

ELECTRONIC FILE MONITORING SYSTEM

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(Received 6 November 2014; Revision Accepted 10 December 2014)

ABSTRACT

Document monitoring has been an area of concern in various organizations. Over the years, various strategies have been devised to tackle document monitoring, thereby bringing about the development of software applications for document management. These applications solve the problems of document creation, document retrieval, distribution, document workflow, email management, document security. Despite these functionalities, we need to obtain efficiency and effectiveness when it comes to document monitoring. This paper illustrates how documents in an organization, most specifically the University can be monitored. The University of Port Harcourt was used to implement this monitoring system. The system is developed with object oriented methodology and implemented with Java programming and Microsoft SQL server. The result of the developed system shows a simple and effective graphic user interface, ensuring privacy for users and effective document monitoring.

KEYWORDS: Process model, Routing, Document management, Document monitoring

INTRODUCTION

Document monitoring cannot be discussed without document management which is the bedrock. Document management is the process of having knowledge and controlling an organization's official business transactions, decision-making records and storage of important documents, (like letters, e-mails etc) which are represented in the format of a document. The medium of these transactions (electronic or paper) is irrelevant, (Sutton and Michael; 1996).

Document monitoring is not only about moving a document from one point to another. There are a number of additional factors to take into consideration. Some of these are, records of documents received and sent out, time a document spends in a particular office, tracking the movement of the document until it gets to its destination. Records provide information for planning and decision making. It also forms the foundation for organization accountability which will in turn be essential for effective and efficient administration. Considering the documentation system we have on the arrival and dispatching of documents, records are taken either on paper or on a computer. If on paper, documents monitoring is very difficult. Where records are electronically generated over a network, then monitoring can be achieved easily.

Certain function and volume considerations suggest that paper processes continue to make sense in particular situations. Beyond the very small organization, what is saved in holding fast to manual processes usually is dwarfed by the cost of lost efficiency, and the losses scale upward as the size of the business increases, (Scott; 2007).

Internal document tracking tools have been provided to automatically track documents from the moment they are received or created. This is done by

intelligent routing, sorting, proactive email notifications and in-depth reporting.

We previously have had software that neglect some vital details and procedures which eventually leaves the user with the need to go an extra mile in getting some details about the movement. Sometimes the user lacks the ability to monitor documents due to inadequate facilities for processing.

2. LITERATURE REVIEW

Document management technology is one area of the digital movement that financial planners have been slow to adopt. It has been recognized that many misconceptions regarding document management that cause them to maintain inefficient and cumbersome paper-based systems in their businesses. There are five common misconceptions regarding document management and how embracing this technology can best position a planner's business in the digital age, (Winterberg; 2013).

Irfan et al (2010), developed file tracking system that offers visibility of the file movement throughout the file approval process. There was no additional client application or software required to be installed as the system is integrated with Lotus Email system.

Campbell (2007), integrated RSS functionality (an online syndication technique that can allow users subscribe to changes to documents or new content via a web browser) with its new koral system. This type of syndication could be a useful feature, allowing groups of people to track document revisions, communicate about modifications, or monitor additions to folders, (Peter and Campbell; 2007).

Delhi, (2010) worked on File Tracking System is web based application to monitor the pendency of receipts and files and assist in their easy tracking. The application was developed by National Informatics

Centre (NIC), based on the Central Secretariat Manual of Office Procedures (CSMoP) of the Department of Administrative Reforms & Public Grievances (DAR&PG). It is an integrated package which has features right from diarizing of receipts/files, updating its status, opening of new files, tracking the movement of the files, dispatch of letters/files and finally records management.

According to Scott (2007), the first phase of any business management system upgrade entails a realistic analysis of the requirements and a study of the types of solutions that can satisfy them. In the most successful digital upgrade solutions, these will be integrated seamlessly in a global electronic business environment that includes centralized storage of all documents and related content, with the flexibility to distribute any document in the system electronically or to print, fax, or mail it as a hard copy. Things to be considered for this upgrade are Document Design, Document Production, Document Storage and Retrieval, Document Capture, Document Delivery/Distribution, Document Workflow.

In 2012, L.M Perocho designed a document tracking system for a medical centre using waterfall model. He automated the document monitoring system using barcodes. The 'chief' of hospital is the major server controller of the system. All types of document enter the system. Hence all communications from within the different section/department or other government agencies are easily monitored or trapped. The hospital

chief assigns routes of the documents to the different offices where respective heads sign the documents.

3. METHODOLOGY

In this process model, the method includes verification, scanning, documentation, filing, analysis, release and tracking.

- **Verification:** When a document is received, it is first verified to ensure that it tallies with the softcopy documented. This is done to avoid mistakes of sending wrong documents.
- **Scanning:** Documents are scanned to ensure there are soft copies of every result sent to that office. Note that, verification is not allowed before scanning. The document goes straight for scanning if there is nothing to be verified.
- **Documentation:** Here documentation of time, day, type of document, source, scanned documents etc are done and stored in the database which in turn can be queried at any time for information regarding a desired document. Furthermore, after verification, if some discrepancies are noticed then documentation will be updated.
- **Filing:** After documentation is done, they are filed and analyzed.
- **Analysis:** Whatever the result of the analysis, documentation is then updated and released to the appropriate office or individual. This is shown in figure 1.

