



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 5, May 2023

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

ijrset@gmail.com

www.ijrset.com

Development of Block-Chain Module

Prof. Bhagat C. B.¹, Shreyas Inamdar², Pratik Sirsath³, Aditya Joshi⁴.

Associate Professor, Department of Computer Engineering, MGM's Polytechnic College, MGM's University,
Chatrapati Sambhajinagar, Maharashtra, India¹

Diploma Student, Department of Computer Engineering, MGM's Polytechnic College, MGM's University, Chatrapati
Sambhajinagar, Maharashtra, India^{2,3,4}

ABSTRACT: This block chain module development provides an overview of the development process involved in creating a module for a block chain platform. The module is designed to facilitate the storage and transfer of digital assets on the block chain, while ensuring security and transparency. The abstract will cover the key components of the development process, including the design of the module's architecture, the implementation of the module's features and functionality, and the testing and deployment of the module on the block chain platform. Additionally, the abstract will address the challenges associated with block chain module development and highlight the potential benefits of implementing block chain technology for digital asset management. Overall, this abstract aims to provide a comprehensive understanding of block chain module development and its potential impact on the future of digital asset management.

KEYWORDS: Blockchain Module Development, Overview, Development Process, Module Design, Storage, Transfer, Digital Assets, Security.

I. INTRODUCTION

The Block chain is revolutionizing how we conduct business in this modern world by harnessing decentralized technology to create a distributed digital ledger system. Essentially it records numerous types of transactions through multiple devices while ensuring exceptional security at all times. Once a new transaction has been successfully verified and encrypted it becomes part of the permanent block chain history.

The unique feature of block chain technology is that it allows for secure and transparent recording of transactions without the need for a centralized authority, such as a bank or government. This means that block chain can be used for a wide range of applications, from cryptocurrency transactions to supply chain management and voting systems. Additionally, the decentralized nature of block chain makes it more resilient to hacking and other types of attacks.

Block chain technology was invented in 2008 by an anonymous person or group of people using the pseudonym Satoshi Nakamoto. It was originally created to serve as the underlying technology for the cryptocurrency, Bitcoin.

Block chain is often referred to as a "trust less" system, which means that it does not require trust in a single entity or institution to maintain the integrity of the ledger. Instead, the trust is distributed across a network of nodes that verify and validate each transaction. Each block in the block chain contains a unique cryptographic hash, which is a mathematical function that converts data into a fixed-size output. This hash is used to ensure the integrity of the data in the block and to link it to the previous block in the chain.

Block chain technology is often associated with cryptocurrencies, but it has so many other potential applications. For example, it can be used to create secure voting systems, to manage supply chains, and to record and track property ownership.

There are several different types of block chain, including public, private, and consortium block chain. Public block chains, such as the Bitcoin block chain, are open to anyone and are not controlled by any single entity. Private block chains, on the other hand, are controlled by a single organization or group of organizations and are not open to the public. Consortium block chains are a hybrid of the two, in which multiple organizations work together to maintain the block chain. Block chain technology is still in its early stages, and there are many technical and regulatory challenges that need to be addressed before it can become widely adopted. However, many experts believe that it has the potential to revolutionize the way that we store, manage, and exchange data and assets.



II. RELATED WORK

To develop a block chain module, you should start by researching existing block chain modules and platforms like Ethereum, Hyper ledger Fabric, and Corda. By understanding their strengths and weaknesses, you can choose the best platform for your project. Smart contracts are crucial to block chain applications, so it's essential to learn how to write and deploy them. Consensus mechanisms determine how block chain networks agree on the state of the ledger, so you should study different mechanisms to design a more robust and efficient block chain module.

Scalability is another critical consideration, as the size of the block chain can become challenging to manage as more transactions are added. You can research scalability solutions like sharding, sidechains, and off-chain processing to help you design a scalable block chain module. Security is also essential to block chain module development, and you should research security risks and develop appropriate measures such as encryption, multi-factor authentication, and secure key management.

It should consider interoperability when developing your block chain module, as you want it to be able to interact with other block chain networks and applications seamlessly. Researching interoperability solutions can ensure that your block chain module can communicate and exchange information with other networks effectively.

III. METHODOLOGY

Requirement Gathering: The first step is to gather requirements from stakeholders and end-users by understanding their needs, goals, and technical requirements for the block chain module.

