

DESIGN AND IMPLEMENTATION OF AN ONLINE OPEN REGISTER FILE MANAGEMENT SYSTEM IN EDO STATE POLYTECHNIC

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Abstract

File management constitutes a critical administrative function within academic institutions; however, the manual transfer of physical documents across departments presents significant logistical challenges and operational bottlenecks. This study proposes the development and implementation of a web-based file tracking system specifically designed for the Open Registry Department of Edo State Polytechnic, Usen. The system architecture will utilise PHP, MySQL, JavaScript, CSS, and jQuery to create a robust, user-centric platform. The research outlines comprehensive design, development, and implementation strategies, including a critical analysis of existing manual file flow processes alongside detailed specifications of the proposed system's operational framework. Through systematic design documentation, the study presents user interface schematics, role-based access hierarchies, and automated reporting functionalities. Anticipated outcomes include enhanced efficiency and consistency in records management, optimised resource allocation, elevated administrative quality, and strengthened transparency and accountability mechanisms. Ultimately, the system aims to significantly reduce turnaround times and eliminate processing delays associated with manual file handling.

Keywords: *Design and Implementation, Management System, Online, Open Register File and physical documents*

Introduction

File location and retrieval constitute significant operational challenges within the Registry Department of Edo State Polytechnic, resulting in substantial resource wastage—including time expended on archival searches, energy devoted to locating misplaced documents, missed deadlines, and occasional permanent file loss. Presently, the institution operates without an automated mechanism for monitoring the status of physical files, compelling staff members to rely on direct consultation with Registry personnel to ascertain document locations. Consequently, the absence of a digitised record-keeping infrastructure

necessitates the development of a faster, more reliable tracking system accessible from remote locations.

Given Nigeria's unique operational context, any proposed solution must account for critical environmental constraints, including inconsistent power supply, limited internet connectivity, cost limitations, and robust security requirements. International precedents demonstrate the viability of such systems. The United States Citizenship and Immigration Services (USCIS) utilises the National File Tracking System (NFTS), an automated platform that maintains accurate file inventories and tracks physical document locations (Hawkins, 2010). This system employs primary tracking numbers to categorise files into five distinct classifications: Alien Files (A-Files) for immigration benefit seekers; Certificate Files (C-Files) for pre-1956 naturalisation records; Receipt Files for benefit applications; Temporary Files (T-Files) for interim document storage; and Work Files (W-Files) for duplicate documentation—thereby facilitating efficient management of millions of records.

Similarly, the Qatar Public Prosecution (QPP) operates what is considered the world's largest RFID-enabled file-tracking system, implemented by OGTech Technology Solutions using SMARTRAC's DOGBONE inlays. Spanning a 46-story facility with over 1,000 read points, this RAIN RFID (UHF) solution tracks 70,000 files with precision down to specific corridors, offices, or stairwells, while incorporating loss-prevention mechanisms that trigger alarms for unauthorised file removal (Smartrac, 2018).

Despite their technological sophistication, these systems operate outside the educational sector and possess inherent limitations that render them unsuitable for deployment in tertiary institutions. Therefore, a file-tracking architecture specifically designed to accommodate the unique constraints of Nigerian universities—while addressing the operational drawbacks identified in existing commercial solutions—is both necessary and desirable.

Literature Review

Information Management Systems (IMS) refer to integrated frameworks designed for the acquisition, processing, storage, and dissemination of data to support organisational decision-making and operational efficiency (Wilson, 2002). Functioning primarily through software applications, these systems facilitate the systematic collection and processing of information necessary for task execution across diverse sectors. Originally introduced by IBM in 1968 as a database and record management solution, IMS has evolved into a foundational infrastructure for modern organisations, with applications spanning education, commerce, healthcare, government, and financial services.

Contemporary implementations demonstrate the versatility of these systems. Retail environments utilise inventory management platforms to monitor stock levels, shipments, and sales transactions, while corporate entities deploy staff management systems to track employee activities and attendance patterns. Despite technological advancements, numerous organisations continue to rely on manual processes for attendance tracking and leave management, frequently resulting in data loss, administrative inefficiencies, and compromised record integrity.

The Registry File Management System exemplifies a specialised application of IMS principles, designed to analyse, monitor, and manage personnel activities through role-based access hierarchies. Such systems typically accommodate various user categories—including administrative staff, human resources personnel, managers, and regular employees—while maintaining strict authentication protocols. A pertinent example is the implementation at the National Water Resources Institute (NWRI) in Kaduna, established in 1979 under the Nigerian Ministry of Agriculture and Water Resources (Alayande, 2020). This institution, mandated with basic and professional training alongside applied research in the water sector, utilises a fingerprint-authenticated employee management system that enables administrators to update records, generate reports, and monitor attendance, while restricting other users to role-specific functions. Initially developed to digitise intern and NYSC trainee attendance recording, the system subsequently expanded to address leave management requests previously handled through paper-based processes.

The significance of developing robust file and staff management systems extends beyond individual organisational contexts. These implementations serve as operational templates for emerging enterprises seeking structured administrative procedures, while providing foundational frameworks for future research in institutional information management. Such systems address pervasive challenges across Nigerian organisations, offering scalable solutions that bridge the gap between manual inefficiencies and digital automation.

Related Work

Human Resources departments across organisations manage substantial employee populations, yet many continue to rely on outdated paper-based systems that prove inadequate for contemporary data storage and retrieval demands. This context has prompted diverse technological interventions, ranging from basic digitisation to sophisticated biometric solutions.

