JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue

JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

GRAPHICAL PASSWORD

M.Harini, Dr.V.Kavitha

MCA Student, Professor

Master of Computer Application

Hindusthan College of Arts and Science

Coimbatore - 641028, India.

ABSTRACT:

This project is entitled as **"GRAPHICAL PASSWORD AUTHENTICATION SYSTEM"**. The main objective of this project is to replacement/alternative of the text password using Cued Click Point (CCP). It based on cued click points. Users click onpoint of the image from the sequence of the images. The next image/input depends on the past click or past input. It is simply nothing but the use of image or sequence of images appearing one by one in a sequence and task related it to drive the password authentication activity. The main purpose of this system is generating complex to guess to hackers but easy to remember the password to user. User preferred to select using one point rather on image rather than selecting multiple points. Cued click point is easy for user to use and implement as well as it is easy to recognize. CCP is best than pass point because maximum number of images can reduce the guessing attacks and makes it confusable to the hackers.

Index Terms: **Image, Password, hackers, User, Numbers, click.**

CHAPTER 1

INTRODUCTION

During early days text password was the well known and only proposed computer authentication scheme to authenticate the user. Initially text passwords were used for authentication system. Text password is nothing but simply collection of characters or string. As how user has to always create their own passwords for different systems, which would be rememberable but hard to guess attackers. But text passwords are easy to hack with some hacking techniques like brute force and fishing attacks. As well as it is again difficult to remember more than one text password for number of different systems to the user. After some time, biometric and token based password authentication

systems were introduced as an alternatives to the text password but again it has its own drawbacks as it requires extra hardware setup and cost to setup new system for it. After some time, as alternatives for all those methods introduced is graphical password authentication system as it is very cheap and best. As well as per psychological studies user can remember graphical passwords very well than text passwords. Graphical password is of three types: Click basedgraphical password scheme, Choice based graphical password scheme, Draw based graphical password scheme.

1.1 OVERVIEW OF THE PROJECT

This project uses Click Based Graphical Password Scheme, where users will click on the image which are in random sequence every-time. Users can click any number of positions as they want, for the password the position the user clicks matters not the images. While user come to login phase he has to select the point over the image then system again generates the new signature for that point and if both signatures are same then and then usercan be said ad authenticated user. Otherwise the system will say to the user about the failed login, if the user has 3 failed logins his/her account will be locked and only after they login using the link sended to there mail there account will be unlocked.

This Graphical Password Authentication System is developed to provide the followingservices:

- ***Secured Login:*** Users will have limited fail login attempts before there account getslock for the security purpose.
- ***Password Reset:*** Users will be able to request for the password reset link throw theremail.
- ***Random Images Every Attempt:*** The images displayed will changed every time theuser logins or registers.
- ***Encrypted Password Storage:*** User account passwords are stored with hasherencryption.

1.2 MODULE DESCRIPTION

Register Module: Perform All The Operations In Register Functionality.

Login Module: Perform All The Operations In Login Functionality.

Password Reset Module: Perform Operations for resetting the user password.

Secure Account Block Module: Performs actions related to blocking the mass failedattempt.

CHAPTER 2 SYSTEM

STUDY

2.1 EXISTING SYSTEM

Till now most of the login systems use the basic username and text password combination. For most of the time the basic text password are useful, but hackers can use the brute force attacks for finding and logging-into the system. Some users create a easy to remember password but that password can be easily be hacked and if the user creates a difficult password it's hard to remember.

2.2 PROPOSED SYSTEM

For reduce most common ways of hacking possibilities related with the text password i.e. Brute force and dictionary attack and Fishing. For more human friendly password. To increasing level of security. Create system which is easy to remember compared with text password. Providing more security. For password which would not be easy to guess.

In this project here proposed we are going to use image position with some points. While login images appears in sequence in one by one manner. CCP is a click-based graphical password scheme, a cued-recall graphical password technique. Various graphical password schemes have been proposed as alternatives to text-based passwords. It can be used as password for folder lock, web-driven applications, desktop lock etc.

