IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Integrating Blockchain Technology in Online Trading

Mr. Pratik S. Jaiswal[1], Dr. Rameshwar R. Gaikwad[2], Mrs. Karuna Patel[3], Ms. Sabiha Shaikh[4]

[1]Assistant Professor, Deogiri Institute Of Technology & Management Studies, Chh. Sambhajinagar, (M.S), India

[2] Director, Deogiri Institute Of Technology & Management Studies, Chh. Sambhajinagar(M.S), India

[3] Freelancer Python developer, Nagpur (M.S), India

[4]Assistant Professor, Deogiri College, Chh. Sambhajinagar

Abstract: Setting up your own Ethereum wallet is straightforward using the official MyEtherWallet service. Here's a streamlined guide to get you started: When you visit the MyEtherWallet site, you'll first encounter important security notices. These deserve your careful attention as they provide crucial information about protecting your digital assets and understanding fundamental wallet operations. After reviewing the security information, you'll be prompted to establish a new wallet by creating a strong password. Following this step, you'll have the opportunity to download a keystore file - a security measure worth taking advantage of. Store this file in a secure location for safekeeping. The most critical part of the process is securing your private key. Take multiple precautions with this information: create backups, commit it to memory, record it physically and store it somewhere highly secure like a safety deposit box. These steps are essential to prevent both loss and unauthorized access. To access your wallet, you can either enter your private key or upload your keystore file. While other access methods exist, these two approaches are particularly suitable for newcomers to cryptocurrency wallets.

Key Word: Ethereum virtual machine, Decentralized finance, Smart Contract, CryptoKitties

1. Introduction

Ethereum introduced the ERC721 token standard to track unique digital assets. Tokens are sometimes used to establish ownership of digital valuables, making them a popular use case. Many games are also being developed utilizing this technology, like the overnight sensation CryptoKitties, which allows users to gather and breed digital cats.

Ethereum's team built the statically typed Solidity language, which was debuted in 2014. It is object-oriented, supports libraries, and allows inheritance. Solidity remained the primary Ethereum programming language despite the presence of other options[1]. So, if you want to work with Ethereum and smart contracts, you should absolutely understand Solidity. Blockchain technology has rapidly gained popularity over the past decade. This is a public-access digital information database. Users prefer it for privacy because they are only known by their usernames or digital signatures. Blockchain is also decentralized, meaning there is no single server or authority. Previously, working with Blockchain was difficult due to the need for advanced coding skills. Then Ethereum was introduced. The Ethereum virtual machine (EVM) platform simplifies the development of decentralized apps. The platform is worldwide, allowing access to projects from anywhere. Ethereum users strive to gain Ether tokens. There is also a second form of token, gas, which is used to pay transaction fees[2].

Smart Contract

Smart contracts, or blockchain programs, include all of the code. These are the foundational components of blockchain applications. This article will cover creating a smart contract to automate our to-do list. It will be in charge of obtaining all of the items on our to-do list from the blockchain, adding new tasks, and finishing them.

Smart contracts are created in Solidity, a computer language similar to JavaScript. The smart contract code is immutable, meaning it cannot be changed. Once we've deployed the smart contract on the blockchain, we won't be able to edit or update the code. This is a design element that assures code trustworthiness and security. I frequently draw comparisons between smart contracts and web microservices. They serve as an interface for reading and writing data from the blockchain, as well as performing business rules. They are publicly available, which means that anybody with access to the blockchain may use their interface[3].

2. Problem Statement

Nowadays, there are many cybercriminals that hack websites where people buy various things, resulting in many frauds for online purchases; however, if we integrate blockchain in such fraud systems, such frauds may be avoided. The Ethereum platform benefits from all of the features of the Blockchain technology that it is based on. It is totally resistant to third-party intrusions, which means that no one can manage any of the network's decentralized apps and DAOs[4].

Any Blockchain network is built on the notion of consensus, which means that all nodes in the system must agree on any changes made to it. This removes the possibility of fraud and corruption, making the network tamper-proof.

The platform is decentralized, with no single point of failure. As a result, all apps will remain active indefinitely. Furthermore, because to its decentralized design and cryptographic security, the Ethereum network is effectively secured from any hacker assaults and fraudulent operations[5].

3. Methodology

We developed an app to track online trading transactions, including order placement, cancellation, and stock data.

