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CONTRACT MANAGEMENT WITH BLOCKCHAIN

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ABSTRACT

The new frame of Blockchain and other Distributed Ledger Technologies (DLT), has empowered smart contract applications and has expanded research represented considerable authority in brilliant agreement. Smart Contracts are computerized securities that are dispersed, decentralized and require no outsider. Smart Contracts fill in as an extraordinary option for conventional securities/marks. With the utilization of customary SDLC models and the idea of square permanence these agreements are presented. With these qualities of permanence, decentralized nature, cost-time adequacy, there is no necessity of outsider as we are attempting to make this smart contract as an option in contrast to conventional money contracts. The offering system is by and large utilized by state run administrations and organizations to get labor and products from assembling adventures along with specialist co-ops. In any case, e-offering being the most utilized procurement usual methodology, there are different security suggestions present. Blockchain innovation can be utilized to address these security insinuation as it intensely centers around the decentralization of data and is secured by encryption, unsegregated with undeniable square based design for exchanging the board. Here we have examined on how smart contract gets that dependence on ethereum blockchain and how they can be utilized to plan a circulated e-offering framework. We have isolated the task in four areas which are as per the following (i)Tender creation and distributing process, (ii)Bidding process on the delicate, (iii)Evaluation and arranging the bid, (iv)Selecting the Winning bid. Different calculations are utilized to help through each cycle. The security challenges connected with security and realness are assessed then they are placed into correlation with the ongoing offering process. The chief target of this paper is to incorporate an unprejudiced, straightforward and open offering plan.

Keywords: Blockchain, Impartial and Open Tendering Scheme, ethereum, e-tender.

I. Introduction

Smart contracts are self-executing contracts in which the items in the purchaser dealer arrangement are recorded straightforwardly into lines of code. In Blockchain, Smart Contracts assume an extremely fundamental part, it assists with making the exchanges occurring more free from even a hint of harm and capacity in a coordinated way. Furthermore, in addition to that, it assists different parts with loving applications running on these stages be considerably more open and secure. Utilizing it makes the exchanges recognizable, straightforward, and irreversible. Current E-Tendering frameworks are not fair and open‟ implying that the data isn't imparted to all partners. The data is delivered on 'however they see fit' for instance - when an organization is chosen as a victor of an agreement, different organizations that bid on a similar delicate are not advised of why their bid was dismissed and why a specific organization was chosen as a champ. An organization can demand this data yet it is a drawn-out course of getting this information. Despite the fact that examining these records is conceivable, assessing the reports needs time. Aside from not being straightforward, security is likewise a significant issue for these entryways prompting extortion and control of information put away in a unified data set. Assuming a programmer gets hold of this unified information base, offers can be spilled to contenders prompting major monetary and vital misfortunes for a business. Blockchain innovation can be utilized to address these security suggestions as it intensely centers around the decentralization of data and is gotten by encryption incorporated with irrefutable square based engineering for exchange the executives. Thus, Blockchain and Smart Contract can be utilized as a straightforward, decentralized and got offering structure that will work with bidders' oversight on entryway works and see all the exercises did by the delicate entrance.

II. LITERATURE SURVEY

S. NO	Journal Type with Year	Authors	Title	Outcomes
1	IEEE Access, 2019	Wang, Wenbo, etal.	A review on agreement instruments and mining technique the board in blockchain networks.	They give a methodical vision of the association of blockchain networks
2	IEEE ,2018	Ambegaonker, Ajeenkkya, Utkarsh Gautam,and Radha Krishna Rambola	Efficient approach for Tendering by acquainting Blockchain with keep up with Security and Reliability	Working on web-based framework for offering however it isn't secure as it ought to be on the grounds that offering has secret information which shouldn't be spilled and Blockchain tackles that issue productively.

3	IEEE, 2017	Zheng, Zibin, etal	An outline of blockchain innovation: Architecture, agreement, and future trends	They give an outline of blockchain architecture right off the bat and analyze some ordinary agreement calculations used in different blockchains.

S. NO	Journal Type withyear	Authors	Title	Outcomes
4	Edward Elgar Publishing, 2016	Pilkington, Marc	Blockchain technology: principles and applications. Research handbook on computerized transformations	It uncover the principal elements of decentralized public record stages
5	2016 Conference	L. Luu, D.-H. Chu, H. Olickel, P. Saxena, and A. Hobor	Making smart contracts smarter	They present a few new security issues in which an enemy can control smart contract execution to acquire benefit.
6	Journal, 2017	Cachin, Christian, and Marko Vukolić	Blockchain consensus protocols in the wild	Discusses the method involved with surveying and acquiring trust in the versatility of an agreement conventions presented to flaws and ill-disposed hubs.

Technologies Used

Hardware Configuration

Processor : Intel® Core i5-7200 or above

RAM **:** 8GB

System : 64bit OS, x64 processor

SSD/HDD **:** 128GB

Software Configuration

Operating System	: Windows7/8/10
Application Server	: Xampp
Front End	: HTML, CSS
Scripts	: Javascript
Database	: MySQL
Technologies	: Python 3.9+
IDE	: PyCharm

Existing System

The unchanging nature and got information process isn't there in customary frameworks. Since customary agreements were not secure and could be altered effectively consequently brought about claims. Dangers and ignorance that are concealed in the desk work bring about defects in the current framework. Formal lawful agreements are generally utilized in some certifiable applications, going from information sharing frameworks to complex monetary exchanges. In existing frameworks no manual check will get all mistakes, and deficient arrangements that outcomes in claims . Conventional agreements need actual mark, they are costly and are not cost-time compelling. Conventional Contracts require an outsider for validation and are variable by anybody, need manual installment and require manual presence. Thus, Traditional Contracts have different issues related with them.

Proposed Solution

In this we have proposed an answer for every one of the current blunders that are there with the ongoing framework. We have taken a stab at connecting the bidders record to the Tender Officer's account. We have protected the Tender data with hash keys. This large number of qualities will

empower the future users(bidders) to save their time, cash while applying for tenders. This will expand the proficiency and administration for bidders and tender's officials.

Feature Extraction

When a condition is met, the agreement is executed promptly in light of the fact that savvy contracts are carefully mechanized, there is no desk work to process and no time spent accommodating mistakes that frequently results from physically filling in archives.

Trust and transparency because there is no third party involved, and in light of the fact that encoded records of exchanges are shared across members, there is compelling reason need to address whether data has been changed for individual advantage.

Security Blockchain exchange records are scrambled, which makes them extremely difficult to hack. In addition, in light of the fact that each record is associated with the past and resulting records on an appropriated record, programmers would need to modify the whole chain to change a solitary record.

Smart contracts eliminate the need for intermediaries to handle transactions.

APPLICATIONS OF SMART TENDERS

Smart Tenders can be utilized in different fields which are referenced underneath:

- Monetary Tenders
- Supply Chain Management/ Inventory network Management
- Trading Activity/ Exchanging Activity
- Insurance/Protection
- Escrow
- Mortgage Systems/Contract System
- Finance Services
- Hospital Management
- Infrastructure

Smart Contract Platforms

Different blockchain platforms (e.g., Ethereum, Bitcoin and NXT) can be used to create and deploy smart contracts.

- Bitcoin: - It is a public blockchain network that can be used to process cryptocurrency transactions, but it only has a small compute capacity. Bitcoin makes use of a bytecode scripting language that is built on stacks.

- NXT: - NXT is a public blockchain platform with smart contract models.

- Ethereum: - Ethereum is a public blockchain platform that uses a Turing-complete programming language to support advanced and customizable smart contracts. Withdrawal caps, loops, financial contracts, and gambling markets are all possible on the Ethereum network. Ethereum smart contracts use a stack-based bytecode language to write their code, which is then executed by the Ethereum Virtual Machine (EVM).

RELATED WORK

Smart contracts have built-in accountability and forge resistance, making it easier to execute contractual agreements. Smart contracts are useful in a variety of applications due to their distinguishing characteristics. There is a plethora of smart contract solutions on the market, each with its own set of distinguishing features that are best suited to particular applications.