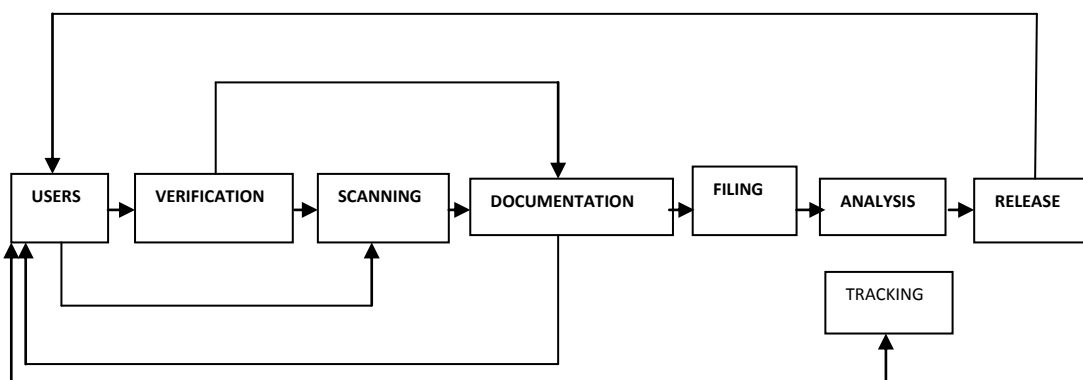


Figure 1: The Process Flow of the System.

- **Tracking:** Tracking of documents can be done at anytime as long as the user that is tracking has at one time received document.

System Architectural Design

The exact description of the system architecture is demonstrated in figure 2. Documents are sent by the users either in hard or softcopy. Hardcopy documents are first scanned and saved in the computer while softcopy documents are converted to a format that will be appropriate for the user.

To create documents, the user logs into the software application through the graphical user interface (GUI). Once in, information about the document is filled into the documentation form; the document to be sent is chosen using the file browser and attached to the form. A file browser provides a GUI for navigating the system, and then either choosing a file or directory from a list, or entering the name of a file or directory. The data base connection API (JDBC) provides universal data access based on assisted routine.

