

Electronic Document Journey Management System

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ABSTRACT

Large organizations have countless documents travelling in their system. There are no official records of where these documents are and what the status of those documents is. At times documents have to travel a long way up the hierarchy for approval which may take a lot of time, it is not possible to keep track of these document on daily basis. Document Journey Management System (DJMS) will assist in tracking the entire journey of a document in hierarchy of the organization as well as will provide status of the documents at any instance. Previous literature proposed some activities which replaced paper based activities such as Penmark^[2], JITinOffice^[1] and PapierCraft^[3].

In this paper, we will study how Document Journey Management System (DJMS) can be implemented and its benefits to the organization.

Categories and Subject Descriptors

[Data and Information Systems]: Document Journey Management System

Keywords

AES, DES, DJMS

1. INTRODUCTION

A study by records managers in the U.S. estimates that there are 318 billion pages of paper documents on file, with 92 billion new pages added each year^[4]. Computers print 775 billion pages each year. In 1990, these new documents required 3.1 million tons of paper (Allerding, 1992)^[4]. Document Journey

Management System (DJMS) is one module which will track the entire journey of a document in hierarchy of the organization. As the document enters the hierarchy, a notification will appear in the account of the user for which the document is pending for approval.

Once approved the notification is sent to the issuer of the document. During this entire process the issuer can check the status of the document. This module consists of 20 user interface forms in all which will contribute in some way or the other in keeping the track of the document. This module will be integrated with other modules of the system.

2. OBJECTIVE AND PURPOSE

Manual handling of documents in a large organization often ends up in creating problems like late approval, monetary loss to organization and sometimes missing the document itself. These files remain at a particular place for years without approval. In order to track the location of the document in an organization and also to maintain transparency in the process Document Journey Management System (DJMS) is used. The objective of this paper is to demonstrate the entire process of DJMS and its implementation benefits.

3. EXISTING SYSTEM

Currently there is no system at Maharashtra Police to track the status of documents in the system. All the documents are handled manually. Also status of these documents is given verbally with no official record. The applications are handwritten or an application form is submitted manually. No time to time updates are available. The documents are shared

via various insecure mediums ex. pen drive, cd etc. which is a violation of data integrity and confidentiality.

4. PROPOSED SYSTEM AND IMPLEMENTATION

1.1) AES Encryption in database

password	contact	encpassword
character varying(100)	character varying(100)	character varying(100)
Suraj	9876543210	ZqdJ8pi0JDS8+e4+Bi5X0Q==
Prakhar	3598674120	Fv0v9s90tVrkkXyUfrTbjA==
abc	2233445566	huz0Q2sp72/6auwZmCdxpA==
Sanket	7598641230	xFChkFHU5eNj0AWd/mKw==

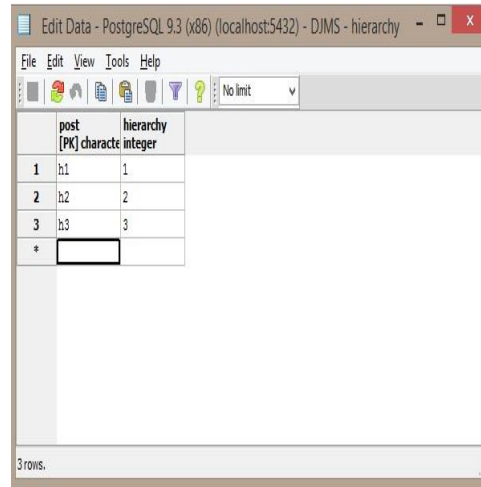
Proposed system will automate all the manual work as well as assist in keeping track of the status of document. First the admin will create an account for all the police officers. Unique Id and passwords will be given to every user. Also all details of the user including id and passwords are stored in the database in encrypted form. Encryption of data is done using AES. In “Differential Fault Analysis on AES”^[5], a practical application of the concepts presented in “On the Importance of Checking Computations”^[6] and “Strengthening Hardware AES Implementations against Fault Attacks”^[7] is presented which allowed fault injection analysis to retrieve a full AES-128 key by analyzing less than

50 cipher texts. In 2009, Biryukov et al.^[8] published related-Key attacks on full-strength AES-192 and AES-256. The attacks recover the key with 2176 work for AES-192 and 2119 work for AES- 256. Since these attacks take less time than brute force, AES- 192 and AES-256 are theoretically broken; but the attacks take too long to be practical. The reasons for using AES are:-

- AES is more secure (it is less susceptibility to Cryptanalysis than 3 DES).
- AES supports larger key sizes than 3DES.
- AES is faster in both hardware and software.

