Analysis and Design of File Tracking System

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Abstract

The file tracking system has been one of the areas of concern in most of our organizations. Much research over the years has been carried out to tackle the problem of file monitoring system in our institutions. As we all know large volumes of data are usually generated in most institutions of learning today. Locating files using the manual method is a tedious and time-consuming process for most of our administrative staff of such institutions. This paper aims to analyze and propose a file tracking system that will eliminate the problem caused by the manual system of a file monitoring system. This can be achieved by interviewing the staff who is in charge of the file monitoring system in the institution. The proposed system was designed based on the information gathered from staff using UML diagrams such as use case diagrams and easy designer to create a database diagram. Which helps in managing the flow of files effectively and efficiently. All the files such as reports, decisions, requests, and location history can be processed and tracked by the system at any period.

Keyword: file tracking system, UML Software, paperless, electronic, monitoring

1.0   Introduction

In today's computerized world, administrative offices also tend to become paperless offices and with no more piles of file scenario. This advancement aids the governing bodies in the disposal of the issues within a reasonable time frame with evasion of stationary use. File Tracking System is a step in the direction of realizing the concept of a paperless office (Virmati, 2018).

The solution is a simulation of physical files into electronic form. This enables fast retrieval and makes file movement and tracking easy. File Tracking System also captures and documents attached to the file and assignments for the file. A complete history of the File Movements and action taken on the file is maintained. File Tracking System offers clear visibility of the file movement throughout the file approval process (DMD, 2010).

According to Krasniqi (2013), a File Tracking System is a web application that manages all the files' movement at any time from one desk/room to another one and help in managing the flow of files efficiently. Any desk/room can receive and send a request and make decisions at any time. The system follows a procedure of file unique numbering and enables file management, file status monitoring, file movement tracking, etc.

Furthermore, the File Tracking System deals with the creation of files to completion of files through the embedded softcopy of the files. The authority can obtain the status of any file at any time.
File Tracking System (FTS) also called File Tracking and Monitoring System (FTMS) is a web-based application to monitor the movement of files and receipts and assist in their easy tracking. Its features include the generation of receipts and files, updating its status, opening of new files, tracking the

movement of files, recording their track, etc. (Banday, 2015).

Document monitoring is not only about moving a document from one point to another. There are several 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 (Williams and Uzochukwu, 2014)

The existing File Tracking System used in the University is manual which is characterized by many problems which include: time wasted in searching a file, energy is wasted chasing mislead file and sometimes files are lost. This makes the current system in the institution inefficient to be used. This new system will help to track not only the place of the file but also the number of days spent on one desk to another. The aim of this paper therefore is to analyze and to propose a file tracking system for High Institution.

1.1   Objective
The objective of this paper is as follows:
1. To analyze the Existing File Management System in the Institution.
2. To propose an automated file tracking system

2.0   Literature Review

Various File Tracking systems have been developed which are used to track files in our organization. Examples of such systems are described in the paragraphs below. Which shows their strength and their weakness in terms of their operation.

Information and Data Exchange Advanced System is an advanced file information system developed by the National Informatics Centre in Kerala, India. It is built on Free and Open Source Software. It is a web-based application for a file tracking system that records details of the files that come into a government office (Bakshi, 2011). The drawback of this particular system is that it is built to serve files in government offices and not necessarily Universities or other institutions of higher learning.

Delhi, (2010) worked on File Tracking System which is a 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). The system is used to create, send, and track government files (receipts). There is no actively log file and also in any possible hacking situation, all the files can be manipulated. The drawback of this particular system is that it is built to serve files in government offices and not necessarily Universities or other institutions of higher learning.

Also, Omoregbe et al., (2014) developed a file tracking system for tertiary institutions which is a web-based application that can manage the creation and movement of files from desk to desk of personnel who work on them. It performs the following functions on Files such as reports, decisions, requests, reminders that can be processed and tracked by the system in real-time. The drawback of this system is that the system has to include other high-ranking officers such as Registry in approving the file also there is a need for location history to know the different locations the file moves.