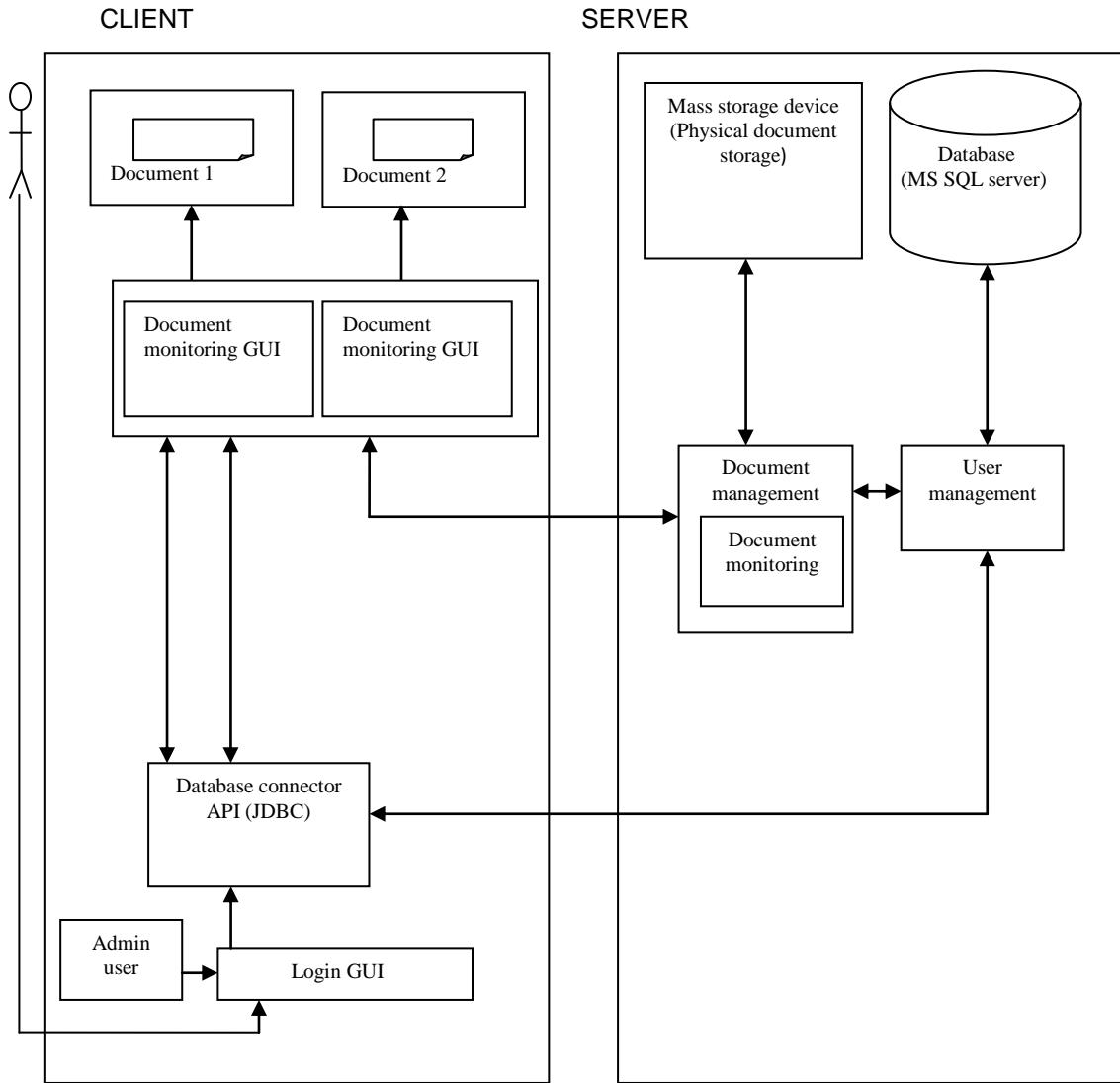


Fig 2: Proposed System Architecture

Using this API we can access virtually any data source from relational database to spreadsheets and flat files. If a user intends to send a document, the office should be indicated and thus "SEND" is clicked to complete process. At the background of this process, the user management and database management facility is employed for this process to be executed. To track

documents, the user highlights the specific document on the sent document column and clicks OPEN DOCUMENT HISTORY. At this click, details of the offices the documents have been received at one point or the other is displayed. Time and date of these movements are also displayed. The database system used is the SQL database.

B. Entity Relational Database Model of the System

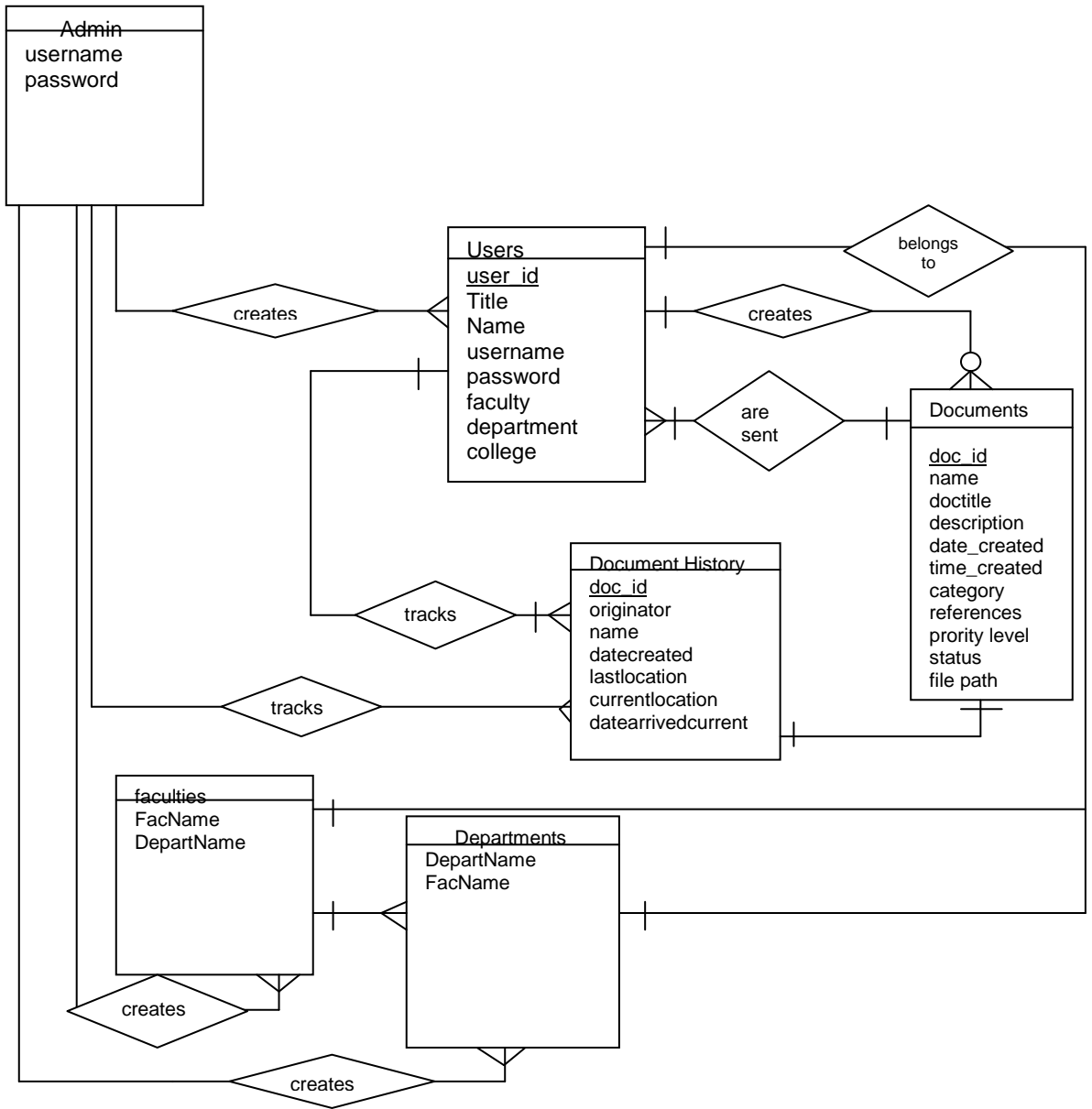


Figure 3: Entity Relational Database Model for the proposed system

The diagram in figure 3 shows all the entities present in the database system. The Crow's method is used in determining the relationship between all the entities. For example, we can see that the admin can create many

users, many department, many faculties but not documents or document history. We also can identify that only the user can create these entities.

