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Enhanced Grievance Monitoring Application

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ABSTRACT

The huge success of the internet and information technology has a significant impact on both the public and private sectors of a country. Internet applications and services have multiplied dramatically. Because of this, many prefer to use internet applications to report any suspicious activity online rather than going to a police station. It takes a strong foundation to build a web-based petition management system, especially when processing complaints. Higher officials also find it challenging to track and monitor complaints these days, thus this project was created to make things simpler.

***KEY WORDS*:** Petition, Tracking, HS256, AES.

1. INTRODUCTION

In today's world, when people are more eager than ever to express their ideas and take part in decision-making, petition tracking systems are becoming more and more crucial. With the rise of the internet and social media, petitions have emerged as one of the most powerful tools for mobilising the people and influencing public policy. But managing and monitoring the status of petitions can be a difficult undertaking, particularly when dealing with significant numbers of signatures.

In this project, we used the MERN (MongoDB, Express.js, React, Node.js) stack to create a petition tracking system. This technology seeks to make it easier to create and manage petitions and to keep track of their advancement in real time. We have developed a seamless and effective user experience by utilising the MERN stack, which combines the strength of a NoSQL database (MongoDB) with a server-side framework (Express.js) and a client-side framework (React).

Users can make and sign petitions, examine their status, and follow their progress using the system. Additionally, it offers administrators tools for managing and moderating petitions as well as for producing performance data. This improved petition tracking system is the perfect answer for businesses, governments, and people who want to harness the power of petitions to bring about change since it is scalable, secure, and simple to use.

In this document, the upgraded petition tracking system is described in depth, including its design, features, and implementation information.

2. LITERATURE SURVEY

Novaro et.al., [6] contrasts the features, functions, and user interfaces of the various online petitioning systems.

J. Krieger et.al., [10] deals with the creation and development of online petition platforms for social change; provides insights into these processes. It talks about how crucial user participation and feedback mechanisms are in these kinds of systems.

K. Tabassum et.al., [1] deals with a current tool to monitor and track the crime walk around the country and also have a complete online record of information related to crime.

M. Tufekci et.al., [7] uses transformation.org, one of the most well-known online petition sites, as a case study to analyze the function of online petition systems in political activity and social transformation.

A. B. Kamaruddin et.al., [9] the MEAN stack (MongoDB, Express, AngularJS, and Node.js) is used in a case study to develop an online petition system.

3. EXISTING SYSTEM

The next section lists a few applications that are comparable to this paper.

K. Tabassum et.al, [1] offer a simple, quick, and accurate online method that enables anyone to file concerns at any time. In order to combat crime and criminals, E-cops KSA is proactive and prompt. In the

past, this method relied on paper records, which were susceptible to manipulation or loss.

The following features are supported by the proposed system: 1. Simple to use and eliminates the need for paper.2- Provides greater security than the prior offline paper-based approach.3-Lets users submit online concerns.4-Allows the public to keep track of their grievances. 5. Only open to citizens of the KSA city.Chapter Headings.

Change.org - Users can develop and sign petitions on a variety of topics using the well-known petition site Change.org. Additionally, the site has tools for tracking and keeping tabs on the status of petitions, including updates on signature counts and interactions with decision-makers.

Avaaz - Another well-known petition website that enables users to create and sign petitions on a range of concerns is Avaaz. The platform also has tools for interacting with decision-makers and monitoring the status of petitions.

Care2 Petitions - A petition website called Care2 Petitions concentrates on social and environmental issues. Users can write and sign petitions on the platform, which also has tools for tracking and keeping tabs on their development.

iPetitions - Users can create and sign petitions on a variety of topics using the iPetitions platform. The portal has tools for following the development of petitions, such as updates on signature counts and interactions with decision-makers.

OpenPetition - Users can create and sign petitions on a range of topics using the petition website OpenPetition, which is situated in Europe. The website has tools for working with other users, contacting decision-makers, and monitoring the status of petitions.