In case if user fails to click right point for at least 3 times he will be blocked from login and a login link will be sent on users registered email.

CHAPTER 3 SYSTEM

SPECIFICATIONS

3.1 HARDWARE REQUIREMENT

PROCESSOR : Pentium IVHARD

DISK : 4 GB

RAM : 256 MB

MONITOR : 15" Color Monitor KEYBOARD : 104

keys Standard KeyboardMOUSE : Standard 3 Button Mouse

3.2 SOFTWARE REQUIREMENT

OPERATING SYSTEM	: Windows 7/8/10/11
FRONT END	: HTML
BACK END	: Django Framework

3.3 *SOFTWARE DESCRIPTIONHTML*

OVERVIEW

The World Wide Web's markup language has always been HTML. HTML was primarily designed as a language for semantically describing scientific documents, although its general design and adaptations over the years have enabled it to be used to describe a number of other types of documents.

The main area that has not been adequately addressed by HTML is a vague subject referred to as Web Applications. This standard attempts to rectify this, while at the same time updating the HTML language to address issues raised in the past few years.

HyperText Markup Language is the computer language that facilitates website creation. The language, which has code words and syntax just like any other language, is relatively easy to comprehend and, as time goes on, increasingly powerful in what it allows someone to create. HTML continues to evolve to meet the demands and requirements of the Internet under the guise of the World Wide Web Consortium, the organization that designs and maintains the language; for instance, with the transition to Web 2.0.

HyperText is the method by which Internet users navigate the web. By clicking on special text called hyperlinks, users are brought to new pages. The use of hyper means it is not linear, so users can go anywhere on the Internet simply by clicking onthe available links. Markup is what HTML tags do to the text inside of them; they mark it as a specific type of text. For example, markup text could come in the form of boldface or italicized type to draw specific attention to a word or phrase.

DEFINITION OF HTML

HyperText Markup Language (HTML) is the set of markup symbols or codes inserted into a file intended for display on the Internet. The markup tells web browsers how to display a web page's words and images.

Each individual piece markup code (which would fall between "<" and ">" characters) is referred to as an element, though many people also refer to it as a tag. Some elements come in pairs that indicate when some display effect is to begin and when it is to end.

ADVANTAGES

- HTML is easy to use, learn and implement.
- No special software is required.
- It contains powerful text formatting facilities (commands/tags).
- An HTML page can be created on any hardware platform using any text editors.
- Hyperlinking facility enables visitor or users to traverse to any HTML document.
- Finding an error is easy.
- If compatibility with user habits, expectations, and multiple platforms is the goal,then, HTML is the only approach to develop a good web application.

FEATURES OF HTML

- It is easy to learn and easy to use.
- It is platform-Independent
- Images, videos, and audio can be added to a web page.
- Hypertext can be added to the text
- It is markup language.

CSS

Cascading **S**tyle **S**heets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

CSS handles the look and feel part of a web page. Using CSS, you can controlthe color of the text, the style of fonts, the spacing between paragraphs, how columns aresized and laid out, what background images or colors are used, layout designs, variationsin display for different devices and screen sizes as well as a variety of other effects.

CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the markup languages HTML or XHTML.

ADVANTAGES OF CSS

- **CSS saves time** − You can write CSS once and then reuse same sheet in multiple HTML pages. You can define a style for each HTML element and apply it to asmany Web pages as you want.
- **Pages load faster** − If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all theoccurrences of that tag. So less code means faster download times.
- **Easy maintenance** − To make a global change, simply change the style, and all elements in all the web pages will be updated automatically.
- **Superior styles to HTML** − CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.

- **Multiple Device Compatibility** − Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing.
- **Global web standards** − Now HTML attributes are being deprecated and it is being recommended to use CSS. So its a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.

