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Authentication using Mixed-mode approach.

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***Abstract*—** Text passwords have been widely used for user authentication, e.g., by almost all websites on the Internet. However, it is well-known that text passwords are insecure for a variety of reasons. For example, users tend to choose simple passwords which can be remembered easily. In favor of memorability, making them subject to dictionary attacks; and text passwords can be stolen by malicious software (e.g., keystroke loggers) when being entered from keyboards. Phishing is another serious threat to text passwords, by which, a user could be persuaded to visit a forged website and enter their passwords. The system aim is to grant access to a legal user, and to prevent the system from illegal or non-authorized person.

***Keywords*—**Text Password, Passfaces, Authentication, Authorized user, Phishing, Hybrid Password, BODMAS, Fisher Yates Randomizer Algorithm.

I. INTRODUCTION

The main aim of security is to grant access to a legal user, and to prevent the system from illegal or non-authorized person in very precise and easy way so that they don't have to remember the long password and still authenticate the system in easy way.[8]

II. PROBLEM DEFINIATION

In order to enhance the privacy of access, we propose to develop a hybrid authentication mechanism that will use combination of alphanumeric authentication and graphics based authentication.[2][3][4]

The alphanumeric password based authentication technique would consist of generation of virtual password with the use of simple math which uses BODMAS rule. To avoid shoulder phishing attack we introduce graphical password in the system. Graphical passwords are an alternative to alphanumeric passwords in which users click on images to authenticate themselves rather than type alphanumeric strings.[5]

III. SCOPE

Many large organizations have critical servers that are usually protected by a textual password. A hybrid authentication proposes a sound replacement for a textual password.

Nuclear and military facilities such facilities should be protected by the most powerful authentication systems. The

Hybrid password has a very large probable password space, and since it can contain token, biometrics, recognition and knowledge based

The hybrid password's main application domains are protecting critical systems and resources like- Critical Servers, Nuclear Reactors & military Facilities, Airplanes and missile Guiding.

A small virtual environment can be used in the following systems like-ATM, Personal digital assistance, Desktop computers & laptops, Web authentication etc.[1][5]

IV. PROPOSED SYSTEM

The proposed system is a mixed mode authentication approach to provide more security to the authentication mechanism.

The system is divided into two important sections: alphanumeric based authentication and graphics based authentication.

The phase-1

Graphical passwords are an alternative to alphanumeric passwords in which users click on images to authenticate themselves rather than type alphanumeric strings.

The phase-2

The alphanumeric password based authentication technique would consist of generation of virtual password with the use of simple math which uses BODMAS rule.[6]
Randomizing algorithm is used to shuffle images and number wherever needed using Fisher Yates Randomizer angorithm.[2][5]

V. SYSTEM ARCHITECTURE.

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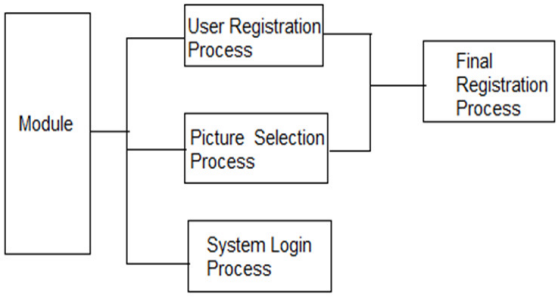


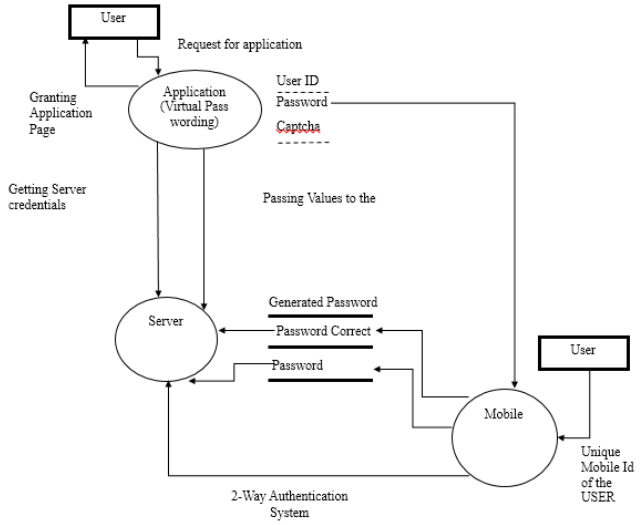
Graphical Password System:

There are several graphical password systems based on recognition. Empirical evidence from a field trial shows that Passfaces may be more memorable than alphanumeric passwords.