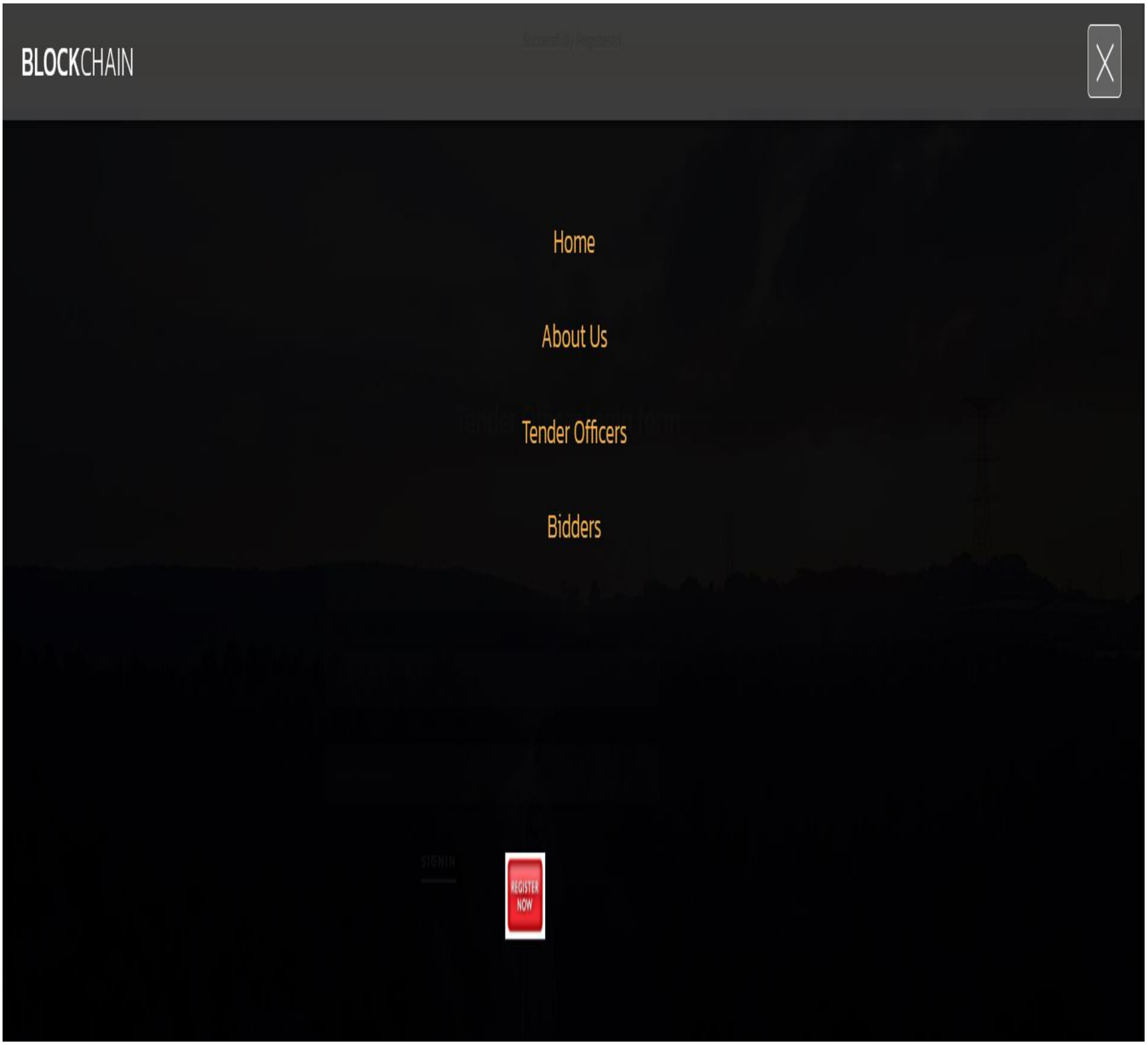
- Wang et al. presented a detailed overview of blockchain-powered smart contracts, highlighting the smart contracts' unique problems as well as future developments.
- Wright et al. discussed the advantages and disadvantages of emerging decentralized technology, as well as the need for the expansion of a new subset of law known as Lex Cryptographia, to regulate blockchain-based smart contract-based entities under legal theory.
- Aggrawal et al. provided a detailed in-depth study in the sense of smart communities, as well as a comparison to previous surveys.
- Wust et al. critically studied the applicability of blockchain for a specific application situation, suggesting a formal framework for determining the appropriate technological solutions, and evaluating it with some real-world examples.

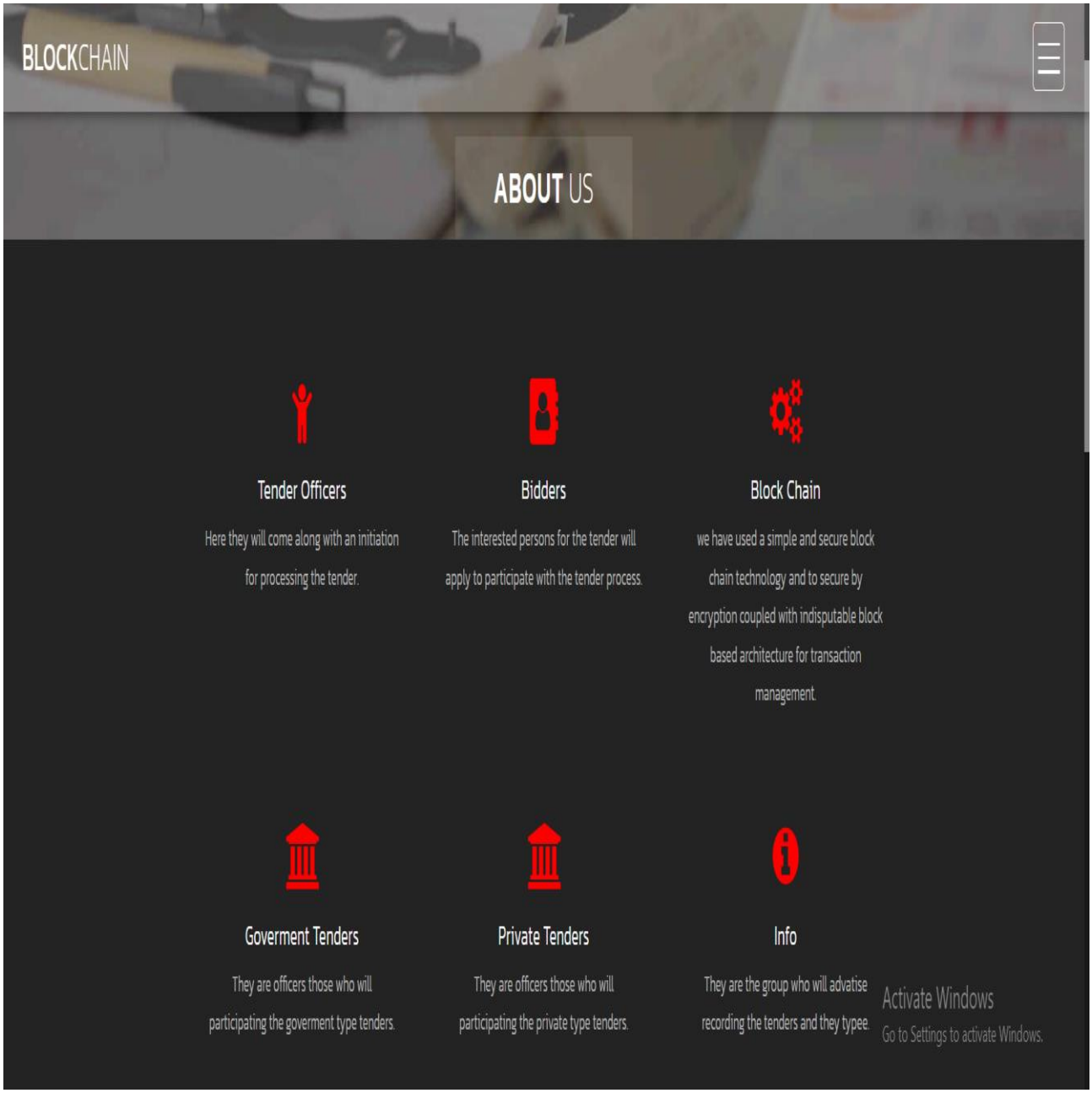
- Clack et al. investigated the design landscape of possible formats for storing and transmitting smart legal agreements in conjunction with blockchain technology, with a focus on the financial services sector.
- Chen et al. proposed an agent model for contract execution over a network of decentralized nodes and public ledger, to prevent users from manipulating smart contract execution by applying principles of game theory and agent based analysis.
- Sousa et al. designed, implemented, and evaluated a BFT ordering service for HLF on top of the BFT-Smart state machine replication/consensus library, implementing also optimizations for wide-area deployment with good results.

