E-Tender System using Blockchain

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***Abstract*— A tender is a procedure for obtaining proposals from the public and private sectors for a significant project. The existing method makes it difficult to distribute tenders, which slows down the process and increases the possibility of meddling from outside parties (such brokers). Due to its adherence to the decentralized nature of distributed databases, blockchain generation is one of the technologies that enables covered structures without the involvement of a third party. In order to store bidder data in blocks of files using blockchain technology, we are offering an easy design for a tender application. and concentrate in particular on clearing and settling bids. It uses a machine learning approach based on data to generate a schema for tender approval and assigns tenders to bidders synthetic intelligence.**

Keywords-rtificial Intelligence, Bid, Blockchain, Clearance, Settlement, Tender.

I. INTRODUCTION

Blockchain (BC) has received a lot of interest due to its distributed and relatively relaxed nature, as well as its potential for commercial uses. For major projects like takeover bids or the delivery of equipment, the government, the private sector, or the exchange may legally invite bids through a tender. Pre-agreement in compliance with industry standards and post-tender manipulation are both included in clearing. Customers can get stock tender clearing and stock settlement services through a clearinghouse. The clean allocation of open tender is a tedious undertaking, and labor completion-based budgeting is challenging to control. The tender clearance device is also currently quite slow.

The idea behind this proposed system is to show how Blockchain technology adheres to the decentralized nature of allocated databases to allow for incorporated structures without the requirement of a third party (broker) and a replication of numerous bids. by settling and clearing tenders using blockchain technology. Blockchain holds out hope for decreasing fraud, particularly tampering with databases.

In order to prevent other parties from meddling with (or favoritizing) the allocation of tenders, blockchain will be used for tender clearance and settlement. to avoid corruption by using secure clearance and competitive bidding. to alert bidders of the tender request and to preserve the tender papers and information in a dispersed manner.

Second, a literature survey

The system's primary function is to make the tender documents and application forms available to customers online. Daily, a number of tenders will be made available for free, and as a result, fresh tenders are updated so that consumers can read them and transfer the tender type if they're interested. The user will be given access to the tender papers. The user will access several tenders from the company at first and may transfer the designated forms. This method may also manage numerous tender documents at once. The user will online submit the department with the major elements and the quotation. Then, on the analysisdate, the department staff evaluates all of the tenders filed b users, and they allocate that being employed by the UNorganization in question qualifies and qualifies for a smaller volume [1]. The model may be a completely new abstract depiction of a digital, web-based, computer-controlled tendering solution that includes all relevant division system modules, stakeholders, and phases of the tendering process. The model will serve as the basis for the establishment of a fresh framework for the development of a suitable e-Tendering system that fully automates the tendering procedure in any organization.

Tendering Management System (TMS) [2].

Obtaining offers that satisfy a contract, evaluating those offers, and selecting one of them based on predetermined criteria are all steps in a controlled method called a tender. The requirements for a secure tendering system are outlined in this article, along with a proposal employing cryptographic primitives. To evaluate the protocol's adherence to the security functions, Maple mathematical software is used. The preservation of the papers' appropriate integrity, authentication, non-repudiation, and confidentiality is the mainobjective [3].

The Public-Private Partnership was surgically carried outby the Chinese government. To describe the many biological process stable ways and to generate a diagram of the dynamic replication component, a biological process game model was developed. The examination of each participant's sport behavior choices led to recommendations to toughen the penalties for rent-seeking, implement useful direction suggestions, and reduce the cost of direction. It provides a scientific justification for a surgical procedure project tender

[4]. The National Securities Clearing Corporation (NSCCL) is used as a victim for the clearing and

settlement mechanism in Asian countries (in the case of NSE). The settlement process takes two working days to complete after the mercantilism day. The project creates a blockchain victimization clearing and settlement paradigm. The settlement period is reduced by the model from two days to a few minutes. The proposed concept includes a distributed ledger that operates simply and with good judgment.