1. If stock is not available, it returns false; otherwise, it returns true.
2. If the consumer purchases, the supply will be reduced.
3. If the consumer cancels the order, the supply remains the same.
4. The customer will provide his or her age, name, address, and gender.
5. In this case, we employed inheritance.

4. Area Of Application

Despite criticism for its limited scalability, Ethereum remains the most popular platform for decentralized apps.

Decentralized financing (DeFi)

Decentralized financial applications (abbreviated as "DeFi") are a promising real-world use case for Ethereum. This includes smart contract-powered loans, the creation of stablecoins, and decentralized exchanges[6]. One significant effort in this category is "MakerDAO," which, using intricate Ethereum smart contracts, has enabled the development of a stablecoin (DAI) backed by Ether and always worth $1.

Digital identity

Over the last five decades, our self-identification has been largely consistent. We continue to use passports made of paper, which we must take with us wherever we go. Governments struggle to verify the legitimacy of online documents, which is one of the primary reasons for the delay in transitioning to a digital system. Until now.

Ethereum offers open and transparent data verification, therefore it might be used to pioneer the development of a digital identification system. Companies like as Civic saw this possibility early on and are actively striving to make it happen.

Tokenizing real-world assets

Ethereum may play a key role in allowing the multi-trillion-dollar security token industry. Security tokens are essentially blockchain-based representations of real-world assets such as equities, precious metals, and real estate. Tokenizing these assets on a blockchain allows issuers to move and deal in them far more easily than if they simply had a paper contract. The blockchain start-up PolyMath, which raised $59 million in an ICO, is currently developing one of the first compliant systems to tokenize real-world assets on the Ethereum blockchain[7].

Health applications

Ethereum will totally transform the healthcare sector. All hospitals worldwide may keep, access, and exchange patient records. This is an important aspect in designing novel vaccinations for viral epidemics, or potentially preventing them in the first place. You may go to a doctor in Thailand for a checkup while on vacation and to a hospital in New York when you return home, and both will have the same information about you[8].

But that is not all. Remember the wearables mania a few years ago? Whether we like it or not, these technologies are here to stay. Imagine your smartwatch's daily data being automatically shared with all hospitals worldwide. This approach can detect trends in medical disorders, such as heart attacks or strokes, and provide warnings before they occur. Ethereum will make this feasible, and it may even save your life one day.

Security Infrastructure

Without a central server, it is more difficult for hackers to obtain personal information from websites.

Payments

The global economy is founded on transactions. Ethereum has the potential to permanently alter these dynamics. Ethereum supports "smart contracts." These allow for risk-free trade of any valuable asset. Computer code is used to record transactions rather than traditional paper agreements. Rather than using a marketplace like Shutterstock, consider purchasing a photo directly from the photographer and entering into a contract[9].

Ethereum's system has "If This Then That" (IFTTT) logic, which enables this.

For example, if the buyer funds an escrow account, the photo will be downloaded.

Privacy from third parties

Do you know the search engine that the majority of the world's internet users use every day? Yes, the one with a capital "G". Surprise, surprise: the corporation gathers and sells your personal information to advertising. This technique generates billions of dollars in profit annually[10]. This type of data collecting would be impossible with Ethereum's blockchain technology.

Actually, it does not make it impossible (nothing is impossible:P), but it does log each time the search engine utilizes your data and makes those logs public. To avoid harming their brand image, major organizations must exercise greater caution when handling personal data.

Politics

Reading this post indicates that you are a well-educated individual with higher intelligence than the typical person. It's probable that you'll vote for your preferred political party every few years, depending on your nation.

Despite living in a democracy, it is not uncommon for poll results to be manipulated. Ethereum's implementation makes total network control impossible, as all changes are documented and publicly viewable. Ethereum promotes more transparency and fairness in democracy[11].

Storing Data

Companies like Dropbox and Microsoft store large volumes of data on server farms. A server farm is a facility with hundreds of servers that store information. Server farms place a significant portion of a company's storage capacity in one location. The firm may incur significant damages if damaged by natural disasters or terrorist attacks.

The answer is a decentralised storage facility. In this scenario, data is housed in several data centers worldwide, rather than just a few in the US[12].

Creating a secure and fast network to connect all servers has been a significant technological challenge. However, Ethereum's blockchain technology has the potential to encrypt and swiftly transport data between millions of computers, making it a possible answer to this problem[13].