C. The System Flowchart

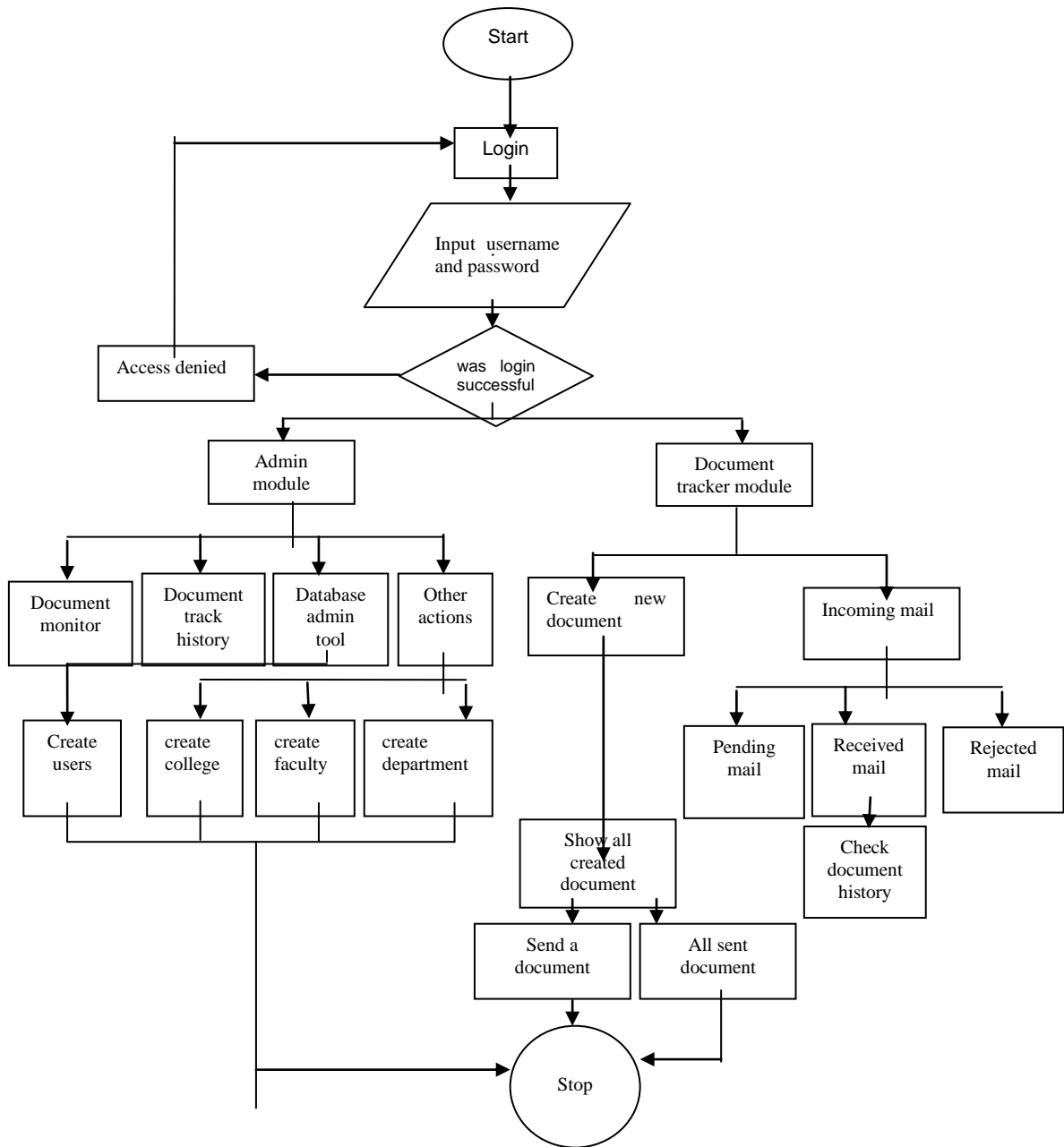


Figure 4: Proposed system flowchart

The diagram in figure 4 represents the algorithm process of the proposed document monitoring system. To begin the use of the document monitoring system, first, the user logs in either as an admin user or as a staff user. If login is not successful, then re-login is performed. Once successfully logged in, all available privileges can be explored. The admin user is enabled to track documents but he cannot read them except for date details of day, time, and to whom a document is sent. He can also use the admin tool to create other users. Other functions also apply which enable the creation of tables like colleges, departments, faculty, etc. After any of these are done successfully, the administrator can stop and log off. The created users can now login,

create documents at will, send them and monitor their movement at will. Incoming mails can be received and treated accordingly. As soon as the job is done, the user can stop and log off.

4. EXPERIMENTATION AND RESULT

In this software, it is necessary that the output reports be compatible in format with the existing reports. The output must be in line with the overall expected system requirements and performance. The developed system provides an avenue for entering the input and the output into the system. Proper messages and appropriate directions can control errors committed by users as is shown in figure 5.

