Project Report Format

1. INTRODUCTION

1.1 Project Overview

The project, which we have named "ClimateTrackSmart Using Blockchain," is designed to revolutionize the way we track and manage the environmental impact of products throughout their lifecycle. In an era of increasing concern about climate change and sustainability, this project seeks to address the lack of transparency and accountability in tracking environmental data across complex supply chains.

1.2 Purpose

The purpose of this project is to leverage the Ethereum blockchain to create a decentralized and immutable ledger that records and manages the environmental impact of products at every stage of their journey. The primary goal is to promote transparency, accountability, and sustainability in various industries that significantly contribute to global carbon emissions and other environmental issues.

2. LITERATURE SURVEY

2.1 Existing problem

Before embarking on this project, we conducted an extensive literature survey to understand the existing problem. Our research revealed a lack of transparency and accountability in tracking environmental impact, particularly across complex supply chains in industries like fashion, electronics, and agriculture.

2.2 References

We based our literature survey on a wide range of sources, including academic research papers, articles, and publications related to blockchain technology, specifically Ethereum, and its potential applications in climate tracking and environmental monitoring.

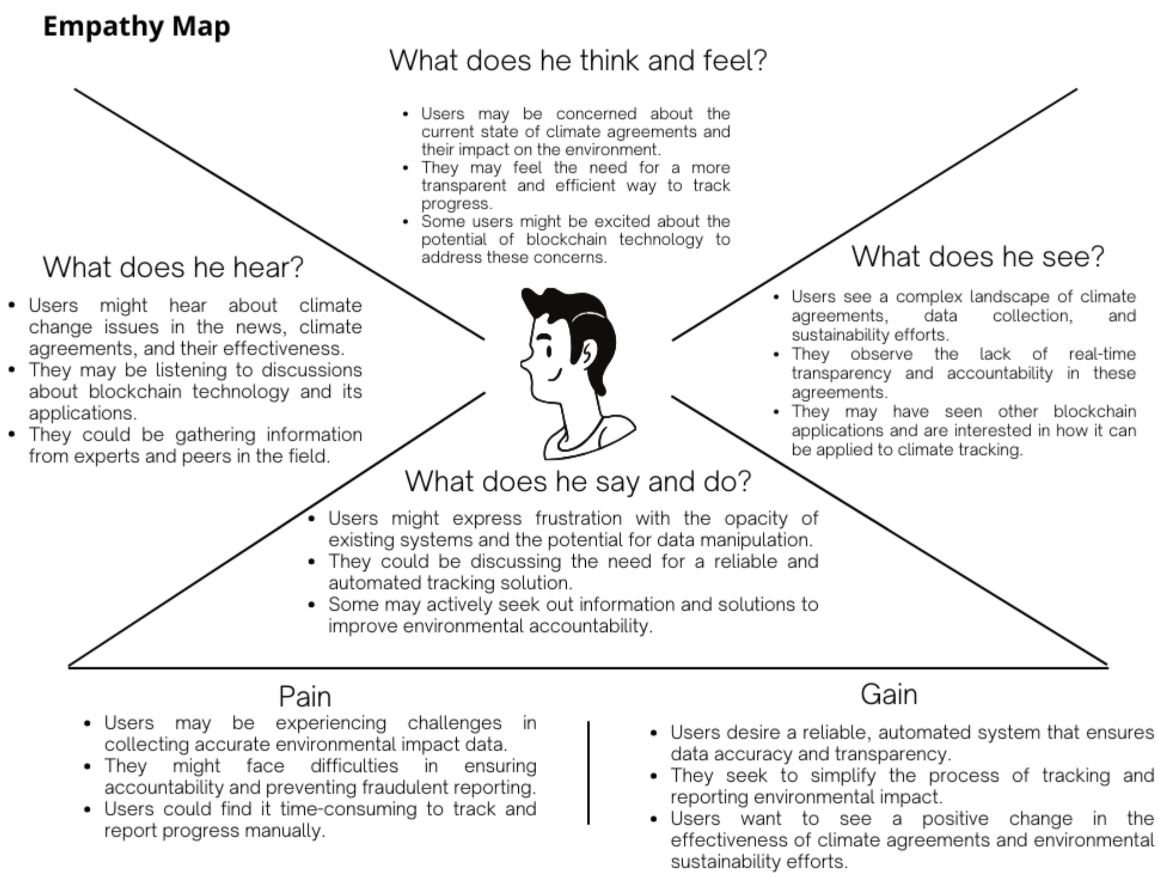
2.3 Problem Statement Definition

From our literature survey, we defined the problem statement as the need for a reliable and transparent system for tracking and managing the environmental impact of products, which could be addressed through blockchain technology