Initial Coin Offerings

Token Sales, also known as Initial Coin Offerings (ICOs), enable start-ups to obtain capital by producing and selling "tokens" for Ether. Tokens are designed to play a function in the startup's application and are acquired by individuals for use or speculation[14]. Bancor, one of the largest Ethereum ICOs, raised $153 million in less than 3 hours by selling its BNT token to the public.

Gambling

The gambling business in the US is believed to be worth 240 billion USD, however it is one of the most dishonest areas of the economy. In the late 1990s, online casinos emerged as the internet became more widely used. Even "realworld" casinos lack openness, so picture what happens on internet gambling sites[15]. Anyways. One of the main advantages of Ethereum technology is its ability to facilitate rapid and secure transactions. This will both disrupt and boost the online gambling sector by eliminating the risk of frauds for players[16].

5. Experimental Setup

1. Go to the any browser ➤ https://remix.ethereum.org/

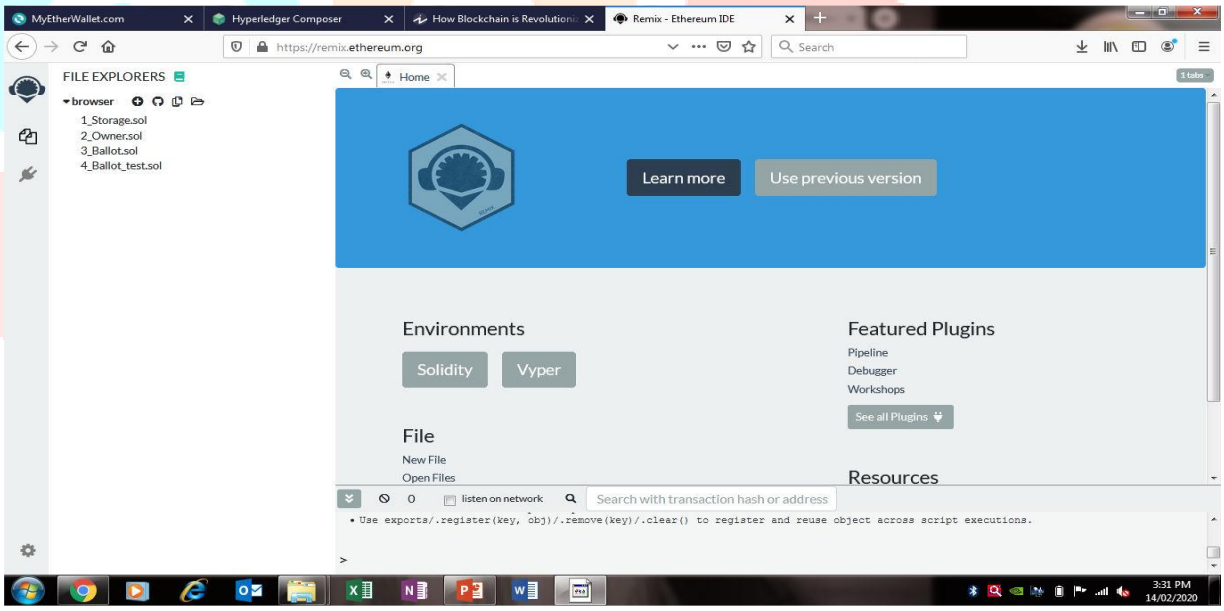

Fig.1 Web Interface

The Fig.1 shows a web interface for what appears to be a development or coding environment. The interface has a blue header bar at the top with a hexagonal logo on the left side and two buttons on the right side, one labeled "SignIn/SignOut" and another with text that isn't fully legible.

Below the header, the page is divided into sections. On the left side, there's a section labeled "Environments" with two green buttons, one labeled "Develop" and another that appears to say "Model" or similar.

Further down on the left is a "File" section with what seems to be a file navigation interface or explorer.

On the right side of the page, there's a section labeled "Tools and Plugins" with several menu items or options listed below it, though the specific text is not clearly readable.

The overall layout suggests this is likely an integrated development environment (IDE), code editor, or possibly a cloud-based development platform. The interface has a clean, modern design with a blue and white color scheme, and appears to be running in a web browser window, as indicated by the browser tabs visible at the top of the image.