Lastly, Infotronic system is a company that developed a file tracking system using RFID technology. The idea behind the system is to make the existing system more secure. Each file, in file storage, receives an RFID file tag label, depending on the file type. The tag contained the name and other related information such as a unique file number. Which uniquely identified a particular file. In the file storage door, it is implemented as an RFID security gate (sensor). Whenever someone takes a file from the file room and goes out with that file, an alarm is generated and security guards interfere immediately. The drawback of such a system is that is not good at arranging or searching files, it is only good at securing the file. Also, the cost of buying the tags and the reader is another problem (Krasniqi, 2013).

3.0   Methodology
The approach for this work is based on the Object Modeling Technique (OMT). OMT is one of the most popular object-oriented development techniques developed by James Rumbaugh (Demong *et al*., 2009). There are five main phases in OMT methodology namely; analysis, system design, object

design,   implementation   (programming/coding,   installation),   and   testing   as   shown   in   Figure
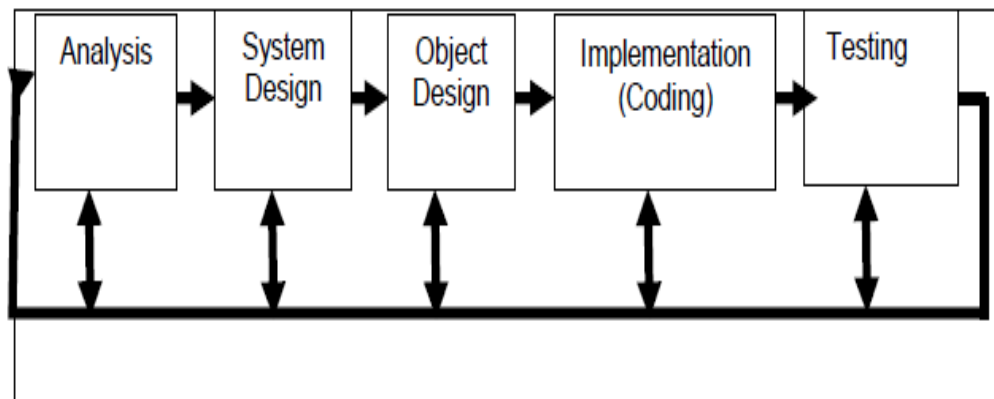

Figure 1: Source OMT Phases (Demong et al., 2009)

3.1 Analysis of Current System
This part will discuss the data collection on the current system of the institution which is currently handled manually by the administrative staff. Issues regarding the current system were analyzed and explained in more detail.

3.2 Types of File handle in the institution
Type of files that are treated in the institution includes a memo, circulation, letter from an outside organization or other departments, and others.

3.3 Current Document Management and Tracking System
The users of the file consist of the staff who are in charge of file movement in the university. Two major transactions involved in the current system namely; updating user records and Tracking the movement of a document received. Each copy of the document needs to be kept in a file for future reference. All these transactions are done manually which result delay in updating user result, time-consuming as well as a loss of files.

3.3.1 Users Roles and Responsibilities
The roles of the related users using this system are as follows:

3.3.2 Sender
The sender can be the secretary in the registry department, Registrar as well as Vice-Chancellor.

3.3.3 Receiver

Normally the receiver of the file will be an administrative staff which includes: Registrar and Vice-Chancellor.

3.4 Challenges faced by the Current System
Based on the interview conducted between the staff that are responsible for file movement and Tracking in the institution. The monitoring of the movement of files from one office to another is usually done manually using a movement register to track the status and location of the file. This method tends to pose a lot of challenges in terms of efficiency due to the bureaucratic bottleneck associated with the method.

This method is ineffective because there is a delay in checking the location of the file in the movement register, considering a large number of the file that are treated.

The challenges we encountered with the current file monitoring method used in the university include; delay in retrieving and updating file movement information as well as duplication of records about respective files in the file movement register which may lead to difficulty in the file handling process.

The current method of file tracking system used in an institution is characterized by nepotism, favoritism as well as corrupt practices among staff which usually hinder the efficient and effective management of files in the institution. Also, there is the problem of improper documentation of file movement which usually results in difficulty in tracking files.