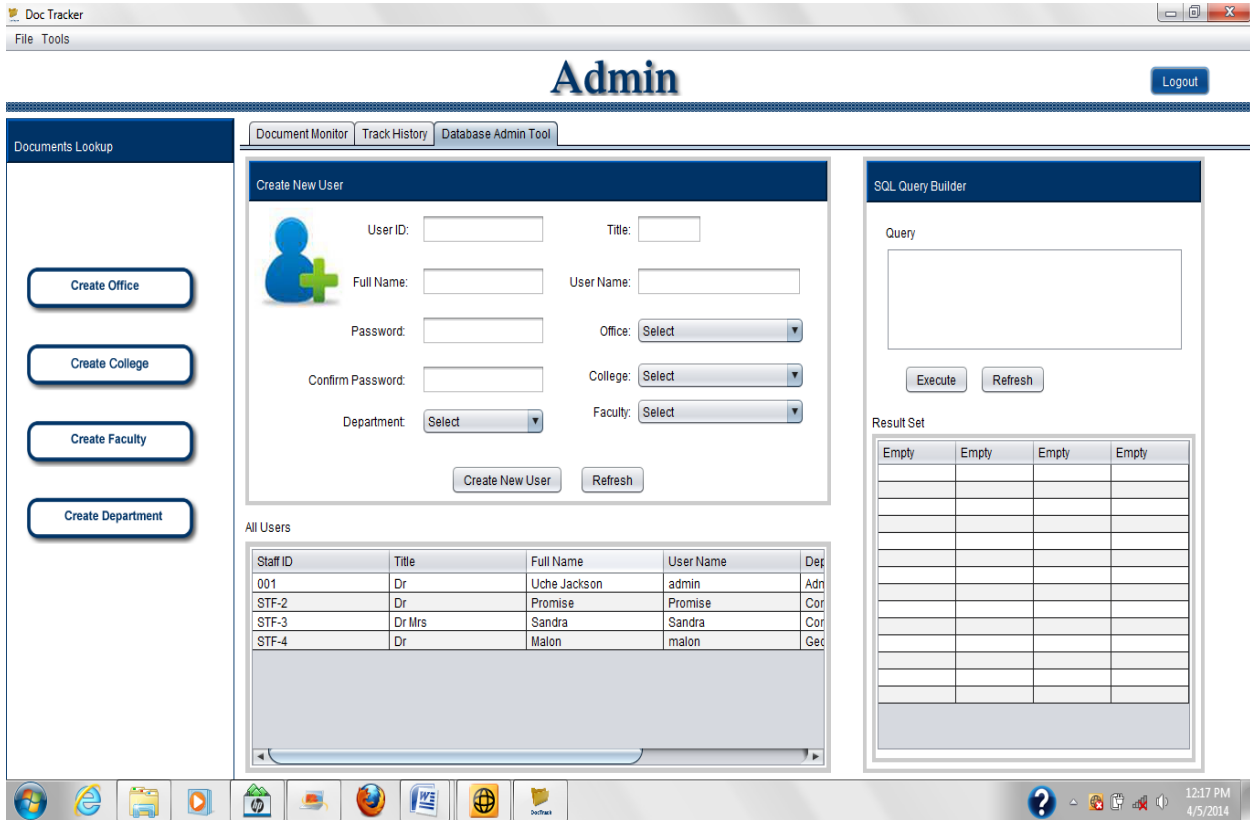


Figure 5: The Interface Used By the Administrator to Register Incoming Document

Figure 5 displays the admin console where users are created. Certain details are expected to be supplied for this to be successful. Some of these details include Title,

full name, username, password, office, faculty, department etc. With these we can get information about each user.