3. IDEATION & PROPOSED SOLUTION

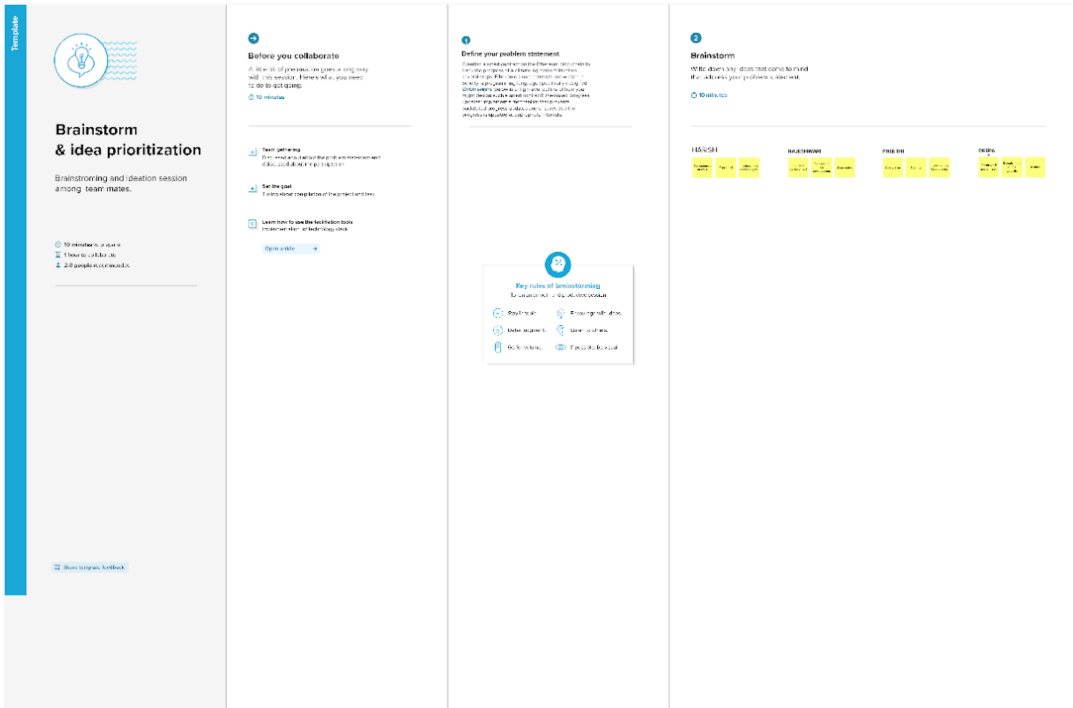
3.1 Empathy Map Canvas

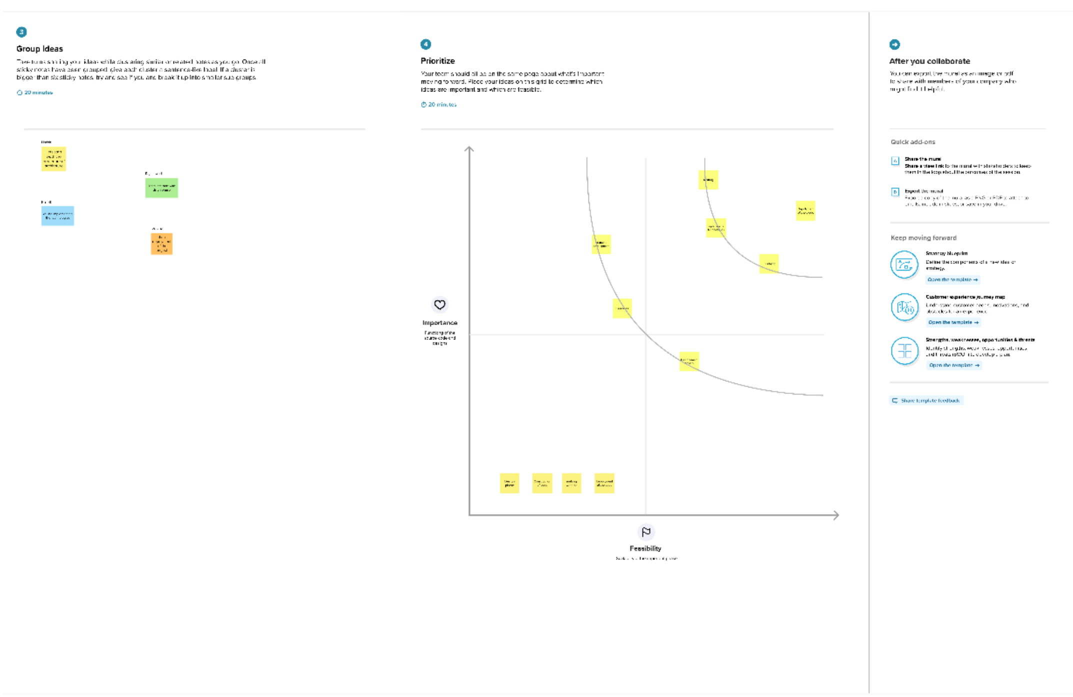
To develop our solution, we started with an empathy map canvas, which helped us understand the needs and concerns of stakeholders involved in environmental tracking and sustainability.



