

DOCUMENT DIGITIZATION

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Abstract - In daily life the processes or services which are especially for the people, to get these services properly and within time is important. Such services are related to RTO, College admission, Bank, Passport and so many. These all services are only for the Indian people but these are so time-consuming and there are also the chances of fraud in getting services. So we are making all services digital. In this project, we are using Arduino as a cloud for storing the authentication data for 200 peoples for demo. We are storing documents on the online cloud and the particular documents we can use where they become necessary. We are using RFID Reader and RFID Card as a Smart Card for scanning a particular person in this there are also chances of fraud. This we can overcome by Digital Signature using the Fingerprint Sensor.

Key Words: Digital Service, RFID Reader, RFID Card, Digital Signature, Fingerprint Sensor.

1. INTRODUCTION

Digital India is a campaign launched by the Government of India to ensure that government services are made available to citizens electronically by improved online infrastructure and by increasing Internet connectivity or by making the country digitally empowered in the field of technology. The vision of Digital India program is inclusive growth in areas of electronic services, products, manufacturing and job opportunities, etc. and it is centered on three key areas Digital Infrastructure as a Utility to Every Citizen, Governance Services on Demand and Digital Empowerment of Citizens.

In the document processing, each and every person or employee of an organization wastes almost more than 4-5 hours in a year, looking for hard copy documents that are kept in physical files in an unorganized way. In a work environment marked by limitations of time, space and there are chances of fraud in getting these documents, the concept of digitization comes as a pleasant alternative.

In the concept of the digital document, we can create a global database so that different services can be accessed globally. RFID tags with the possibility of strong mutual authentication with smart cards will provide authorized access to digital signature secret keys: they can be used after successful mutual authentication only. We proposed several ways to combine RFID-based physical access control systems with the digital signature, systems to increase their security, including improved digital

signature calculation procedure that allows preventing unauthorized calculation of a digital signature for a fraudulent document.

2. LITERATURE SURVEY

The research done by us was focused on digital signature and digitization, and also focused on IoT implementation. We came across many research papers related to these fields. The digital signature was used to provide security to the data stored in the database. Cryptography was used to store the documents in the database in an encrypted format. Advanced Encryption Standard (AES) algorithm was used to encryption and decryption purpose [4][5]. Documents which were stored was in image format, so modified version of the AES algorithm is used. Special image encryption-decryption AES algorithm was used [4].

Biometric fingerprints were used to identify the unique user in order to provide security to the documents of a respected person [3]. A smart card like RFID card was provided to users at the time of registration, and fingerprint of users was taken. RFID card contains a 32-bit unique number which was assigned to the respected person's fingerprint [6][7]. RFID card and fingerprint were used for authentication and also to provide double security [1][2][3][7]. RFID reader was used to scanning the RFID card fingerprint scanner was used to scanning the fingerprint of the user [1][3][7]. Authentication data was stored in the database at the time of registration and these data was then used to authenticate the user [1][6][7]. Arduino was used for providing power supply to the RFID reader and fingerprint scanner, and also used to transfer data from the reader and scanner to the system [2].

3. DESIGN

Document Digitization system is implemented using an application along with the implementation of IoT. Fingerprint scanner, RFID card, RFID reader and Arduino are the hardware used for the implementation of IoT. At the time of registration to the system user's information gets stored in the database along with the details of RFID card and fingerprint. Then user's original documents verified by the authorized admin and then uploaded to the database by scanning them using document scanner.

Fig-1 shows the architecture of the system. User and database are important components of the system.

Architecture in fig-1 shows the working of the system. Admin store user's RFID number and fingerprint in the database. Get documents from user verify them and upload them to the database. This is a one-time process, once documents stored in the database, the service can be used for the whole life.

Now, whenever a user needs to provide documents, he can use the RFID card to provide documents. He just needs to scan the RFID card and Fingerprint. The system will check the details in the database if matched then it will display the documents corresponding to that user.

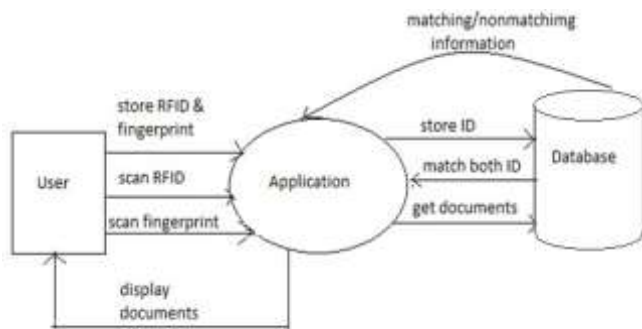


Fig -1: System Architecture

4. METHODOLOGY

The methodology about Digitization of document can be explained using IoT and Cryptography.

IoT: Arduino is used to processing the inputs which are given through RFID reader and fingerprint scanner. Those inputs then sent to the system using wireless network over wifi. The RFID reader and fingerprint scanner are connected to Arduino.

Cryptography: When an image is uploaded to the system it is in jpg or png form. To provide security to the documents the AES Algorithm is used for encryption. Documents stored are in encrypted form and whenever the need to display and download documents then is converted to original form by decrypting them using the same AES Algorithm.

4.1 Working:

1. Admin is assigned to the system when system is deployed. Admin is provided with a special RFID card called master card which is used to enroll the user.
2. When a new user wants to get benefits of our service, he first needs to register himself. After

registration user need to go to the admin with original documents for upload purpose.

