A

Report

Of

Of

Industrial Training

On

“BLOCKCHAIN TECHNOLOGY”

Submitted in partial fulfillment for the award of the degree of

Bachelor of Technology

in

Computer Science & Engineering

Submitted by:

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21EJCCS039

Submitted to:

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(Class Co-Ordinator)

Department of Computer Science & Engineering

Jaipur Engineering College & Research Centre

Jaipur, Rajasthan

2022-23

JECRC JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE	Jaipur Engineering College and Research Centre, Shri Ram ki Nangal, via Sitapura RIICO Jaipur- 302022	**Academic Year** 2023-24

CERTIFICATE

This is to certify that the industrial training entitled "**Blockchain Technology**" is Bonafide work carried out by **Armaan Sinwar** a student of BTech. in Computer Science & Engineering at **Jaipur Engineering College and Research Centre**, during the year **2023-24** in partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology in Computer Science & Engineering under my guidance.

Name of Guide: Mrs. Madhu Chaudhary

Place: Jaipur

Date:04 September 2023

VISION OF THE CSE DEPARTMENT

To become a renowned Centre of excellence in computer science and engineering and make competent engineers & professionals with high ethical values prepared for lifelong learning.

MISSION OF THE CSE DEPARTMENT

1. To impart outcome-based education for emerging technologies in the field of Computer Science and Engineering.
2. To provide opportunities for interaction between academia and industry.
3. To provide a platform for lifelong learning by accepting the change in technologies
4. To develop for aptitude fulfilling social responsibilities.

PROGRAM OUTCOMES (POs)

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and Computer Science & Engineering specialization to the solution of complex Computer Science & Engineering problems.

2. Problem Identity is: Identity, formulating, researching, and analyzing complex Computer Science and Engineering problems reaching substantiated concluding first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex Computer Science and Engineering problems and design system components or processes that meet the needs with moderation for the public health safety cultural, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of Computer Science and Engineering experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex Computer Science Engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional Computer Science and Engineering practice.

7. Environment and sustainability: Understand the impact of professional Computer Science and Engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the Computer Science and Engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, d in multidisciplinary settings in Computer Science and Engineering.

10. Communication: Communicate effectively on complex Computer Science and Engineering activities with the engineering community and with society at large, such as being able to

comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding he Computer Science and Engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning of their broader text of technological change in Computer Science and Engineering.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The PEOs of the B. Tech (CSE) program are:

1. To produce graduates who can apply computer engineering knowledge to provide turn-key IT solutions to national and international organizations.
2. To produce graduates with the necessary background and technical skills to work professionally in one or more of the areas like – IT solution design development and implementation consisting of system design, network design, software design and development, system implementation and management, etc. graduates, would be able to provide solutions through logical and analytical thinking.
3. To able graduates to design embedded systems for industrial applications.
4. To inculcate in graduates' effective communication skills and teamwork to workin multi-disciplinary environments
5. To prepare graduates for personal and professional success with commitment to their commitment to socialites.

6. PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Ability to interpret and analyze network-specific network purity issues, and automation in the environment

PSO2: Ability to design and develop mobile and web-based applications under realistic constraints.

COURSE OUTCOMES (COs)

On completion of Industrial Training, Graduates will be able to-

- CO1: Generate the report based on the projects out for demonstrating the ability to apply the knowledge the of engineering field during training
- CO2: Demonstrate Competency in relevant engineering fields through problem identification, formulation and solution

MAPPING OF CO's & PO's

Subject Code	Cos	Program Outcomes (POs)											
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
3CS7-30 Industrial Training	CO-1	3	3	2	2	2	1	1	2	2	3	3	3
	CO-2	3	3	3	3	3	1	1	2	2	3	3	3

ACKNOWLEDGEMENT

It has been a great honor and privilege to undergo training at JECRC. I am very grateful to our guide for giving their valuable time and constructive guidance in preparing the report for training. It would not have been possible to complete this report in a short period of time without their kind encouragement and valuable guidance.

I wish to express our deep sense of gratitude to our Industrial Training Guide **Mrs. Madhu Chaudhary**, Jaipur Engineering College and Research Centre, Jaipur for guiding us from the inception till the completion of the industrial training. We sincerely acknowledge them for giving their valuable guidance, and support for the literature survey,critical reviews, and comments for our industrial training.

I would like, to, express our thanks to **Mr. Arpit Agrawal** Director of JECRC, for providing us with such a great infrastructure and environment for our overall development.

I express sincere thanks to **Dr. V. K. Chandna**, Principal of JECRC, for his kind cooperation and extendible support towards the completion of our industrial training.

Words are inadequate in offering our thanks to **Dr. Sanjay Gaur,** HOD of the CSE department, for consistent encouragement and support for shaping our industrial training in the presentable form.

Also, our warm thanks to **Jaipur Engineering College and Research Centre**, who provided us with this opportunity to carry out this prestigious industrial training and enhance our learning in various technical fields.

Armaan Sinwar

21EJCCS039

ABSTRACT

1. Name of the Student**:** Armaan Sinwar

2. RTU Roll Number**:** 21EJCCS039

3. Training Mode: Offline

4. Training Duration**:** 45 Days

5. Technology**:** Blockchain, Web 3, Cryptocurrency, Cryptography, Remix IDE, Solidity, MetaMask

6. Project**:** Building a token (JECRC Custom Token) using blockchain technology.

7. Project Description:

In the world of blockchain, a token refers to a digital asset that exists within a blockchain network. It serves as a virtualrepresentation of value, ownership, or access to services. Tokens can be used for exchanging value, representing ownership of assets, or unlocking specific functionalities within a blockchain ecosystem. These tokens are created, tracked, and traded using blockchain technology, ensuring transparency, security, and trust. They enable individuals andbusinesses to participate in a digital economy, facilitating seamless transactions, ownership verification, and innovative services. Overall, tokens in blockchain revolutionize traditional systems by providing a secure, efficient, and decentralized means of representing and utilizing value in the digital realm.

8. Keywords: Blockchain, web3, cryptocurrency, cryptography.

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INTRODUCTION

A token economy is a system in which an individual is rewarded for demonstrating the desired behavior and is awarded by earning a token that can be exchanged for desired prize. The token acts as a physical representation of the number of times the individual has demonstrated the desired behavior.