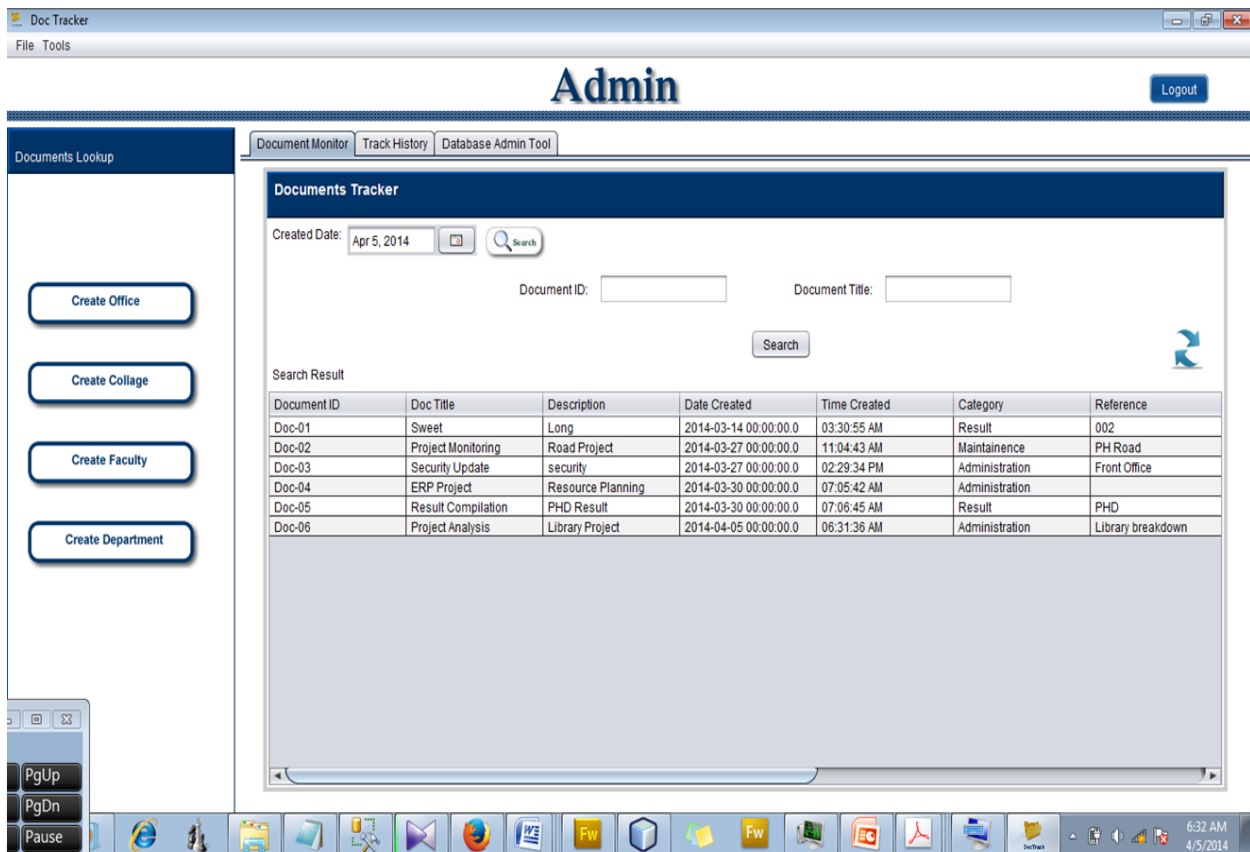


Figure 6: The Interface Used By the Administrator to Track Document

Figure 6 displays all the documents created and saved into the database. The administrator can search for documents created by using the document_id dialog box

or the document title dialog box. Either of these is efficient depending on which one is most convenient for the administrator.

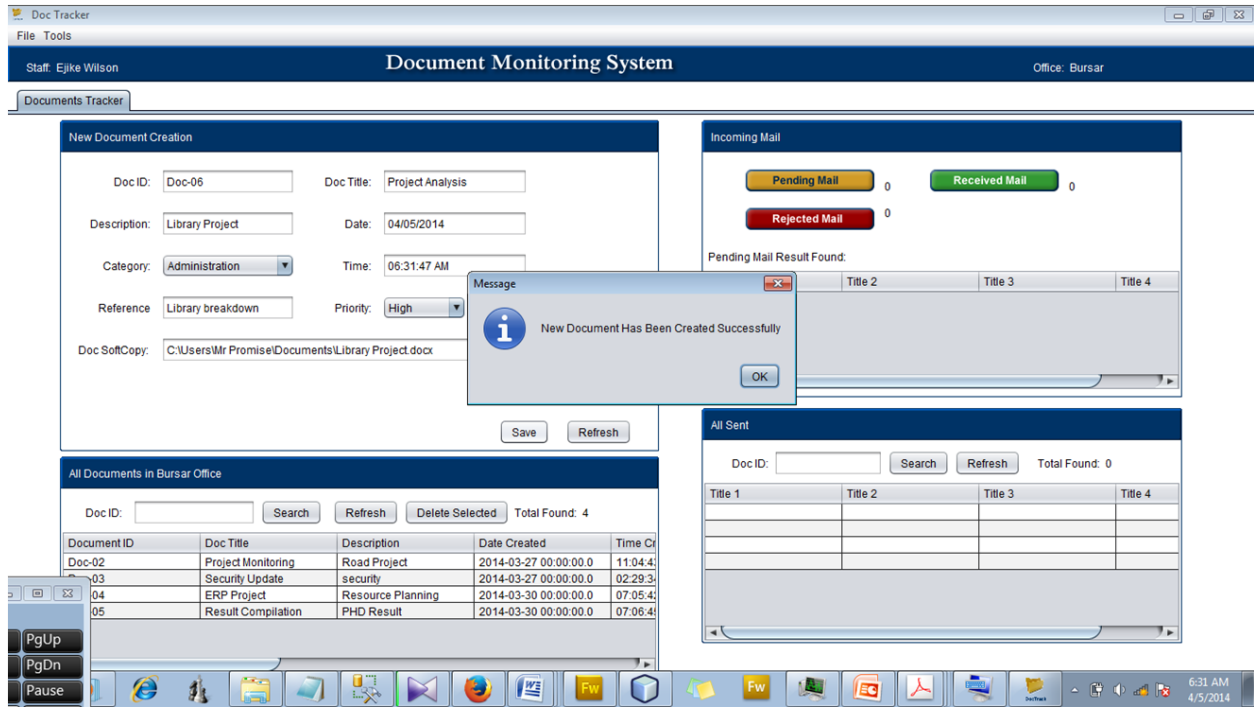


Figure 7: Creating Documents On The Document Monitoring System

As it is shown in figure 7 the Doc_id is generated automatically, then doc title, description, and category are filled in. The document needed is selected and saved. When saved all the documents created both

presently and previously are listed at the bottom of the page. Document selection is made available and can be sent to another user.

