

Mini Project Report on

Smart Notary

Submitted in partial fulfillment of the requirements
of the degree of Bachelor in Engineering

By

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**University of Mumbai
(AY 2023-24)**



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CERTIFICATE

This is to certify that the report of the Mini Project entitled
is a bonafide work of

Name of Student

PRN

(Ms. Deepti Pawar)
Guide

(Prof. Uday Bhawe)
I/c Head of Department

(Dr. Bhavesh Patel)
Principal

Mini Project Approval

This Mini Project entitled “ **Smart Notary** ” by Shubham **Ghumare**,
Soham Lad and **Pratik Hegde** is approved for the degree of
Bachelor of Engineering in **Computer Engineering** .

Examiners

1.....
(Internal Examiner Name & Sign)

2.....
(External Examiner name & Sign)

Date:

Place:

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. It is understood that any of the above deviation will amount to a disciplinary action by the Institute and also attracts penal action from the sources, not so cited or who have not given proper permission as and when required.

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Place:

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We would also like to express my gratitude towards our principal **Dr. Bhavesh Patel** sir and **Dr. Uday Bhave** for giving us this great opportunity to do a project on Smart Notary. Without their support and suggestions, this project would not have been completed.

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1. Introduction

1.1 Prelude

A notary is an official who has been appointed by a state government. Examples of the particular actions or deeds that a notary may draw up or authenticate include contracts, documents and other categories of instruments which are useful in other jurisdictions. The office is that of a relatively disinterested observer in various affirmations and transactions. A notary's responsibilities might have been as simple as signing a record involving the sale of property to other significant deeds of other documents.

An electronic notary is currently also the possibility for an official to be an electronic notarizing provider. The notary public of the past has been eligible to perform electronic-wise notarization, and with this, it can use the technology of the signature and the seal depending. The electronic notary attaches the licensed seal and signature to a qualified document.

This notary public activity uses cryptography and a secured public key to manage, create, store and distribute the digital certificate. Blockchain technology is expected to facilitate the notarization process. With this technology, users can be guaranteed the integrity of data on the chain. The known characteristics of blockchain already set it up to be a great asset to improve notary capabilities.

The features of blockchain technology assure users of tamper resistance and nonrepudiation. On the open market, different services offer different blockchain implementation.

1.2 Motivation

The notary scheme is designed to facilitate cross-blockchain exchange based on digital signatures, such as elliptic curve signatures. Unfortunately, as the mathematical problems underlying elliptic curve signatures can be solved quickly on quantum computers, they will be easily broken by quantum computer attacks. Using notary schemes based on elliptic curve signatures poses a significant risk of quantum computer attacks. For example, if a user transfers a certain amount of money in one cryptocurrency to another user holding a different cryptocurrency, quantum computer attacks may lead to property damage. Therefore, it is vital to secure notary schemes for cross-blockchain exchange.

1.3 Abstract

In traditional notarization processes, the correctness of the activities between the parties is guaranteed by a central authority or guaranteeing institution. In this case, the authority is notable to quickly establish the originality of the content to be notarized, or at least to have a large degree of certainty without the use of automated systems.

This paper presents a new notarization platform that uses blockchain technology and integrates advanced anti-plagiarism approaches able to effectively detect copyright violations of documents that users want to notarize. In addition, our proposal includes the use of models, methods, and techniques, through which a very high level of privacy and information security can be guaranteed.

Due to its decentralized nature, blockchain serves as a foundational platform for smart transportation, enabling peer-to-peer communication. However, exchanging data between different blockchain applications often poses a complex challenge known as cross-blockchain exchange. To address potential vulnerabilities and tackle challenges related to cross-blockchain exchange, we introduce post-quantum techniques that utilize blockchain.