Knowledge is transferred through the network's members' gifts. The settling time is shortened by the rapid exchange of knowledge between completely unrelated entities [5].

Customers should sign up on their own, and they will receive a secret word and a permanent customer ID. He will be able to download the delicate structures in the future using this ID and secret word. The buyer will have access to all of the company's tenders at once and may transfer the required structures when dealing with several sensitive reports at once.At that point, the office personnel evaluate each tender submitted by a buyer on the evaluation day, and they assign the job to the buyer who qualifies and receives fewer citationsoverall [6].

Tanzania's public procurement process may be dreadfully ineffective, leading to enormous costs, corruption, and delays in the completion of public works. This essay examines how innovation can be used in public procurement to promote genuine equity, competition, transparency, and value for the tax payers' money. The basic procurement management procedures used in Tanzania, the difficulties, how the technique affects the public, and how e-evaluation as acomponent of electronic procurement will reduce thosedifficulties are all discussed in this paper.

As the time and cost of the public approach, the project eventually establishes a specified scope for the deployment of a cost-effective e-tendering system [7].

- When people are unaware of it, the open tender is referred to in current technology as both offline and online. Typically, tenders are mentioned in nationalized media and on websites where requests for bids are submitted for a variety of objectives. Sensitive information is sometimes not preserved securely since the bidder still chooses the tender request method manually. The work order assignment is totally completed by the lowest bidder. The procedure of allocating tenders takes a long time because it involves reviewing 100 files of previous job history. The survey's findings are listed below.
- Favouritism.
- Corruption
- No replication of information due to centralizedsystem
- High Competition
- Tender information less secure.
- No notification of new tender call to bidders
- Maintaining data of a particular bidder is difficult.

II. PROPOSED SYSTEM

In the proposed System Tender Clearance and Settlement using Blockchain notify tender call to the registe red bidders, basically tender called upon newspaper and w ebsites. Bidders can file tenders based on the notifications published on the newspaper and websites. Once bidder registered to our proposed system, the bidders facts is saved within the server with the aid of encryption of the blocks of documents it use blockchain technique. To provide Eas y clearance of tenders and secure settlement of tenders to bidders. Tender approval schema by machine learning pro cess based on the Artificial Intelligence. These are the advantages of proposed system:

- High Competition but No Favoritism.
- Secured Clearance and settlement.
- Replica of tender information.
- Notification of all new tender to bidders.
- Automatic tender allocation based on previous workdone using artificial Intelligence

III. IMPLEMENTATION AND WORKING

Using well-planned tests for testing that were all generated onthe previous system would be the greatest way to obtain control while implanting any new system. Text files must be prepared on the old system, copied to the new system, and used for the initial test of each application before production files are used to test data. To implement new software from the zero level and level flow idea can be designed, we must first create the best way for acquiring control while implanting planned test files on the outdated system. Next, we must collect the requirements before beginning the implementing phase.

A. Blockchain

A block chain is a decentralized, distributed, open, and public digital ledger that keeps track of user transactions on numerous computers in a way that forbids changes to the file in the past without also modifying all succeeding blocks and getting community approval. A block chain is a continuously growing database of information about a cryptographic energy source.

B. MD5 Algorithm

The primary function of the MD5 (Message-Digest Algorithm) cryptologic hash

function is to confirm theexistence of a file. The MD5 rule is a commonly used hash function that generates a 128-bit hash value. Although MD5 was initially intended to be used as a cryptologic hashfunction, it has been discovered to have extensive flaws. It will still be utilized as a verification to check the accuracy of the knowledge, but only in cases of accidental corruption. TheMD5 algorithm is a cryptologic method that generates a message digest with a length of 128 bits from an input of any length. The "hash" or "fingerprint" of the input is another name for the digest. Many applications use MD5 whenever a MD5 Working:

Preparing the input:

The input is initially split into blocks of 512 bits each by the MD5 rule. At the end of the final block, 64 bits are inserted. These 64 bits are typically used to store the initial input's length. A few extra bits are "padded" to the tip if the final block is less than 512 bits. Each block is then divided into sixteen words, each with 32 bits. These are designated M0 through M15.

