Project Proposal

Title of the project: Password and User Information Encryption

Type of the project: Implementation project

Team members : Nihitha Veeramachaneni, Sree Hari Priya Bellam, Jhanavi Ghadia

Project description:

Today, almost all the websites or applications that we use in our daily lives have some form of credential systems associated with them. Through the credential system, the users are able to access their own personal account of a particular application. A basic credential system consists of a username and password option. It is very likely that individuals use the same credentials (email address and password) for different applications to make the process easier for them. At the same time, there is an associated risk of their passwords being used maliciously by an outsider, who can get access to the password through the credential system. They can easily use this password to sign in the users' other accounts. Therefore, it is highly important to keep these passwords safe even while trying to use the credential system.

The motivation of this project is to make the users feel safe and comfortable while using any online platform. There are so many opportunities for growth, personal development, entertainment, etc available online for all the groups of people but there are several people who do not feel safe and comfortable using these opportunities. Our goal is to make the online portal system secure against outsiders' attacks and store the private information of the users after encrypting it. If this system of password encryption is used by all the websites and applications, the users will feel more safe and secure to use these platforms and get the full experience of any particular website or application.

The main goal of our project is to keep the private information of the user safe by encrypting them at every stage. When the user would sign up to access their portal on our website, they would have to go through the same credential system where they would enter their username or email address and their password. But our website will encrypt the password and store it in the database, so when the outsider gets access to the database, they won't be able to get hold of the original password. When the user again tries to login using the same password, our website will decrypt the password which is stored and compare it with the password entered by the user. This way, the password that the user enters will be safe and no one except the user will have access to it. Our website will not only encrypt the password but also any private information that the user would

like to enter in their profile. For example, the address, phone number, etc which the user would like to add, will be encrypted and kept safe.

What work is done:

The development of a front end, backend, and encryption method implementation are the three main components of this project.
The user's information will be entered through the front end, or user interface. This is a website that keeps track of a user's information. Once a user has submitted all of their personal data, it is saved in a database that is handled and controlled by the backend to store the information in an encrypted way.
There has been a lot of research on which encryption method to employ between AES and DES, and the results vary depending on the use case and both the algorithms have their own pros and cons.
So far, the project's initial and most important component, namely the front end or login page, has been completed. Currently working out how to connect the backend and the front end on the backend. After connecting to the backend, the information entered into the form is encrypted and stored in the database using an encryption technique.

Each team member's responsibility:

Since we would be developing a web application that allows users to login and see their personal information, it would require work on both frontend and backend for displaying the personal information and storing and retrieving it as required. Jhanavi would be working on developing the frontend UI pages that involves the signup page, the login page and the user profile page. Sree Hari Priya would work with the database setup and creation of tables and Nihitha would work on integrating the frontend pages with the database. For the encryption algorithm that actually encrypts the password and the private information, we have decided to divide the work equally. All of us would work on the implementation of the encryption algorithm.

References:

[1] A. Hamza and B. Kumar, "A Review Paper on DES, AES, RSA Encryption Standards," 2020 9th International Conference System Modeling and Advancement in Research Trends (SMART), 2020, pp. 333-338, doi: 10.1109/SMART50582.2020.9336800.

[2] M. Kannan, D. C. Priya, and S. VaishnaviSree, "A COMPARATIVE ANALYSIS OF DES, AES AND RSA CRYPTO ALGORITHMS FOR NETWORK SECURITY IN CLOUD COMPUTING," vol. 6, no. 3, p. 10, 2019.