2. Coding window

The Fig.2 shows a web-based development environment or code editor interface. The window displays a programming or development workspace with multiple panels: On the left side, there's a directory or file navigation panel showing a hierarchical folder structure with multiple items listed vertically.
The central and largest panel contains code or script with multiple lines visible. The code appears to have syntax highlighting with different colors for various elements, and there are several indented blocks that suggest function definitions or logical sections of code.
On the right side, there are configuration panels or property editors with various fields and options. There appears to be at least one purple-highlighted notification or information box in this area. At the bottom of the interface, there's a status bar or console area with several icons and what looks like a search input field. The very bottom of the screen shows a taskbar with several application icons.
The interface is being viewed in a web browser, as indicated by browser navigation tabs at the top of the window. The overall appearance suggests this is likely an integrated development environment (IDE) or code editing platform designed for software development, possibly running as a web application.

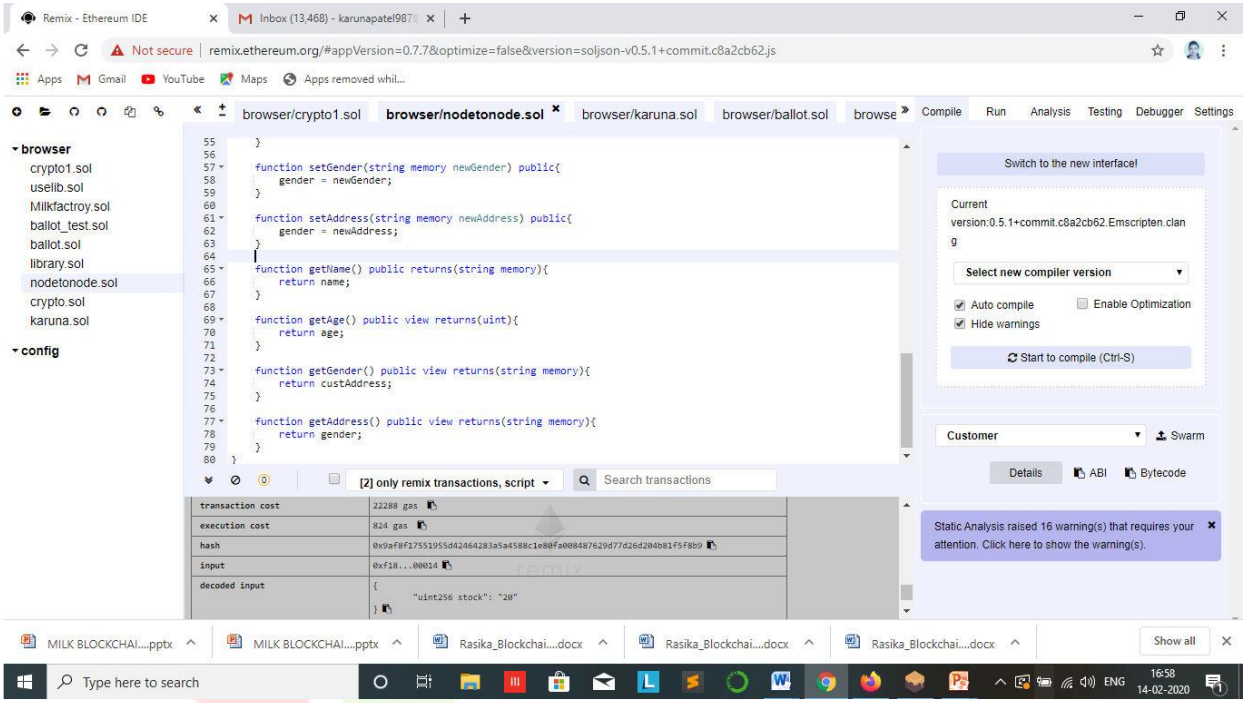

Fig.2 Code Editor Interface

3. Ether wallet

The Fig.3 shows a web interface of what appears to be a blockchain or smart contract interaction platform called "MyEtherWallet" (visible in the top header).
The interface displays a page focused on contract interaction with a header that reads "Interact with Contract or Deploy Contract." Below this heading is a section where users can input contract information. There's a field labeled "Contract Address" with some alphanumeric text entered (appears to be an Ethereum contract address).
On the right side of the address input, there's a green circular icon with a checkmark, suggesting the address has been successfully validated or recognized. Next to this icon is a button labeled "Select Existing Contract" or similar text.
The right side of the page shows what looks like a dropdown menu or navigation panel with multiple options related to contract management and interaction. The interface has a teal/turquoise colored header bar at the top of the page, consistent with MyEtherWallet's branding. The page appears to be designed for users to interact with existing smart contracts on the Ethereum blockchain or to deploy new contracts. The image is showing a browser window with several tabs open, and this application is running in one of those tabs.