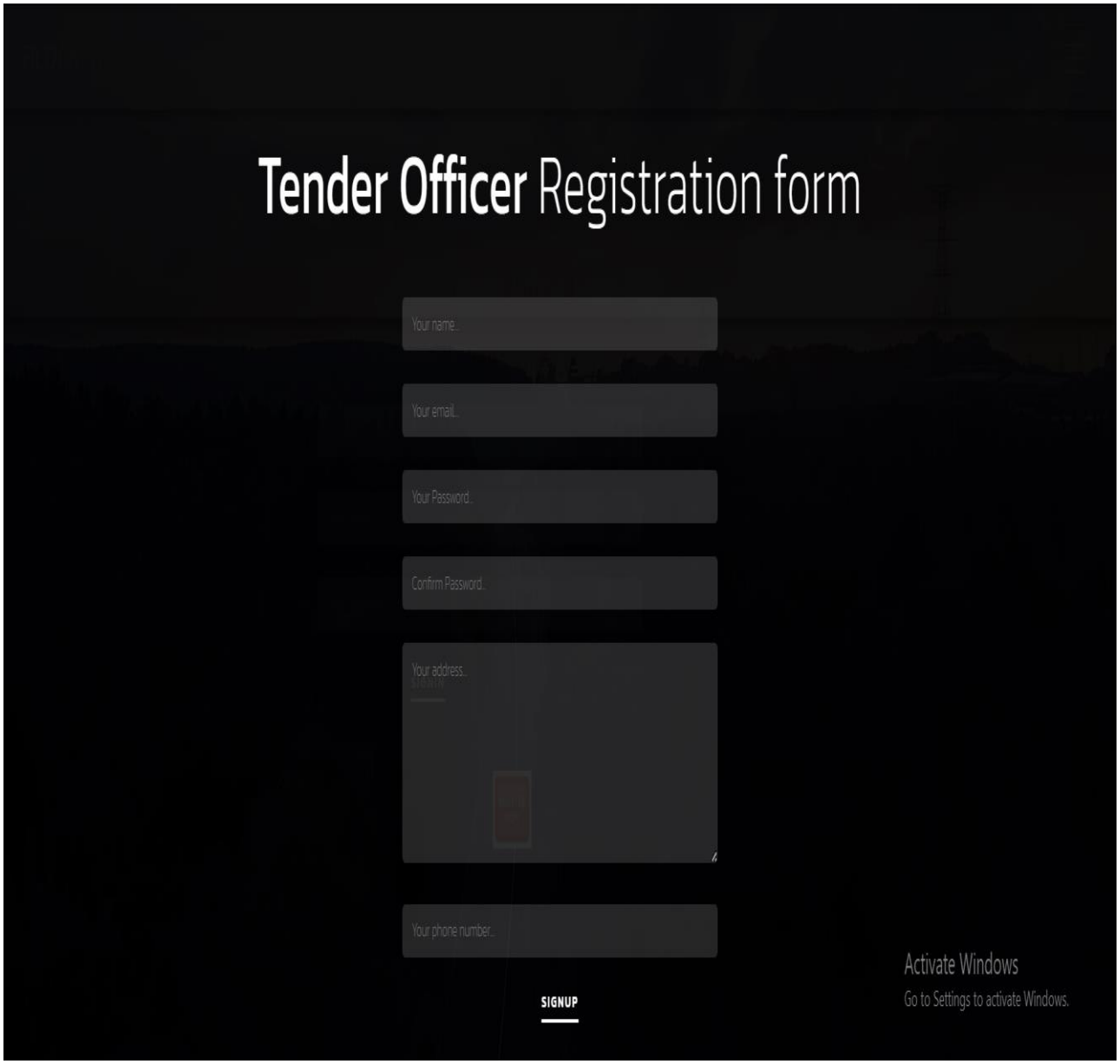
SCOPE

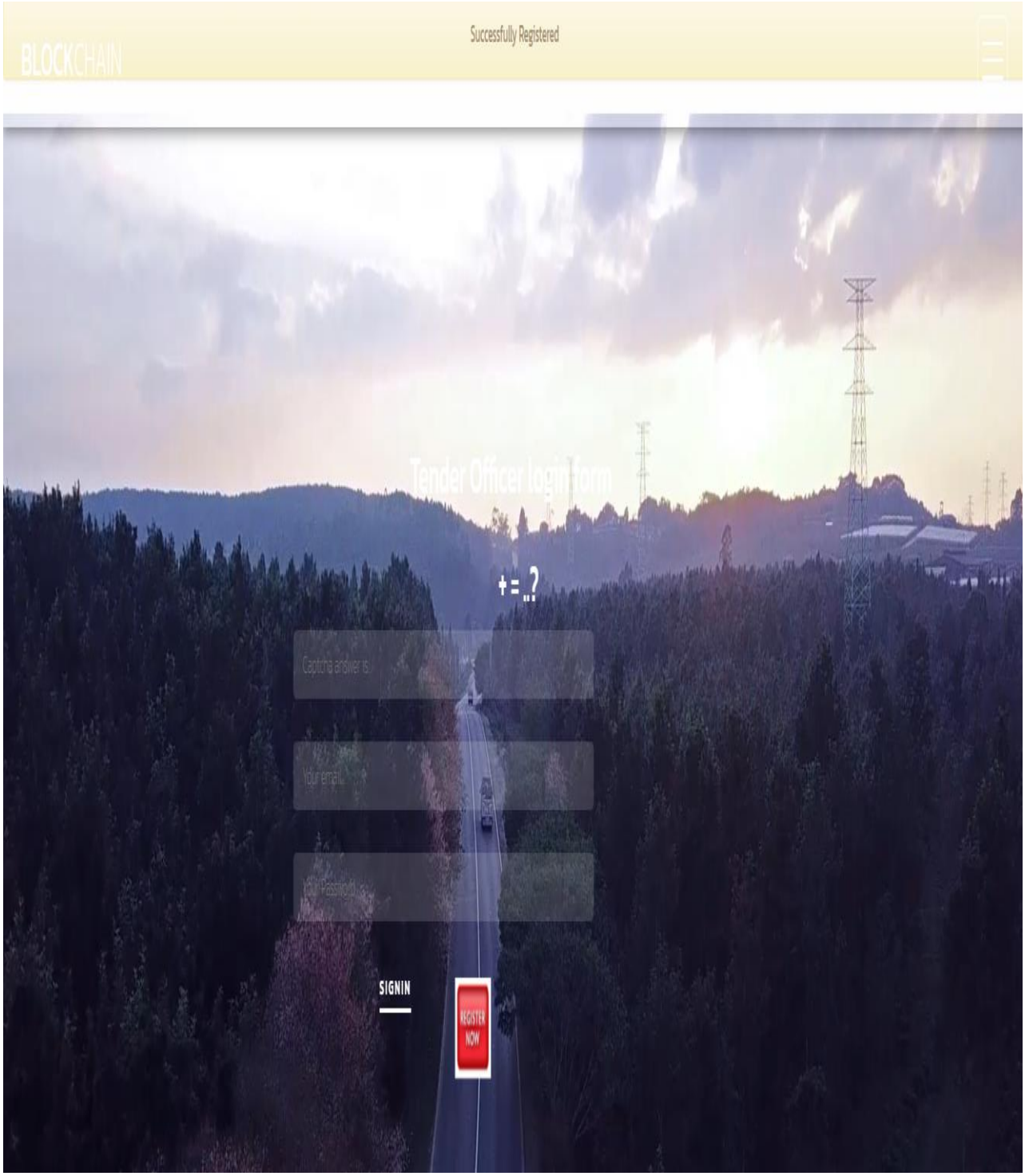
There are two further research directions, which are as follows - The Smart Contract can be made more secure by using more complex cryptographic algorithms for eg. SHA-256 to encrypt its confidential contents. The use of blockchain is explored further in other government services.