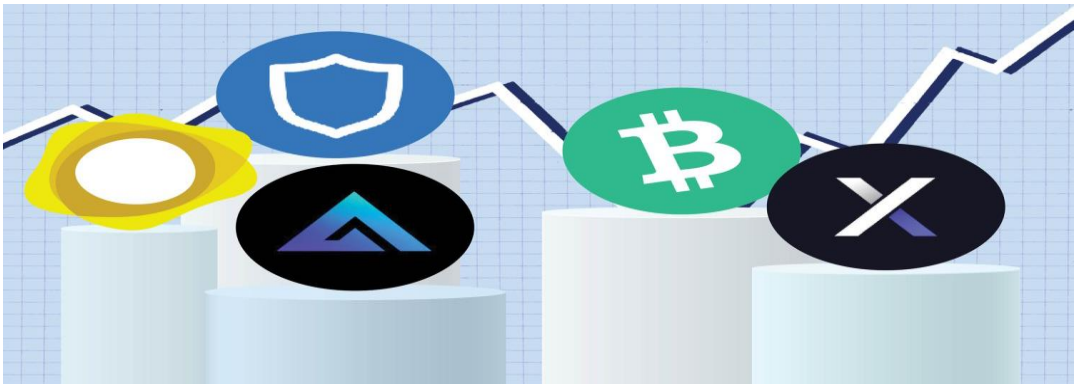

Figure 1

Tokenized assets can be designed to be freely exchangeable online and allow investors to acquire fractional ownership of a token's underlying asset. As a result, crypto tokens can both contribute to the liquidity of existing markets and provide a broader range of investment opportunities to more investors.

1) BLOCKCHAIN TECHNOLOGY

1.1) INTRODUCTION

Blockchain is a method of recording information that makes it impossible or difficult for the system to be changed, hacked, or manipulated. A blockchain is a distributed ledger that duplicates and distributes transactions across the network of computers participating in the blockchain.

Blockchain technology is a structure that stores transactional records, also known as the block, of the public in several databases, known as the "chain," in a network connected through peer-to-peer nodes. Typically, this storage is referred to as a 'digital ledger.'

Every transaction in this ledger is authorized by the digital signature of the owner, which authenticates the transaction and safeguards it from tampering. Hence, the information the digital ledger contains is highly secure.

In simpler words, the digital ledger is like a Google spreadsheet shared among numerous computers in a network, in which, the transactional records are stored based on actual purchases. The fascinating angle is that anybody can see the data, but they can't corrupt it.

1.2) WHY BLOCKCHAIN

Suppose you are transferring money to your family or friends from your bank account. You would log in to online banking and transfer the amount to the other person using their account number. When the transaction is done, your bank updates the transaction records. It seems simple enough, right? There is a potential issue which most of us neglect

These types of transactions can be tampered with very quickly. People who are familiar with this truth are often wary of using these types of transactions, hence the evolution of third-party payment applications in recent years. But this vulnerability is essentially why Blockchain technology was created.

Technologically, Blockchain is a digital ledger that is gaining a lot of attention and traction recently. But why has it become so popular? Well, let's dig into it to fathom the whole concept.

Record keeping of data and transactions are a crucial part of the business. Often, this information is handled in house or passed through a third party like brokers, bankers, or lawyers increasing time, cost, or both on the business. Fortunately, Blockchain avoids this long process and facilitates the faster movement of the transaction, thereby saving both time and money.

Most people assume Blockchain and Bitcoin can be used interchangeably, but that is not the case. Blockchain is the technology capable of supporting various applications related to multiple industries like finance, supply chain, manufacturing, etc., but Bitcoin is a currency that relies on Blockchain technology to be secure.

Blockchain is emerging technology with many advantages in an increasingly digital world:

- HIGHLY SECURE:

  It uses a digital signature feature to conduct fraud-free transactions making it impossible to corrupt or change the data of an individual by the other users without a specific digital signature.

- DECENTRALIZED SYSTEM:

  Conventionally, you need the approval of regulatory authorities like a government or bank for transactions; however, with Blockchain, transactions are done with the mutual consensus of users resulting in smoother, safer, and faster transactions.

- AUTOMATION CAPABILITY:

  It is programmable and can generate systematic actions, events, and payments automatically when the criteria of the trigger are met.

1.3) HOW DOES IT WORKS

In recent years, you may have noticed many businesses around the world integrating Blockchain technology. But how exactly does Blockchain technology work? Is this a significant change or a simple addition? The advancements of Blockchain are still young and have the potential to be revolutionary in the future; so, let's begin demystifying this technology.

Blockchain is a combination of three leading technologies:

1. A peer-to-peer network containing a shared ledger
2. A means of computing, to store the transactions and records of the network
3. Cryptographic key.

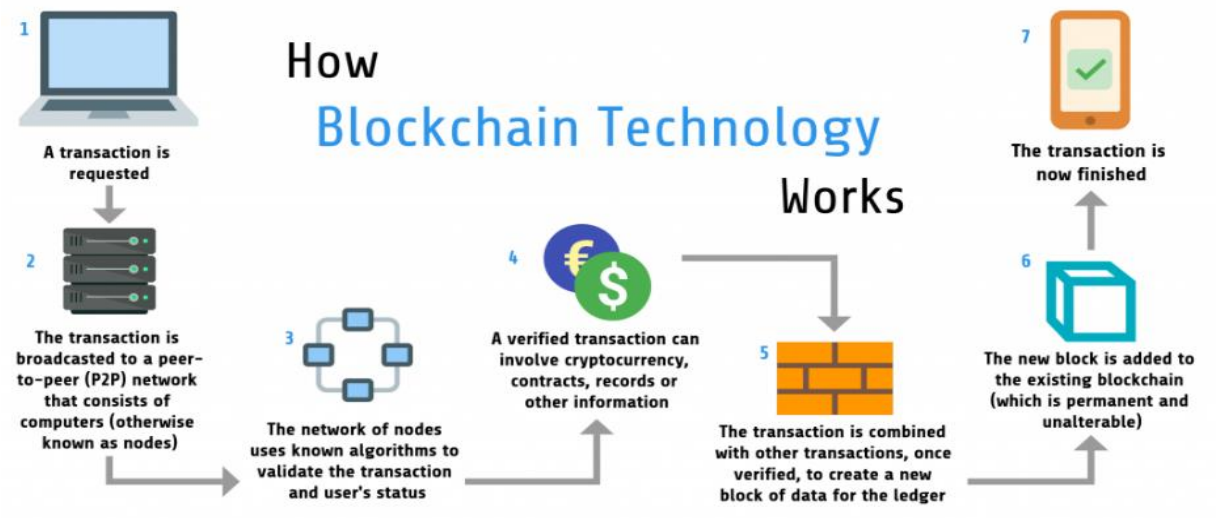

FIG. No. 2

1.4) TYPES OF BLOCKCHAINS

There are different types of blockchains. They are as follows:

1. Private Blockchain Network
2. Public Blockchain Network
3. Permissioned Blockchain Network
4. Consortium Blockchains
5. Hybrid Blockchain
6. Sidechains

1.5) THE PROCESS OF TRANSACTION

One of Blockchain technology's cardinal features is the way it confirms and authorizes transactions. For example, if two individuals wish to perform a transaction with a private and public key, respectively, the first-person party would attach the transaction information to the public key of the second party. This total information is gathered into a block.

The block contains a digital signature, a timestamp, and other important, relevant information. It should be noted that the block does not include the identities of the individuals involved in the transaction. This block is then transmitted across all the network's nodes, and when the right individual uses his private key and matches it with the block, the transaction gets completed successfully.

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successfully.

