# Encrypting/Decrypting Images Through Web App Using Blockchain

## 1. Introduction

In the modern digital era, securing sensitive data such as images, videos, and documents has become critical. This web application is designed to provide a secure platform for encrypting and decrypting various file types. To enhance the security and authenticity of user data, Blockchain technology is integrated for authentication purposes. This document explains the working mechanism of the web application and the role of Blockchain in user authentication.

## 2. Objectives

- To provide a secure platform for encrypting and decrypting images, videos, and documents.  
- To implement Blockchain technology for robust user authentication.  
- To enhance data integrity and prevent unauthorized access.

## 3. System Architecture

The system architecture consists of the following components:  
  
- \*\*Frontend:\*\* HTML, CSS, Bootstrap for designing an interactive user interface.  
- \*\*Backend:\*\* PHP and MySQL for server-side operations and data management.  
- \*\*Encryption/Decryption:\*\* Utilizing PHP Hash functions for securing image, video, and document data.  
- \*\*Authentication:\*\* Integrating Blockchain for secure, tamper-proof user verification.

## 4. How Blockchain Authentication Works

Blockchain authentication ensures that user credentials are securely stored and verified. The process includes:  
  
- \*\*Registration:\*\* User information (like username and password hash) is stored in a new block on the blockchain. This data is immutable and secure.  
- \*\*Login:\*\* When a user attempts to log in, their input is verified against the blockchain data. If the data matches, access is granted.  
- \*\*Security:\*\* Even if the server is compromised, the blockchain’s distributed ledger ensures data remains secure and unaltered.

## 5. Features of the Web Application

- \*\*Image Encryption/Decryption:\*\* Securely encrypt and decrypt image files to protect sensitive visual data.  
- \*\*Video Encryption/Decryption:\*\* Protect video content from unauthorized access using advanced encryption methods.  
- \*\*Document Encryption/Decryption:\*\* Encrypt and decrypt various document types (PDFs, Word files, etc.) to safeguard confidential information.  
- \*\*Blockchain Authentication:\*\* Ensure secure user login and data integrity through blockchain-based verification.  
- \*\*Reports Generation:\*\* Generate detailed reports on user activity and file management.

## 6. Benefits of Using Blockchain for Authentication

- \*\*Transparency:\*\* All changes and data entries are visible, enhancing accountability.  
- \*\*Security:\*\* Data cannot be altered once recorded on the blockchain, providing strong security.  
- \*\*Decentralization:\*\* Data is not stored on a single server but distributed across multiple nodes, reducing the risk of breaches.

## 7. Workflow of the Application

1. \*\*User Registration:\*\* The user provides their credentials, which are securely stored on the blockchain.  
2. \*\*User Login:\*\* The system verifies login details against the blockchain data.  
3. \*\*File Encryption/Decryption:\*\* Once authenticated, the user can encrypt and decrypt images, videos, and documents securely.  
4. \*\*Reports Generation:\*\* The application can generate reports based on user activity.

## 8. Conclusion

Integrating Blockchain for authentication in the web application significantly enhances security, data integrity, and user trust. The combination of PHP, MySQL, and Blockchain technology provides a robust platform for secure image, video, and document encryption and decryption.