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AUTHENTICATION BASED SECURITY SYSTEM ANALYSIS

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Abstract:

Authentication based on passwords is used largely in applications for computer security and privacy. However, human actions such as choosing bad passwords and inputting passwords in an insecure way are regarded as "the weakest link" in the authentication chain. Rather than arbitrary alphanumeric strings, users tend to choose passwords either short or meaningful for easy memorization. With web applications and mobile apps piling up, people can access these applications anytime and anywhere with various devices. This evolution brings great convenience but also increases the probability of exposing passwords to shoulder surfing attacks. Attackers can observe directly or use external recording devices to collect users' credentials. To overcome this problem, we proposed a novel authentication system PassMatrix, based on graphical passwords to resist shoulder surfing attacks. With a one-time valid login indicator and circulative horizontal and vertical bars covering the entire scope of pass-images, PassMatrix offers no hint for attackers to figure out or narrow down the password even they conduct multiple camera-based attacks.

Keywords : Pass Matrix, link, Privacy.

1. INTRODUCTION

Graphical password authentication schemes were developed to address the problems and weaknesses associated with textual passwords. Based on some studies such as those in humans have a better ability to memorize images with long-term memory (LTM) than verbal representations. Image-based passwords were proved to be easier to recollect in several user studies. As a result, users can set up a complex authentication password and are capable of recollecting it after a long time even if the memory is not activated periodically. However, most of these image-based passwords are vulnerable to shoulder surfing attacks (SSAs). This type of attack either uses direct observation, such as watching over someone's shoulder or applies video capturing techniques to get passwords, PINs, or other sensitive personal information.

2. PROBLEM STATEMENT

- Authentication based on passwords is used largely in applications for computer security and privacy.
- However, human actions such as choosing bad passwords and inputting passwords in an insecure way are regarded as "the weakest link" in the authentication chain.
- Rather than arbitrary alphanumeric strings, users tend to choose passwords either short or meaningful for easy memorization.
- With web applications and mobile apps piling up, people can access these applications anytime and anywhere with various devices.

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- This evolution brings great convenience but also increases the probability of exposing passwords to shoulder surfing attacks.
- Attackers can observe directly or use external recording devices to collect users' credentials.
- Objective of the project is to develop the application which resist Shoulder Surfing attacks in Graphical Authentication System.

3. SYSTEM ANALYSIS

A system is an orderly group of interdependent components linked together according to a plan to achieve a specific objective. Its main characteristics are organization, interaction, interdependence, integration and a central objective. System analysis and design are the application of the system approach to problem solving generally using computers. To reconstruct a system the analyst must consider its elements output and inputs, processors, controls, feedback and environment.