Here is a use case that illustrates how Blockchain works:

1. HASH ENCRYPTION:

   blockchain technology uses hashing and encryption to secure the data, relying mainly on the SHA256 algorithm to secure the information. The address of the sender (public key), the receiver's address, the transaction, and his/her private key details are transmitted via the SHA256 algorithm. The encrypted information, called hash encryption, is transmitted across the world, and added to the blockchain after verification. The SHA256 algorithm makes it almost impossible to hack the hash encryption, which in turn simplifies the sender and receiver's authentication.

2. PROOF OF WORK:

   In blockchain each block consists of 4 main headers namely: Previous hash, Transaction Details, Nonce, Hash address of the block.

3. MINING:

   In Blockchain technology, the process of adding transactional details to the present digital/public ledger is called 'mining.' Though the term is associated with Bitcoin, it is used to refer to other Blockchain technologies as well. Mining involves generating the hash of a block transaction, which is tough to forge, thereby ensuring the safety of the entire Blockchain without needing a central system.

2) WEB 3.0

INTRODUCTION

Web3 is the next iteration of the internet. It heavily relies on blockchain technology, machine learning, and artificial intelligence (AI) It aims to create a decentralized internet with open, connected, intelligent websites and web applications. The idea of Web3 refers to a 'decentralized online ecosystem based on blockchain.'

Web 3.0 is still being developed, so there isn't a universally accepted definition. Even the proper spelling isn't nailed down, with analyst firms like Forrester, Gartner and IDC toggling between "Web3" and "Web 3.0."

What is clear, though, is that Web 3.0 will place a strong emphasis on decentralized applications and probably make extensive use of blockchain-based technologies. It will also use machine learning and AI to empower a more intelligent and adaptive web.

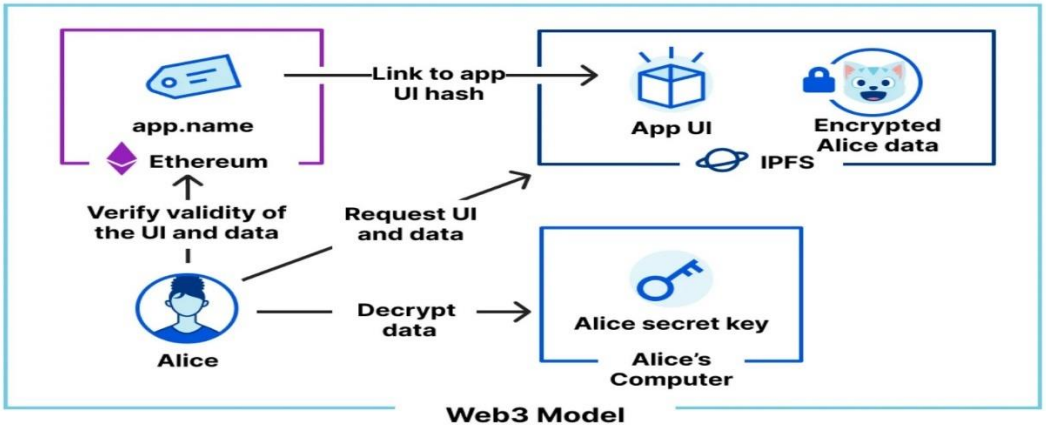

FIG.No.3

2.1) COMPERISION TO METAVERSE

Although Web3 and the metaverse overlap, they are not the same in theory or practice. Web3 describes one way today's internet can evolve. The metaverse is a space where people interact in an immersive, virtual world. They share a vision of the internet as an extension of the real world, but they are not interchangeable terms.

The metaverse can be owned by an organization that acts like a central governing authority (Web 2.0 model), or it can take the form of a peer-to-peer network (Web3).

2.2) HOW DOES IT WORK

Web 3.0 works by combining the decentralization on web 1.0 with the interactiveness of web 2.0 in a user-friendly interface.

Ideally, it gives individual users more control over their online experience and increased security through blockchain technology.

Web 2.0 forces you to rely on the technology and security of big tech companies. Web3 puts the control in your hands and the hands of all other users. Users contributing to Web3 can receive tokens in exchange for participating in the development.

2.3) APPLICATIONS

Blockchain application- Polkadot:

Polkadot is a decentralized web3 blockchain project designed to achieve the multichain vision for the decentralized web. With features like true interoperability, parachains, parathreads, high energy efficiency and user-driven governance, Polkadot stands apart from the rest of the third-generation advanced blockchains. Polkadot's ecosystem facilitates the development of innovative dApps and solutions that can seamlessly support diverse web3 projects.

Gaming application- Axie Infinity:

Axie Infinity is a new-age web3 gaming platform that implements a play-to-earn model, allowing the players to play, earn and trade NFTs-based game assets like weapons, skin, vehicles, etc., and collectibles. To access the Axie Infinity platform, users must complete a multi-step process, which includes setting up an Axie Infinity account and connecting the wallet.

DeFi application- Uniswap:

Uniswap is a web3 DeFi exchange protocol that uses an open and decentralized network protocol to provide ownership completely to the users instead of a single entity. Developers, traders, and liquidity providers participate together in a financial marketplace that is open and accessible to all.

2.4) ADVANTAGES

Many of web 3.0 advantages stem from its decentralized structure, which shifts control of the internet from big tech companies to those who use it. For example, internet users on Web 2.0 users must log in to social networks to access, share, or interact with a lot of content. The platform ultimately controls who can join and how they interact with others. It can remove users or limit what they can do on the platform. Web3 gives this control to the community, which can then self-govern the content and the people sharing it. Here are more benefits of a decentralized internet:

- Interaction: Users should have more opportunities to interact with content and other users in Web3 and experience higher levels of engagement than they do with Web 2.0 and 1.0 websites and platforms.
- Ownership: Web3 users are more than content consumers. They are owners of the community who receive incentives for participation instead of being asked to trade them personal data to access platforms.
- Permissions: All network users have access to the network's data and permission to use the service.
- Privacy: In Web3, your identity attaches to your digital wallet. What you do online is open to the public, but you can keep your identity a secret.
- Speed: The use of artificial intelligence, machine learning, and smart contracts via the blockchain makes it possible to get more relevant data to end users in less time.

3) CRYPTOGRAPHY

3.1) INTRODUCTION

Cryptography is a technique or a set of protocols that secure information from any third party during a process of communication. It is also made up of two Greek terms, Kryptos term meaning “hidden” and Graphein, a term meaning “to write”. Some terminologies related to Cryptography:

- **Encryption:** Conversion of normal text to a random sequence of bits.
- **Key:** Some amount of information is required to get the information of the cryptographic algorithm.
- **Decryption:** The inverse process of encryption, conversion of a Random sequence of bits to plaintext.
- **Cipher:** The mathematical function, i.e. a cryptographic algorithm which is used to convert plaintext to ciphertext (Random sequence of bits).