First, we present a multi-signature method employing multivariate cryptographic primitives, offering security in the face of quantum computer attacks. Second, building upon our initial technique, we develop a post-quantum notary scheme to enhance the security of cross-blockchain exchanges. Finally, utilizing the post-quantum notary scheme, we propose a post-quantum cross-blockchain exchange model. We implement this scheme on the blockchain using Python and analyze the experimental results of the cross-blockchain exchange model. The integration of our blockchain design into intelligent transportation systems offers several advantages, including improved security, transparency, and efficiency.

2 . Literature Survey

2.1 Literature Review

A comprehensive literature survey of smart notary suggests that the use of blockchain in various applications will be emerging in the upcoming years. A review of a Japanese research paper suggests that to verify transactions using the proposed system combines a digital signature function using a national eID card with PKI implemented and automatic contract execution using smart contracts. It uses transaction receipts as certificates of fixed dates. Also the Brazilian government is keen on smart notary system as various researches have been started by them for implementation of this system.

| NAME OF THE ARTICLE | AUTHOR(s) AND YEAR OF PUBLICATION | DESCRIPTION |
|---|--|--|
| 1. Blockchain-Based Autonomous Notarization System Using National eID Card | Shinta Haga And Kazumasa Omote Nov 2022 | Suggests that to verify transactions using the proposed system combines a digital signature function using a national eID card with PKI implemented and automatic contract execution using smart contracts |
| 2. Blockchain and smart contract architecture for notaries services under civil law: a Brazilian experience | Leonardo Dias Menezes, Luciano Vieira de Araújo & Marislei Nishijima Feb 2023 | Create a system to verify legal documents of property online by using IPFS Technology and storing notaries on blockchain after verification of property and authentication of Owner. |
| 3 . A Literature Review about Smart Contracts Technology | David Nadler Prata Humberto Xavier De Araújo Jan 2021 | It suggests to mint a NFT (Non Fungible Token) for every block of details entered and use a smart contract that is software technology to store details in a blockchain |

2.2 Problem Statement:

The problem that "Smart Notary" aims to solve is digitalizing the process of traditional notary system which will help reduce amount of paper and time but also will create a decentralized system where all records of property renting, property selling, etc many such applications will be stored in an immutable system "Blockchain".

This will help create and keep legal records of all property actions happening in the society and also the Government officials or legitimates will also have the proper system to keep a track on all actions.

Notarization is a system established by law to serve the public in general financial transactions, estates, deeds, powers of attorney, and non-litigious cases involving foreign and international business.

The main roles of notarization, which vary among countries, are to authenticate the signatures of a person for the purpose of signing documents; administer oaths and affirmations; obtain affidavits from witnesses; authenticate the execution of certain types of documents; approve deeds and other assignments; notify foreign bills of exchange; and provide exemplary answers and notarized copies.

2.3 Objectives:

1. Our goal is to digitalize the traditional notary system by storing the records on Blockchain.
2. We aim to reduce the paperwork involved in the traditional notary system, thus resulting in less use of paper preventing use of resources.
3. In our system all necessary details required to be filled in the notary will be filled in an input form and all details will be stored on the blockchain in separate blocks.
4. Every new notary will have a separate block where each block contains a unique hash id of that block, hash of previous block and necessary information such as Property Owner, Property purchaser, Amount involved, Time period and many more details.
5. A block will be created on passing the input details as a transaction costing gas, a familiar term in bitcoin transactions which is the amount required to carry out a transaction.
6. We Aim to keep your details safe and secure and also provide an online interface to view your transaction block.

2.4 Scope:

The aim of our Smart Notary website is to provide a platform where users can digitize their traditional way of notary using less resources and less time.

Our scope also extends to data security, accessibility, as all the transactions or records will be stored in a decentralized system where it will be easier for government officials and legal legitimates to keep a track or search for details easily and efficiently within few minutes and few clicks.

3. Proposed System

3.1 Architecture/ Framework

Our application contains this several page System:

1. User login page:

The login page is the first step for registered users to access their accounts. It typically includes fields for entering a username or email address and a password.

2. User register page:

The registration process may include email verification to confirm the user's identity.

3. Home Page:

This page is where users can browse and select from a variety of resume templates.