PYTHON

Python is a computer programming language often used to build websites and software, automate tasks, and conduct data analysis. Python is a general-purpose language, meaning it can be used to create a variety of different programs and isn't specialized for any specific problems. This versatility, along with its beginner- friendliness, has made it one of the most-used programming languages today. A survey conducted by industry analyst firm RedMonk found that it was the second-most popular programming language among developers in 2021.

COMMON USES OF PYTHON

Python is commonly used for developing websites and software, task automation, data analysis, and data visualization. Since it's relatively easy to learn, Python has been adopted by many non-programmers such as accountants and scientists, for a variety of everyday tasks, like organizing finances.

CHARACTERISTICS OF PYTHON

Five important Characteristics make python's practical nature possible

- Data analysis and machine learning
- Web development
- Automation or scripting
- Software testing and prototyping
- Everyday tasks

DJANGO FRAMEWORK

Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. Built by experienced developers, Django takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It is free and open source, has a thriving and active community, great documentation, and many options for free and paid-for support.

FEATURES

Despite having its own nomenclature, such as naming the callable objects generating the HTTP responses "views", the core Django framework can be seen as an MVC architecture. It

consists of an object-relational mapper (ORM) that mediates between data models (defined as Python classes) and a relational database ("**M**odel"), a system for processing HTTP requests with a web templating system ("**V**iew"), and a regular-expression-based URL dispatcher ("**C**ontroller").

Also included in the core framework are:

- A lightweight and standalone web server for development and testing
- A form serialization and validation system that can translate between HTML formsand values suitable for storage in the database
- A template system that utilizes the concept of inheritance borrowed from object-oriented programming
- A caching framework that can use any of several cache methods
- Support for middleware classes that can intervene at various stages of requestprocessing and carry out custom functions
- An internal dispatcher system that allows components of an application to communicate events to each other via pre-defined signals
- An internationalization system, including translations of Django's own componentsinto a variety of languages
- A serialization system that can produce and read XML and/or JSON representations of Django model instances
- A system for extending the capabilities of the template engine
- An interface to Python's built-in unit test framework

3.4 BACKEND(SQLite)

SQLite is a database engine written in the C language. It is not a stand-alone app; rather, it is a library that software developers embed in their apps. As such, it belongs to the family of embedded databases. It is the most widely deployed database engine, as it is used by several of the top web browsers, operating systems, mobile phones, and other embedded systems.

SQLite has bindings to many programming languages. It generally follows PostgreSQL syntax but does not enforce type checking. This means that one can, for example, insert a string into a column defined as an integer.

DESIGN:

Unlike client–server database management systems, the SQLite engine has no stand-alone processes with which the application program communicates. Instead, the SQLite library is linked in and thus becomes an integral part of the application program. Linking may be static or dynamic. The application program uses SQLite's functionality through simple function calls, which reduce latency in database access: function calls within a single process are more efficient than inter-process communication.

SQLite stores the entire database (definitions, tables, indices, and the data itself) asa single cross-platform file on a host machine. It implements this simple design by locking the entire database

file during writing. SQLite read operations can be multitasked, though writes can only be performed sequentially.

Due to the server-less design, SQLite applications require less configuration than client–server databases. SQLite is called *zero-conf* because it does not require service management (such as startup scripts) or access control based on GRANT and passwords. Access control is handled by means of file-system permissions given to the database file itself. Databases in client–server systems use file-system permissions that give access to thedatabase files only to the daemon process.

Another implication of the server-less design is that several processes may not be able to write to the database file. In server-based databases, several writers will all connect to the same daemon, which is able to handle its locks internally. SQLite, on the other hand, has to rely on file-system locks. It has less knowledge of the other processes that are accessing the database at the same time. Therefore, SQLite is not the preferred choice for write-intensive deployments. However, for simple queries with little concurrency, SQLite performance profits from avoiding the overhead of passing its data to another process.

SQLite uses PostgreSQL as a reference platform. "What would PostgreSQL do" is used to make sense of the SQL standard. One major deviation is that, with the exception of primary keys, SQLite does not enforce type checking; the type of a value is dynamic and not strictly constrained by the schema (although the schema will trigger a conversion when storing, if such a conversion is potentially reversible). SQLite strives to follow Postel's rule.