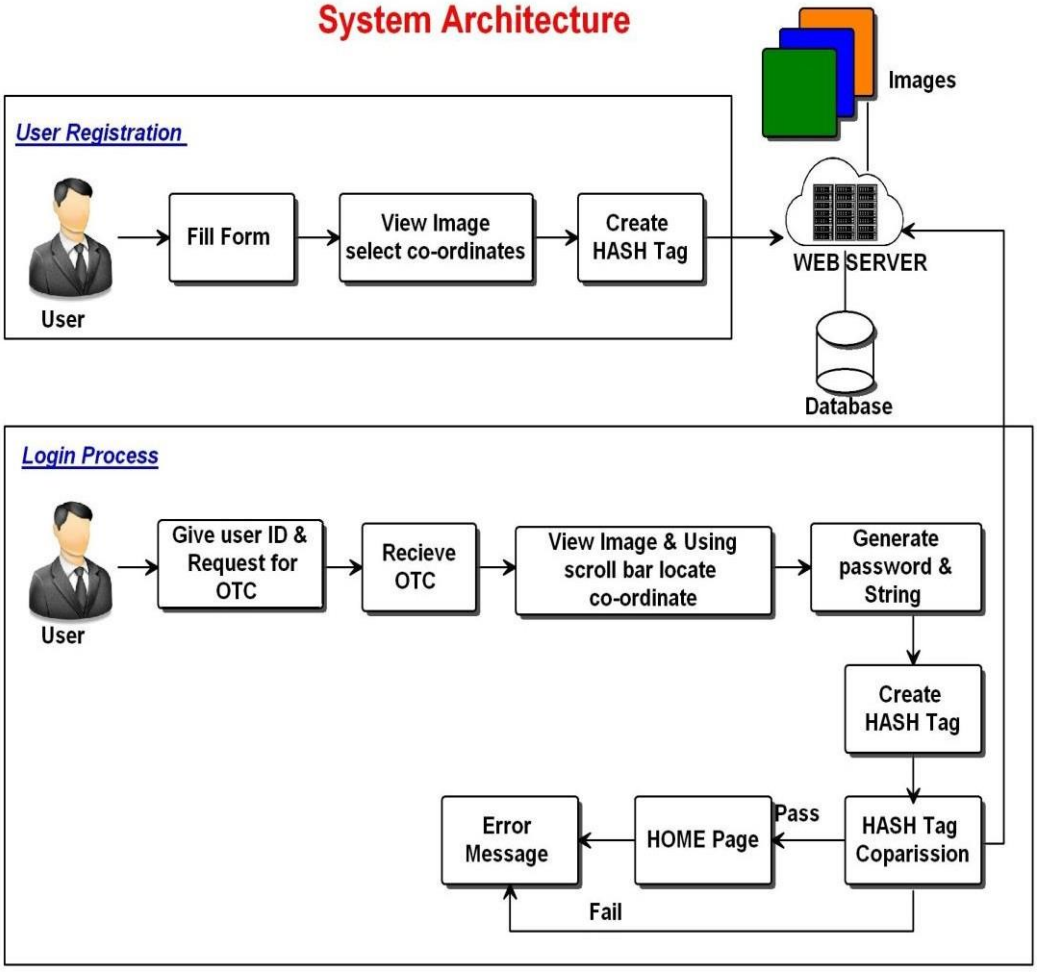

Fig.1.System Architecture

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Analysis is a detailed study of the various operations performed by a system and their relationships within and outside of the system. One aspect of analysis is defining the boundaries of the system and determining whether or not a candidate system should consider other related systems. During analysis data are collected on the available files decision points and transactions handled by the present system. This involves gathering information and using structured tools for analysis.

4. EXISTING SYSTEM

In the Existing System Users' actions such as typing from their keyboard, or clicking on the pass-images or pass-points in public may reveal their passwords to people with bad intention. Existing System is vulnerable to shoulder surfing attacks.

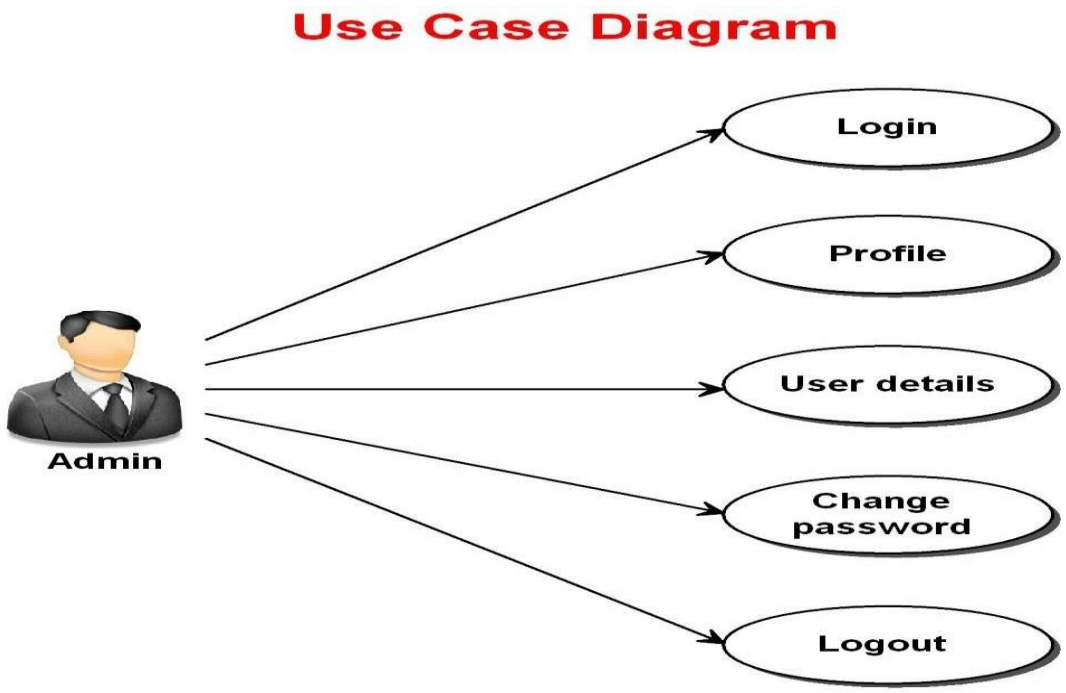

Fig.2.Use case diagram

Disadvantages of the Existing System

- Existing System is vulnerable to shoulder surfing attacks.
  Type-I: Naked eyes.
  Type-II: Video captures the entire authentication process only once.
  Type-III: Video captures the entire authentication process more than once.

