

Displaying Documents via QR Code

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Abstract - Document retrieval is a crucial aspect of modern digital management systems, particularly for educational institutions, businesses, and government organizations. Traditional methods such as emailing files, manually searching cloud storage, or relying on physical storage introduce inefficiencies and security risks. These outdated approaches consume time, create vulnerabilities, and often require multiple authentication steps. The proposed system introduces a QR Code-based document retrieval solution, which eliminates manual searching and allows instant access to documents through a simple scan. By integrating encryption and authentication mechanisms, the system ensures secure, efficient, and cross-platform accessibility. The implementation of this system streamlines document access, enhances security, and provides a scalable solution for document management.

Keywords: QR Code, Document Retrieval, Secure File Sharing, Digital Document Management, Encryption, Authentication.

I. INTRODUCTION

The rapid advancement of technology has led to a shift toward digital document management, reducing dependency on paper-based records. However, the current digital document-sharing methods involve multiple steps such as logging into cloud storage, searching for specific files, and setting access permissions, making the process time-consuming and prone to unauthorized access. A QR Code-based document retrieval system offers a solution by assigning each document a unique QR code, which can be scanned via a mobile or web application to retrieve the file instantly. This eliminates the need for manual searching and enhances security by restricting access to authorized users only.

1.1 Need for the research

Existing document-sharing solutions, including Google Drive, OneDrive, and Dropbox, require users to go through multi-step authentication and manual searching, leading to delays in retrieving important files. Email attachments, another widely used method, are susceptible to spam, access restrictions, and security breaches. Furthermore, physical storage methods, such as USB drives and printed copies, pose risks of loss, damage, or theft. The proposed QR Code-based

system offers a faster, more secure, and efficient way to access documents, eliminating unnecessary steps and security vulnerabilities.

II. LITERATURE SURVEY

Various document management systems have been developed, but most of them still rely on manual searching, authentication delays, and cloud storage access limitations. Research indicates that QR codes have been widely used in payment systems, verification processes, and digital marketing, but their potential for secure document sharing remains untapped. Moreover, security measures in many document retrieval systems are inadequate, leaving sensitive documents vulnerable to unauthorized access. This project bridges these gaps by introducing a QR Codebased document retrieval system that is secure, scalable, and user-friendly.

III. SYSTEM IMPLEMENTATION

A) Components Used:

The system consists of several key components that enable secure and efficient document retrieval. The frontend is developed using HTML, CSS, and JavaScript (React.js), ensuring an interactive and responsive user interface. The backend is built using Node.js and PHP, handling server-side operations and database interactions. Document storage is managed using MySQL or MongoDB, which efficiently organizes and stores metadata. QR code generation is achieved using the Google Charts API or a dedicated QR code library. To ensure security, AES-256 encryption, HTTPS, and JWT authentication are implemented, preventing unauthorized access.

B) Circuit Design:

Since this project is primarily software based, the circuit design focuses on integrating QR code scanners with digital devices such as smartphones and computers. The system does not require physical circuitry but relies on QR code scanning

capabilities built into modern devices. The design follows a structured approach where the document URL is encrypted, a QR code is generated, and stored metadata ensures secure access. The authentication process verifies users before granting access, ensuring document security.

C) Working Principle:

The system functions through an automated and secure workflow. An administrator uploads a document into the system, which then generates a unique QR code linked to the encrypted document URL. When a user scans the QR code, the system decrypts the URL, verifies authentication, and grants access to the document. This eliminates the need for manual searching, logging into accounts, or setting permissions, significantly reducing retrieval time and security risks. The system ensures instant access while maintaining strict security measures.

IV. ADVANTAGES

The QR Code-based document retrieval system offers multiple advantages over traditional document-sharing methods: **Instant Access:** Documents can be retrieved immediately by scanning the QR code, eliminating manual searches.

Enhanced Security: AES-256 encryption, HTTPS, and JWT authentication ensure that only authorized users can access documents. **User-Friendly Interface:** The system provides a seamless experience with minimal steps for document retrieval.

Cross-Platform Compatibility: The system works across various devices, including desktops, tablets, and smartphones. **Reduced Dependence on Cloud Logins:** Unlike cloud storage services that require users to log in, the QR code system allows direct access with proper authentication. **Scalability:** The system can handle large datasets efficiently, making it suitable for organizations with extensive document.