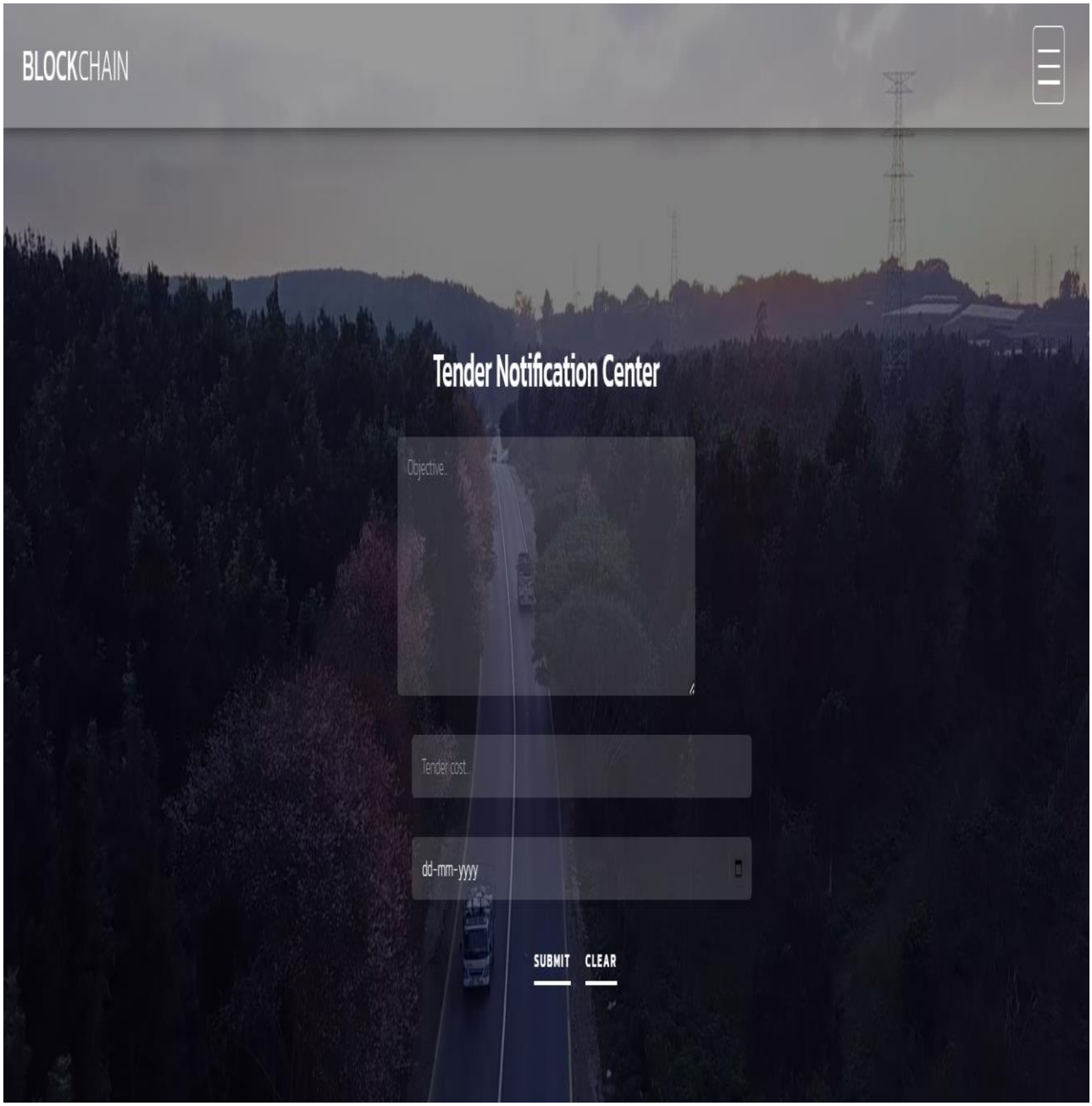
IMPLEMENTATION SCREENSHOTS

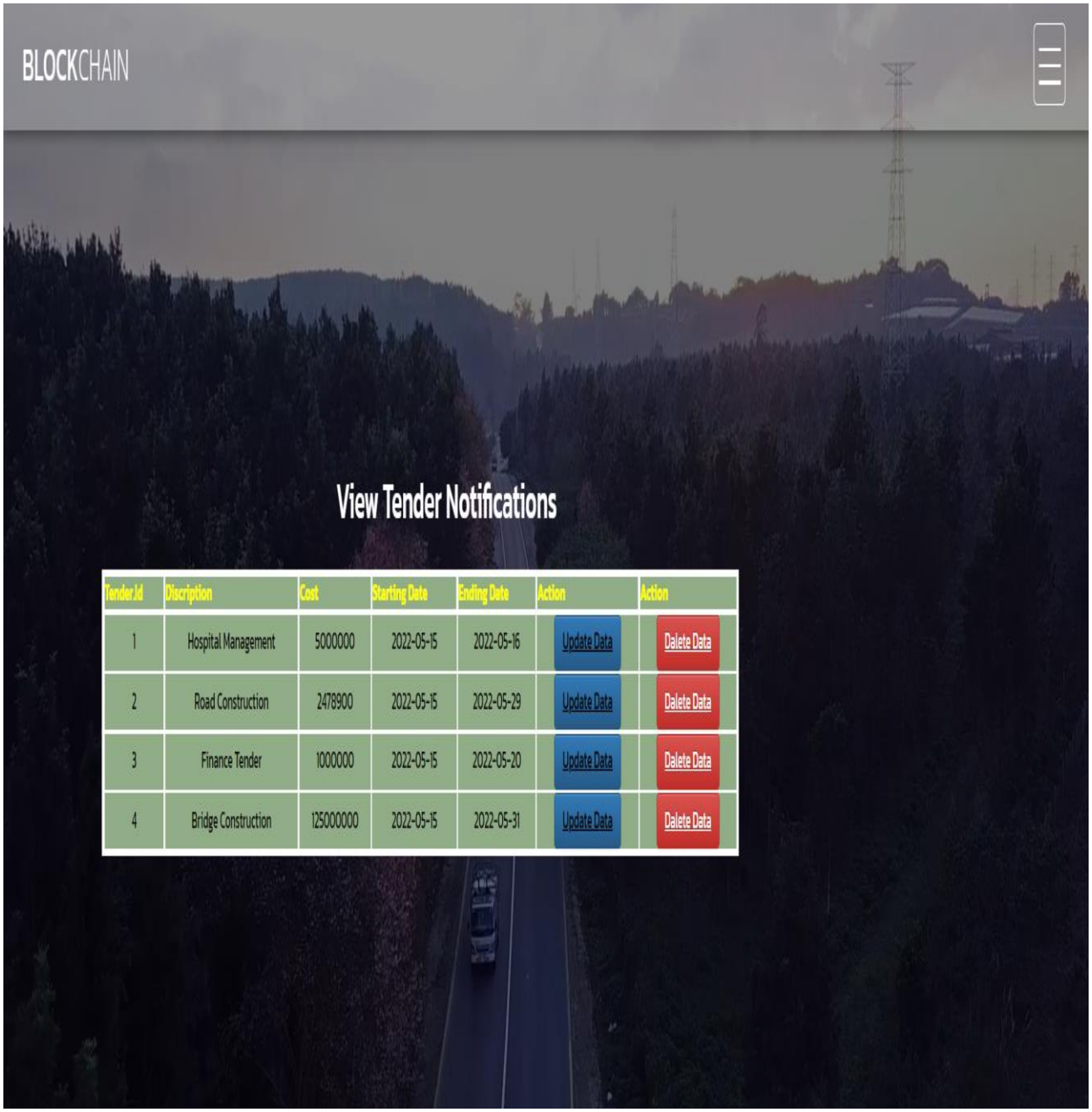

BLOCKCHAIN
Home
About Us
Tender Officers
Bidders
REGISTER NOW


BLOCKCHAIN
ABOUT US
Tender Officers
Here they will come along with an initiation for processing the tender.
Bidders
The interested persons for the tender will apply to participate with the tender process.
Block Chain
we have used a simple and secure block chain technology and to secure by encryption coupled with indisputable block based architecture for transaction management.
Goverment Tenders
They are officers those who will participating the goverment type tenders.
Private Tenders
They are officers those who will participating the private type tenders.
Info
They are the group who will advatise recording the tenders and they typee.
Activate Windows
Go to Settings to activate Windows.


Tender Officer Registration form
Your name..
Your email..
Your Password..
Confirm Password..
Your address..
Your phone number..
SIGNUP
Activate Windows
Go to Settings to activate Windows.