3.2) TYPES OF CRYPTOGRAPHY:

Symmetric-key Encryption: It focuses on a similar key for encryption as well as decryption. Most importantly, the symmetric key encryption method is also applicable to secure website connections or encryption of data. It is also referred to as secret-key cryptography. The only problem is that the sender and receiver exchange keys in a secure manner. The popular symmetric-key cryptography system is Data Encryption System (DES). The cryptographic algorithm utilizes the key in a cipher to encrypt the data and the data must be accessed. A person entrusted with the secret key can decrypt the data.

Examples: AES, DES etc.

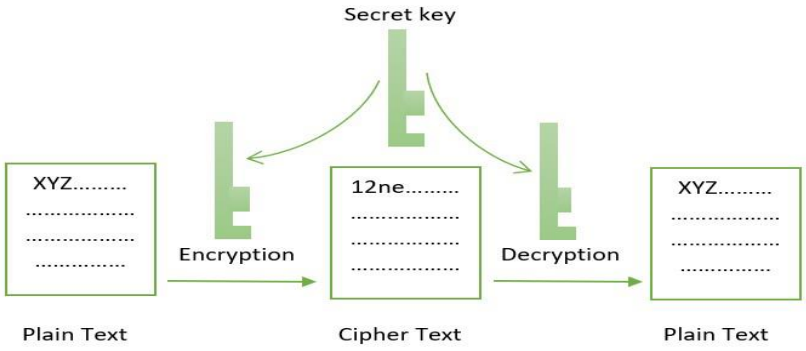

FIG.No.4

Asymmetric-key Encryption: This cryptographic method uses different keys for the encryption and decryption process. This encryption method uses public and private key methods. This public key method helps completely unknown parties to share information between them like email id. private key helps to decrypt the messages and it also helps in the verification of the digital signature. The mathematical relation between the keys is that the private key cannot be derived from the public key, but the public key can be derived from the private key.

Example: ECC, DSS etc.

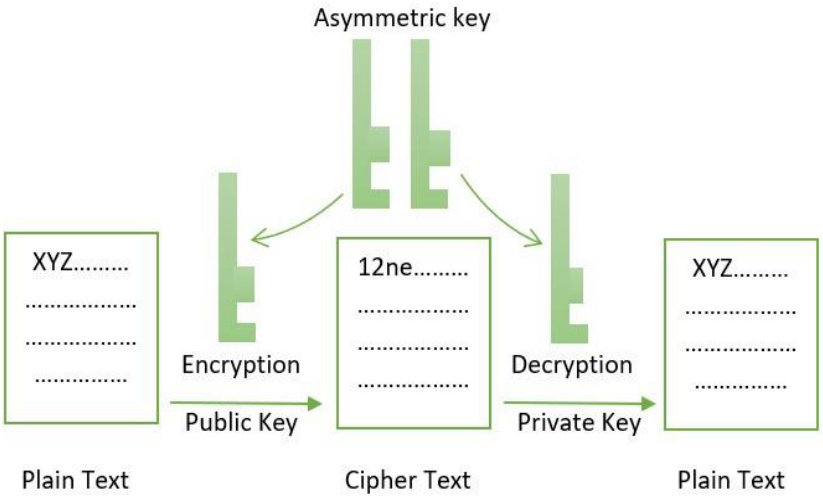

FIG. No.5

3.3) WALLETS AND DIGITAL SIGNATURE:

A blockchain wallet is a special software or a hardware device that is used to keep the transaction information and personal information of the user. Blockchain wallets do not contain the actual currency. The wallets are used to keep private keys and maintain a transaction balance. Wallets are only a communication tool to communicate to carry out transactions with other users. The real data or currency is stored in blocks in the blockchain.

Digital signatures are like proofs that the user gives to the recipient and other nodes in the network to prove that it is a legitimate node in the network to carry out transactions. While initiating a transaction with other nodes in the blockchain network, the user first has to create a unique digital signature by combining the transaction data with the user's private key using a special algorithm. This process will guarantee the authenticity of the node and the integrity of the data.

3.4) BENEFITS OF CRYPTOGRAPHY:

There are a huge number of benefits of cryptography in blockchain some of them are stated below:

Encryption: Cryptography uses asymmetric encryption to ensure that the transaction on their network guards the information and communication against unauthorized revelation and access to information.

Immutability: This feature of cryptography makes it important for blockchain and makes it possible for blocks to get securely linked by other blocks and also, to ensure the reliability of data stored in the blockchain, it also ensures that no attacker can derive a valid signature for unposed queries from previous queries and their corresponding signatures.

Security: Cryptography makes the records of transactions easier using encryption of data, and accessing of data using public and private keys. Cryptographic hashing tampering with data is not possible, making blockchain more secure.

Scalability: Cryptography makes the transaction irreversible giving the assurance that all users can rely on the accuracy of the digital ledger. It allows limitless transactions to be recorded securely in the network.

Non-repudiation: The digital signature provides the non-repudiation service to guard against any denial of a message passed by the sender. This benefit can be associated with collision resistance i.e.; since every input value has a unique hash function so there is no clash between the messages that are sent and one message can be easily differentiated from the other.

Prevent Hackers: The digital signature prevents hackers from altering the data because if the data changes, the digital signature becomes invalid. With the help of cryptography, it protects the data from hackers and makes cryptography in blockchain unstoppable.

4) SMART CONTRACT

4.1) INTRODUCTION

Smart Contact are scripts that automate the actions specific to a contract between two parties. Smart Contact do not contain legal language, terms, or agreements—only code that executes actions when specified conditions are met. The primary benefit of smart contact is like the benefit of blockchain technology—they remove the need for third parties.

Other benefits of this technology are:

Efficiency: They speed up contract execution.

Accuracy: There can be no human error introduced

Immutability: The program cannot be altered.

Some of the downfalls of smart contact are:

Permanent: They cannot be changed if there are mistakes.

Human Factor: They rely on the programmer to ensure the code address.

Loophole: There may be loopholes in the coding.

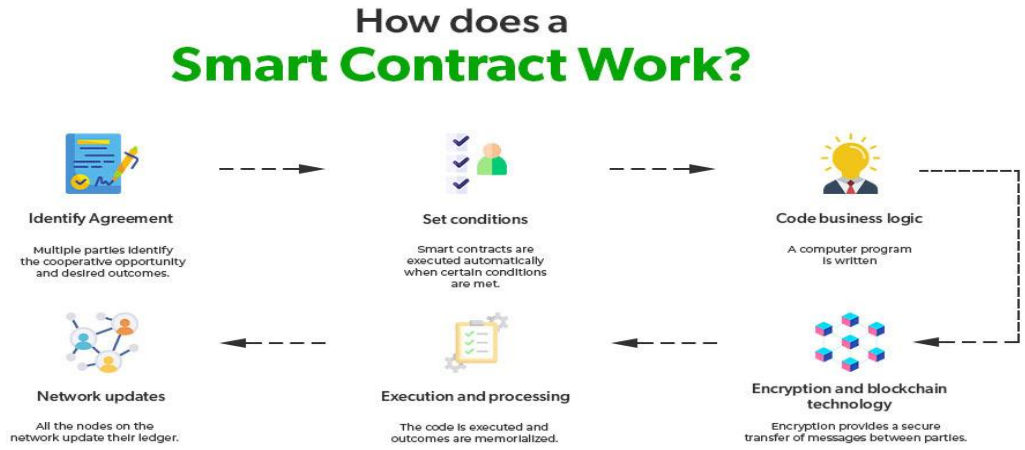

FIG. No.6

5) REMIX IDE AND SOLIDITY

5.1) INTRODUCTION TO REMIX

Remix IDE is an open source online and desktop application. A comprehensive selection of plugins with intuitive GUIs helps speed up development of Smart Contracts in Remix. Remix is used for contract development as well as studying and teaching Ethereum.