4. PROPOSED SYSTEM

The goal of the proposed project is to make it easier for higher officials to track petitions. For this project, the modules listed below were created.

The web session is secured using the JWT (JSON Web Token) signing technique HS256, which guards against outsiders. Only users with valid tokens are permitted. After user authentication (and only if user authentication is successful), the tokens are generated. The files containing information on the petition and the petitioner are encrypted as part of this project using the AES technique, and the encrypted files are then stored in the database.

The Dashboard page includes information on the petitions that have been registered in the system in table form and graphic form (line graph). Officers must enter petitioner information and petition information on the add petition page in order to register a new petition. The user may type the petition while registering, or the petition may be in the form of a pdf file. In order to finish the petition query, the officer registering the new petition must assign it to a lower rank officer. The petition page on which they can see the petition's details and current status allows the higher official to keep track of the registered petitions. The creation of a distinct Admin user allows the admin to make changes to an officer's information and user account in the event that a station or officer moves into that region for the first time, retires, gets suspended, or is fired, or is replaced by an acting officer.

5. ARCHITECTURE

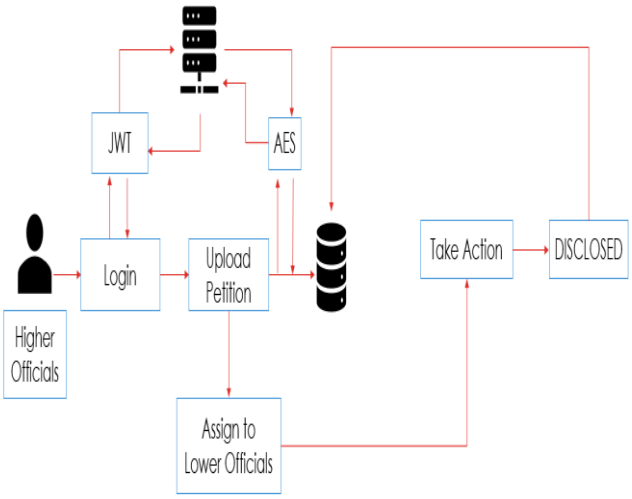

Fig -1: Block diagram

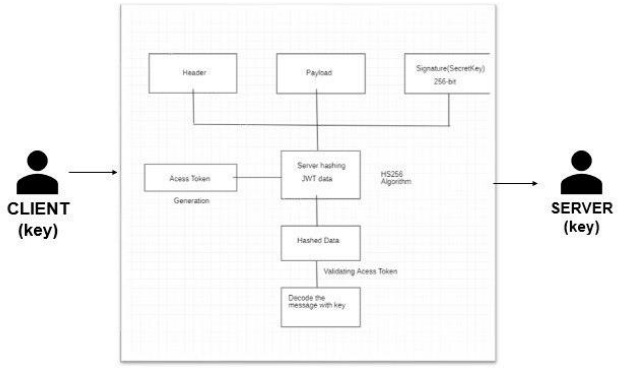

Fig -2: JWT architecture

6. ALGORITHM

The JWT signing algorithm is used with JSON Web Tokens. Although transmitting claims between two parties is the main goal of JWTs, the effort to standardise this in the form of a simple, optionally validated, and/or encrypted, container format is probably the most important portion of this. Ad hoc remedies have already been implemented for this problem.

Older standards8 exist for establishing assertions about specific parties as well, both publicly and secretly in the past. JWT brings a straightforward, practical, and well-known container structure to the table. Even if the up to this point definition has been rather abstract, it is not difficult to imagine their use: login systems (although other uses are available). Among these uses are federated identity, authentication, and authorization.