Successfully Registered
BLOCKCHAIN
Tender Officer login form
SIGNIN
REGISTER NOW


BLOCKCHAIN
Tender Notification Center
Objective..
Tender cost..
dd-mm-yyyy
SUBMIT
CLEAR


BLOCKCHAIN
View Tender Notifications
Tender Id
Discription
Cost
Starting Date
Ending Date
Action
Action
1
Hospital Management
5000000
2022-05-15
2022-05-16
Update Data
Delete Data
2
Road Construction
2478900
2022-05-15
2022-05-29
Update Data
Delete Data
3
Finance Tender
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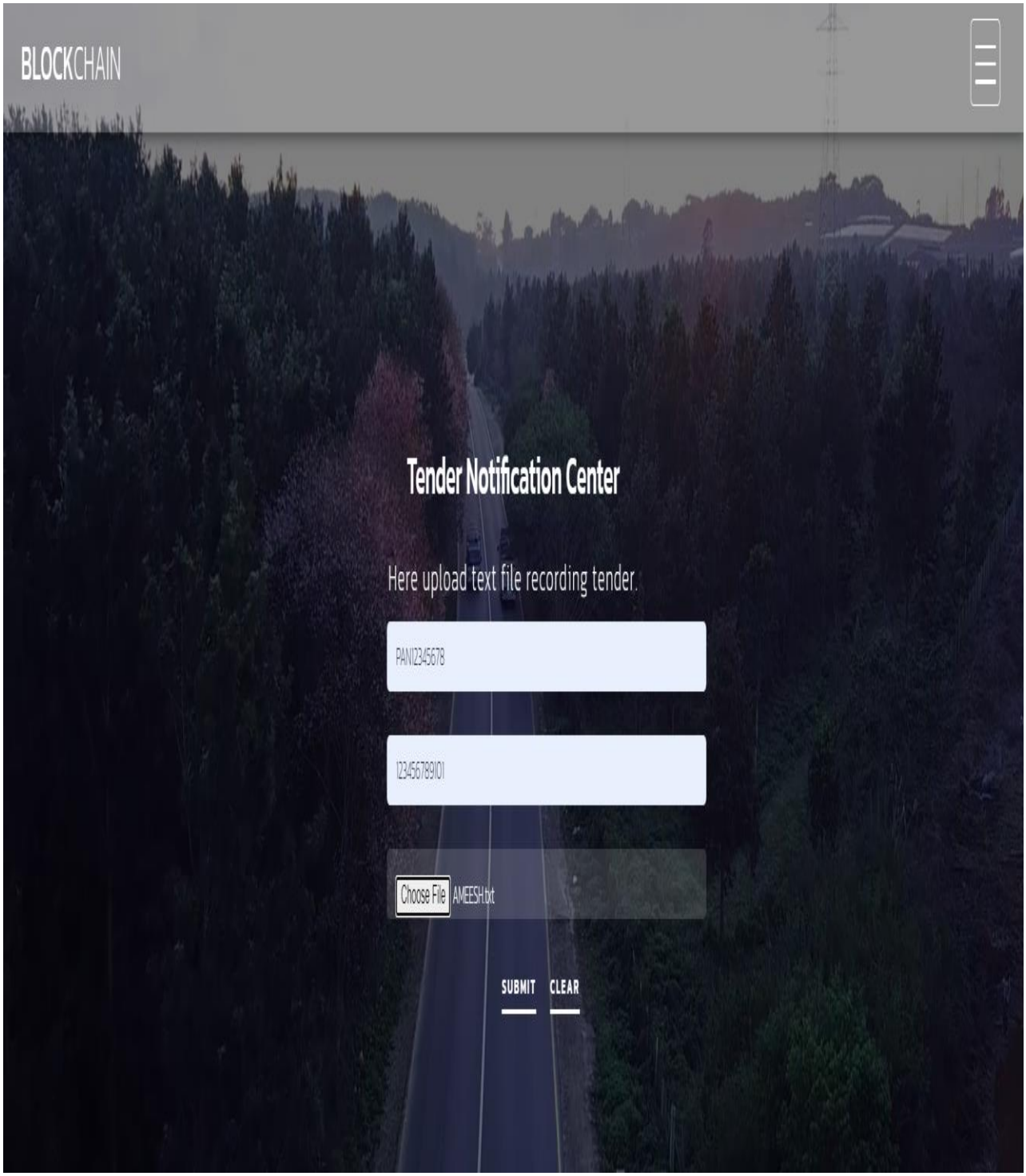
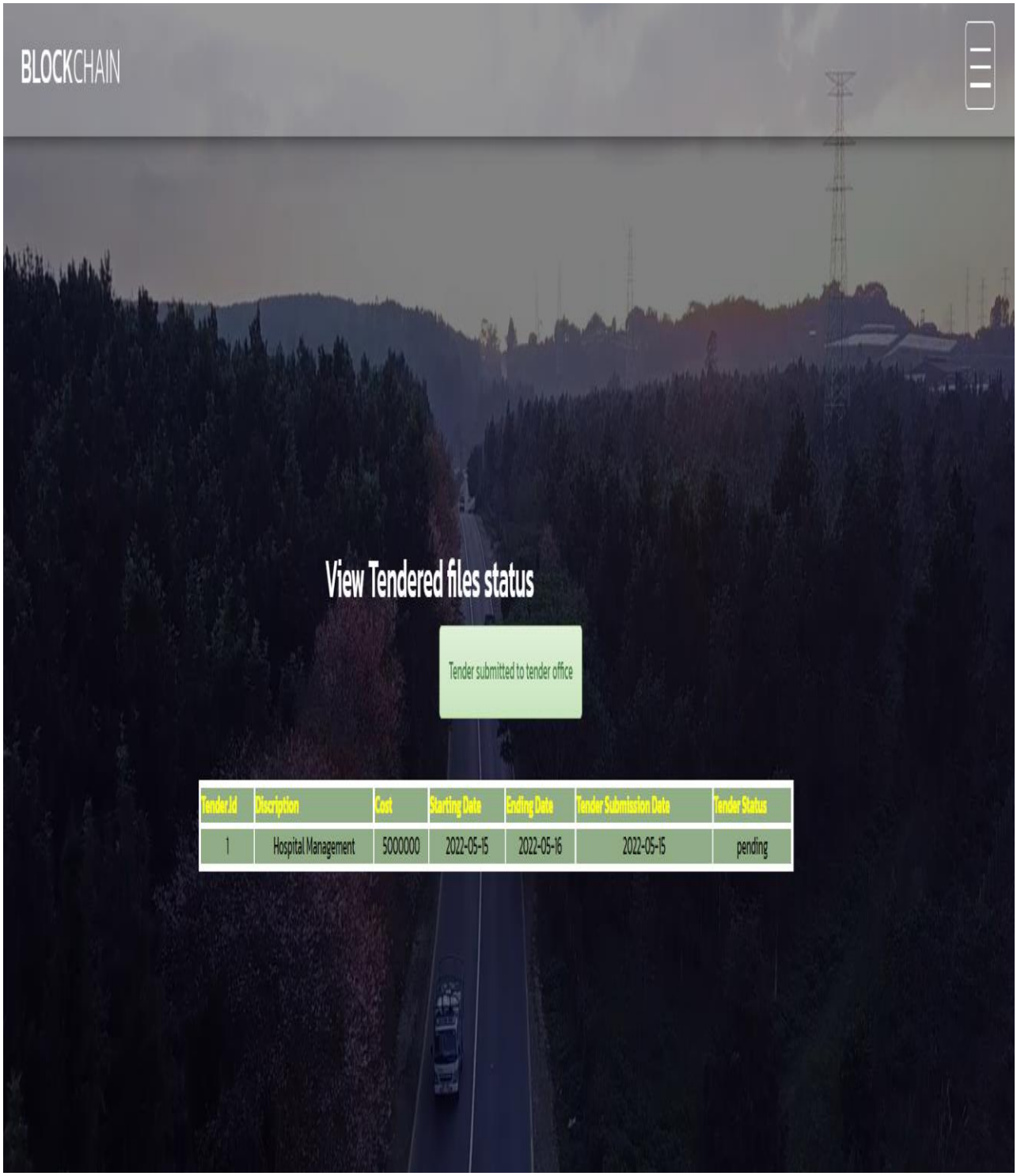
2022-05-15
2022-05-31
Update Data
Delete Data