MD5 helper functions:

1. The buffer

A buffer for MD5 is built from four words that are each 32 bits long. These letters are A, B, C, and D. as their initialization.

2. The table

An additional table K with 64 components is used by MD5. Range of components is denoted by Ki. To expedite the computations, the table is computed in advance. The mathematical sin function is used to calculate the weather:

3. Four auxiliary functions

Additionally, MD5 makes use of four auxiliary functions, each of which accepts three 32-bit words as input and produces one 32-bit word as output. Put the input bits through the logical operators and, or, not, and xor.

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4. Processing the blocks

To combine the words from the input with the contents of the four buffers (A, B, C, and D), the four auxiliary functions (F, G, H, and I) are currently used. The four rounds are divided amongthe sixteen basic processes.

5. The output
6. The buffers A, B, C and D contain the MD5 digest original input.

C. Neural Network

Sometimes the term "neural network" in the modern sense refers to a man-made neural network made up of artificial neurons or nodes. Therefore, a neural network for artificial intelligence (AI) problems can either be built from real biological neurons or it can be artificially created. The connections between biological somatic cells are sculptural weights. An enthusiastic attachment in nursing is indicated by a positive weight, whereas a restrictive association is shown by a negative value. Prior to combining, each input is assigned a weight. This procedure is referred to as "linear combination". Finally, the activation function controls the output's amplitude. For example, a good output range is often between 0 and 1, but it might also be 1.

D. SVM Algorithm

A supervised machine learning model for classification or regression is the (Support Vector Machine). Your information is transformed using a technique called the kernel trick, and after these alterations, it determines the optimal boundary between the feasible outputs. SVM is gathering data on a set of rules that might be applied to any regression or beauty gainsays. But its kilometers were actually applied similarly problems. In the SVM set of rules, we typically represent each data point as a facet in an n-dimensional space (where n is your skill level), with the cost of each operation being the value of a certain coordinate. Then, with the aid of discovering beauty, we have a propensity to perform.

SVM Algorithm Steps:

Step 1: SVM created by renowned coaching knowledge

.Step 2:.Produce the point knowledge.

Step 3: The output worth of SVM of the point knowledgeand trained knowledge are compared.

Step 4: The value is computed with trained data

Step 5: The output of the projected SVM is additionallycomputed with trained knowledge.

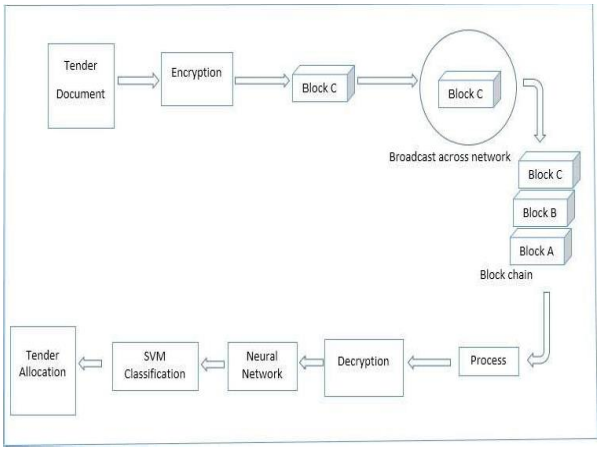
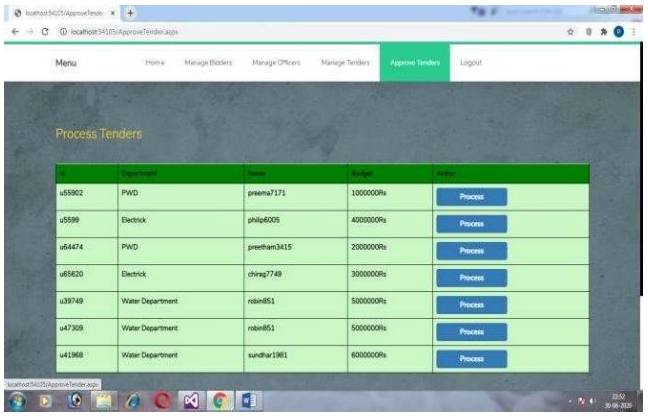