FEATURES:

SQLite implements most of the SQL-92 standard for SQL, but lacks some features. For example, it only partially provides triggers and cannot write to views (however, it provides INSTEAD OF triggers that provide this functionality). Its support of ALTER TABLE statements is limited.

SQLite uses an unusual type system for a SQL-compatible DBMS: instead ofassigning a type to a column as in most SQL database systems, types are assigned to individual values; in language terms it is *dynamically typed*. Moreover, it is *weakly typed* in some of the same ways that Perl is: one can insert a string into an integer column (although SQLite will try to convert the string to an integer first, if the column's preferred type is integer). This adds flexibility to columns, especially when bound to a dynamically typed scripting language. However, the technique is not portable to other SQL products. A common criticism is that SQLite's type system lacks the data integrity mechanism provided by statically typed columns in other products. The SQLite web site describes a "strict affinity" mode, but this feature has not yet been added. However, it can be implemented with constraints like CHECK(typeof(x)='integer').

Tables normally include a hidden *rowid* index column, which gives faster access. If a database includes an Integer Primary Key column, SQLite will typically optimize it by treating it as an alias for *rowid*, causing the contents to be stored as a strictly typed 64-bit signed integer and changing its behavior to be somewhat like an auto-incrementing column. Future[*when?*] versions of SQLite may include a command to introspect whether a column has behavior like that of *rowid* to differentiate these columns from weakly typed, non- autoincrementing Integer Primary Keys. [*failed verification*]

Full support for Unicode case-conversions can be optionally be enabled through an extension.

Several computer processes or threads may access the same database concurrently. Several read accesses can be satisfied in parallel. A write access can only be satisfied if no other accesses are currently being serviced. Otherwise, the write access fails with an error code (or can automatically be retried until a configurable timeout expires). This concurrent access situation would change when dealing with temporary tables. This restriction is relaxed in version 3.7 when write-ahead logging

(WAL) is turned on, enabling concurrent reads and writes.

SQLite version 3.7.4 first saw the addition of the FTS4 (full-text search) module, which features enhancements over the older FTS3 module. FTS4 allows users to perform full-text searches on documents similar to how search engines search webpages. Version 3.8.2 added support for creating tables without rowid, which may provide space and performance improvements. Common table expressions support was added to SQLite in version 3.8.3. 3.8.11 added a newer search module called FTS5, the more radical (compared to FTS4) changes requiring a bump in version.

In 2015, with the *json1 extension* and new subtype interfaces, SQLite version 3.9 introduced JSON content managing.

As of version 3.33.0, the maximum supported database size is 281 TB.

CHAPTER 4 SYSTEM

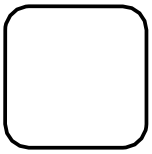
DESIGN

System design is the process of planning a new system to complement or altogether replace the old system. The purpose of the design phase is to plan a solution for the problem. The phrase is the first step in moving from the problem domain to the solution domain. The design process also helps the programmer to decompose our project into various parts to complete to the work and separates the conceptual representations from the data structure.

4.1 DATA FLOW DIAGRAM

A two-dimensional diagram explains how data is processed and transferred in a system. The graphical depiction identifies each source of data and how it interacts with other data sources to reach a common output. Individuals seeking to draft a data flow diagram must identify external inputs and outputs, determine how the inputs and outputs relate to each other, and explain with graphics how these connections relate and what they result in.

DATA FLOW SYMBOLS

SYMBOLS	DESCRIPTION
	An **entity**. A source of Data or a destination for data.
	A **process** or task that is performed by the system.
	A **Data store**, a place where data is held between processes
	A **Data Flow**

This type of diagram helps business development and design teams visualize how data isprocessed and identify or improve certain aspects.

Level 0

DFD Level 0 is also called a Context Diagram. It's a basic overview of the wholesystem or process being analyzed or modelled. It's designed to be an at-a-glance view, showing the system as a single high-level process, with its relationship to external entities. It's should be easily understood by a wide audience, including stakeholders, business analysts, and data analysts.