The Fig.3 shows the MyEtherWallet (MEW) web interface, which is a platform for interacting with the Ethereum blockchain. At the top of the browser window is the MyEtherWallet header with its logo on the left side and navigation menu items across the top.
The main section of the page displays the "Interact with Contract or Deploy Contract" interface. This functionality allows users to interact with existing smart contracts on the Ethereum blockchain or deploy new ones.

In the main form:

- There's a "Contract Address" field containing what appears to be an Ethereum contract address (a long hexadecimal string)
- A green circle with a checkmark icon indicates the address has been validated
- A dropdown or button labeled "Select Existing Contract" is visible to the right
- Below is a field labeled "ABI / JSON Interface" containing what looks like the beginning of a JSON structure with curly braces

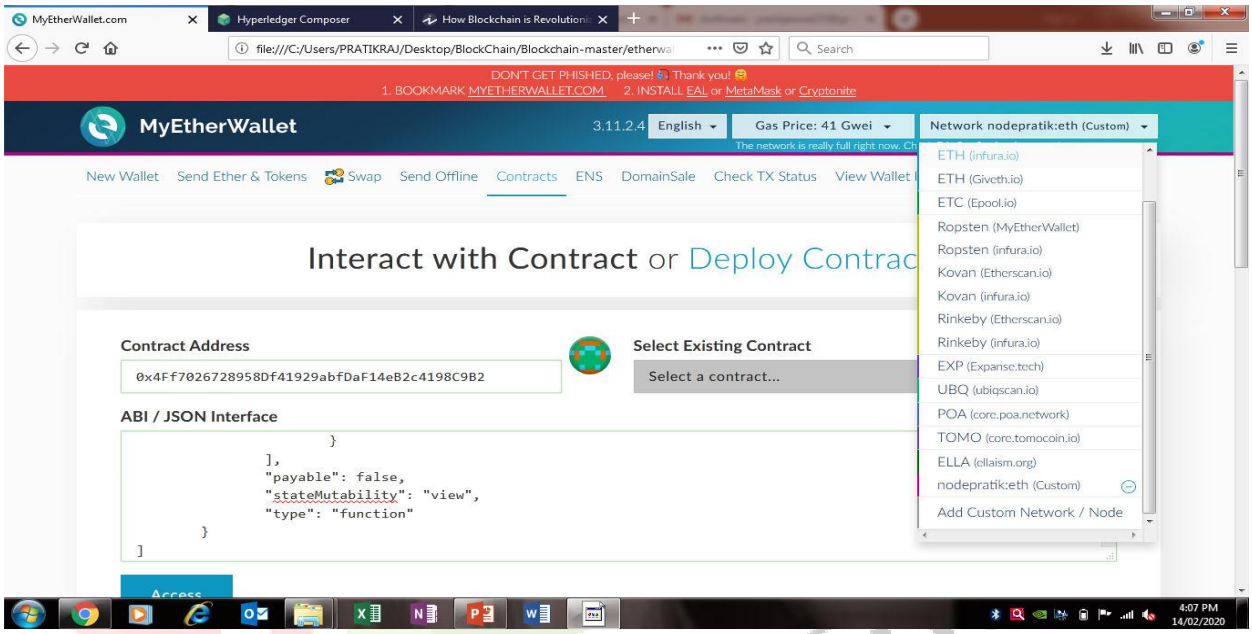

Fig.3 MyEtherWallet

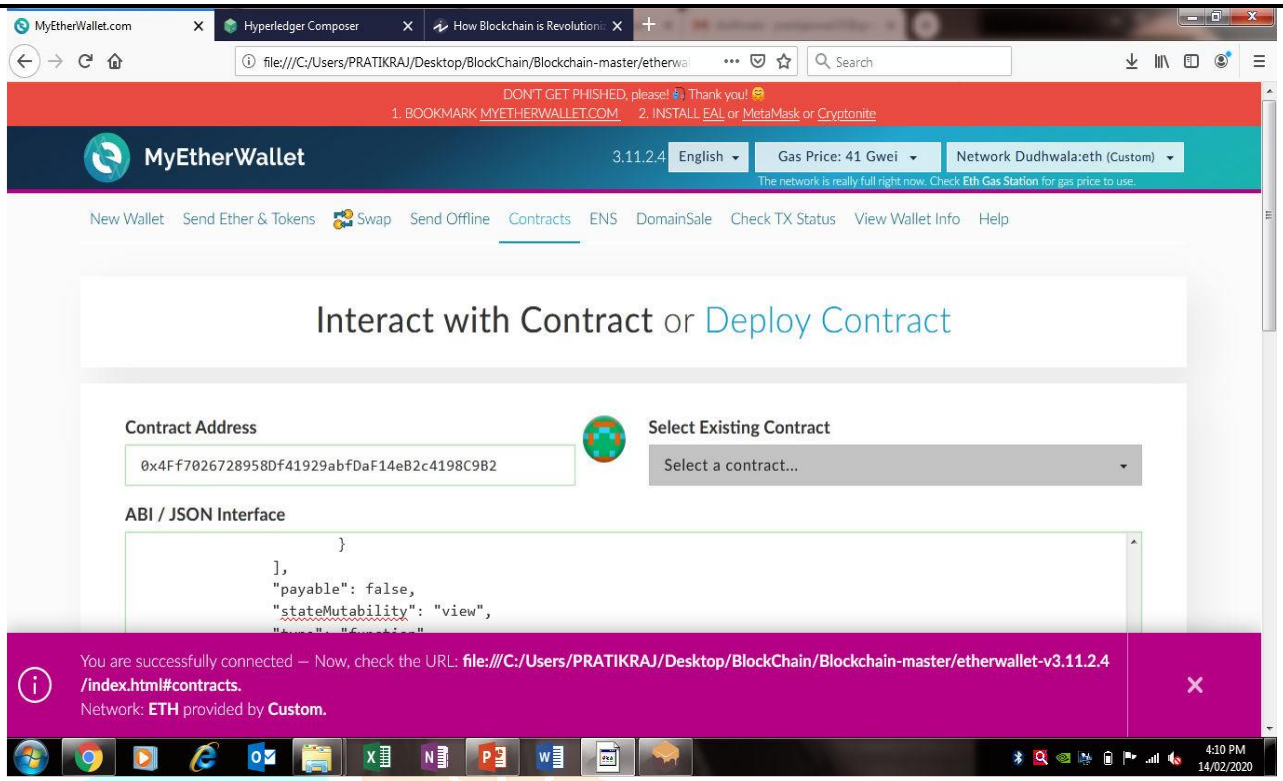

Fig.4 Deploy Contract

At the bottom of the screen, there's a prominent purple notification banner with a warning or information message related to the contract interaction process.
The interface is being displayed in a web browser with multiple tabs open at the top. The overall design follows MyEtherWallet's characteristic color scheme with teal/turquoise header elements and a clean white interface for the main content area.