Kanchev (2006), developed an Employee Information Management System specifically designed for small-scale organisational contexts, incorporating database architecture and application programming functionalities to maintain staff records and generate on-demand reports. The system emphasises flexibility in programming tool selection to accommodate varying organisational requirements.

Nucleus (2008), proposed a Computerised Employee Management System targeting the elimination of repetitive manual processes and data entry errors. While demonstrating productivity improvements, payroll accuracy enhancement, and cost reduction through paper elimination, this approach retains a critical vulnerability: departments must still capture attendance manually before computerisation, preserving potential for transcription errors.

Arulogun (2013), advanced toward biometric authentication with a Wireless Iris Recognition Attendance Management System utilizing Daugman's algorithm (Daugman, 2003). Despite theoretical sophistication, hardware requirements for iris recognition implementation introduced prohibitive cost barriers, ultimately preventing system completion and deployment.

An alternative Bluetooth-based attendance system leverages staff mobile devices through MAC address verification to confirm presence. However, this architecture presents significant integrity flaws: physical attendance becomes decoupled from system verification, enabling proxy attendance marking when devices remain within coverage areas while actual staff members are absent.

These precedents reveal persistent tensions between security rigor, implementation cost, and operational practicality in employee management system design—tensions that directly inform the development requirements for file tracking systems in Nigerian tertiary institutions.

Methodology

The proposed Open Registry File Management System targets paper-based administrative environments, specifically the Open Registry Department managing high-volume document workflows. The platform prioritizes usability through an intuitive web-based interface designed to minimise operational complexity while maintaining robust security and reliability standards.

Architecturally, the system adopts a three-tier web application model. The presentation layer utilises HTML5 and CSS3 for structural markup and visual styling, selected for their implementation flexibility and extensive functional capabilities. Dynamic client-side interactions are enabled through JavaScript and jQuery, facilitating responsive user experiences and asynchronous data handling without requiring page reloads.

Server-side processing leverages PHP (Hypertext Preprocessor), chosen for several strategic advantages: it is an open-source scripting language with widespread community support and extensive documentation; it operates across multiple platforms (Windows, Linux, Unix), ensuring deployment independence; it demonstrates compatibility with predominant web server architectures including Apache and IIS; and it incurs no licensing costs. PHP manages bidirectional data transfer between the user interface and persistent storage, handling both input validation and database query execution.

The data tier employs MySQL, the world's most widely deployed open-source relational database management system. This selection supports cost-effective delivery of reliable, high-performance, and scalable database solutions suitable for web-based transactional processing. The automated File Tracking System architecture is designed to execute document location queries and status updates within seconds, significantly reducing the temporal overhead associated with manual file retrieval processes.

Results

The system allows the user to create, and delete Locations and allows the managing of users, files and all other configurations. The software when done will require a valid username and password from User to be able to gain access and control.

Use Case Diagram

This segment allows the user to create, and delete Locations and allows the supervision of users, files and all other structures.

From the figure below, in order to do any action, a user must be registered in. When the job is done, he/she has to sign out from the system.

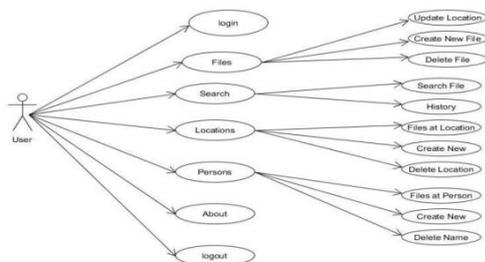


Figure 1: Use case diagram of the File management System

Deployment Diagram

In the below deployment diagram of the system execution, the user sends a specific request from the web application to the server via HTTP protocol. There the request is analysed and send to the MySQL Database if needed. When a process is finished with the execution, it comes back to the user and is shown to him as an interface from the web browser.

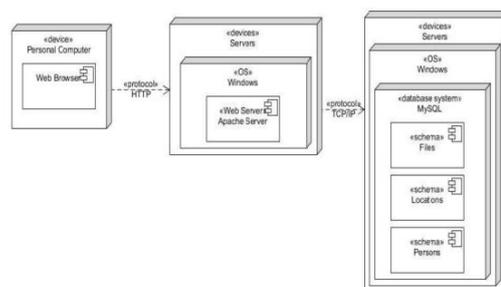


Figure 2: Deployment diagram showing execution of the system

Register Page

This interface allows the user to register on the system. The user will be required to provide his/her username, password, name and post. The register page is shown in Fig. 3 below

Register File Management System Edo state Polytechnic

LOGIN	REGISTER	
REGISTRATION	Username	REGISTRATION
	Password	
	Name	
	Post	
	<input type="button" value="Reset"/> <input type="button" value="Register"/>	

Summary and Conclusion

This paper has discussed about a Web Application which aims to serve offices that has to do with paper work, especially Universities, in the best way possible. The goal of this web application is to improve file management, increase staff efficiency, save staff energy and time, reduce cost and improve the work efficiency by using the latest and fastest technologies, Eliminating of wear out and tear that occurs during retrieval and manual handling of files, Prompt identification of file location, to automate File Tracking System, Reduction in the difficulties experienced in updating of record in open registry. Misplacement, loss or damage of file or staff's record will become a time of the past.

The one important thing that needs to be mentioned in this conclusion is that from the research I have done on file tracking systems, there is no file tracking system developed or implemented for Institutions at all. There are some file tracking systems used for some other purposes (governmental purpose) implemented in few countries, however they are also some simple ones who tracks only receipts. Hence, I took this condition as a favour and hope that the project I developed will have a great usage worldwide in the near prospect.

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