- [1] **Design:** The next step is to design the module's architecture, data models, and interface by selecting an appropriate block chain platform, consensus mechanism, and programming language.
- [2] **Development:** Once the design is finalized, coding, testing, and integration of the module with the block chain network can begin.
- [3] **Testing:** After development, testing the module for security, performance, and scalability is necessary to ensure that it meets functional and technical requirements.
- [4] **Deployment:** Once validated, the module can be deployed on the block chain network by configuring the infrastructure for production use.
- [5] **Maintenance:** The block chain module requires ongoing maintenance and support, including bug fixes, upgrades, and updates.
- [6] **Communication:** Effective communication among team members is essential to ensure that the project is delivered on time and within budget.
- [7] **Collaboration:** Collaboration skills are necessary to work together to identify and resolve issues, share knowledge and resources, and ensure that the project meets required standards.
- [8] **Adaptability:** Adapting to new technologies and processes is essential as the block chain industry is rapidly evolving.
- [9] **Problem-solving:** Problem-solving skills are crucial in identifying issues, brainstorming solutions, and implementing the best possible solution.
- [10] **Accountability:** Each team member should be accountable for their work, meeting deadlines, completing tasks, and communicating effectively.
- [11] **Empathy:** Creating a positive and supportive team environment is essential as the block chain module development process can be stressful.

It is vital to note that the block chain module development process may involve several iterations of these steps, refining or improving the module based on user feedback or changing requirements. The successful delivery of the project requires a collaborative effort from a team of skilled professionals.

IV. EXPERIMENTAL RESULTS

In the last few years, many people have become interested in block chain technology because it can store and share data in a safe, honest, and unchangeable way. As a result, many companies and industries are looking into how they can use block chain technology to solve problems and make their work better. This paper will talk about what we have learned and how we can use block chain module development in different ways.

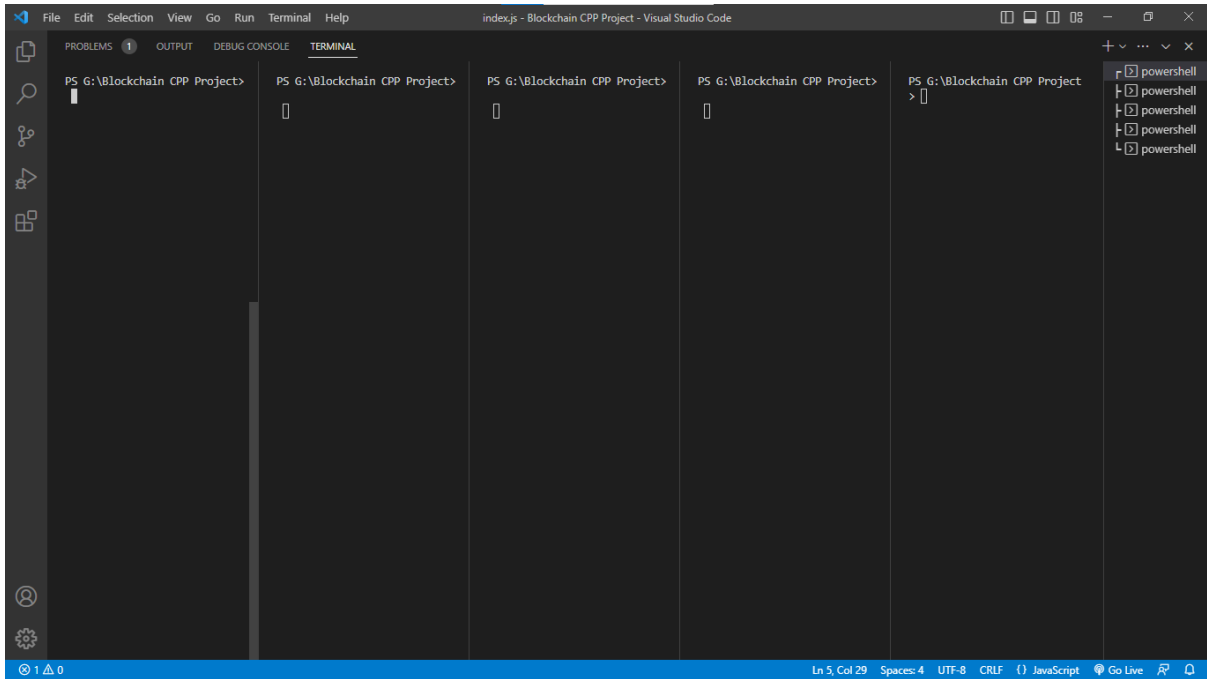


Fig no. 6.1.1 Blank Terminal with Five Users.