There is a need to improve the file tracking method that is used in university so that we can have a quick location of the file and also eliminate the corrupt practices.

3.0   Solution of the Propose File Tracking System

All these issues and problems need to be solved to make sure every source and information can be used effectively. Therefore, a File Tracking system needs to be developed for the benefit of all the stakeholders that are involved in using the file tracking system in the Institution. The current method of File Management in the Institution has to be automated with the availability of higher technology and higher specification software.

3.4   Object Model

The object model is the most important. It identifies the object classes in the system and their relationships, as well as their attributes and operations. It represents the static structure of the system. The object model is represented graphically by a use case diagram and Easy Design Diagram for database representation. The object model describes the data structure that describes the dynamic and functional model.

Also, the operations in the object model correspond to events in the dynamic model and functions in the functional model. The OMT identifies the following for the system such as identifying objects and classes.

The use case diagram of the proposed File Tracking System is consisting of three actors namely the secretary, Registrar, and Vice-Chancellor as shown figure   below.
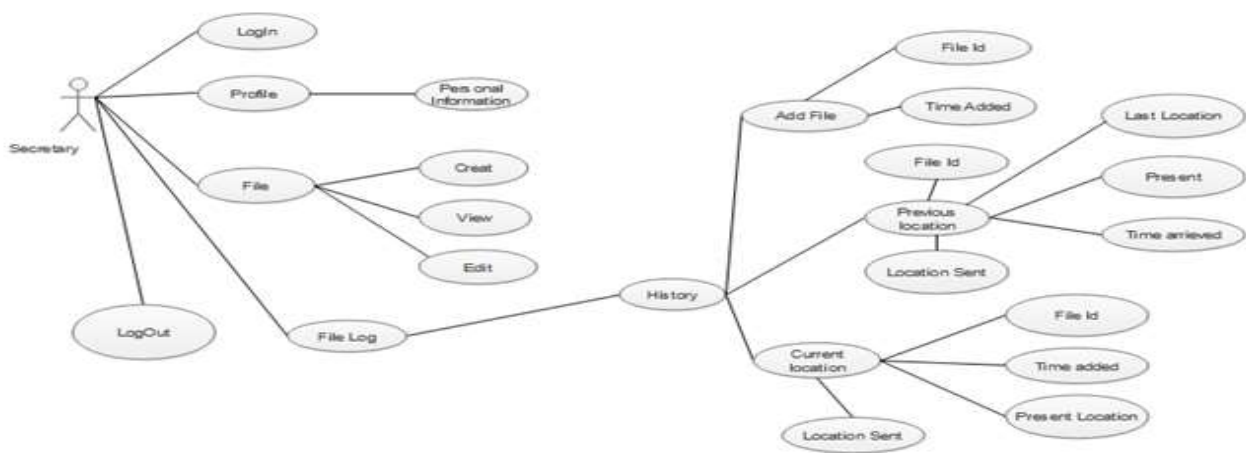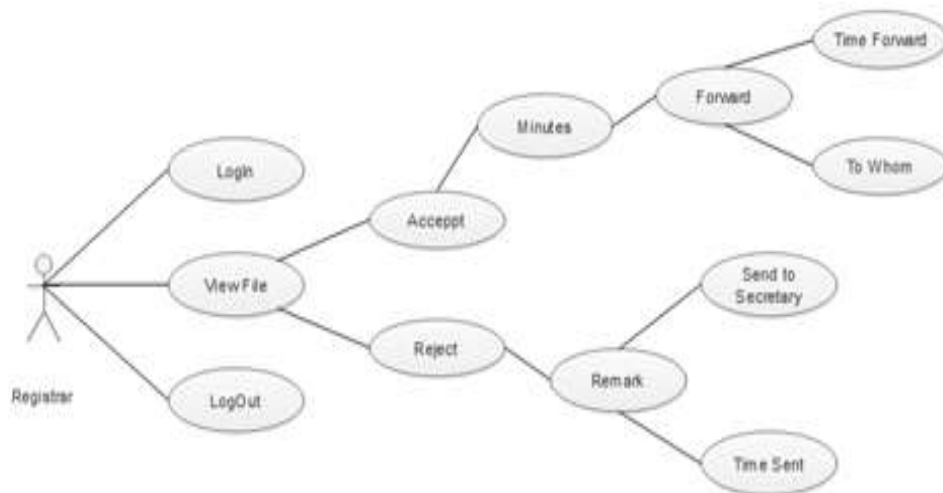