- Authentication
- Authorization
- Federated identity
- Client-side sessions (“stateless” sessions)
- Client-side secrets

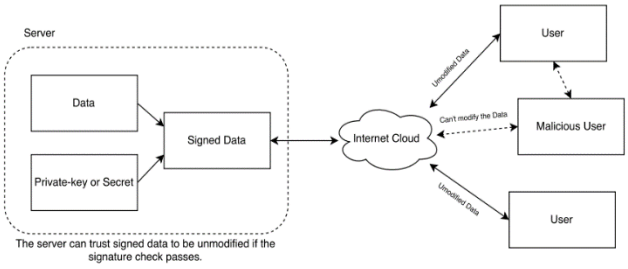

Fig -3: Client-side signed data

AES:

The National Institute of Standards and Technology of the United States (NIST) approved the symmetric block cypher known as the Advanced Encryption Standard (AES), which was chosen through a 1997–2000 process that was noticeably more open and transparent than that of its predecessor, the Data Encryption Standard (DES). This process received plaudits from the open cryptography community, which gave people who were worried about backdoors in the losing algorithm, DES, more confidence in the algorithm's security.

From 128 bits of input, it produces 128 bits of protected cypher text as the output. The substitution-permutation network concept, which is how AES works, involves a series of interconnected processes that replace and scramble the incoming data. The fundamental driver behind the need for a new standard was the increasing vulnerability of DES's relatively small 56-bit key to brute-force attacks. Because it was originally designed for hardware, the DES was likewise fairly slow when applied to software. Even in hardware, Triple-DES is incredibly slow, making it unsuitable for platforms with limited resources, despite the fact that it overcomes the issue of a tiny key size and it might be impacted by potential security flaws connected to the (now relatively modest) block size of 64 bits.