Steps in Graphical Password Systems (Passfaces):

1. The user chooses four images of human faces from a large portfolio of faces at the time of registration.
2. When logging in, the user sees a 3x3 grid with nine faces, consisting of one face previously chosen by the user at the time of registration.
3. The user must recognize and click anywhere on the previously chosen face.
4. This procedure is repeated for a total of four rounds.
5. Only if the user chooses all four correct faces, will he or she successfully log in. of recognition.[7][9][10]

Text-based Password system:



In the Text based System with username and password, when a user has enabled Virtual password for real time verification, his login process will be expanded with an extra layer of security.

Steps in Text based System:

1. First, the user has to enter his username and password.
2. After entering the username he will be prompted to enter new generated password.
3. This newly generated password will be sent to him via SMS.
4. After the user enters the password he will authenticated.
5. If the password is correct he will be granted permission, if not he will be declined.
6. Next the application will go to 2-step verification i.e graphical password system.[7][9][10]

VI. IMPLIMENTATION

Graphical Password Systems(Passfaces):

- The user chooses two images of human faces from a large portfolio of faces at the time of registration.
- When logging in, the user sees a 3x3 grid with nine faces, consisting of one face previously chosen by the user at the time of registration.
- The user must recognize and click anywhere on the previously chosen face.
- This procedure is repeated for a total of two rounds.
- Only if the user chooses all two correct faces, will he or she successfully log in. of recognition.

Text based System:

- First, the user has to enter his username and password.
- After entering the username he will be prompted to enter new generated password.
- This newly generated password will be sent to him via SMS.

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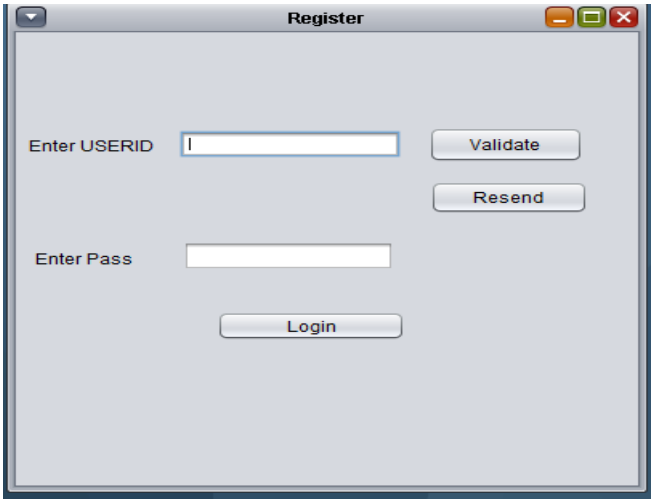
- After the user enters the password he will authenticated.
- If the password is correct he will be granted permission, if not he will be declined.



VII. External Interface Requirement

Hardware Requirements-

1) A "19" Display LCD monitor (color)
2) Multimedia keyboard
3) Optical Mouse
4) Printer (Laser)
5) DVD RW
6)160GB HDD
7) 2 GB RAM (DDR 2)
8) A Pentium D (2.9 GHz) processor
9) A Intel chipset motherboard (915)

Software Requirements-

1) Windows XP or later.
2) JRE 7
3) NetBeans
4) SQLite

VIII. Conclusion

User authentication is a fundamental component in most computer security contexts. In this extended abstract, we proposed a simple graphical password authentication system. The system combines graphical and text-based passwords trying to achieve the best of both worlds. This technique is new of its kind in which the arithmetic operations have been hidden in the four letter words making it more secure and at the same times easy. Graphical images also makes system more secure and more interesting. Overall this technique is a blend of alpha numeric and graphical process

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