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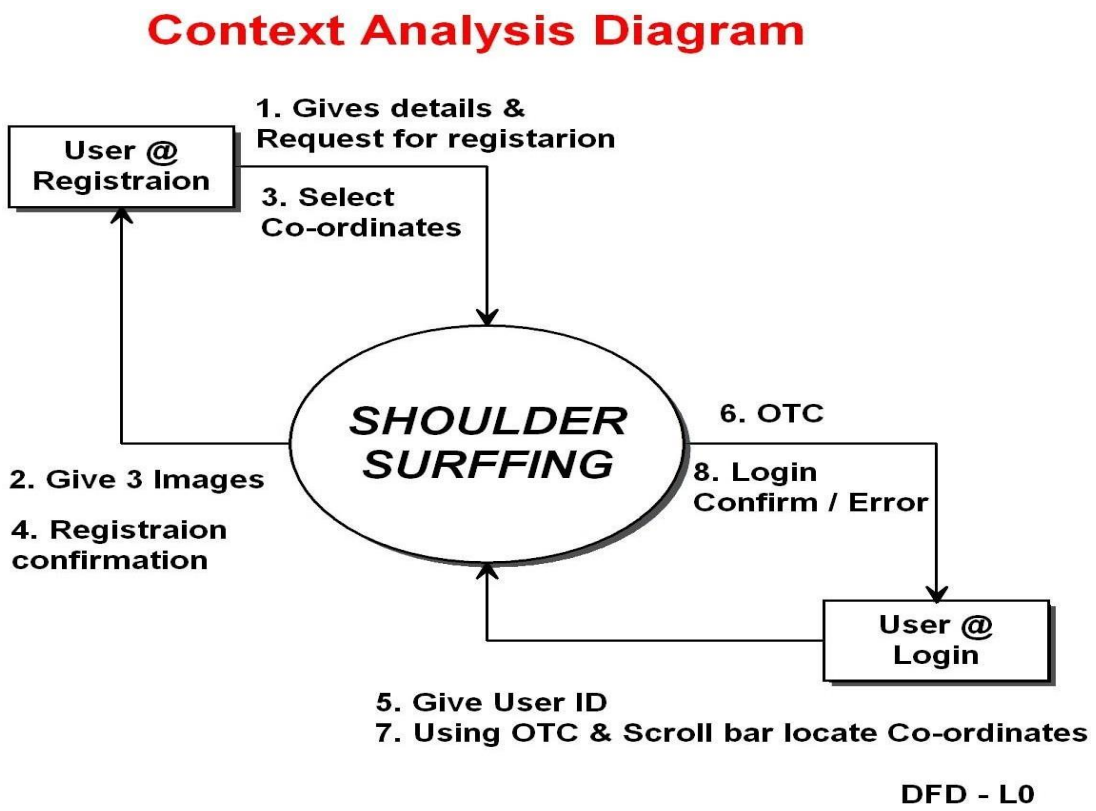

Fig.3. Context analysis diagram

5. PROPOSED SYSTEM

To overcome

- ➢ the security weakness of the traditional PIN method
- ➢ the easiness of obtaining passwords by observers in public
- ➢ the compatibility issues to devices.

We introduced a graphical authentication system called PassMatrix. In PassMatrix, a password consists of only one pass-square per pass-image for a sequence of n images. The number of images (i.e., n) is user-defined. In PassMatrix, users choose one square per image for a sequence of n images rather than n squares in one image as that in the PassPoints scheme.

FEASIBILITY STUDY

Feasibility is the determination of whether or not a project is worth doing. The process followed in making this determination is called feasibility Study. This type of study if a project can and should be taken. In the conduct of the feasibility study, the analyst will usually consider seven distinct, but inter-related types of feasibility.