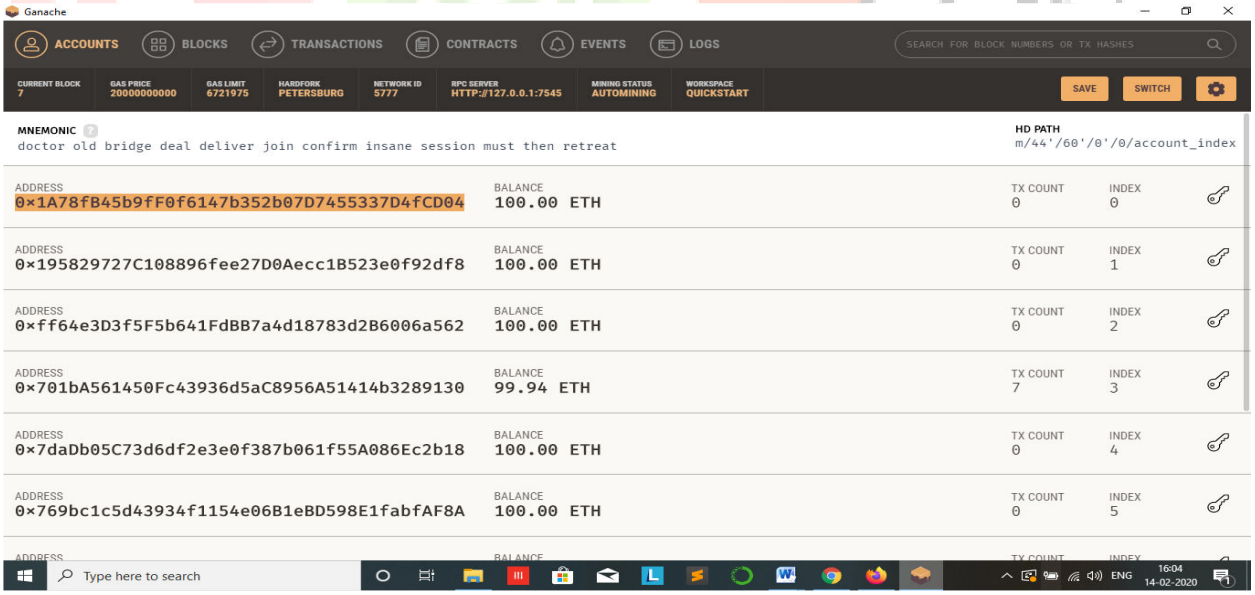

Fig.5 Blockchain Management Interface

The Fig.5 shows a cryptocurrency or blockchain management interface displaying a list of transactions or accounts. The application has a dark-themed navigation bar at the top with several menu options including "ACCOUNTS," "BLOCKS," "TRANSACTIONS," "CONTRACTS," "EVENTS," and "LOGS."
Below the navigation bar is a main content area showing what appears to be a transaction or account ledger with multiple entries. Each row contains:

- A long hexadecimal address/hash (starting with "0x" followed by a string of alphanumeric characters)
- An ETH (Ethereum) value, with most entries showing "100.00 ETH"
- One entry shows "99.95 ETH"
- Additional columns on the right that appear to contain transaction counts or status indicators
- Each row has a pencil/edit icon on the far right

At the top of this ledger section, there's a search bar or filter area with some text that appears to be related to ledger filtering options.
The interface appears to be part of a blockchain explorer, wallet management system, or development environment for Ethereum blockchain interaction, possibly used for managing accounts, monitoring transactions, or testing smart contracts with test ETH balances.
At the bottom of the screen is a taskbar with various application icons, suggesting this is running on a desktop operating system.

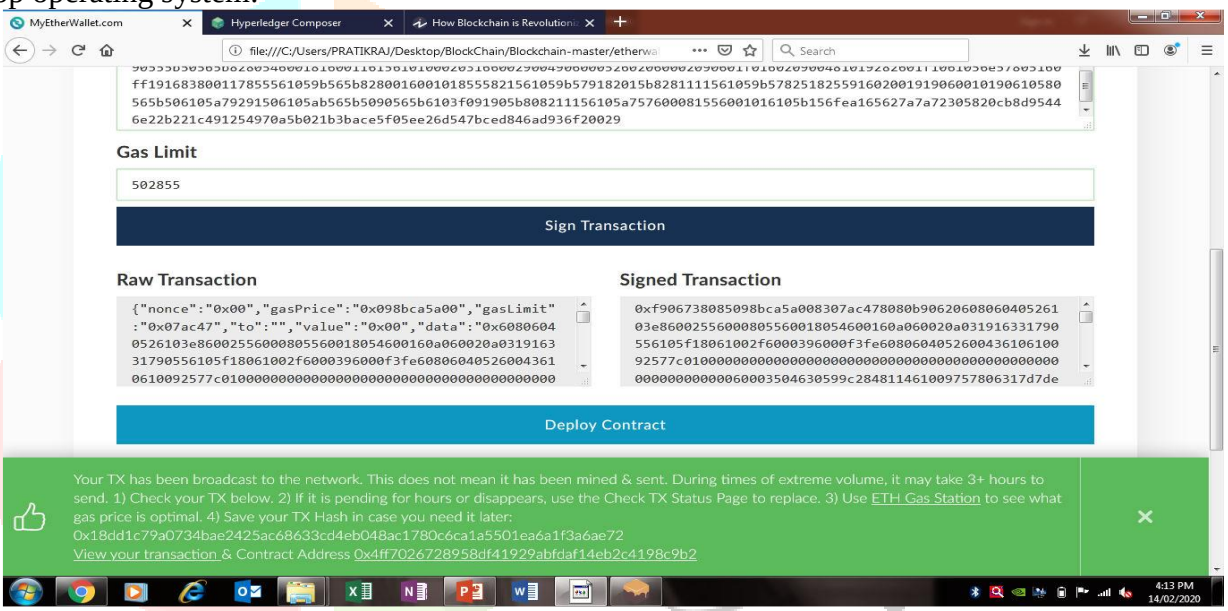

Fig.6 Contract Interface

The Fig.6 shows a web interface for a blockchain transaction system, likely related to Ethereum given the context of previous images.
At the top of the page, there's a long string of hexadecimal characters that appears to be transaction data or a contract hash.
Below this is a section labeled "Gas Limit" with what looks like a numerical value (though not clearly readable in the image).
The main content area is divided into two sections:

- On the left side is a box labeled "Raw Transaction" containing JSON-formatted data with various fields visible
- On the right side is a box labeled "Signed Transaction" containing a long hexadecimal string representing the cryptographically signed version of the transaction

At the bottom of these sections is a blue button labeled "Deploy Contract".
Below this content area is a prominent green notification banner with a thumbs-up icon on the left side. The banner contains a message that appears to be confirming a successful transaction broadcast to the network. The text mentions something about the transaction being broadcast to the network but not yet mined, along with information about expected confirmation times during periods of network activity.

The browser window shows tabs at the top, and at the bottom of the screen is a Windows taskbar with various application icons. The time appears to be displayed in the bottom right corner.

6. Conclusion

We have proposed a system for electronic transactions without relying on trust. We started with the usual framework of coins made from digital signatures, which provides strong control of ownership, but is incomplete without a way to prevent double-spending. Thus we provide a secure network for online trading.

References

[1] Kowalski M., Lee Z.W., Chan T.K., Blockchain technology and trust relationships in trade finance Technol. Forecast. Soc. Change, 166 (2021), Article 120641

[2]Trivedi S., Mehta K., Sharma R., Systematic literature review on application of blockchain technology in E-finance and financial services J. Technol. Manag. Innov., 16 (3) (2021), pp. 89-102

[3] Treleaven P., Brown R.G., Yang D.,Blockchain technology in finance Computer, 50 (9) (2017), pp. 14-17

[4] Chang V., Baudier P., Zhang H., Xu Q., Zhang J., Arami M., How Blockchain can impact financial services–The overview, challenges and recommendations from expert interviewees Technol. Forecast. Soc. Change, 158 (2020), Article 120166

[5] Lahkani M.J., Wang S., Urbański M., Egorova M., Sustainable B2B E-commerce and blockchain-based supply chain finance Sustainability, 12 (10) (2020), p. 3968

[6]Nordgren A.I.N.O., Weckström E.L.L.E.N., Martikainen M.I.N.N.A., Lehner O.M. Blockchain in the fields of finance and accounting: a disruptive technology or an overhyped phenomenon ACRN J. Finance Risk Perspect., 8 (2019), pp. 47-58

[7]Poongodi M., Sharma A., Vijayakumar V., Bhardwaj V., Sharma A.P., Iqbal R., Kumar R., Prediction of the price of ethereum blockchain cryptocurrency in an industrial finance system Comput. Electr. Eng., 81 (2020), Article 106527

[8]Bogucharskov A.V., Pokamestov I.E., Adamova K.R., Tropina Z.N.,Adoption of blockchain technology in trade finance process J. Rev. Global Econ., 7 (2018), pp. 510-515

[9] Hofmann E., Strewe U.M., Bosia N., Discussion—how does the full potential of blockchain technology in supply chain finance look like? Supply Chain Finance and Blockchain Technology, Springer, Cham (2018), pp. 77-87

[10] Zhu X., Wang D.,Research on blockchain applications for E-commerce, finance and energy IOP Conf. Ser.: Earth Environ. Sci., 252 (4) (2019), Article 042126

[11]Li M., Shao S., Ye Q., Xu G., Huang G.Q.,Blockchain-enabled logistics finance execution platform for capital-constrained E-commerce retail Robot. Comput.-Integr. Manuf., 65 (2020), Article 101962

[12] Katona T. Decentralized finance: the possibilities of a blockchain money lego system Financ. Econ. Rev., 20 (1) (2021), pp. 74-102

[13]Chen J., Cai T., He W., Chen L., Zhao G., Zou W., Guo L., A blockchain-driven supply chain finance application for auto retail industry Entropy, 22 (1) (2020), p. 95

[14] Rijanto A.,Blockchain technology adoption in supply chain finance J. Theor. Appl. Electron. Commerce Res., 16 (7) (2021), pp. 3078-3098

[15] Dong L., Qiu Y., Xu F., Blockchain-enabled deep-tier supply chain finance Manuf. Serv. Oper. Manag. (2022)

[16] Wang R., Application of blockchain technology in supply chain finance in beibu gulf region 2021 International Wireless Communications and Mobile Computing, IWCMC, IEEE (2021), pp. 1860-1864