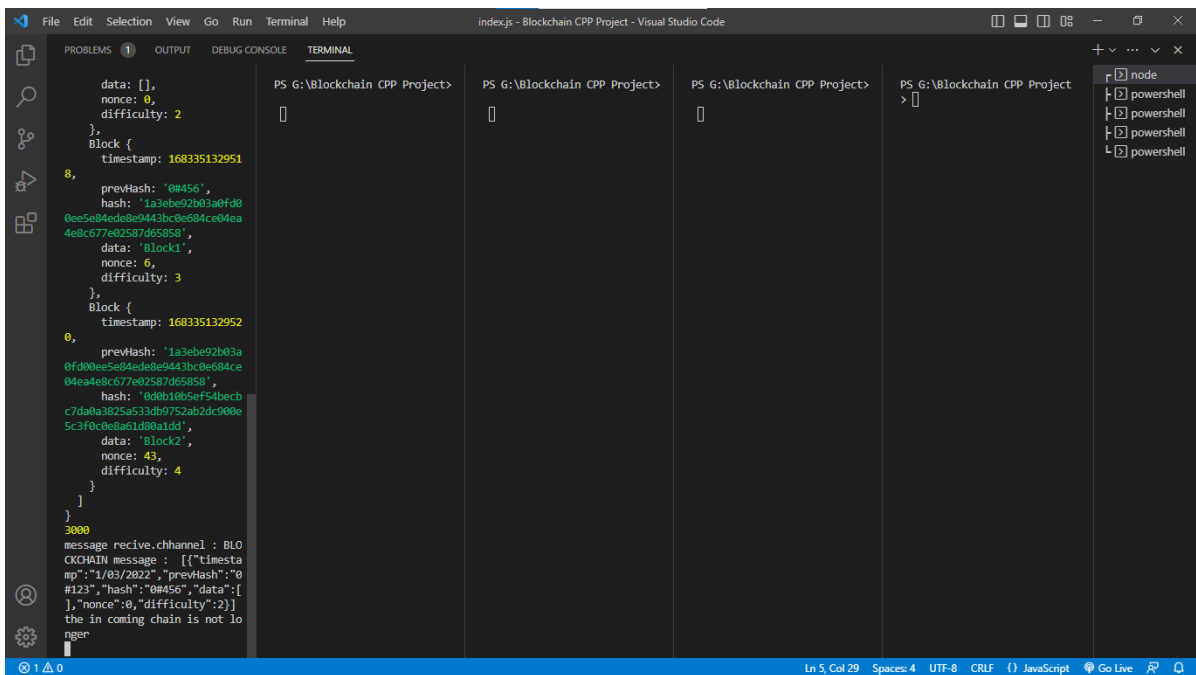


Fig no. 6.1.2 Terminal with Publisher Channel.