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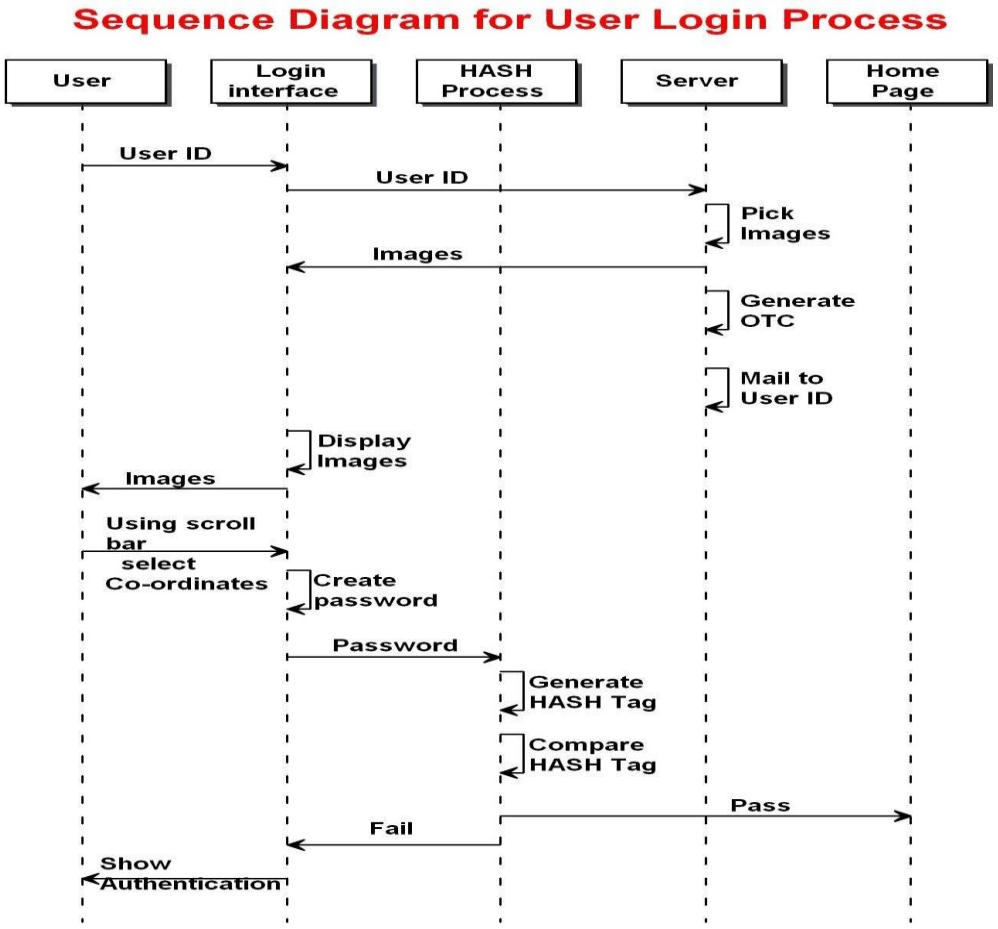

Fig.4. Sequence diagram

ECONOMIC FEASIBILITY

Economic analysis is the most frequently used technique for evaluating the effectiveness of a proposed system. More commonly known as cost / benefit analysis. The procedure is to determine the benefits and savings are expected form a proposed system and a compare them with costs. It benefits outweigh costs; a decision is taken to design and implement the system will have to be made if it is to have a chance of being approved. There is an ongoing effort that improves in accuracy at each phase of the system life cycle.

ALGORITHMS:

- ➢ Click Based Image Co-ordinate Generation
- ➢ Password String creation & Secret Code generation
- ➢ One Time Code (OTC) Generation

- OTC Verification
- Scroll Bar based Image Co-ordinate Generation
- Secret code Comparison
- MD5 (Message Digest 5) Algorithm

CONCLUSION

With the increasing trend of web services and apps, users are able to access these applications anytime and anywhere with various devices. However, conducting the authentication process in public might result in potential shoulder surfing attacks. Even a complicated password can be cracked easily through shoulder surfing. Using traditional textual passwords or PIN method, users need to type their passwords to authenticate themselves and thus these passwords can be revealed easily if someone peeks over shoulder or uses video recording devices such as cell phones.To overcome this problem, we proposed a shoulder surfing resistant authentication system based on graphical passwords, named PassMatrix. Using a one-time login indicator per image, users can point out the location of their pass-square without directly clicking or touching it, which is an action vulnerable to shoulder surfing attacks. Because of the design of the horizontal and vertical bars that cover the entire pass-image, it offers no clue for attackers to narrow down the password space even if they have more than one login records of that account.

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