BLOCKCHAIN
Tender Notification Center
Here upload text file recording tender.
PAN12345678
123456789101
Choose File
AMEESH.txt
SUBMIT
CLEAR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View Tendered files status
Tender submitted to tender office
Tender Id
Discription
Cost
Starting Date
Ending Date
Tender Submission Date
Tender Status
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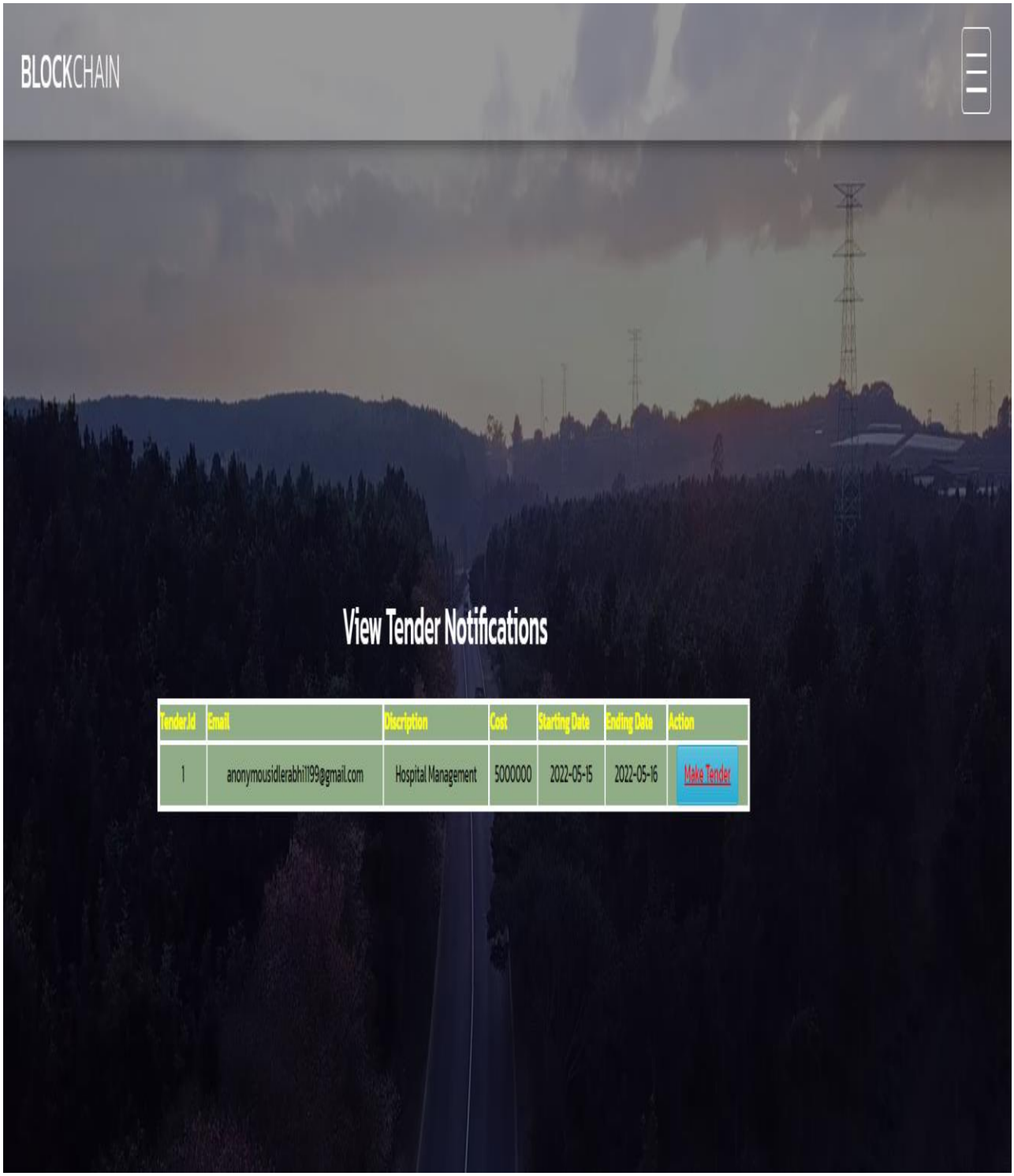
2022-05-16
2022-05-15
pending


BLOCKCHAIN
View Tender Notifications
Tender Id
Email
Discription
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Starting Date
Ending Date
Action
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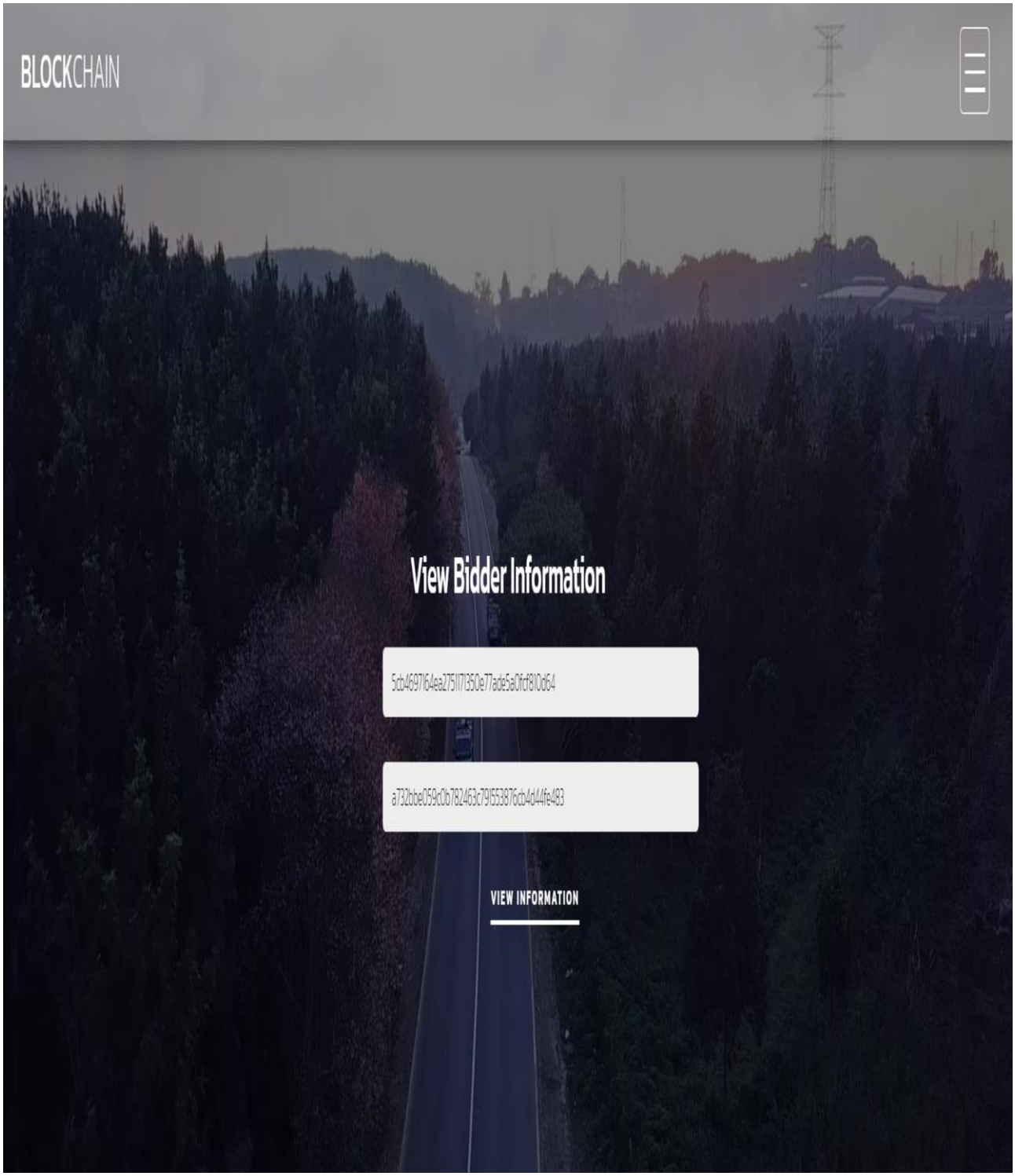
Hospital Management
5000000
2022-05-15
2022-05-16
Make Tender