Remix IDE is part of the Remix Project, a framework for plugin-based development tools. It includes Remix Plugin Engine, Remix Libs, and Remix-IDE. Solidity contracts may be written using Remix IDE, a sophisticated open-source tool.

It's developed in JavaScript and works in both the browser and a desktop version. Remix IDE offers components for smart contract testing, debugging, and deployment.

Remix IDE is used for the entire journey of smart contract development by users at every knowledge level. It requires no setup, fosters a fast development cycle and has a rich set of plugins with intuitive GUIs. The IDE comes in 2 flavors (web app or desktop app) and as a VSCode extension.

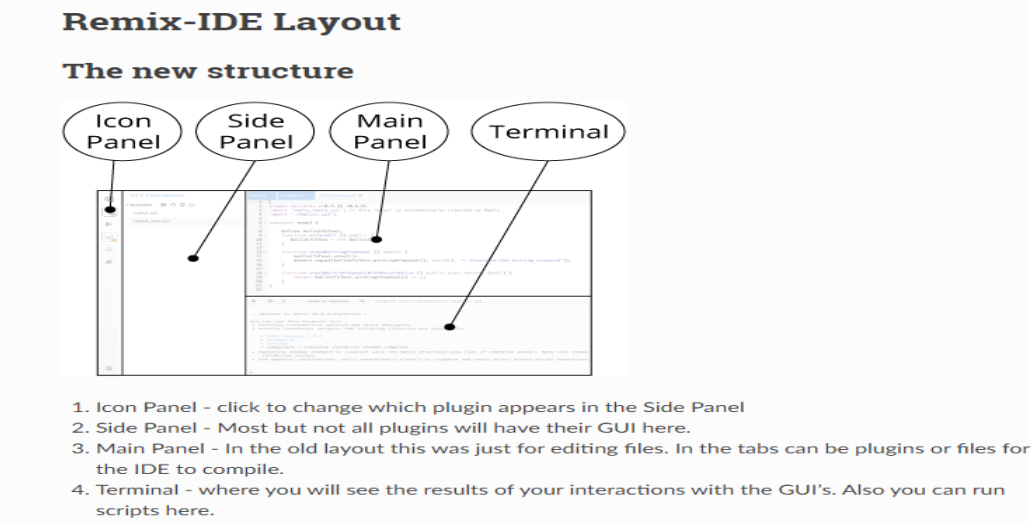

FIG. No. 7

5.2) INTRODUCTION TO SOLIDITY

Solidity is an object-oriented language created specifically by the Ethereum Network team for constructing and designing smart contracts on Blockchain platforms. It is used to create smart contracts that implement business logic and generate a chain of transaction records in the blockchain system. It acts as a tool for creating machine-level code and compiling it on the Ethereum Virtual Machine (EVM). It has a lot of similarities with C and C++ and is simple to learn and understand.

5.3) ADVANTAGES OF SOLIDITY

Apart from the primary functionality of Solidity Programming, there are many other features provided by Solidity programming that cause it to have an edge over other Ethereum based languages. Apart from fundamental data types, Solidity programming also allows complex data types and member variables. It provides an Application Binary Interface (ABI) to enable type safety. If the compiler discovers the datatype mismatched the ABI generates the error.

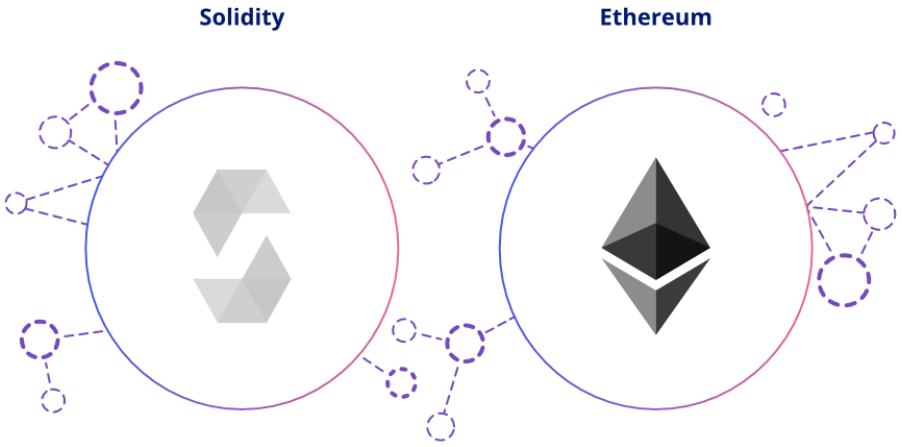

FIG. No.8

6) CRYPTOCURRENCY

6.1) INTRODUCTION

Cryptocurrency is a digital payment system that doesn't rely on banks to verify transactions. It's a peer-to-peer system that can enable anyone anywhere to send and receive payments. Instead of being physical money carried around and exchanged in the real world, cryptocurrency payments exist purely as digital entries to an online database describing specific transactions. When you transfer cryptocurrency funds, the transactions are recorded in a public ledger. Cryptocurrency is stored in digital wallets.

6.2) HOW DOES IT WORK

Cryptocurrencies run on a distributed public ledger called blockchain, a record of all transactions updated and held by currency holders.

Units of cryptocurrency are created through a process called mining, which involves using computer power to solve complicated mathematical problems that generate coins. Users can also buy the currencies from brokers, then store and spend them using cryptographic wallets.

If you own cryptocurrency, you don't own anything tangible. What you own is a key that allows you to move a record or a unit of measure from one person to another without a trusted third party.