4. Lists of Properties and Tenants:

Listing of properties and tenants with their descriptions and other details.

5. Contact us page:

The Contact Us page provides users with a way to get in touch with the website's support or customer service team.

6 . About us Page:

The About Us page provides information about the team behind the website.

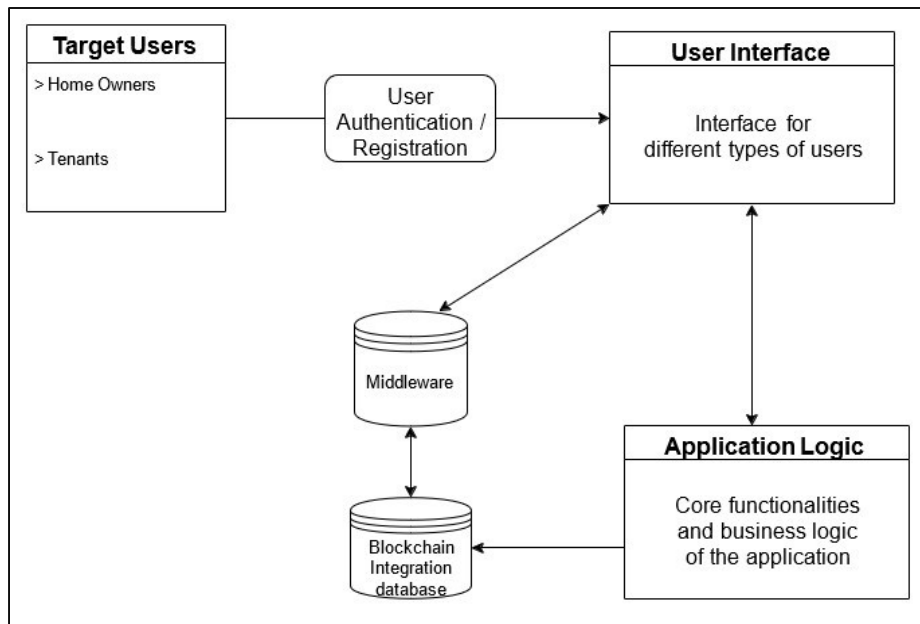


Fig.3.1.1 : Block Diagram

3.2 Proposed Methodology

1. The user enters the web which starts from the home page.
2. The user chooses to proceed and is redirected to the login page .
3. If the user has an existing account he can login or else he can go to the register page
4. In the registration page , the user can enter his details : email and set a password for his account
5. After logging in to the website , the user can browse thru properties and tenants.
6. He/She can select and contact the one most suitable for the options for them.
7. After choosing, the user will be asked to fill in details according to the template.
8. After the details are filled, the user can create a notary agreement.
9. After which, the user can verify whether the agreement is included in the chain.

3.3 Hardware and Software Requirements

Software :

1. Operating systems: (Windows 7 and above), MacOS, Linux and any other modern Operating System.
2. Web browsers like Chrome, Firefox, Microsoft edge, Safari and any other browser that support HTML, CSS, JavaScript and PHP.

Hardware :

1 . Processor (CPU):

An Intel Core i3 processor (or equivalent from other manufacturers) is sufficient for basic web application development.

2. Memory (RAM):

4GB of RAM is the minimum, but 8GB or more is recommended for smoother performance, especially if you have other applications running simultaneously.

3. Storage:

A 256GB or larger Solid State Drive (SSD) for faster data access. An HDD can be used, but an SSD significantly improves overall system responsiveness.

4 . Graphics Card (GPU):

An integrated GPU is typically included with Intel Core i3 processors, which is suitable for web development.

5. Operating System:

Windows 10, macOS, or a Linux distribution like Ubuntu are suitable for development and testing.