BLOCKCHAIN
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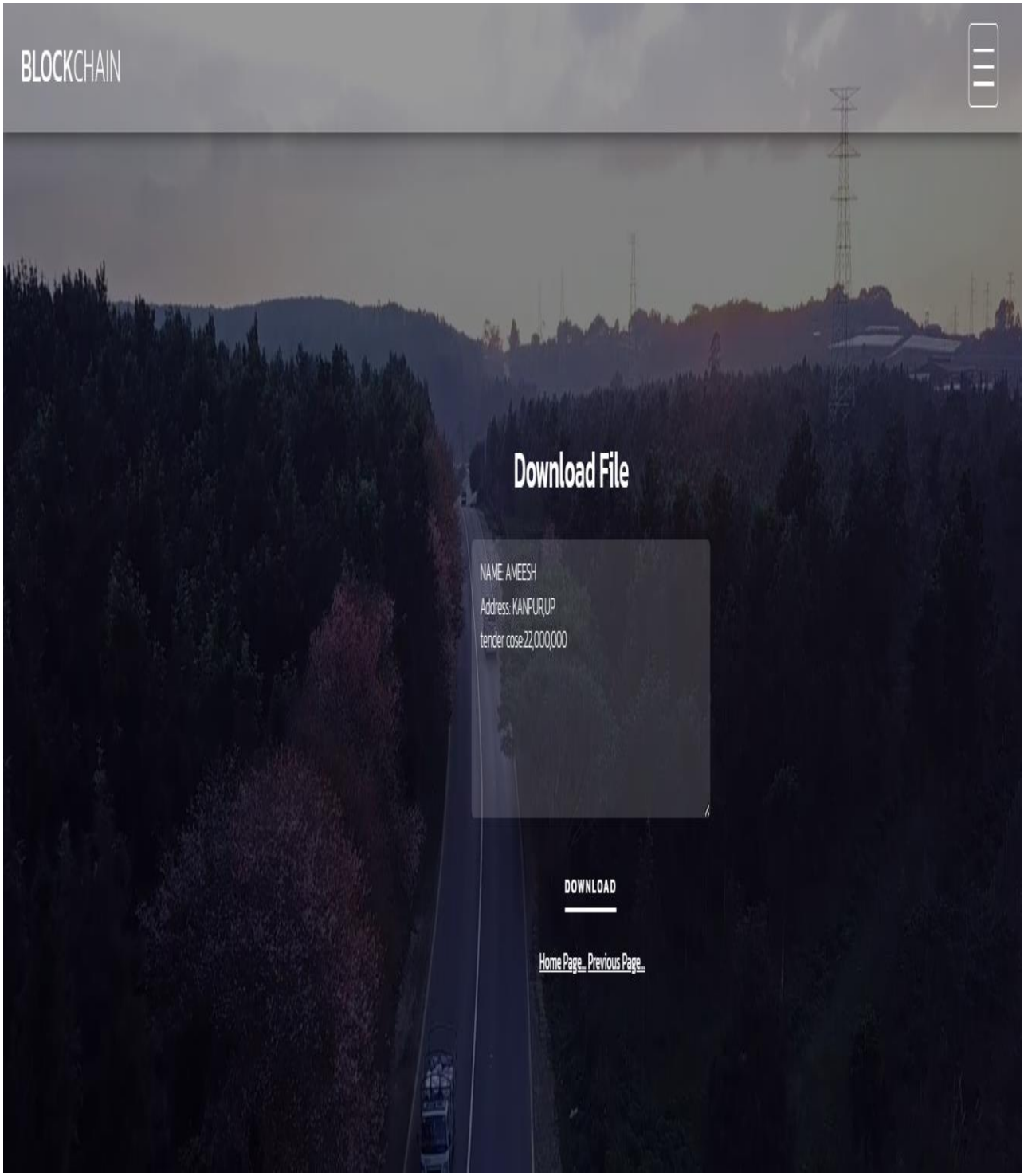
VIEW INFORMATION


BLOCKCHAIN
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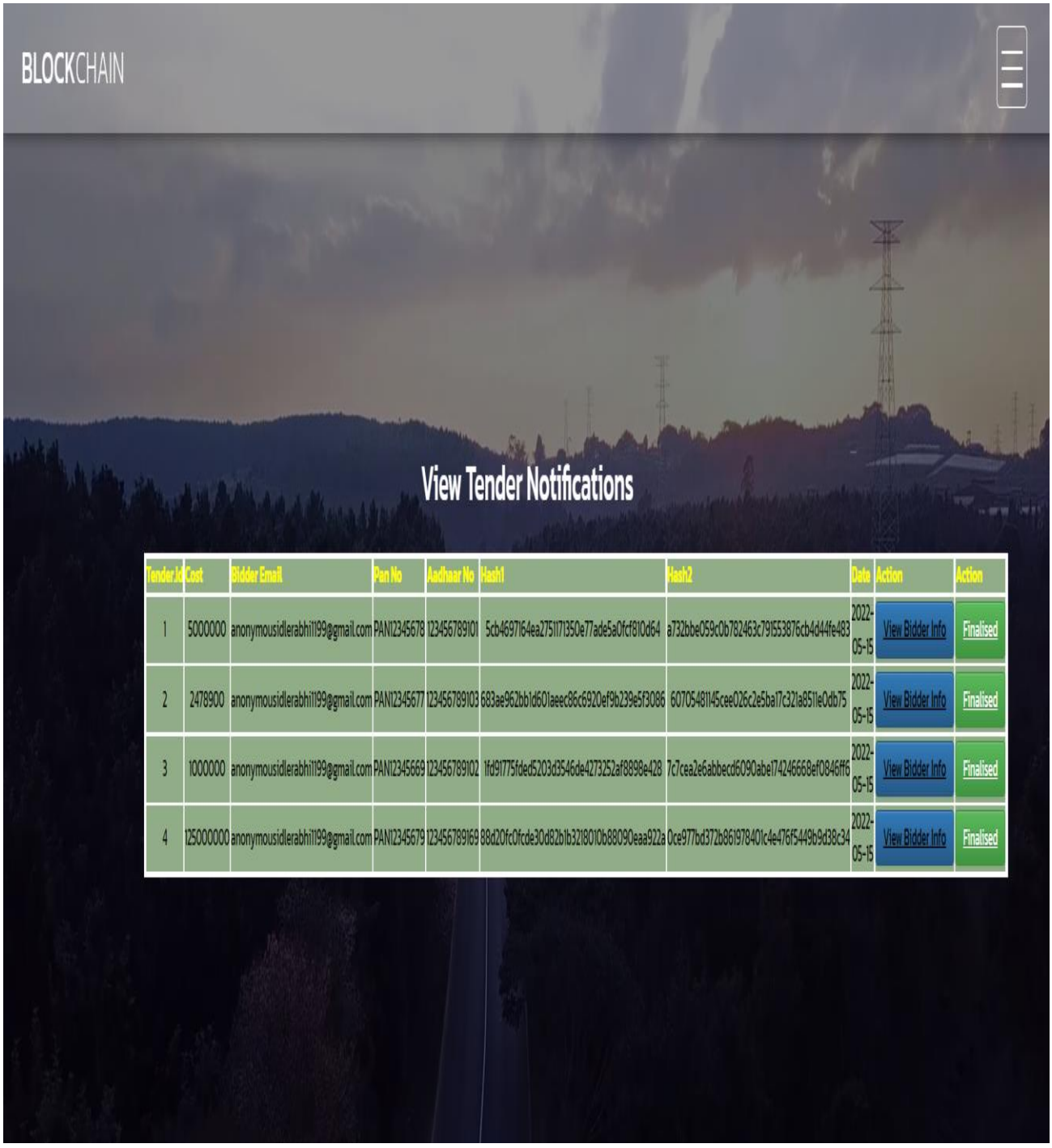
tender cose:22,000,000
DOWNLOAD
Home Page.. Previous Page..