Examples: Bitcoin, Ethereum, Litecoin, Ripple

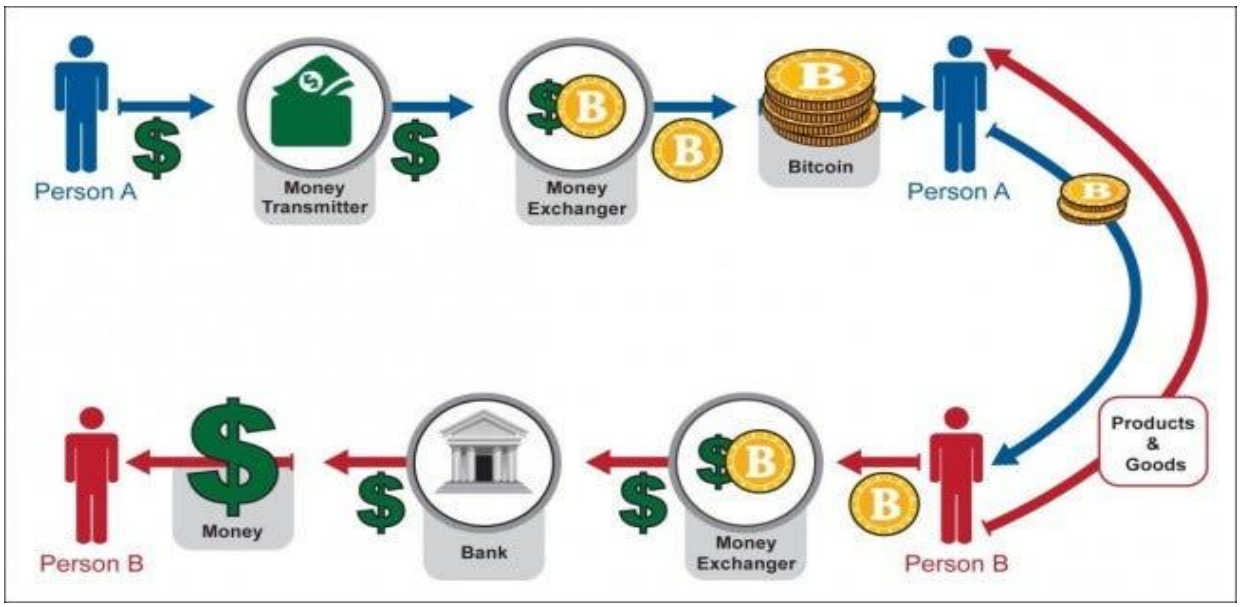

FIG. No. 9

6.3) ADVANTAGES

- Removes single points of failure
- Easier to transfer funds between parties
- Removes third parties
- Can be used to generate returns
- Remittances are streamlined

6.4) DISADVANTAGES

- Transactions are pseudonymous
- Pseudonymity allows for criminal uses
- Have become highly centralized
- Expensive to participate in a network and earn
- Off-chain security issues
- Prices are very volatile

7) METAMASK

7.1) INTRODUCTION

MetaMask is a browser plugin that serves as an Ethereum wallet, and is installed like any other browser plugin. Once it's installed, it allows users to store Ether and other ERC-20 tokens, enabling them to transact with any Ethereum address. By connecting to MetaMask to Ethereum-based apps, users can spend their coins in games, stake tokens in gambling applications, and trade them on decentralized exchanges (DEXs). It also provides users with an entry point into the emerging world of decentralized finance, or DeFi, providing a way to access DeFi apps such as Compound and Pool-Together.

FIG. No. 10

8) TOKENS

8.1) INTRODUCTION

Crypto Tokens are a digital representation of an asset or interest in something and are built on a blockchain. They can also be used as investments, to store value, or to make purchases can also be used as investments, to store value, or to make purchases.

Cryptocurrencies are digital representations of value designed to facilitate transactions (making and receiving payments) using blockchain technology. Often purchased through an initial coin offering, crypto tokens are generally used to raise funds to develop projects.

FIG. No. 11

8.2) ADVANTAGES:

- **Increased security**: Crypto tokens use advanced cryptographic algorithms that make it virtually impossible for hackers to steal or manipulate data.

- **Faster transactions**: Blockchain technology enables real-time transactions, which can significantly reduce transaction times compared to traditional banking systems.

- **Reduced costs:** Transacting with crypto tokens eliminates the need for intermediaries such as banks, which can save businesses and consumers substantial amounts of money.

- **Greater accessibility**: Anyone with an internet connection can buy, sell, or trade crypto tokens, which makes it more inclusive than traditional financial systems.

9) PROJECT

Problem Statement:

Building a token (JECRC Custom Token) using blockchain technology.

Description:

Developing a token in Binance Blockchain offers numerous benefits. Leveraging Binance Smart Chain (BSC), you can create tokens that operate on a **decentralized network**, ensuring **transparency**, **security**, and **resilience .** By utilizingsmart contract programming languages like Solidity or Vyper, you can customize the token functionality and automate predefined actions. Binance Smart Chain's compatibility with popular token standards such as BEP-20 enables **seamless integration** with wallets, exchanges, and decentralized applications (DApps), enhancing liquidity and utility. The blockchain's immutable ledger records token transactions securely, while fractional ownership and global accessibility unable broader participations and assert representation. Additionally, the bianance developer tools, IDEs like remix, and wallet solutions like MetaMask facilitates token development, testing, and deployment, ensuring **compatibility** and **reliability**. Overall, developing a token in Binance Blockchain empowers you to create a **versatile digital asset**, fostering innovation, trust, and participation in the decentralized economy.