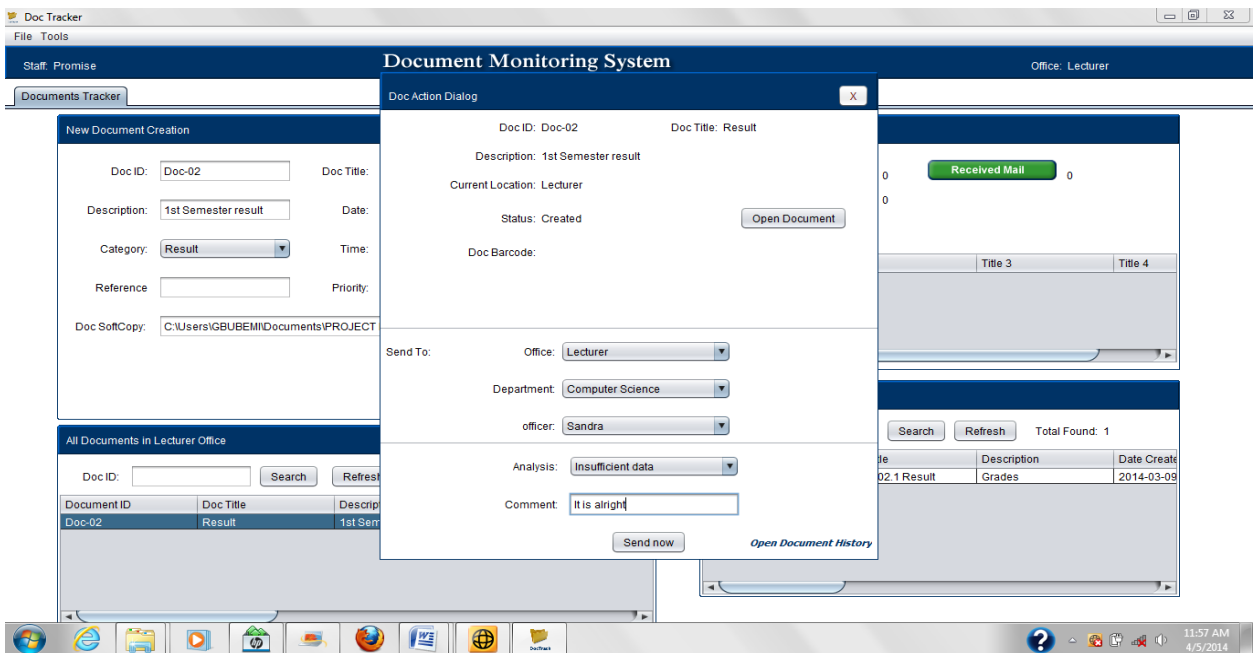


Figure 8: Sending Documents On The Document Monitoring System

On sending, the document to be sent is highlighted and the dialog box for sending comes up. Analysis, comments and details of the receiver are given to

ensure the right routing of the document. Details of the receiver include office and department.