3.4 Experiment and Results



Fig.3.4.1 : Smart Contract

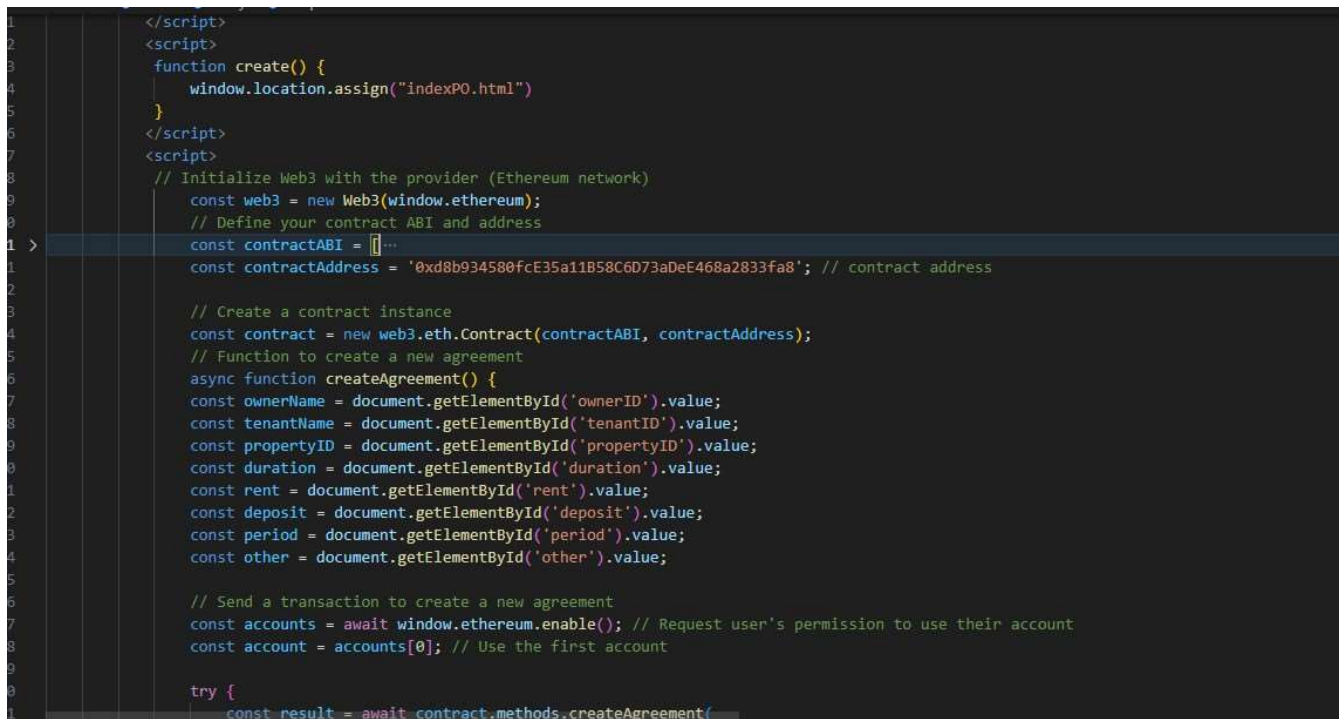


Fig.3.4.2 : Javascript integration



Welcome to the community!