Fig. 1. System Architecture

The suggested system's system architecture is depicted in Fig. 1. Each bidder's tender documents are stored in separate blocks employing an encryption process when they participate in the tenders that the officers have



called. Blocks of saved tender documents are distributed over the network to form a chain. Blockchain is the name given to the chain-link formed when Block C broadcasts over the network (Block A, Block B). Schema for machine learning-based, artificial intelligence-based tender approval. Each block containing the tender bid documents is decrypted when the administrator processes the specific tender requested by the officers. Then, using an SVM algorithm and a neural network to classify and segregate the total number of bids made by the bidders, a tender was distributed to each bidder depending on the information provided by the other bidders

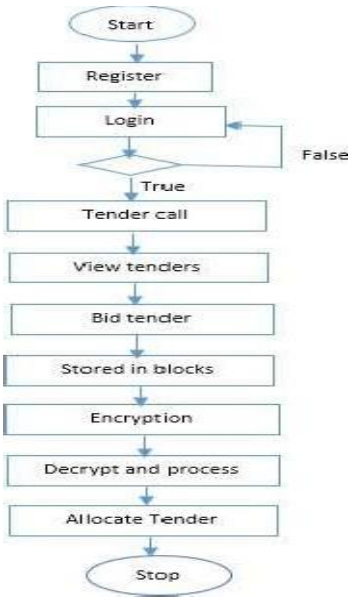
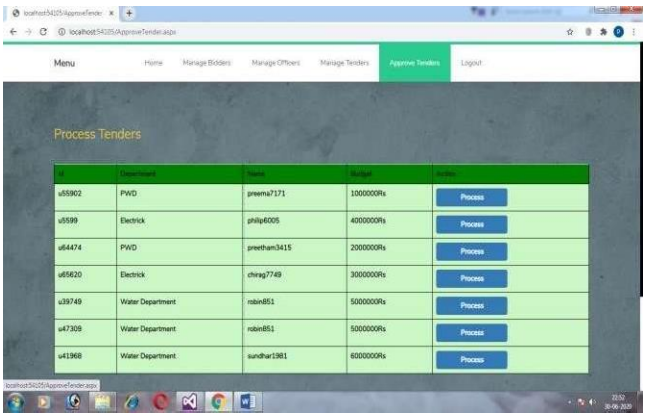


Fig. 2. Flow Chart of the System

IV. EXPERIMENTAL RESULT



The suggested tendering method is functioning effectively. It makes use of block chain technology and distributes bids using th e SVM machine learning algorithm, which produces correct res ults by comparing the nearest bidder, timetable, cost, and amou nt of time bids based on the bid data provided by bidders and o fficer. High levels of tendering transparency are offered by our suggested system.

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Fig. 3. Tender Processing Page

Fig. 4. Tender Approved to bidder using AI PageFig. 3 depicts administrative processing of the particulartender requested by officers. Fig. shows the approval of thetender to the bidder.

4. As shown in Fig. 5, send the bidder a tender approval emailalong with the tender ID. This template for tender approval was created using a machine learning technique that is based on artificial intelligence.

V. CONCLUSION

The proposed answer provides a solid and secure basis for utilizing block chain technology in bids. can save bidder data on the server utilizing the distributed blockchain technology's mechanism of encrypting document blocks and enable speedy clearance and safe

tender settlement for the bidder. to avoid corruption and bias by using artificial intelligence in the allocation of contracts. As a result, we are providing an easy approach to manage applications for the blockchain-based safe clearing and payment of bids. In the future, it can be enlarged in two different ways. Offering three more tender types—negotiated, single-stage, and two-stage—on blockchain to increase authority in order to encourage transparency.

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