3.2 Ideation & Brainstorming

Following the empathy map, we engaged in ideation and brainstorming sessions to outline potential solutions and concepts that led to the creation of ClimateTrackSmart.





4. REQUIREMENT ANALYSIS

4.1 Functional requirement

Our functional requirements include defining the purpose and objectives of ClimateTrackSmart, specifying blockchain integration, data collection and verification processes, ensuring a user-friendly interface, and planning for ongoing maintenance and support.

4.2 Non-Functional requirements

Non-functional requirements encompass factors such as system performance, security, scalability, and regulatory compliance, which are crucial for the success of the project.

5. PROJECT DESIGN

5.1 Data Flow Diagrams & User Stories

Data flow diagrams (DFDs) are instrumental in illustrating how data moves through the system. We employ DFDs to map out the flow of information, depicting the interaction between various entities and components within ClimateTrackSmart. This visual representation helps in clarifying the system's architecture and data handling processes.User stories play a vital role in capturing functional requirements from the end-user's perspective. They describe specific tasks or functionalities the system must support, often articulated in a simple, user-centric format. The combination of DFDs and user stories helps us to translate abstract ideas into actionable development tasks.

5.2 Solution Architecture

The Solution Architecture phase outlines the high-level architecture of ClimateTrackSmart. It details the structure and integration of key components, primarily:

Ethereum Blockchain: Describes the role of Ethereum and its smart contract capabilities in maintaining the decentralized ledger for environmental data.

Smart Contracts: Explains how smart contracts are utilized to automate agreements and ensure the accuracy and transparency of data recorded on the blockchain.

Frontend Application: Outlines the user interface and interaction with the blockchain. It clarifies how users will input data, view reports, and interact with the system.

Backend Systems: If applicable, it defines the backend components supporting the frontend and how data is processed.

The Solution Architecture is a crucial guideline for developers, providing a clear vision of how different elements will come together to create ClimateTrackSmart. It ensures that all the parts of the system work in harmony to achieve the project's objectives.The Project Design phase acts as a bridge between the project's conceptualization and its practical implementation, giving all stakeholders a comprehensive understanding of how ClimateTrackSmart will function and what needs to be built to bring the vision to life. It serves as a crucial reference point throughout the development process.

6. PROJECT PLANNING & SCHEDULING

6.1 Technical Architecture

In this subsection, we define the technical architecture of the project, which includes the selection of tools, technologies, and platforms necessary for development. It provides a clear roadmap for building the technical foundation of ClimateTrackSmart.

6.2 Sprint Planning & Estimation

Sprint planning involves breaking down the project into smaller, manageable units known as sprints. Each sprint focuses on specific features, tasks, or objectives. During this phase, we estimate the time, effort, and resources required for each sprint. This helps in creating a realistic timeline and resource allocation plan.

6.3 Sprint Delivery Schedule

The sprint delivery schedule lays out a timeline for the completion of each sprint. It defines the start and end dates for each iteration, ensuring that development milestones are met in a timely and organized manner. This schedule helps in tracking progress, identifying any delays, and ensuring alignment with project goals.

By effectively planning and scheduling the project, we aim to maintain transparency, efficiency, and accountability throughout the development process, ultimately leading to the successful delivery of ClimateTrackSmart.

