

Visual Authentication Protocol Using Session Password

Abstract

One of the biggest problems faced by Internet users is the issue of trust and security. There are different methods for ensuring security through authentication, and the most common method is the textual password. However, this method has several well-known vulnerabilities such as eavesdropping, dictionary attacks, social engineering, and shoulder surfing. A keylogger is a type of software designed to capture all of a user's keystrokes and use them to impersonate the user in financial or other sensitive transactions.

This project demonstrates a carefully designed visual authentication system that enhances both security and usability. It introduces one visual authentication protocol, based on a password based system. To address keylogger threats, the project introduces an intermediate device that bridges the human user and the terminal. Instead of invoking a regular authentication protocol directly, users interact with a more sophisticated yet user-friendly protocol through this intermediate device.

For implementation, a session password authentication scheme is used to counter keylogger attacks. Two techniques are used to generate session passwords—one using text and the other using colours. Both methods are resistant to shoulder surfing and are suitable for use with Personal Digital Assistants (PDAs). This project emphasizes user-driven visualization to improve both the security and user-friendliness of authentication protocols.

In addition to its secure transaction mechanism, the project features a role-based banking portal for Admins, Banks, Employees, and Customers. Each role has access to specific functionalities such as managing accounts, processing loans, handling customer support, and viewing transaction histories. The back-end database efficiently manages users, accounts, transactions, complaints, chats, and notifications. Developed as a web-based application using HTML, CSS, JavaScript (frontend), Python (backend), and MySQL for data storage, this project provides an integrated and secure banking experience.

The innovative use of session passwords during cash transactions ensures enhanced authentication security without overburdening users, making the system resilient to modern online threats. By integrating usability with strong security, the system builds greater trust among users and promotes safer online banking practices.