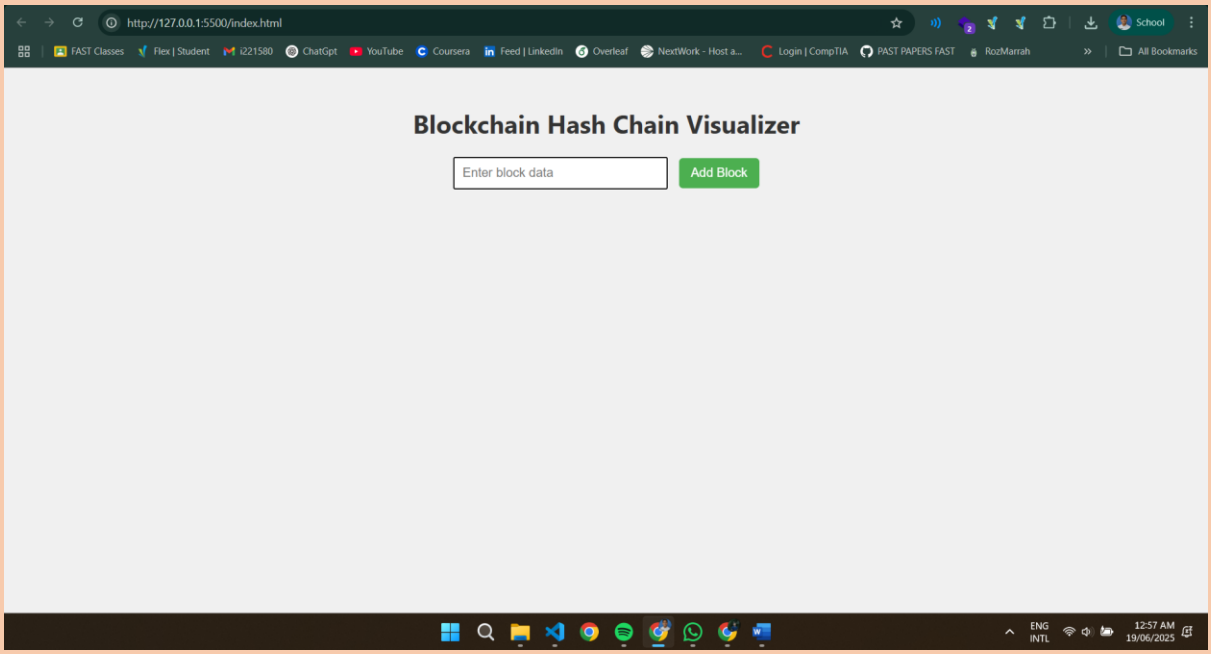
4. IMPLEMENTATION STEPS

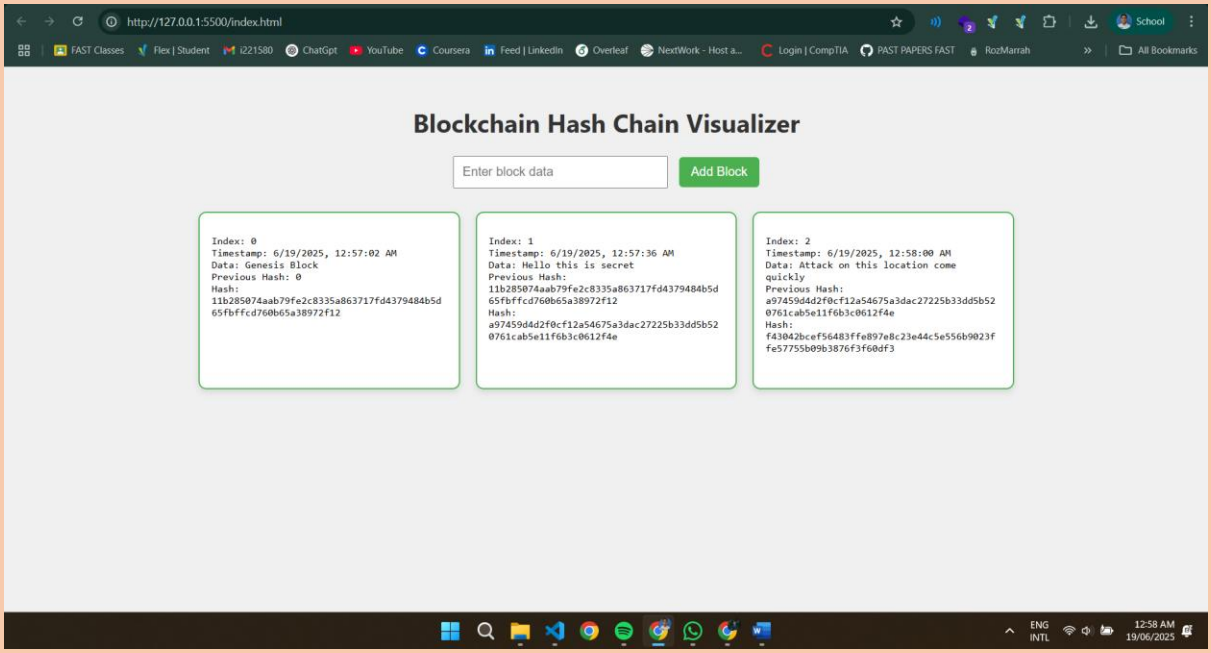
- Created a Block class to represent each block.
- Implemented a Blockchain class to manage the chain.
- Created an HTML interface for users to input data.
- Used JavaScript to dynamically generate blocks and link them using previous hashes.
- Applied SHA-256 hashing via the CryptoJS library.

5. FEATURES

- Genesis block created by default.
- Users can add new blocks with custom data.
- Each block shows its data, hash, and previous hash.
- All blocks are displayed visually.
- Demonstrates how immutability works in a real blockchain.

6. SCREENSHOTS





7. CONCLUSION

Through this project, I gained a practical understanding of how blockchains work and how hashing ensures data integrity. This also helped me strengthen my JavaScript and frontend development skills. In future, I plan to add tamper detection and visualization of Merkle trees.