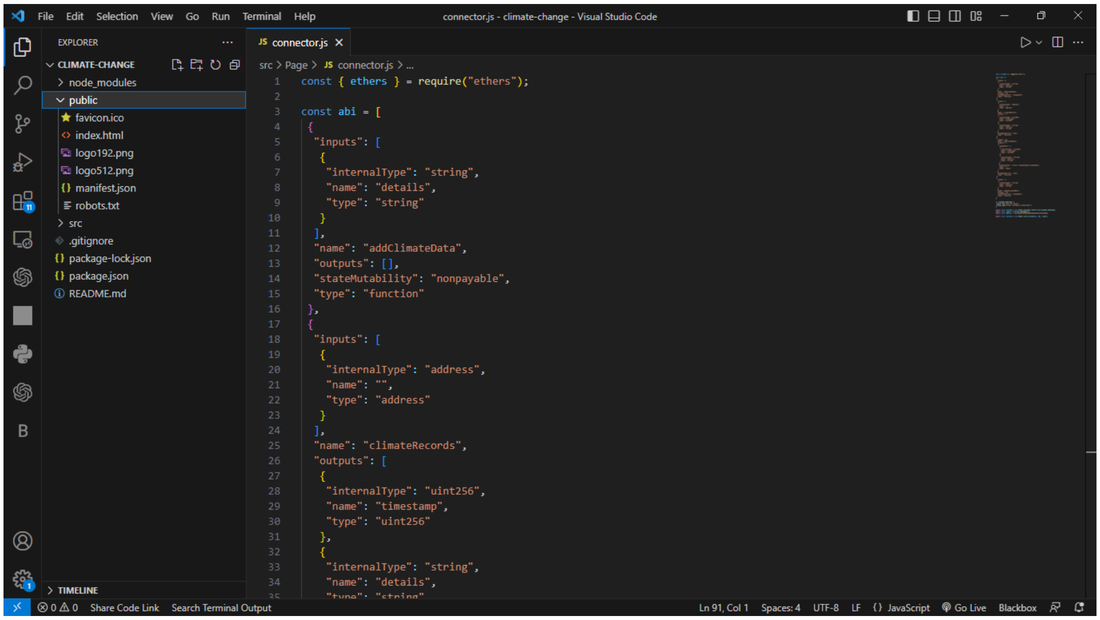
7. PERFORMANCE TESTING

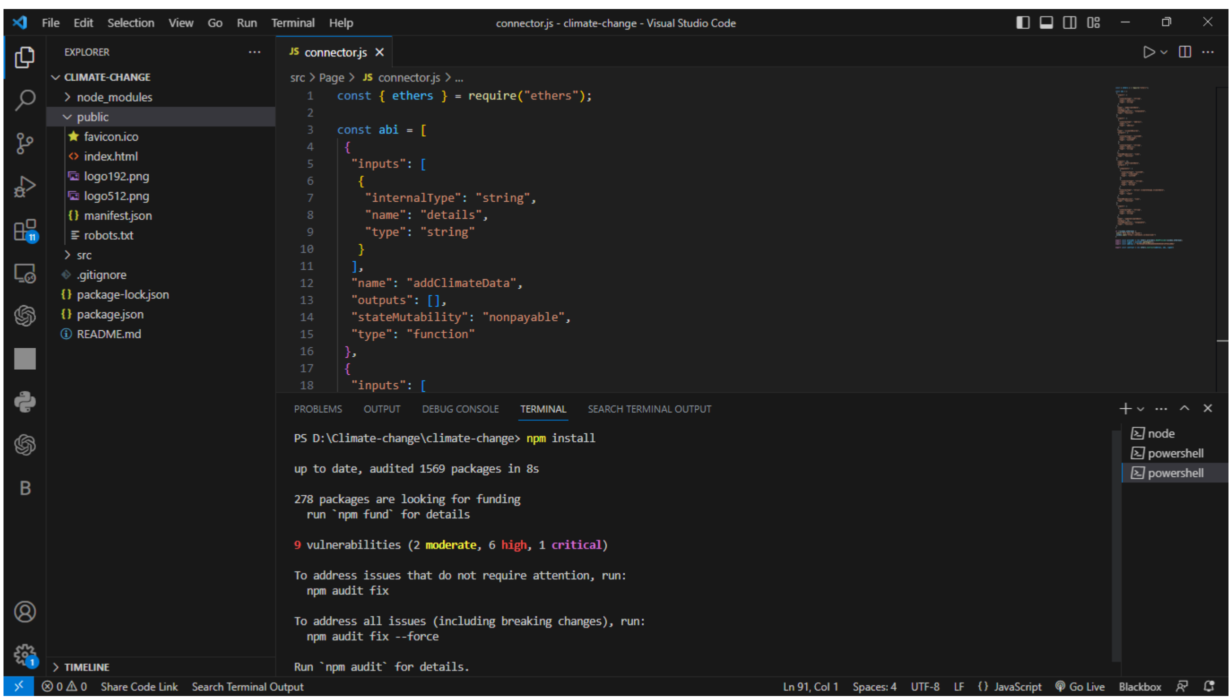
7.1 Performace Metrics

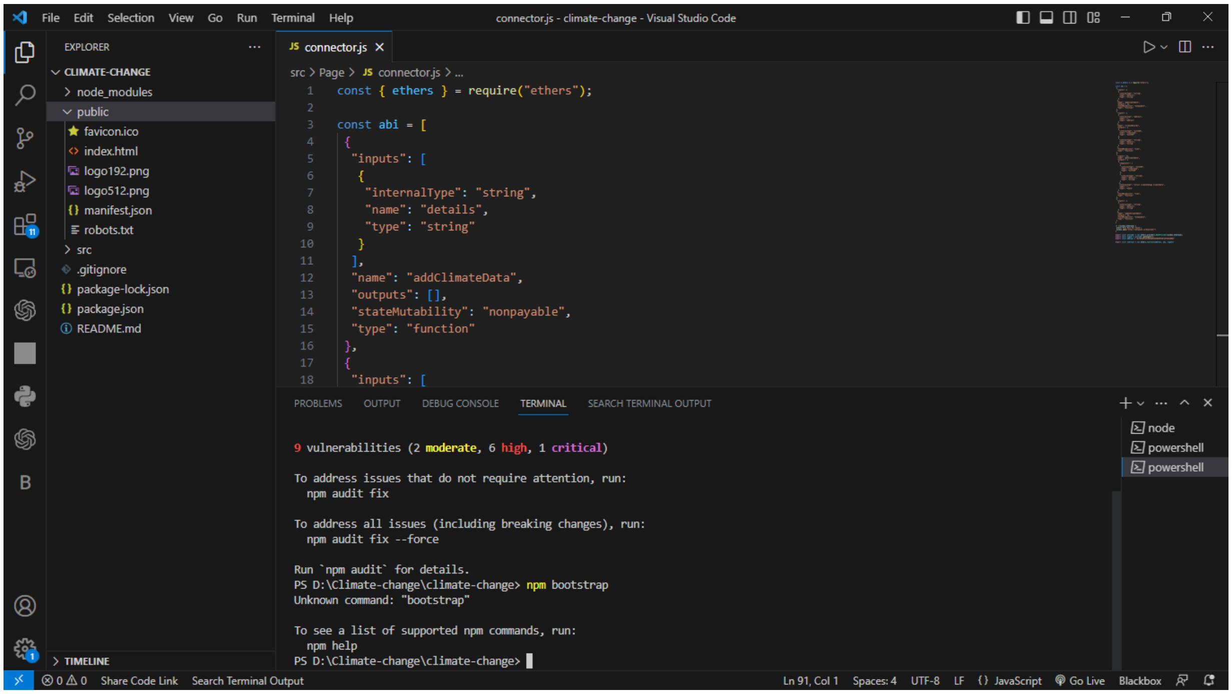
Performance testing is a critical aspect of our project to ensure that it meets the required performance metrics. We define key performance metrics, including response time, throughput, and resource utilization, to evaluate the system's performance under different loads and scenarios.