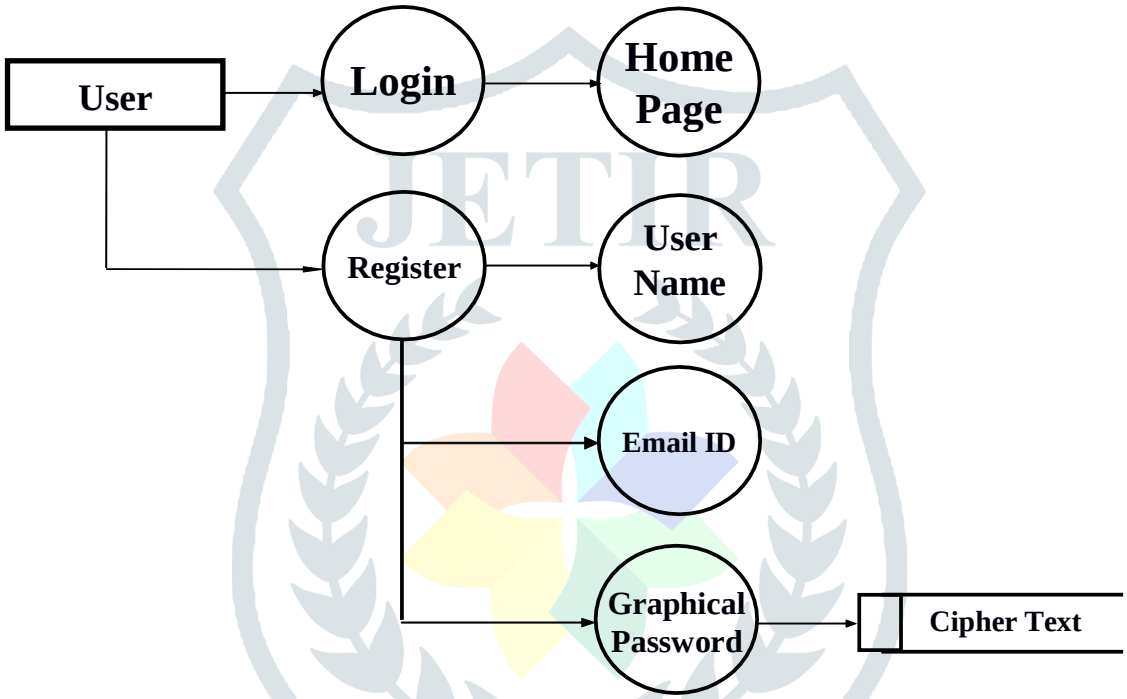


Fig 4.1 Level 0 DFD diagram

Level 1

DFD Level 1 provides a more detailed breakout of pieces of the Context Level

Diagram. You will highlight the main functions carried out by the system, as you breakdown the high-level process of the context Diagram into its sub-process.