SCREENSHOTS OF PROJECT

JEC TOKEN

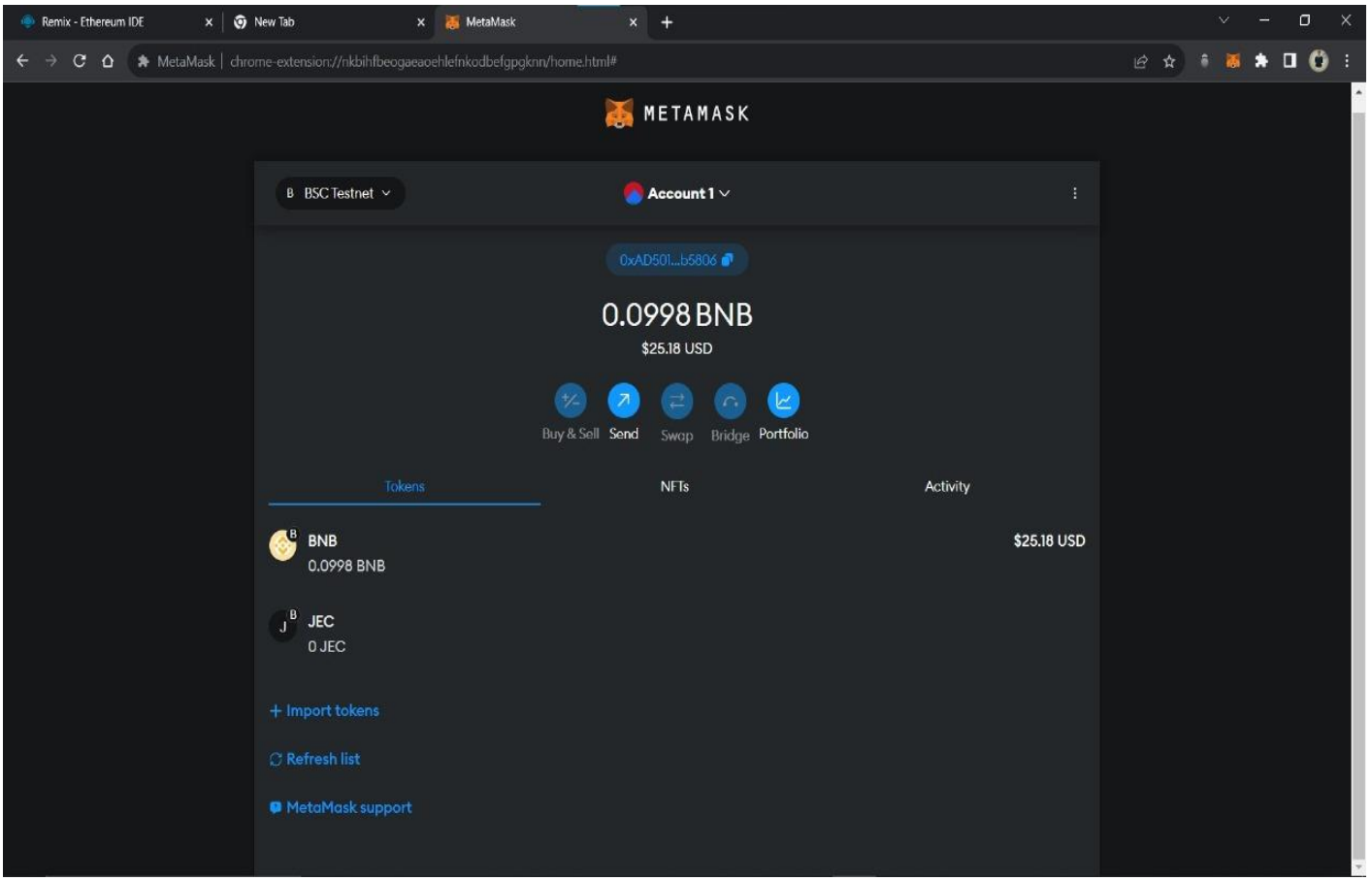

FIG. No.12

PROGRAM CODE

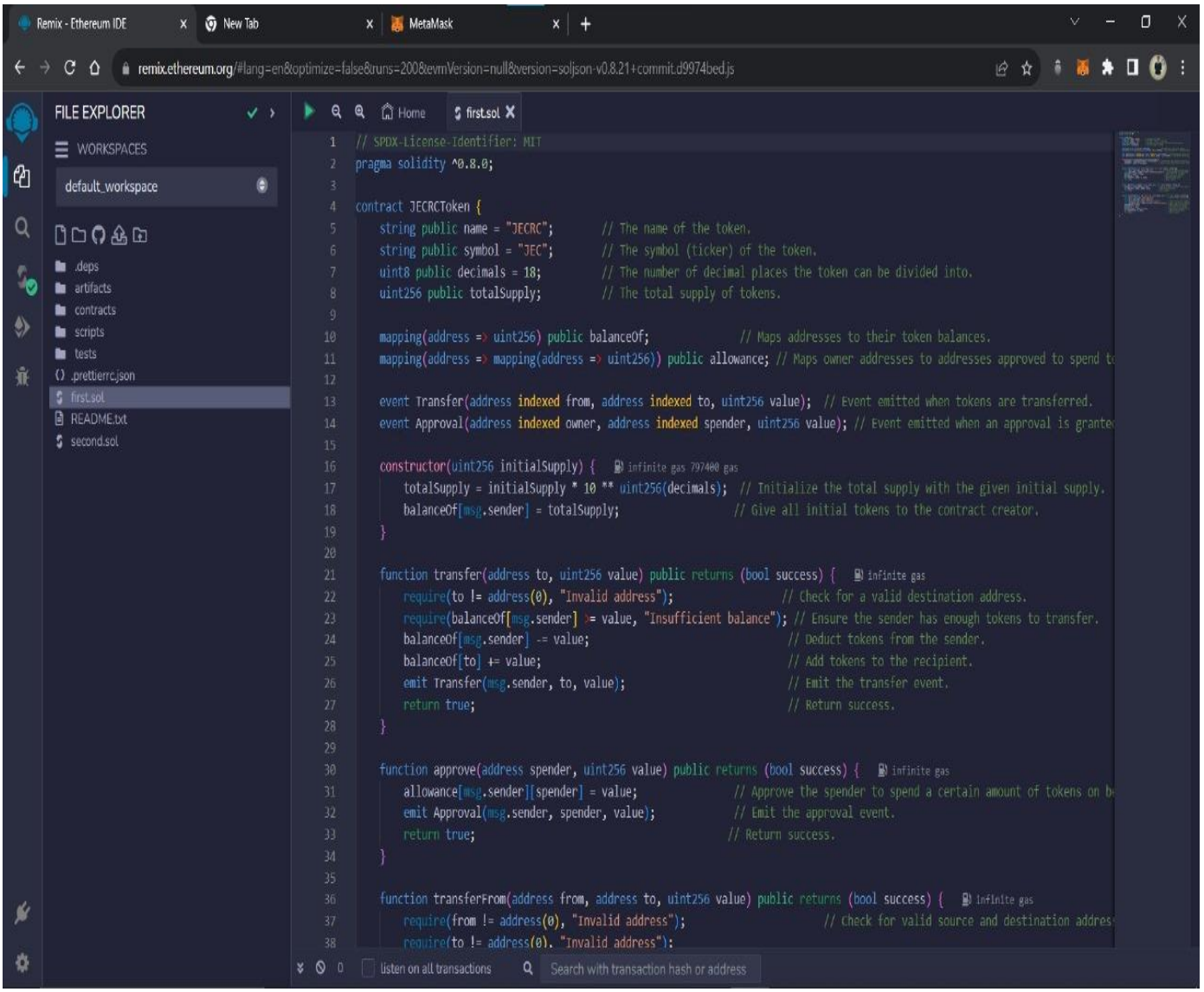

FIG. No. 13

TRANSACTION PROCESSING

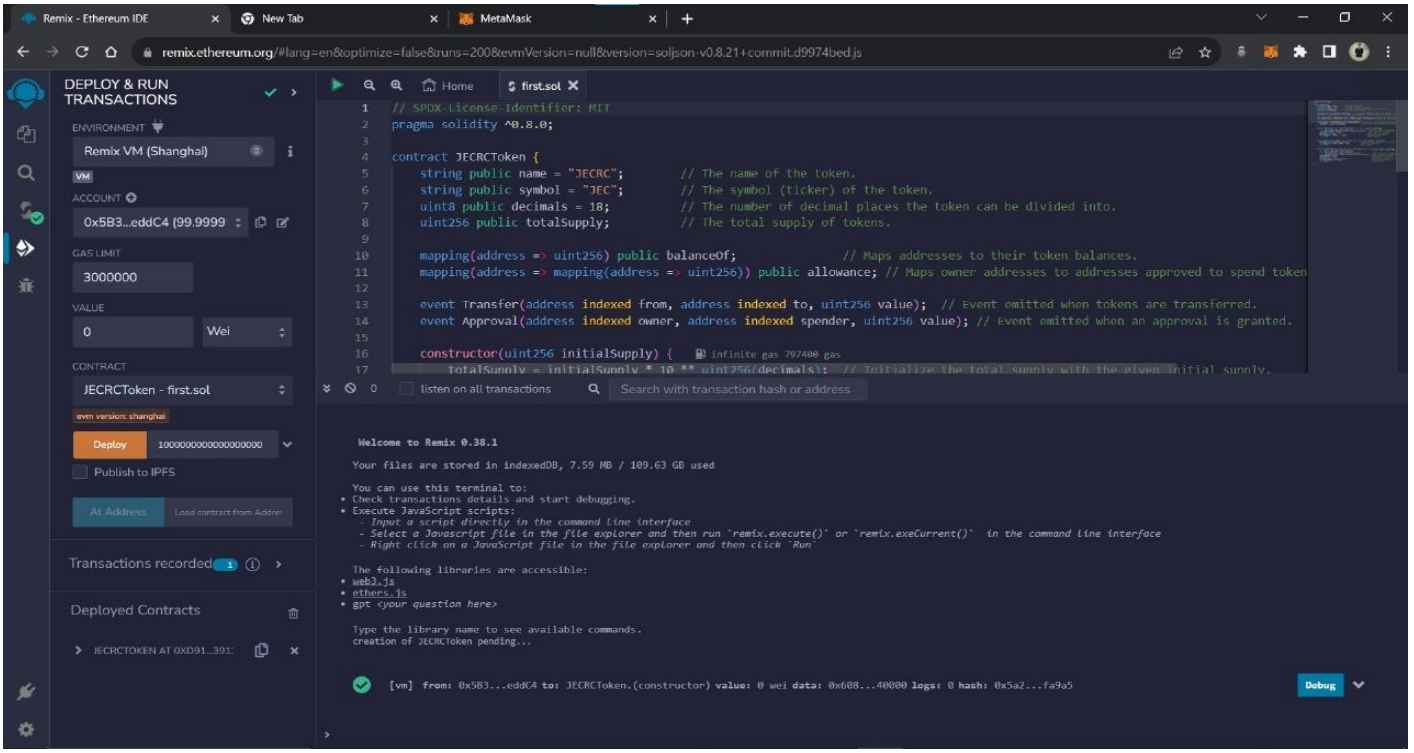

FIG. No. 14

TRANSACTION DONE SUCCESSFULLY

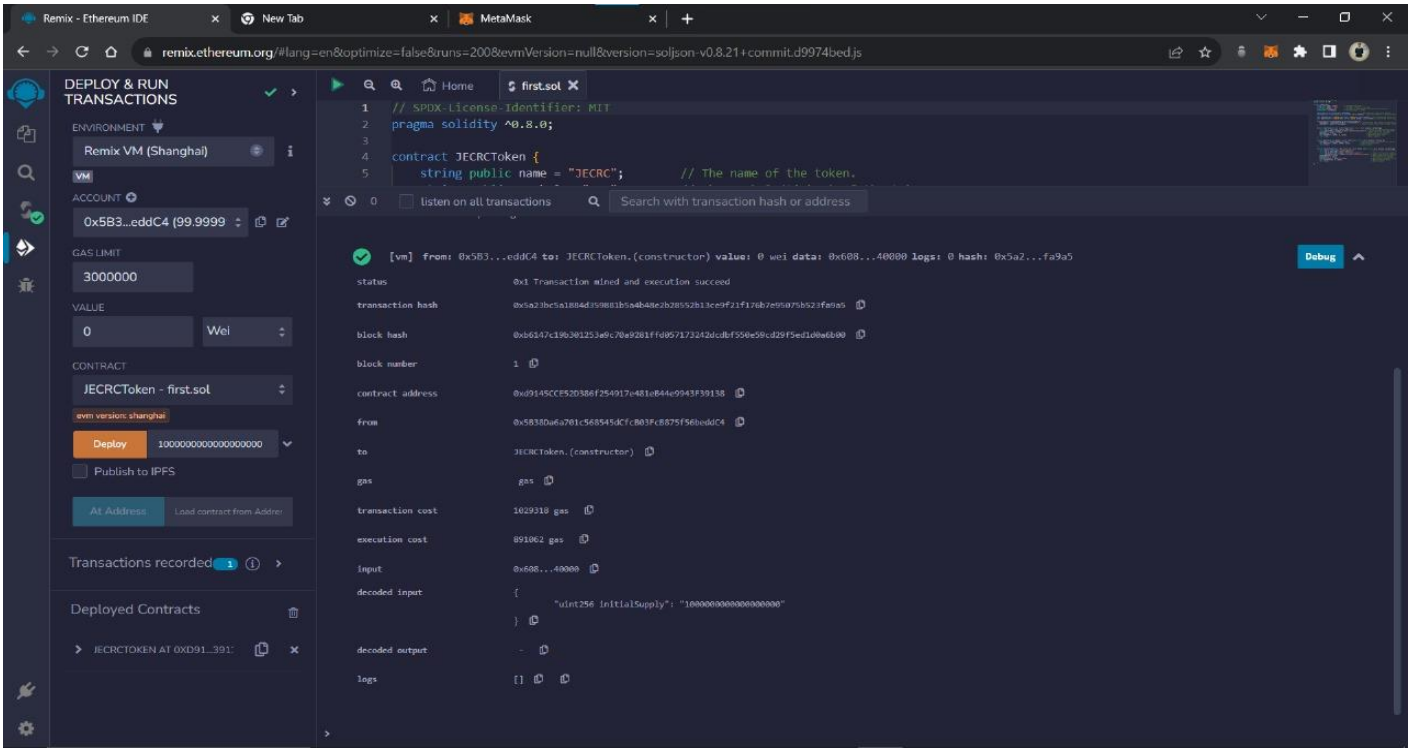

FIG. No.15

10) FUTURE SCOPE AND CONCLUSION

In the rapidly evolving landscape of technology, few innovations have captured the collective imagination and disrupted traditional systems quite like blockchain. Born out of the desire for transparent, secure, and decentralized transactions, blockchain technology has not only given rise to cryptocurrencies but has also paved the way for an array of transformative applications. As we stand on the precipice of a new era, let's delve into the intricacies of blockchain, cryptocurrencies, and tokens, and explore the promising future ahead. At its core, blockchain is a distributed ledger technology that enables secure, transparent, and tamper-resistant record-keeping. Unlike traditional centralized systems, blockchain operates on a decentralized network of computers, known as nodes, which work together to validate and record transactions. Each block in the chain contains a cryptographic hash of the previous block, ensuring the integrity of the entire ledger. The decentralized nature of blockchain brings forth several key advantages, including enhanced security, transparency, and immutability. Transactions on a blockchain are visible to all participants, and once recorded, they cannot be altered without the consensus of the network. This reduces the risk of fraud and fosters trust among users.

11) REFERENCES

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- Mastering Ethereum: Building Smart Contracts and Dapps [2018] – Andreas M. Antonopoulos and Gavin Wood.