Fig 1.1 shows the AES encryption of plain text password. Police officer can use the Id and password to access the system. User specific access authority is given, so that every user does not have access to all the features of this system.

2.1) Hierarchy in the system

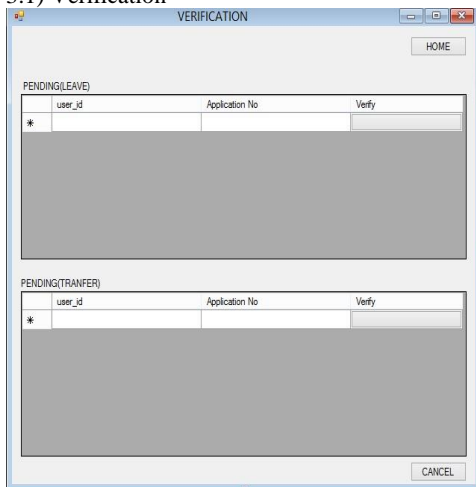


post	hierarchy
[PK] character varying(100)	integer
1	h1
2	h2
3	h3
*	

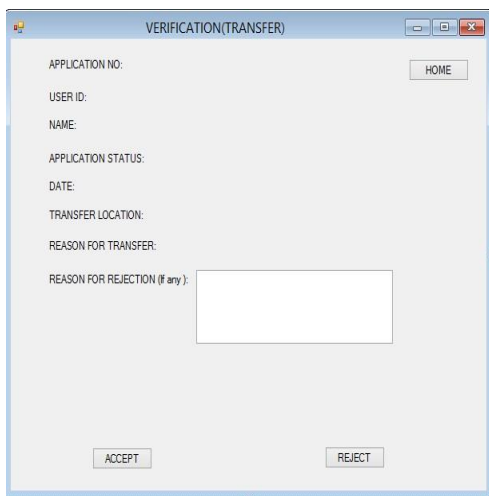
After logging into the system, user can see home page. This page will display entire details about the user which will be auto generated. The data will be retrieved from database and will be displayed automatically on this page. Every user has a level of accessibility in the system. For example a lower ranked police officer cannot verify an application; it can be only done by a senior police officer or a person who has been given the authority to access verification part of the system. Fig 2.1 shows the hierarchy of officers. From this home page user can navigate to other modules of the system.

Transfer application and Leave application are two application documents which are user specified for the 1st phase of this project. Police officers in Maharashtra police have to manually apply for leaves and transfer. Now this module will have a leave and transfer application module. Using that module the officer can apply for leave and transfer. Due to manual handling of documents these leave and transfer requests were not processed on time. A record of number of leaves and transfer taken was also not maintained. This loop hole in the system was exploited. Police officers were transferred to same police station more than once which is not permitted. This application system will not only track the status of the document but will also keep a record of number of leaves taken and number of transfers granted to a particular police officer.

3.1) Verification

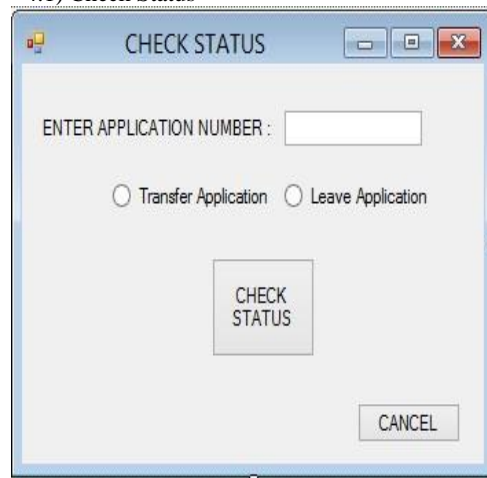


3.2) Transfer Verification



The application (Leave /Transfer) is forwarded to a senior police officer in the hierarchy. The process of forwarding documents for approval or verification follows hierarchy as specified by client. The document then moves up the hierarchy and its entire journey is tracked. Initial status of the application shows pending, but as document moves up the hierarchy it changes. Fig 3.1 shows all the pending verifications for a user. Fig 3.2 is a form which is auto generated once the user decides to verify them. User can approve / deny them along with suggestions. Any decisions taken will be immediately notified to the applicant.

4.1) Check Status



Check status module of the system will show user the status of their application document. User can login into the system anytime to check the status of the document.

5. CONCLUSION

In the world where organizations are expanding day by day and have large numbers of employees, a system like this can reduce a lot of workload. Tracking of all documents in the system and managing those documents will help in increasing the efficiency of organization. Document Journey Management System will not only track the documents but will ensure timely decisions. It will also maintain transparency in the organization. GUI designed is simple and easy to use so that organization will have no investments for training employee to use this system.

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