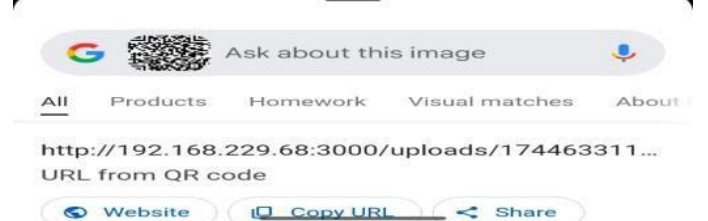
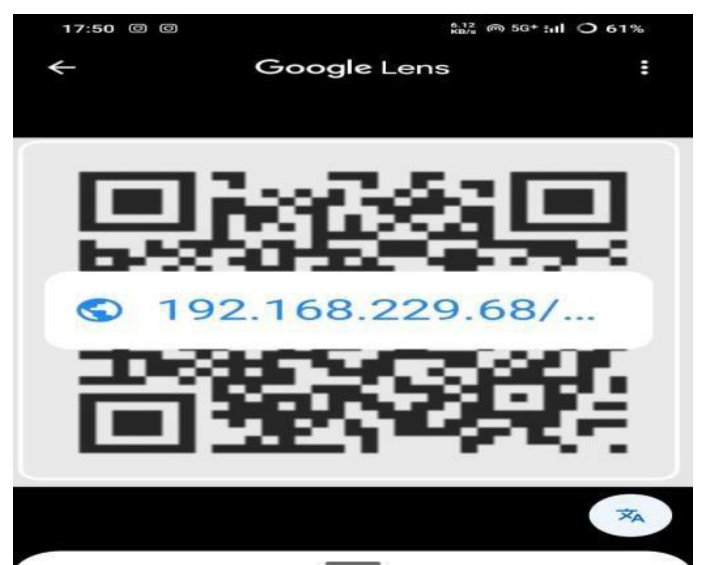
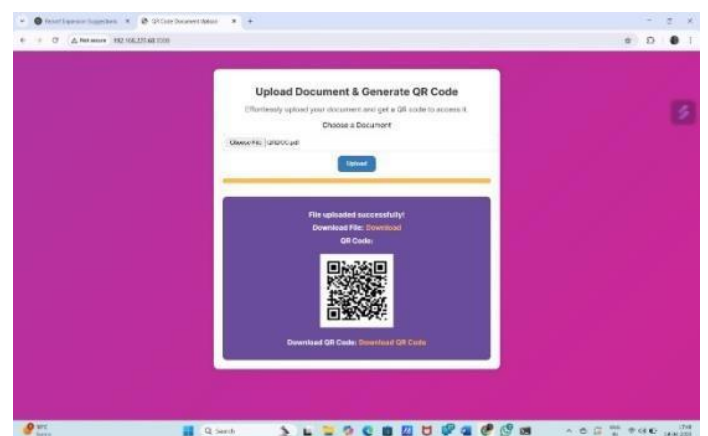
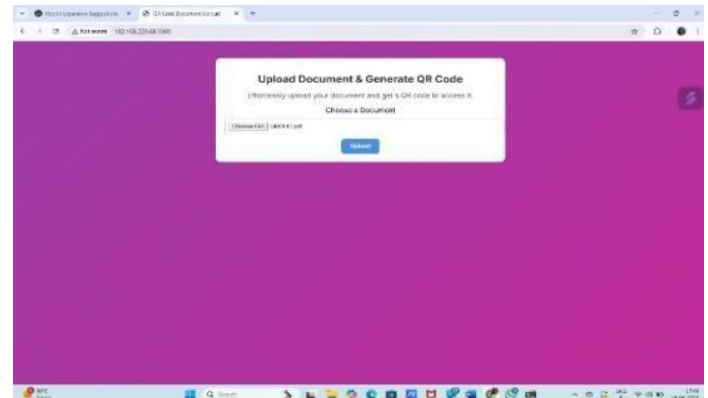
V. RESULT AND DISCUSSION

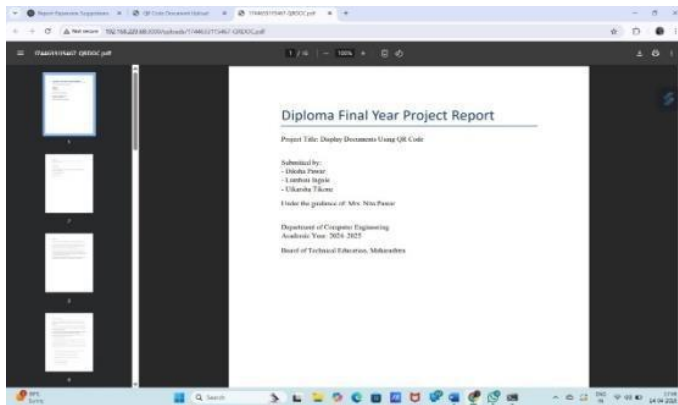
Performance tests of the system indicate that document retrieval is significantly faster compared to traditional methods. The system performs well under high data loads, proving its scalability. Security evaluations show that AES-256 encryption and JWT authentication prevent unauthorized access, making document retrieval highly secure.

The ability to generate time-limited QR codes further strengthens security for sensitive documents. Additionally, users reported improved convenience and efficiency, as they no longer needed to manually search for files or go through multiple authentication steps. Overall, the system

demonstrates high reliability, speed, and security, making it an ideal solution for document management.

VI. SOFTWARE IMPLEMENTATION





VII. FUTURE SCOPE

Several enhancements can be integrated into the system to further improve its capabilities:

Mobile App Development: A dedicated application for scanning and managing documents will provide an even more seamless experience. **Blockchain-Based Verification:** Implementing blockchain technology can ensure document authenticity and prevent unauthorized modifications.

Time-Limited QR Codes: Temporary QR codes can be generated for confidential files, ensuring access is restricted to a specific time. **AI-Based Document Classification:** Artificial intelligence can be utilized to automatically categorize and organize documents, making retrieval even more efficient. **Limited QR Codes:** Temporary QR codes can be generated for confidential files, ensuring access is restricted to a specific time.

VIII. CONCLUSION

The QR Code-based document retrieval system provides a modern, secure, and efficient solution for document management. By eliminating manual searches, redundant authentication processes, and security risks, the system enhances document accessibility and security. The implementation of encryption and authentication mechanisms ensures that only authorized users can retrieve documents, protecting sensitive information. The system is particularly beneficial for schools, businesses, and government institutions, where quick and controlled document access is essential. With planned future enhancements, such as mobile integration, blockchain verification, and AI based classification, the system will continue to evolve, offering even greater efficiency and security in digital document management.

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