

## Green University of Bangladesh

#### Department of Computer Science and Engineering (CSE) Semester: (Fall, Year: 2022), B.Sc. in CSE (Day)

**Secured Login System & Encrypted Data Storing Using Hash**

**To protect password from attackers and ensure the authentication**

#### Course Title: Computer & Cyber Security Course Code: CSE-323

#### Section: 221 D2

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**Lab Project Status**

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**Chapter 1 Abstract**

This project aims to enhance cybersecurity by implementing a robust secured login system and encrypted data storage mechanism using hash functions. The project focuses on safeguarding user credentials and sensitive information through industry-standard encryption techniques, ensuring the integrity and confidentiality of data.

# Introduction

The introduction to the Secured Login System & Encrypted Data Storage Using Hash project report sets the stage by highlighting the critical need for robust cybersecurity measures in today's digital environment. This project addresses the increasing threats to sensitive information by implementing a secure login system and encrypted data storage. Hashing is the process of transforming any given key or a string of characters into another value. This is usually represented by a shorter, fixed-length value or key that represents and makes it easier to find or employ the original string. The most popular use for hashing is the implementation of hash tables.

# Overview

In the contemporary landscape of digital interactions, safeguarding sensitive information is paramount. The project, "Secured Login System & Encrypted Data Storage Using Hash," emerges as a response to the escalating cybersecurity challenges faced by individuals and organizations alike. This overview provides a glimpse into the core objectives and components of the project, which is dedicated to fortifying authentication processes and protecting stored data through advanced security measures.

**Project Components:**

Secured Login Mechanism: Explore multi-factor authentication (MFA) methods to bolster the traditional username-password combination, enhancing the overall security

Data Encryption Framework: Implement state-of-the-art encryption algorithms to safeguard stored data, making it inaccessible to unauthorized entities.

Hashing Algorithms: Employ proven hashing algorithms to transform and protect user passwords, reducing vulnerability to brute-force attacks and unauthorized access.

This project seeks to establish a comprehensive and resilient security infrastructure, contributing to the mission of creating a trustworthy digital environment. As we delve into the intricacies of the Secured Login System and Encrypted Data Storage, this report will unfold the methodologies, technologies, and outcomes that shape this endeavor toward heightened cybersecurity.

# Design Goals/Objectives

The project aims to implement a secured login system and encrypted data storage using hash functions.

* To Develop a robust login system with secure authentication mechanisms to ensure only authorized users can access the system.
* To Implement password hashing to store user passwords securely. This involves using strong cartographic hash functions to protect user credentials.
* To Enhance security by incorporating unique salts for each user's password.
* To Create a secure session management system to control user access during their authenticated sessions.
* To Apply encryption algorithms to safeguard sensitive user data stored in the system's database.
* To Implement secure communication protocols (HTTPS) to protect data transmitted between the user's device and the server.

Emphasizing the significance of protecting user credentials and confidential data, the report outlines the project's objectives to establish a resilient authentication mechanism using hashed passwords and safeguard data integrity through encryption. This initiative aims to fortify digital systems against unauthorized access, ensuring the confidentiality and integrity of user information in the face of evolving cyber threats.

##### Tools and libraries

1. IDE - Vs code.s

2. Server - Local server [Xampp].

3. Language - HTML, CSS, PHP, MySQL.

# Problem Definition & Motivation

The problem domain for a secured login system with encrypted data storage using hashing involves addressing concerns related to authentication and data security.

Motivations for such a project include:

**User Privacy and Protection:** Ensuring that user credentials are securely stored and not susceptible to unauthorized access is crucial for protecting user privacy.

**Data Confidentiality:** Encrypting sensitive user data adds an extra layer of security, preventing unauthorized individuals or entities from gaining access to confidential information.

**Authentication Security:** Implementing a robust login system with secure password hashing helps prevent common attacks like password cracking or unauthorized access attempts.

**Compliance with Regulations:** Adhering to data protection regulations and standards, such as GDPR, HIPAA, or others, is essential for legal and ethical considerations.

**Trust and Reputation:** Providing a secure environment for user data builds trust and enhances the reputation of the system or application, attracting users who prioritize security.

**Mitigating Risks:** By employing encryption and hashing techniques, the project aims to mitigate the risks associated with data breaches and unauthorized access.

In summary, the project aims to create a secure login system that prioritizes user privacy, data confidentiality, and compliance with regulations, thereby building trust and reducing the risk of security breaches.

**Chapter 2**

**Design/Development/Implementation of the Project**

# Project Details

The "Secured Login System & Encrypted Data Storing Using Hash" project employs robust cybersecurity measures to safeguard user credentials and ensure authentication integrity. The system focuses on password protection through the use of hash functions, adding a layer of security that thwarts attackers attempting to compromise login credentials.

**Key Measures:**

Hashed Passwords: User passwords are transformed using strong, one-way hash functions. Hashing ensures that even if the stored data is compromised, attackers cannot easily reverse-engineer passwords.

Salt for Added Security: The system introduces salt, a random string unique to each user, to the hashing process.

Secure Storage: Only hashed passwords are stored, eliminating the risk of plaintext exposure in case of a data breach. Access controls and encryption are applied to protect the stored hash values.

Password Policy Enforcement: Implementation of a password policy encourages users to create strong and complex passwords. Policies may include minimum length, inclusion of uppercase letters, numbers, and special characters.

Multi-Factor Authentication (MFA):MFA adds an extra layer of protection by requiring multiple forms of identification.

# Body Content

# Implementation

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# Results and Discussion:

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**Chapter 3 Conclusion**

# Scope of Future Work

Connect3 focuses on seamlessly connecting three network sites at these company with advanced Cisco solutions. The Project Scope of Features **include here:**

**Seamless Integration:** Establish smooth communication and collaboration between net- work sites.

**Advanced Security:** Implement robust security measures for data protection. **Scalable Architecture:** Develop a flexible network for current and future needs. **Optimized Data Transfer:** Improve data transfer speeds and reliability.

**Centralized Management:** Streamline network administration for efficiency. **Employee Training:** Equip IT staff with skills for effective network management. **Cost-Efficient:** Execute the project within budget for optimal resource use.

**Continuous Monitoring:** Establish ongoing evaluation and improvement mechanisms.

# Discussion

In conclusion, the "Secured Login System & Encrypted Data Storage Using Hash" project represents a significant stride towards fortifying digital security in an era where cyber threats loom large. the secured login system and encrypted data storage project successfully implemented robust security measures. Utilizing hash functions enhanced password protection by converting them into irreversible strings. This cartographic approach adds an extra layer of defense against unauthorized access. Additionally, encrypting stored data ensures confidentiality, safeguarding sensitive information from potential breaches. The combination of secure login and encrypted data storage establishes a comprehensive security framework, contributing to the overall resilience of the system against cyber threats.