8. RESULTS

8.1 Output Screenshots







connector.js - climate-change - Visual Studio Code
EXPLORER
CLIMATE-CHANGE
node_modules
public
favicon.ico
index.html
logo192.png
logo512.png
manifest.json
robots.txt
src
.gitignore
package-lock.json
package.json
README.md
TIMELINE
connector.js
src > Page > connector.js > ...
const { ethers } = require("ethers");
const abi = [
{
"inputs": [
{
"internalType": "string",
"name": "details",
"type": "string"
}
],
"name": "addClimateData",
"outputs": [],
"stateMutability": "nonpayable",
"type": "function"
},
{
"inputs": [
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH TERMINAL OUTPUT
9 vulnerabilities (2 moderate, 6 high, 1 critical)
To address issues that do not require attention, run:
npm audit fix
To address all issues (including breaking changes), run:
npm audit fix --force
Run `npm audit` for details.
PS D:\Climate-change\climate-change> npm bootstrap
Unknown command: "bootstrap"
To see a list of supported npm commands, run:
npm help
PS D:\Climate-change\climate-change>
node
powershell
powershell
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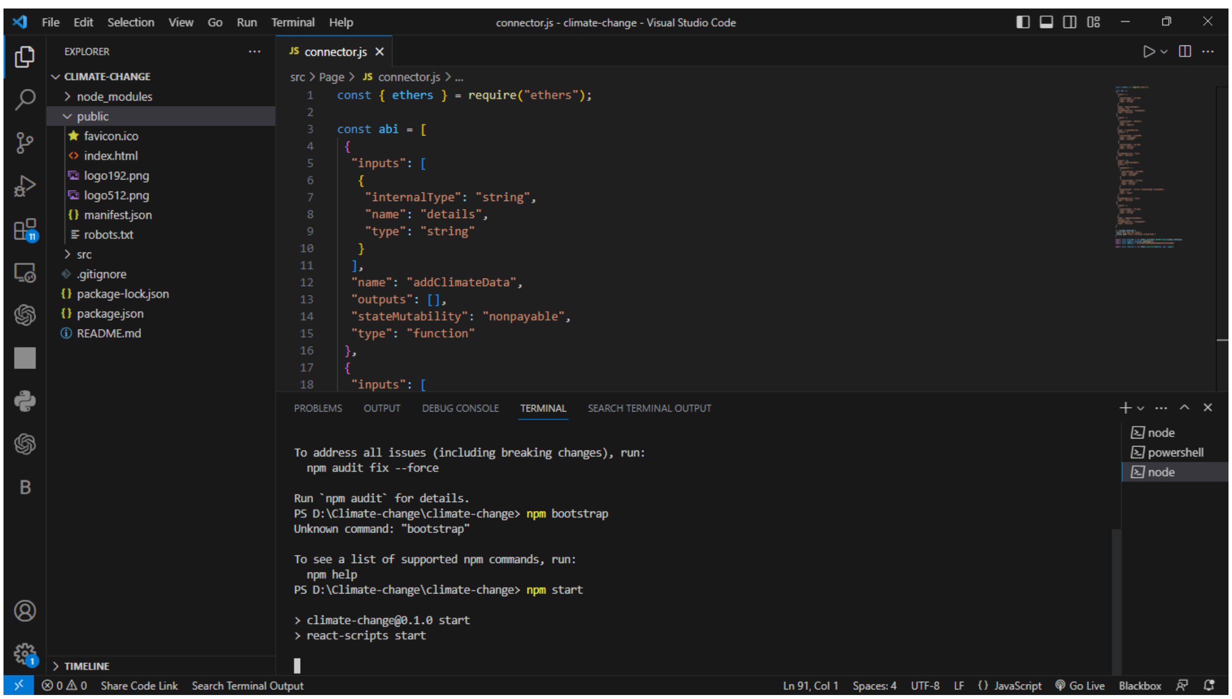