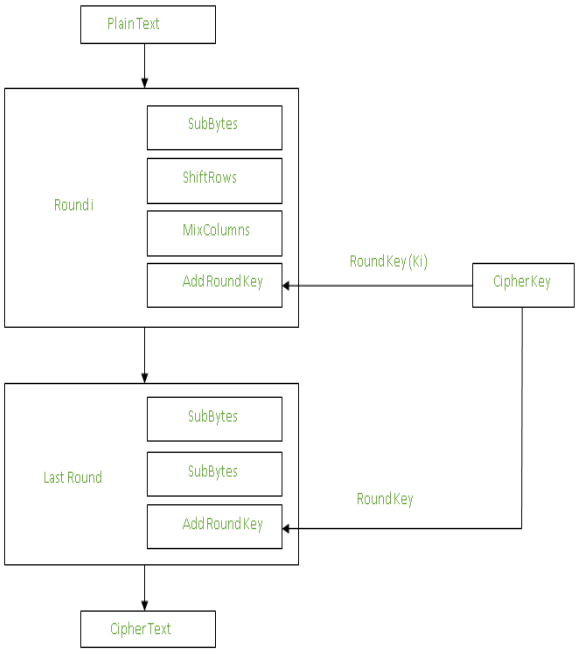

Fig -4: AES system

7. Result/Output

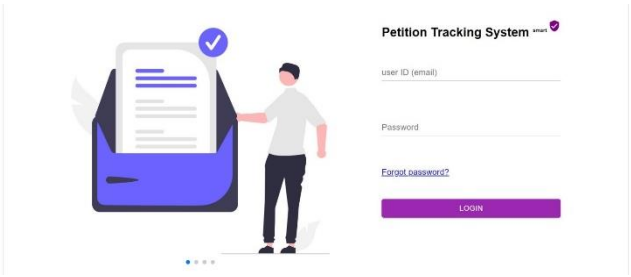

Fig -5: Login

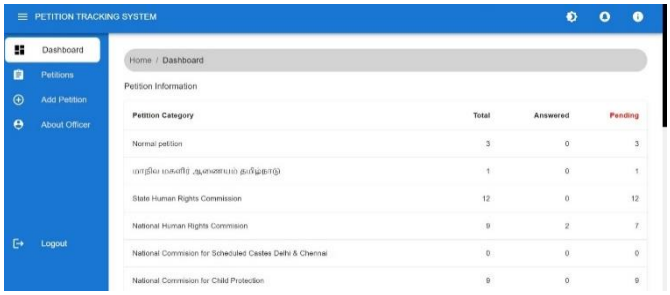

Fig -6: Dashboard

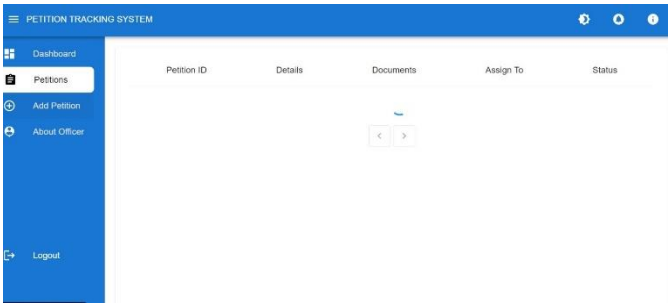

Fig -7: Petitions

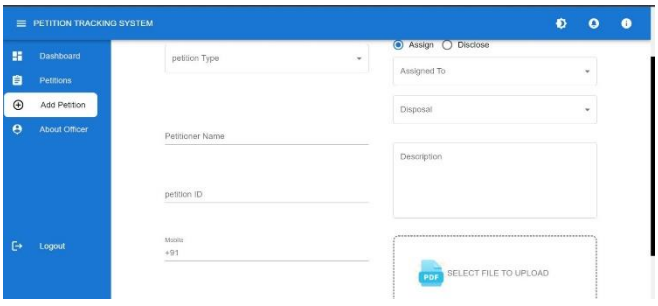

Fig -8: Add Petition

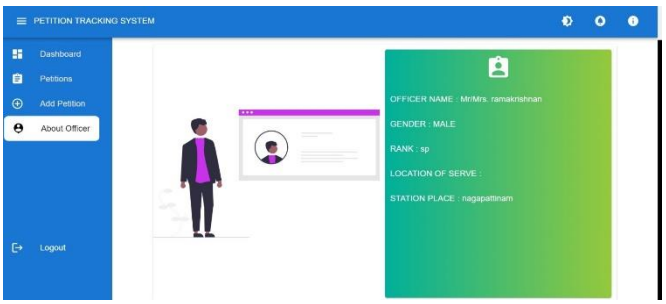

Fig -9: About Officer

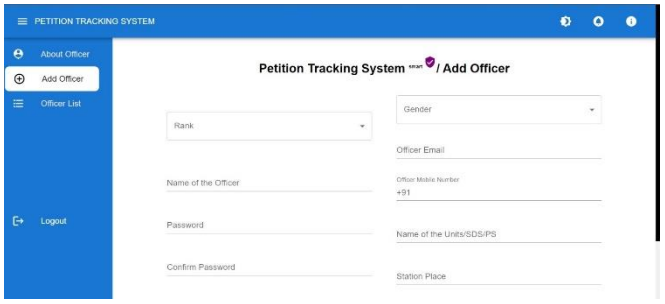

Fig -10: Add Officer

8. CONCLUSION

HS256 and AES are two powerful encryption algorithms that will be used in this research to give an improved petition tracking system. AES offers a high level of security and integrity for the stored data, while HS256 offers a safe way to confirm the validity of requests and make sure they haven't been tampered with. These two encryption techniques work together to provide secure transmission and storage of sensitive data, including user information and petitions. Without a doubt, this system may help organizations that rely on petition monitoring tremendously by offering a safe and effective way to manage petitions. This system's user-friendly interface, which makes it simple for both people and organizations to initiate and handle petitions, is one of its main advantages. The MERN stack's utilization also guarantees the system's great scalability, reliability, and responsiveness. Overall, any organization wishing to enhance the security and dependability of their petition monitoring process will find our Enhanced Petition monitoring System to be a great tool.

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