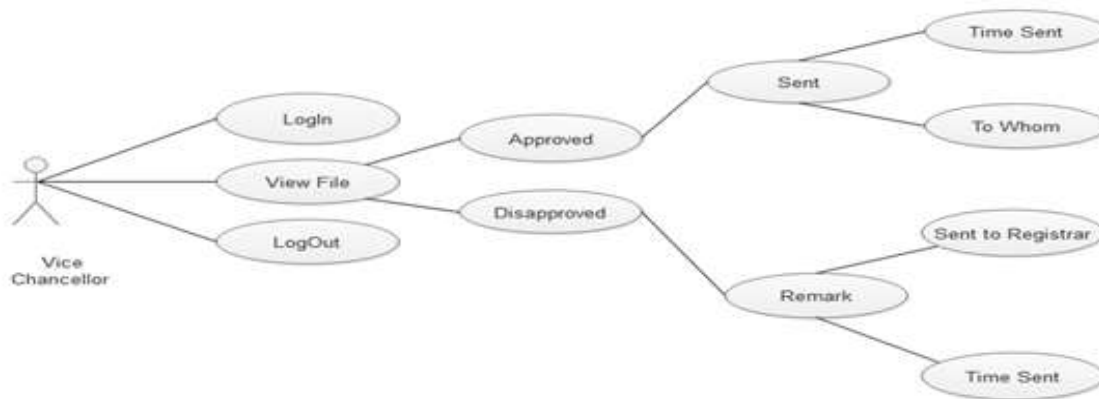**Figure 1. Use Case Diagram of Secretary**
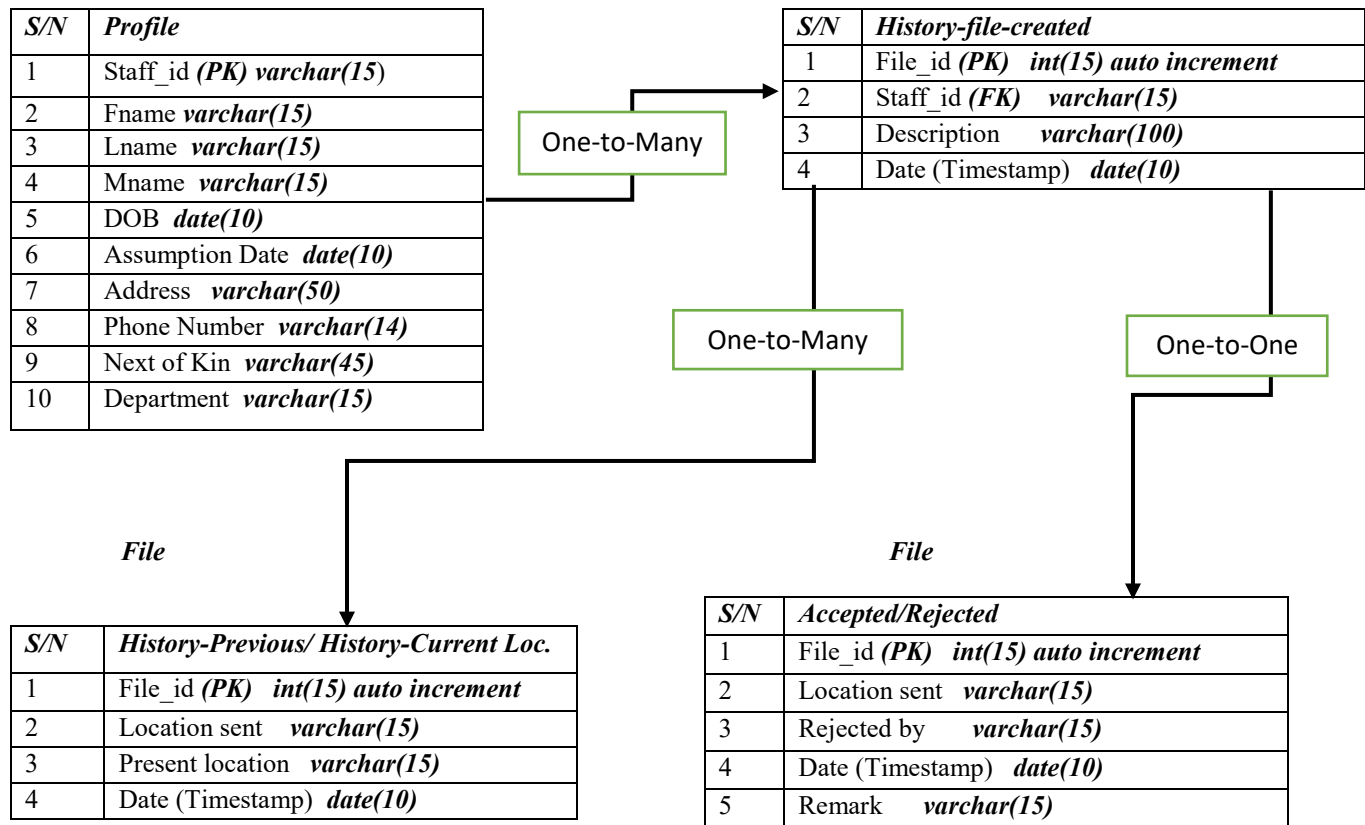
Figure 2: Use Case diagram of Registrar