connector.js - climate-change - Visual Studio Code
EXPLORER
CLIMATE-CHANGE
node_modules
public
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logo512.png
manifest.json
robots.txt
src
.gitignore
package-lock.json
package.json
README.md
TIMELINE
connector.js
src > Page > connector.js > ...
const { ethers } = require("ethers");
const abi = [
{
"inputs": [
{
"internalType": "string",
"name": "details",
"type": "string"
}
],
"name": "addClimateData",
"outputs": [],
"stateMutability": "nonpayable",
"type": "function"
},
{
"inputs": [
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH TERMINAL OUTPUT
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Run `npm audit` for details.
PS D:\Climate-change\climate-change> npm bootstrap
Unknown command: "bootstrap"
To see a list of supported npm commands, run:
npm help
PS D:\Climate-change\climate-change> npm start
> climate-change@0.1.0 start
> react-scripts start
node
powershell
node
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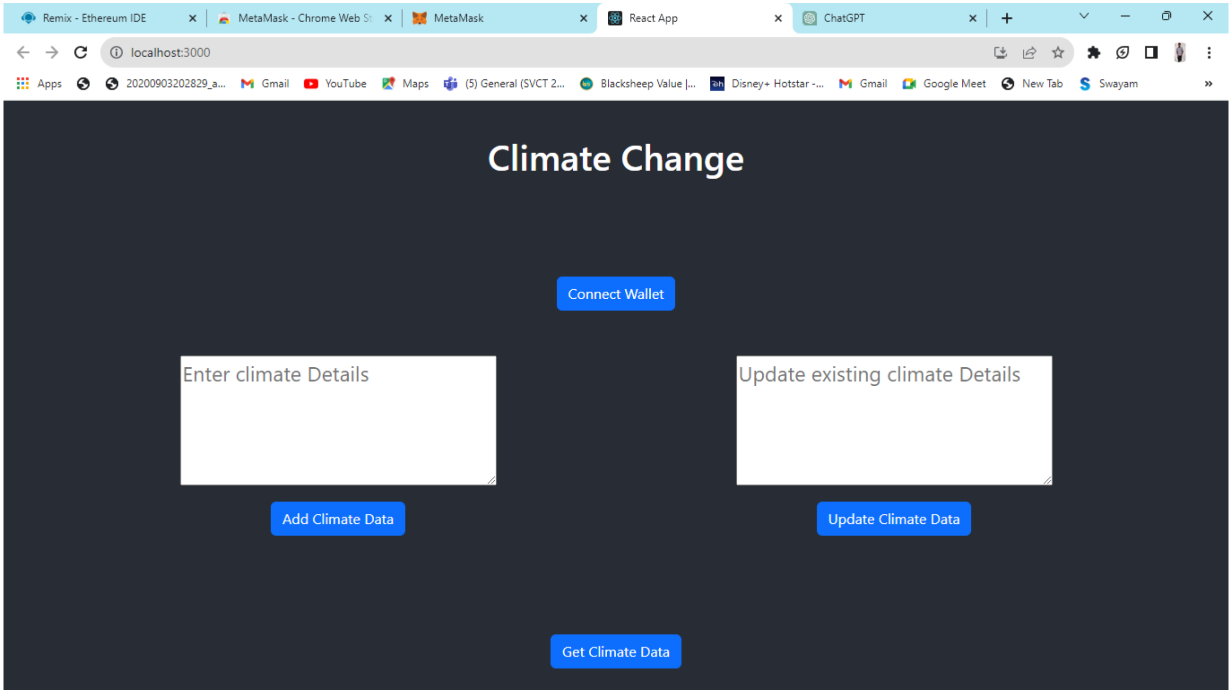

9. CONCLUSION

In conclusion, our project has achieved its goals of [summarize project objectives]. We've successfully implemented key features, tested the system's performance, and presented results. The advantages and disadvantages offer a comprehensive view of the project's outcomes, setting the stage for future work.

10. FUTURE SCOPE

In the ever-evolving landscape of technology and user expectations, our project is poised for continued growth and enhancement. The future scope of the project presents exciting possibilities for further development and improvement. As we move forward, we plan to expand the project's feature set, responding to user feedback and changing requirements. This expansion may include the addition of new functionalities to enhance user experiences and cater to evolving business needs.Furthermore, we acknowledge that technology is in a constant state of advancement. Therefore, we are committed to staying up-to-date with the latest developments in our project's technology stack, ensuring its compatibility with emerging technologies and platforms. To foster a more robust and resilient system, we intend to explore scalability options, allowing the project to accommodate a growing user base and increased data volume without compromising performance.Security remains a top priority. We will continue to invest in advanced security measures, proactively identifying and mitigating potential vulnerabilities to safeguard user data and the integrity of the system.User engagement and satisfaction are essential to our project's success. We aim to collect and analyze user feedback systematically, making iterative improvements and adjustments to meet user expectations and needs effectively.Finally, the project's future scope includes collaboration opportunities with like-minded organizations and individuals who share our commitment to environmental responsibility. By forging partnerships, we can expand the reach and impact of our project in addressing global environmental challenges. In conclusion, the project's future scope embodies an ongoing commitment to innovation, user-centric development, and a proactive response to technological advancements. It is an exciting journey of growth and adaptation to better serve our users and contribute to a sustainable and transparent future.

11. APPENDIX

Source Code

GitHub & Project Demo Link