Login / Sign Up

Fig.3.4.3 : Landing Page 1

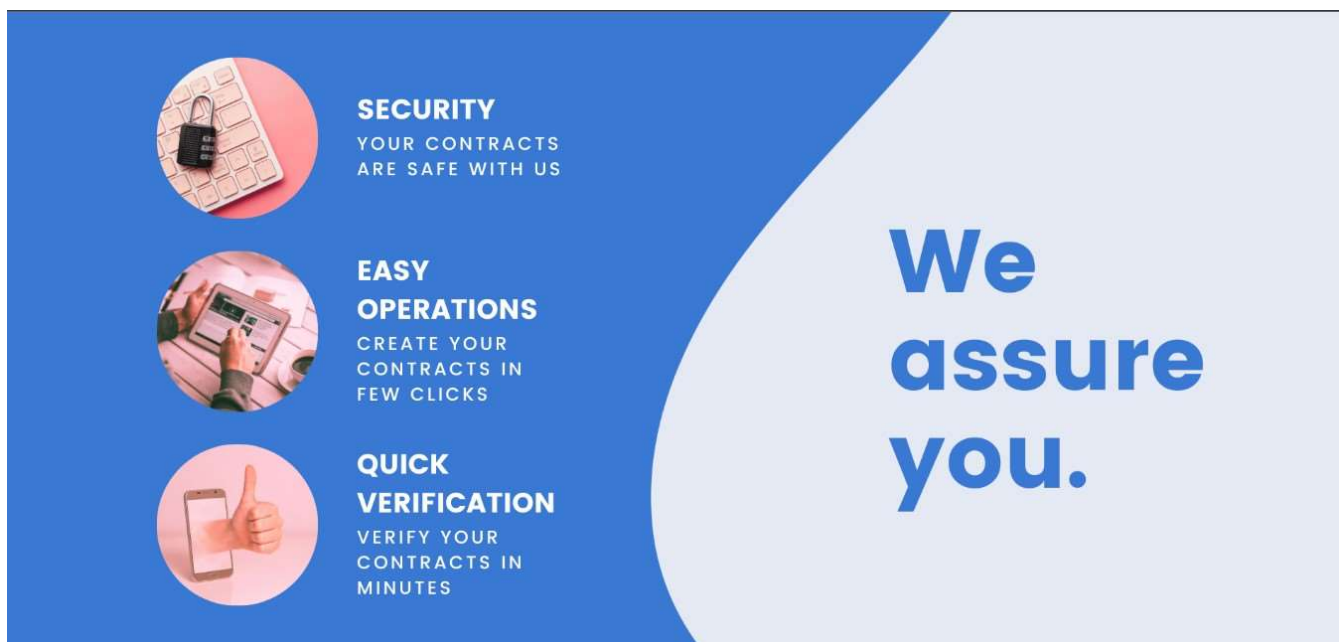


Fig.3.4.4 : Landing Page 2

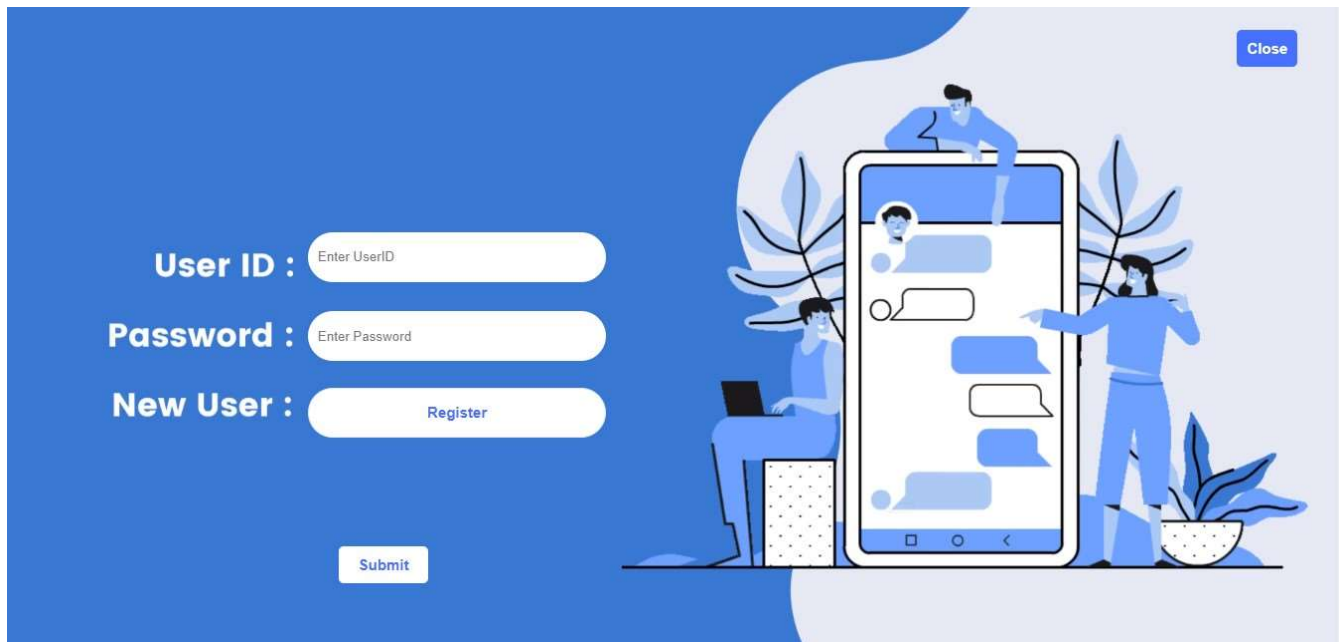


Fig.3.4.5 : Login page

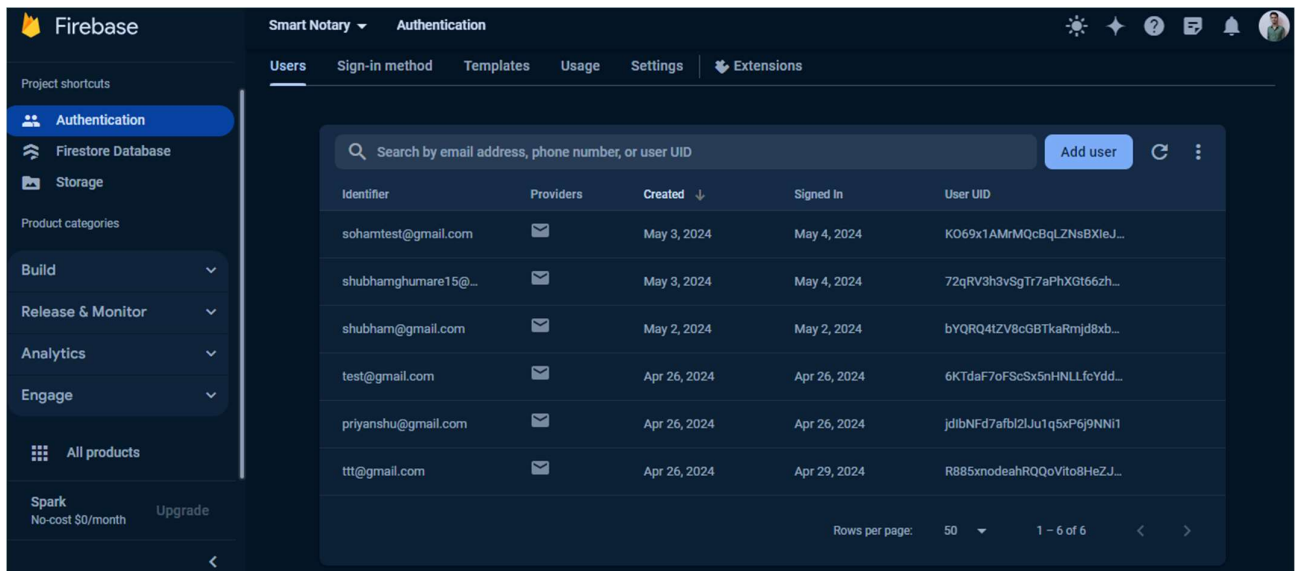




Fig.3.4.6 : Firebase Authentication

Tenants




Shubham Ghumare
 Rent : 16k - 20k Requirement: 1bhk
 Location : Hill Road, Chembur
 Looking for 1bhk apartment in chembur under 20k

Contact




Soham Lad
 Rent : 16k - 20k Requirement: 1bhk
 Location : Hill Road, Chembur
 Looking for 1bhk apartment in chembur under 20k

Contact



Jiya Khan
 Rent : 16k - 20k Requirement: 1bhk
 Location : Hill Road, Chembur






Fig.3.4.7 : Tenants List

Explore Properties



Soham Lad
 Location : XYZ Place
 Looking for 10k rent per month with 50k fist deposit.