Figure 3: Use Case diagram of Vice-Chancellor

SECRETARY   *File*

S/N	Profile
1	Staff_id *(PK) varchar(15)*
2	Fname *varchar(15)*
3	Lname *varchar(15)*
4	Mname *varchar(15)*
5	DOB *date(10)*
6	Assumption Date *date(10)*
7	Address *varchar(50)*
8	Phone Number *varchar(14)*
9	Next of Kin *varchar(45)*
10	Department *varchar(15)*

One-to-Many

S/N	History-file-created
1	File_id *(PK) int(15) auto increment*
2	Staff_id *(FK) varchar(15)*
3	Description *varchar(100)*
4	Date (Timestamp) *date(10)*

One-to-Many

One-to-One

File   *File*

S/N	History-Previous/ History-Current Loc.
1	File_id *(PK) int(15) auto increment*
2	Location sent *varchar(15)*
3	Present location *varchar(15)*
4	Date (Timestamp) *date(10)*

S/N	Accepted/Rejected
1	File_id *(PK) int(15) auto increment*
2	Location sent *varchar(15)*
3	Rejected by *varchar(15)*
4	Date (Timestamp) *date(10)*
5	Remark *varchar(15)*

Figure 4: Database representation of Easy Design Diagram

4. Discussion

This paper has discussed a File Tracking System which aims to serve the institution that has to do with paperwork, especially universities. This Tracking application aims to improve file management, improve staff efficiency, quick document retrieval, eliminate time delay in accessing the file, reduce the cost of paper and pen and improve the overall efficiency of the file tracking system used in the institution by using the latest and fastest technologies.

Findings of the study had revealed the challenges associated with the manual file movement/tracking system which include; delay in retrieving and updating files as well as duplication of the record. It also results in nepotism, favoritism as well as corrupt practices among staff. Therefore, the need for an automated file tracking system arises.

5. Conclusion

This paper analyzes the existing file movement system in Yobe State University and proposes the design for the proposed file-tracking system which will improve quick decision by management, tracking location, history as well as updating of files. It shall all also increase staff efficiency. Also discusses some of the existing file monitoring system, their features as well as drawback.

6. Recommendation and Future work

The researcher recommends that the management of the institution should adopt this design approach and also involve the researcher in the full implementation of the system.

Also, both private and public should adopt this design to eliminate the problem caused by the manual file movement system.

This paper can be improving in the following:

I. Full Implementation and Validation of the File Tracking System.

II. Design of Mobile-based File Tracking System.

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