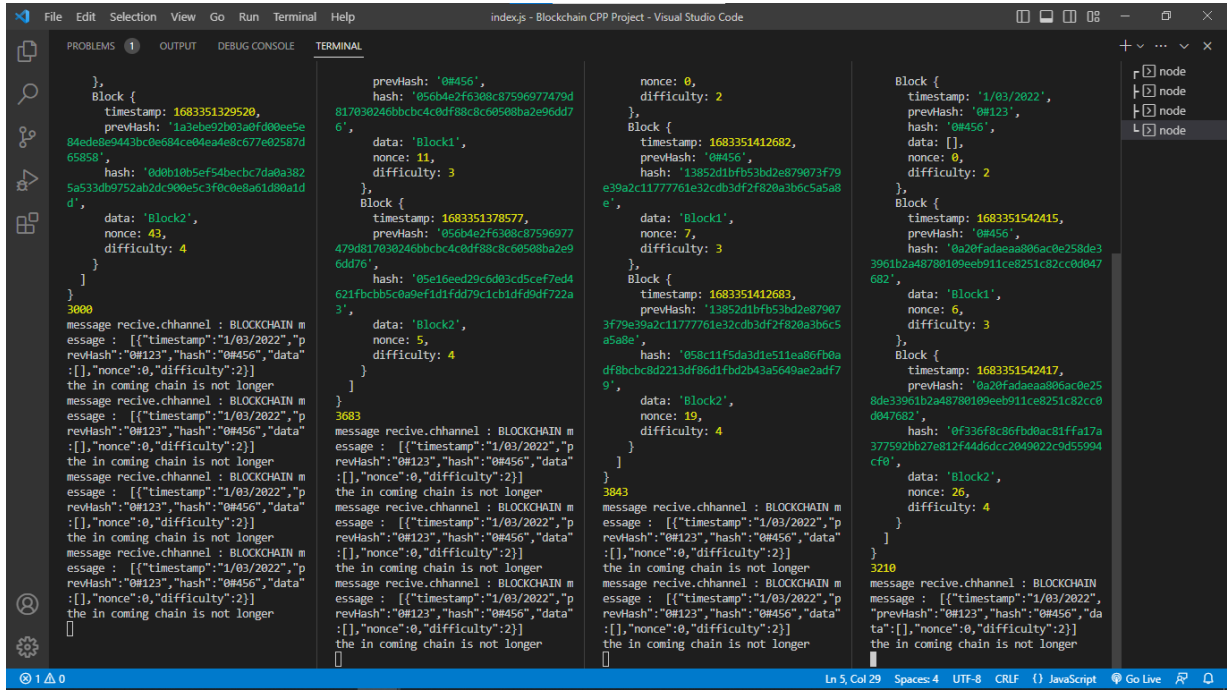


Fig no. 6.1.4 Terminal with Four Users Including One Publisher and Three Subscribers.

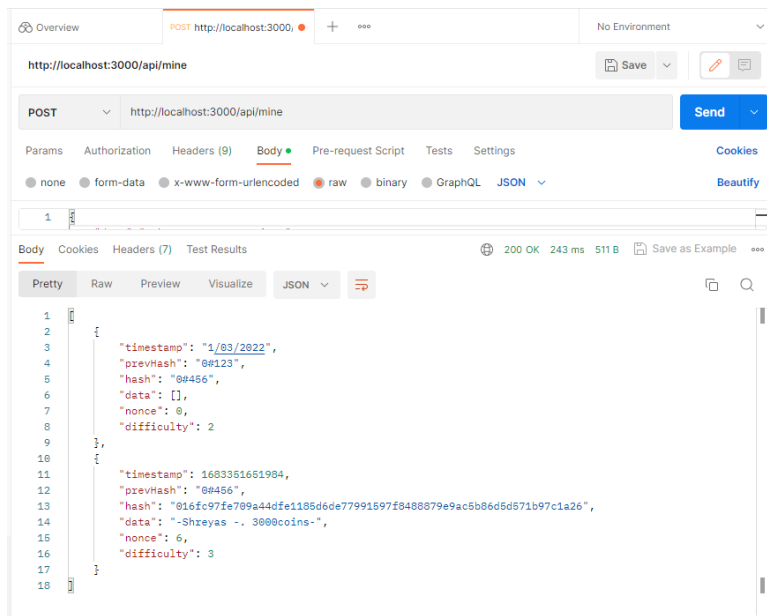


Fig no. 6.1.5 Sending Data Through URL Using POST Method by Publisher.



The screenshot shows a Visual Studio Code editor with a project named 'indexjs - Blockchain CPP Project'. The terminal window displays a series of log messages indicating the receipt of blocks and the state of the blockchain. The messages include timestamps, previous hashes, and data fields. The code files visible include 'cf0', 'data: 'Block2'', 'nonce: 26', and 'difficulty: 4'. The terminal output shows a sequence of blocks being added to the chain, with each block containing a timestamp, a previous hash, and a data field. The terminal also shows the state of the blockchain after each block is added, including the current hash, nonce, and difficulty.

Fig no. 6.1.8 Blockchain with Data Entered Through URL Using POSTMAN API by Subscriber.

V. CONCLUSION

This document provides important guidance for developers who are interested in creating block chain modules. It emphasizes the significance of security, scalability, and consensus mechanisms in the development process. To ensure that block chain networks can handle large volumes of transactions, developers can use techniques like sharding, which breaks the network into smaller groups, or off-chain solutions like payment channels or state channels. It is important to note that block chain module development is a crucial skill for developers who want to work in the block chain industry. By following best practices and keeping these considerations in mind, developers can create reliable and effective block chain modules that will be used for the next generation of decentralized applications.

REFERENCES

- [1] "Mastering Block chain" by Imran Bashir - a book that explains the history, architecture, and applications of block chain technology, with guidance on developing block chain modules and smart contracts.
- [2] "Building Block chain Projects" by Narayan Prusty - a book that provides hands-on guidance on developing block chain modules using Ethereum and Solidity.
- [3] Code Eater: <http://www.youtube.com/@CodeEater21>



INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.423



ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

9940 572 462 6381 907 438 ijirset@gmail.com



www.ijirset.com

Scan to save the contact details