More Details

More Images



Shubham Ghumare
 Location : ABC Place
 Looking for 35k rent per month with 50k fist deposit.

More Details

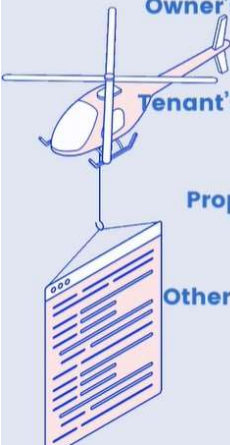
More Images



Fig.3.4.8 : Properties List

[Back](#)

Create Contracts



Owner's Name:

Tenant's Name:

Property ID:

Other Details:

Duration:

Rent:

Deposit:

Notice Period:

Fig.3.4.9 : Contract details

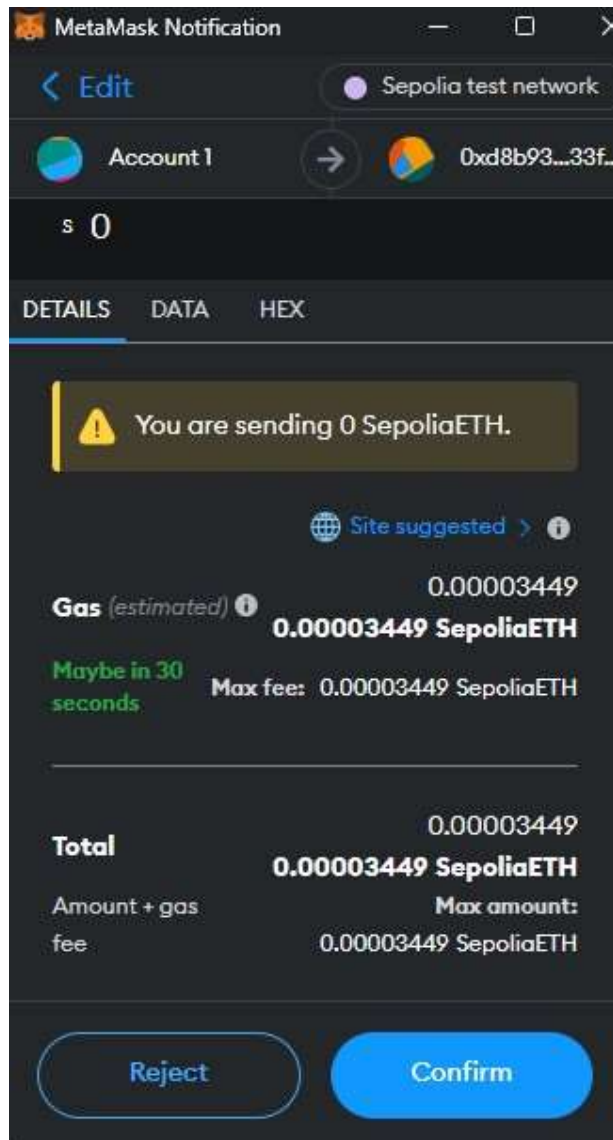


Fig.3.4.10 : Metamask Notification

4. Conclusion & Future Scope

4.1 Conclusion:

In conclusion, the adoption of blockchain technology in the notary profession offers numerous benefits, including increased security, transparency, efficiency and cost reduction. However, it is important to note that the implementation of such solutions requires collaboration between notary professionals, relevant authorities and technology developers to ensure regulatory compliance and the creation of secure and reliable infrastructure.

4.2 Future Scope :

1. The aim of this project is to digitalize the traditional notary system as well as creating a decentralized system of storing records where records will be unaccessed and unaltered by any individual or organization outside the blockchain network.
2. We aim to create a new blockchain that will be accessed by Government officials and legitimates so that they can keep a track on each transaction.
3. This will help them to get details of a particular property instantly in a few searches and a few clicks.
4. We also aim to give the transaction rights to only registered and legitimate lawyers to create transactions of digital notaries.

5. References

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