Tracking Public Infrastructure And Toll Payments Using Blockchain

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Abstract:

This paper introduces a blockchain-based system to revolutionize public infrastructure management and toll collection. By leveraging blockchain's transparency and security, the proposed system automates toll payments, ensures real-time infrastructure monitoring, and fosters trust among government entities, transportation authorities, and the public. Key components include digital infrastructure tokens and secure, automated toll collection. Real-world use cases demonstrate reduced fraud, improved accountability, and increased public trust. While scalability and regulatory challenges exist, the blockchain solution holds the potential to create a more efficient, accountable, and equitable infrastructure management system.

Problem Statement:

In today's modern society, the efficient management and maintenance of public infrastructure, such as roads, bridges, and tunnels, is crucial for the seamless functioning of transportation systems. Furthermore, the collection of toll payments for the use of these infrastructure assets is a vital source of revenue for their upkeep. The current management of public infrastructure and toll payment systems faces significant challenges in terms of transparency, efficiency, and security. To address these issues, there is a need for a robust blockchain-based solution

Our Solution :

The solution for Tracking public infrastructure and toll payments using Blockchain involves creating a decentralized network where digital certificates and student records are securely stored. Using blockchain technology and smart contracts, these Payment details are added to the blockchain, ensuring tamper-proof storage. The actual payment files are stored in a decentralized network like IPFS, ensuring data integrity. This setup allows for instant and trustworthy verification of user records. Users can query and verify efficiently, promoting tracking public infrastructure and toll payments .

Scope of the Project :

- ✓ The scope of his project is to enhance toll collection systems, making them more efficient, secure, and fraud-resistant. This could involve using cryptocurrencies or blockchain-based smart contracts for seamless payments.
- ✓ Extend the scope to include tracking the movement of goods through blockchain, which can affect transportation routes and infrastructure planning.
- ✓ Implement blockchain for e-government services, allowing citizens to access and manage public infrastructure-related information and transactions online.

Steps to complete the project :

Step 1:

Open the Zip file and download the zip file. Extract all zip files

Step 2 :

1.Open vs code in the left top select open folder. Select extracted file and open .

2. Select the projectname.sol file and copy the code.

3. Open the remix ide platform and create a new file by giving the name of projectname.sol and paste the code which you copied from vs code.

4. Click on solidity compiler and click compile the projectname.sol

5. Deploy the smart contract by clicking on the deploy and run transaction.

6. select injected provider - MetaMask. In environment

7. Click on deploy. Save the code.

Step 3:

open file explorer

1. Open the extracted file and click on the folder.

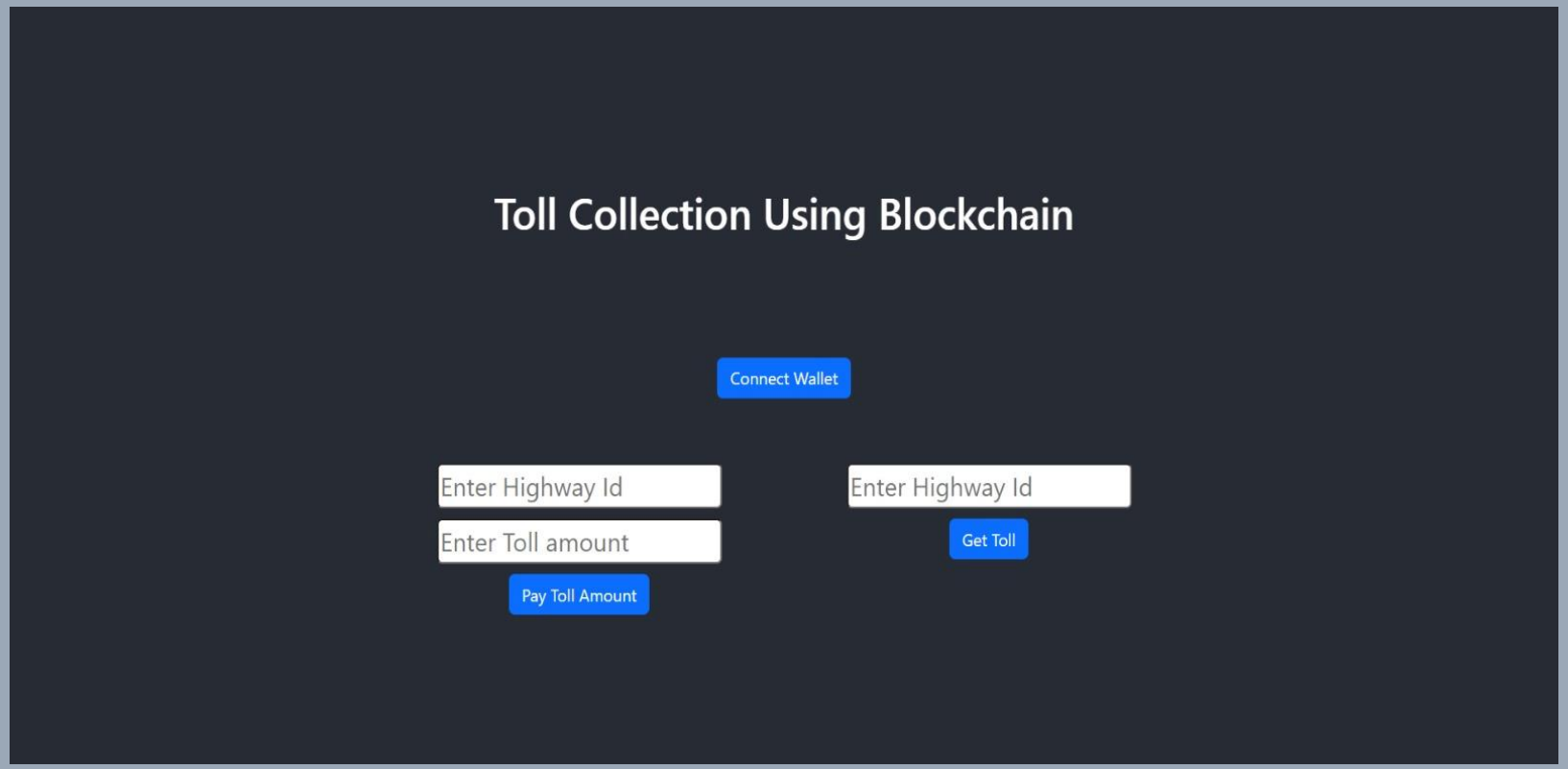
2. Open src, and search for utiles.

3. You can see the frontend files. Select all the things at the top in the search bar by clicking alt+ A. Search for cmd

4. Open cmd enter commands npm install npm bootstrap npm start

5. It will install all the packages and after completing it will open {LOCALHOST IP ADDRESS} copy the address and open it to chrome so you can see the frontend of your project.

Output:


Toll Collection Using Blockchain
Connect Wallet
Enter Highway Id
Enter Toll amount
Pay Toll Amount
Enter Highway Id
Get Toll

Conclusion :

Using blockchain technology to track public infrastructure and toll payments can offer several advantages. It provides transparency, security, and efficiency in monitoring the usage of public infrastructure and collecting tolls. However, some challenges such as scalability and regulatory concerns need to be addressed. In conclusion, blockchain has the potential to revolutionize how we manage and pay for public infrastructure, but its widespread adoption may require further development and regulatory support.

THANK YOU..!