BLOCKCHAIN
View Tender Notifications
Tender Id
Cost
Bidder Email
Pan No
Aadhaar No
Hash1
Hash2
Date
Action
Action
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View Bidder Info
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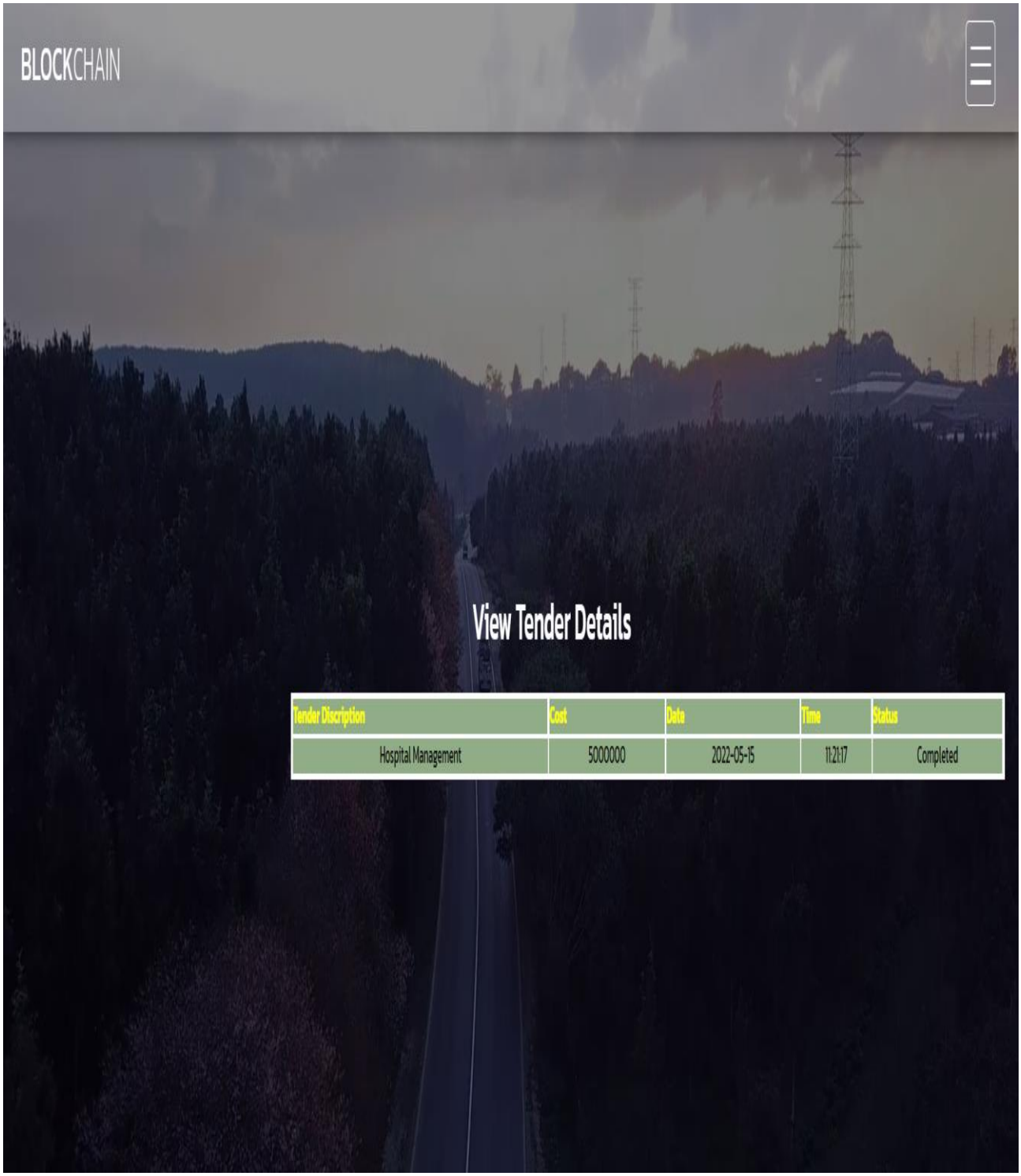
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View Tender Details
Tender Discription
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Date
Time
Status
Hospital Management
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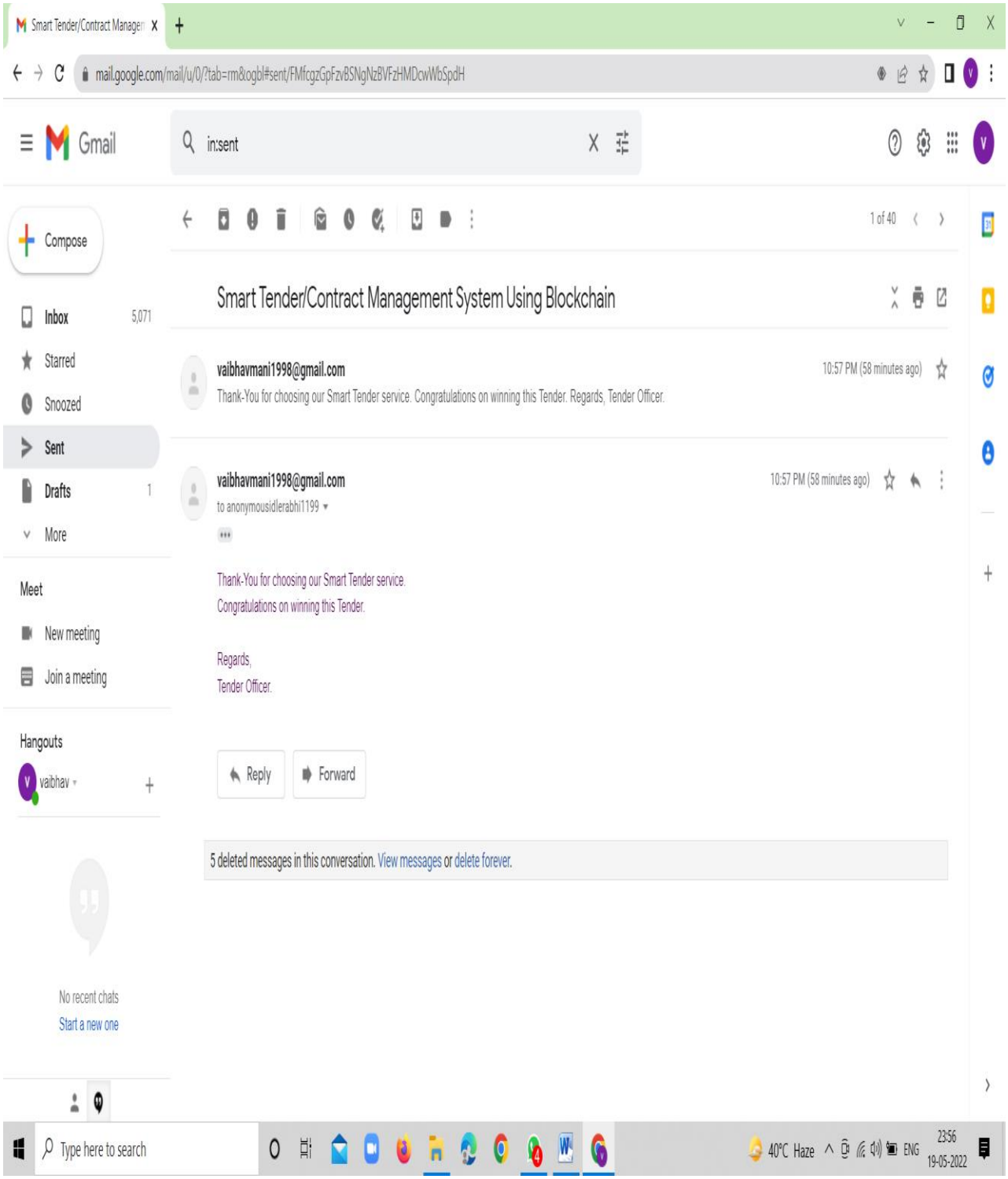
2022-05-15
11:21:17
Completed


Smart Tender/Contract Manager
mail.google.com/mail/u/0/?tab=rm&ogbl#sent/FMfcgzGpFzvBSNgNzBVFzHMDcwWbSpdH
Gmail
in:sent
Compose
Inbox 5,071
Starred
Snoozed
Sent
Drafts 1
More
Meet
New meeting
Join a meeting
Hangouts
vaibhav
No recent chats
Start a new one
1 of 40
Smart Tender/Contract Management System Using Blockchain
vaibhavmani1998@gmail.com
10:57 PM (58 minutes ago)
Thank-You for choosing our Smart Tender service. Congratulations on winning this Tender. Regards, Tender Officer.
vaibhavmani1998@gmail.com
10:57 PM (58 minutes ago)
to anonymousidlerabhi1199
Thank-You for choosing our Smart Tender service.
Congratulations on winning this Tender.
Regards,
Tender Officer.
Reply
Forward
5 deleted messages in this conversation. View messages or delete forever.
Type here to search
40°C Haze
ENG
23:56
19-05-2022

III. METHODOLOGY

The procedure has the following steps:

(1) Open Xampp, MySQL, Pycharm parallelly.
(2) In Xampp start MySQL and connect the the Database in MySQL then run the code in PyCharm.
(3) In output click on the web address that is mentioned.
(4) Copy the web address to another tab.
(5) Then on the tabs that have opened on Chrome open Tenders Officers and Bidders from the drop down menu that available in both tabs simultaneously.
(6) Click on Register Now button and sign in in both tabs.
(7) Fill the Tender's and Bidder's information in respective fields.
(8) Enter the ID information.
(9) A hash key has been created protecting the information.
(10) Finalize the tender and Open another tab in with the gmail of Admin account.
(11) A mail is send to bidder from Tender Officer's account.

ALGORITHM

- The encryption process uses a set of specially derived keys called round keys. The data is to be encrypted. This array we call the state array.
- You take the following aes steps of encryption for a 128-bit block:
- Derive the set of round keys from the cipher key.
- Initialize the state array with the block data (plaintext).
- Add the initial round key to the starting state array.
- Perform nine rounds of state manipulation.
- Perform the tenth and final round of state manipulation.
- Copy the final state array out as the encrypted data (ciphertext).
- The reason that the rounds have been listed as "nine followed by a final tenth round" is because the tenth round involves a slightly different manipulation from the others.
- The block to be encrypted is just a sequence of 128 bits.

IV. CONCLUSION

When it comes to applications such as tender portals, where transparency and security are of preeminent significance, traditional innovations and configuration designs can't be utilized as they put a danger to these prerequisites. As examined before, there are numerous security necessities for an offering system that can't be settled just by involving a concentrated delicate entryway for making and offering on the agreements. The security necessities and transparency expected from this sort of utilization must be addressed by utilizing fair, open, decentralized innovation, for example, Blockchain based Smart Contracts. Here we examine, how a framework like this can be planned by referencing different cycles included and their fundamental execution.

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