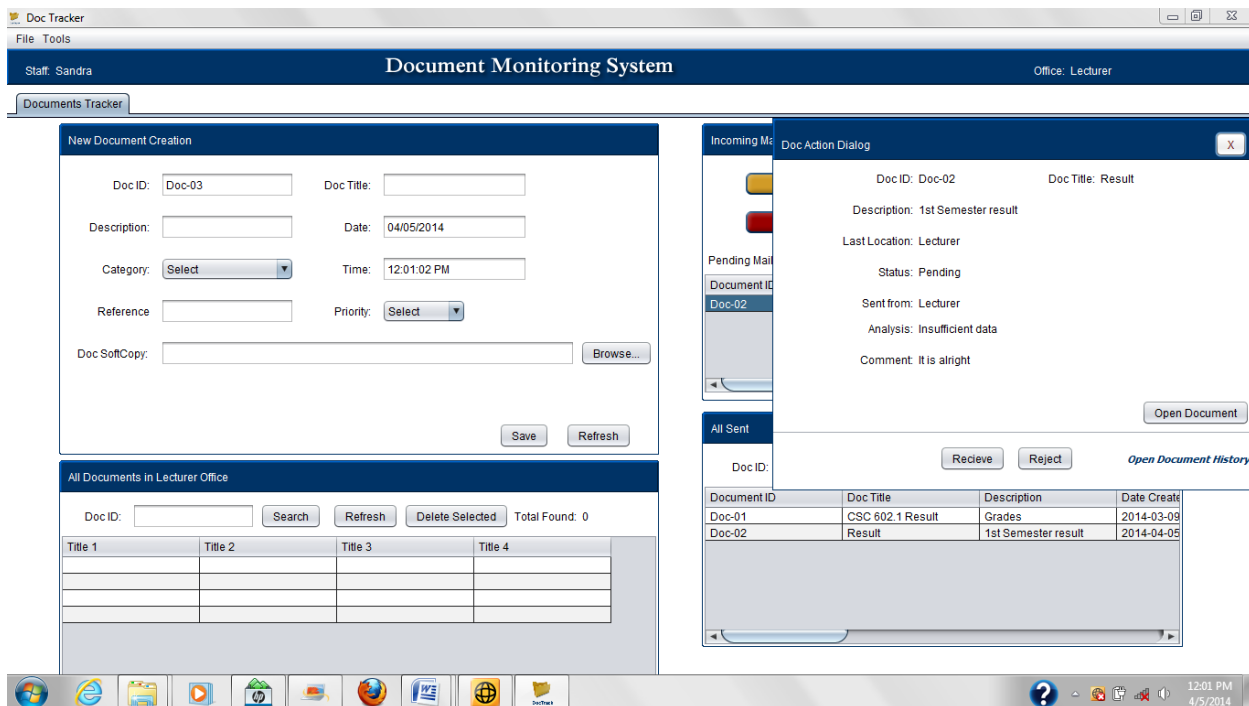


Figure 9: Receiving Documents on the Document Monitoring System

From figure 9 it can be seen that as a document is received, the indicator for received documents shows the number of documents received. To receiver, that column should be clicked on and a different dialog box

will be displayed showing all the details and comments made by the sender. The history of the document can be seen through this dialog box.

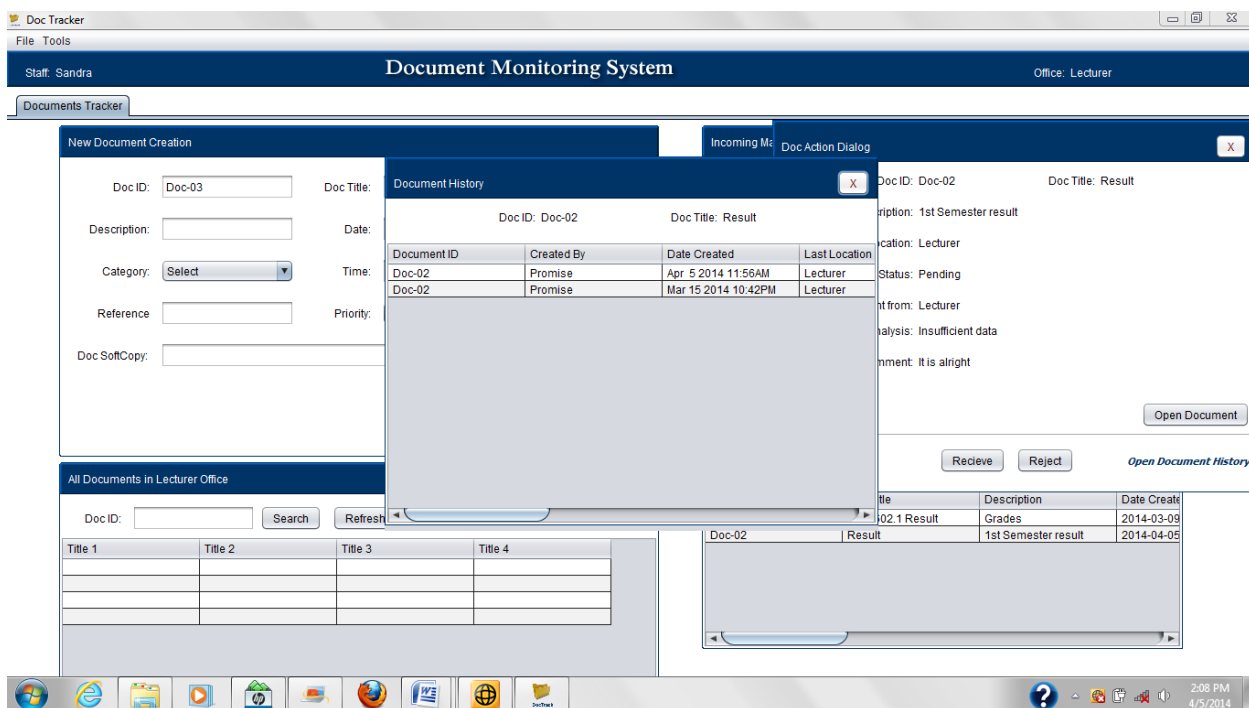


Figure 10: Document History for Document Monitoring System

Document history in figure 10 shows all details about who originated the document, all the recipients of the document with the dates and time of arrival and final destination. All that is needed is for the user to click on the tools icon, select document history then all documents sent from that user is displayed. Click the document to be tracked then the history will be displayed. With this, users can determine where their documents can be found and all the comments made by the various recipients. This is a very good way to enhance workflow as everyone can be checked for inefficiency.

CONCLUSION

Document monitoring has been a crucial problem even with the increasing awareness of information technology. This is so because a number of programmes have been developed yet it is somewhat difficult to imbibe due to their complex and expensive nature as well as so little security, (Irfan et al, 2010). This system developed has giving an advantage to the database administrator as he/she will no longer have to bother about the generation of barcodes for documents in other to ensure adequate security. The graphic user interface is very easy to use, even by people who know very little about the computer system. This attribute makes training unnecessary. Document tracking is achieved just by the click of a button. Unlike some systems where the user only need the document code to access documents, this system does not give that liberty except the user is part of the process the document goes through. This system ensures that intruders or users outside the process cannot access the documents even if they get to know the document_id which is not possible either under normal circumstances.

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