3. Admin will check your registration details and scan his master card and then take user's fingerprints for biometric security. Then he will assign an RFID card to the user's fingerprint and give it to the user. fig-2 shows the new user registration.
4. When the RFID card is scanned using RFID reader, the coil or chip inside the RFID tag gets activated and produces radio waves. RFID reader read that waves and convert the wave signals into a usable form of data.

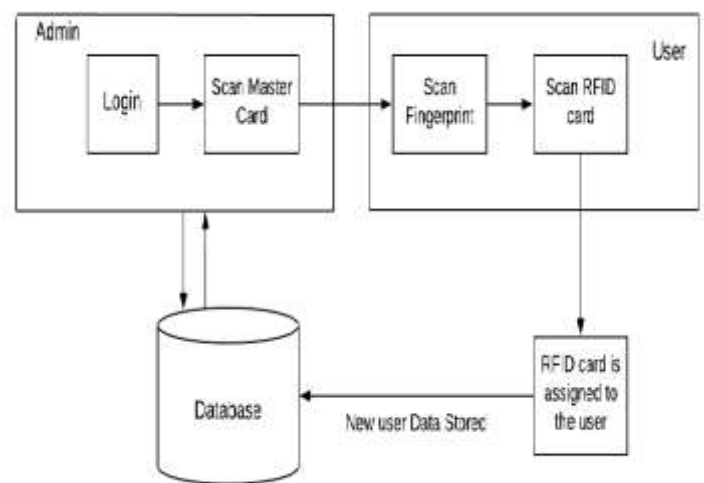


Fig -2: New user Registration

5. Fig-3 shows the procedure for document upload purpose. Admin will log in into the system. Then user needs to scan RFID card and fingerprint. Scanned details get verified with the database, if matched then user's RFID number and fingerprint get on upload document page and admin will scan the document and upload.
6. After scanning the document, it will get converted into image format. Then Modified AES Algorithm which is an image Encryption algorithm is applied on the document and it gets encrypted. This encrypted file then stored into the database.

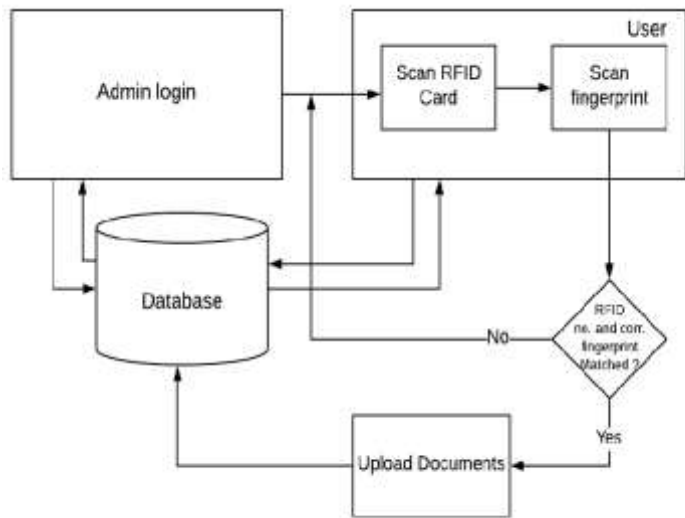


Fig -3: Upload Document

5. OVERVIEW OF THE SYSTEM

Fig-4 shows an overview of the Document Digitization System. The system is divided into two parts: Users interface and Administration interface. The user interface includes the user authentication part were as Administration interface includes admin authentication and document verification and upload. In the user interface, user registration includes the RFID card and fingerprint and in the admin interface, Upload document module includes the RFID and fingerprint.

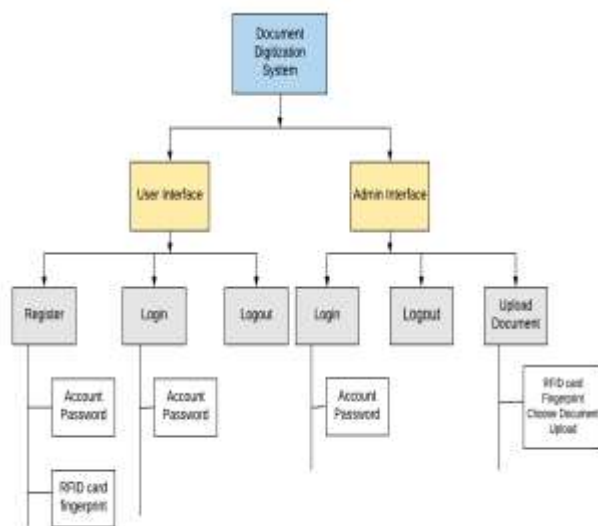


Fig-4: System overview

5. CHALLENGES

Creating an effective document management system is a never-ending process, it takes time and training, but ultimately the reward far outweighs the trouble.

- Voluminous records.
- Need to meet document security mandates on security and access.
- Preventing damage to precious originals.
- Highest quality of documents.
- Integrity document management.
- Manage authorized users.

6. CONCLUSION

The web application is to be created which will provide a system that stores all types of documents digitally, which will reduce the paperwork for the organizations having a lot of paper trails. The security of the system is ensured by using the fingerprint scanning, the RFID scanning, and AES algorithm.

7. FUTURE SCOPE

We can create the global cloud using Arduino so that different services can be accessed globally. Intellectual RFID tags with the possibility of strong mutual authentication with smart cards allow to provide unauthorized access to digital signature secret keys: they can be used after successful mutual authentication only. We proposed several ways to combine RFID-based physical access control systems with digital signature systems to increase their security.

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