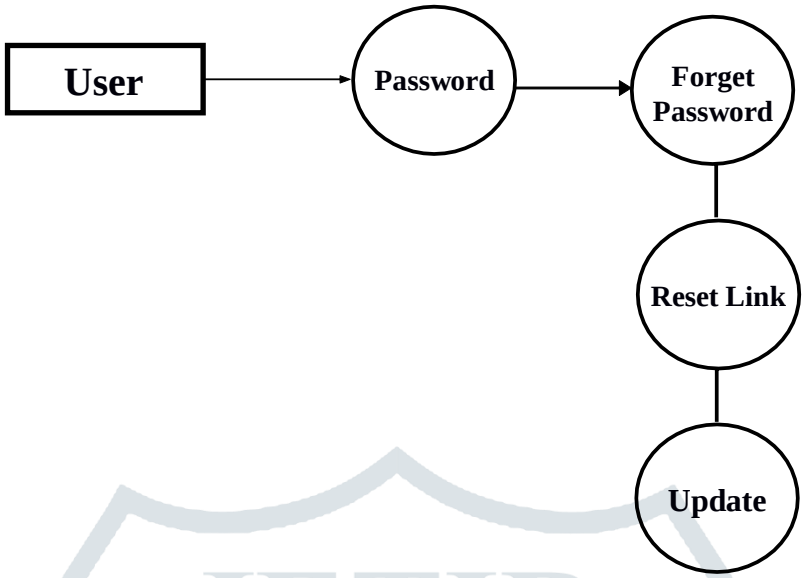


Fig 4.2 Level 1 DFD diagram

Level 2

Level 2 DFD goes one step deeper into parts of 1-level DFD. It can be used toplan or record the specific/necessary detail about the system's functioning.

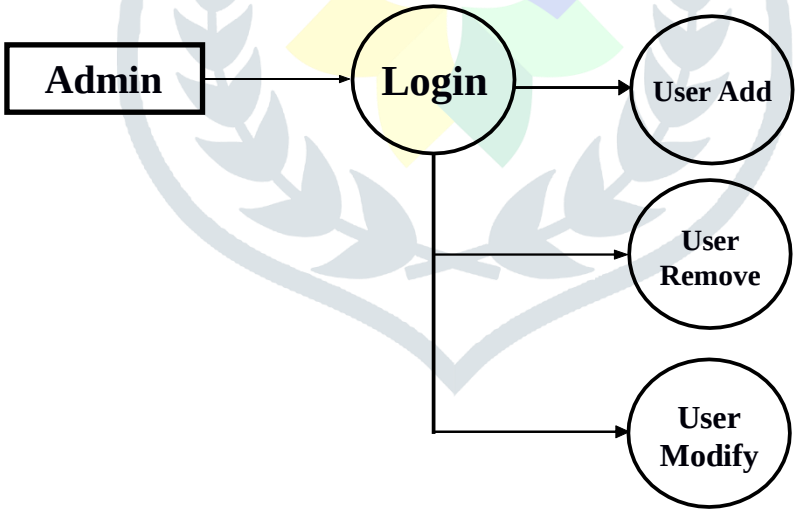


Fig 4.3 Level 2 DFD diagram

4.2 DATABASE DESIGN

A well database is essential for the good performance of the system .several tables are referenced or manipulated at various instance. The table, also know as relation; provide information pertaining to a specified entity. Normalization of table is carried out to extent possible, while the normalizing tables, care should be taken to make sure that the number of tables do not exceed the optimum level, so that table maintenance. Is convenient and effective

The process of doing database design generally consists of a number of steps which will be carried out by the database designer. Not all of these steps will be necessary in all cases. Usually, the designer must:

- Determine the data to be stored in the database
- Determine the relationships between the different data elements
- Superimpose a logical structure upon the data on the basis of these relationships.

Within the relational model the final step can generally be broken down into two further steps that of determining the grouping of information within the system, generally determining what are the basic objects about which information is being stored, and then determining the relationships between these groups of information, or objects. This step is not necessary with an Object database.

Table Name: auth_user

Description: This table stores the details of the users

Primary key: id

Name	Type	Description
Id	int(10)	This field stores ID of the user.
Username	varchar(50)	This field stores the username for login.
Email	varchar(100)	This field stores User Email.
Password	varchar(128)	This field stores Password in encrypted form.
first_name	varchar(30)	This field stores First Name of the User.
last_name	varchar(30)	This field stores Last Name of the User.
is_staff	bool	This field stores Status of the user is staff or not.
is_superuser	bool	This field stores Status of the user is superuser or not.
is_active	bool	This field stores Status of the user is active or not.
date_joined	datetime	This field stores timestamp of the time of account creation.
last_login	datetime	This field stores timestamp of the time of last login.

CHAPTER 5

SYSTEM TESTING AND IMPLEMENTATION

5.1 SYSTEM TESTING

In the system testing the whole system is tested for interface between each modules and program units are tested and recorded. This testing is done with sample data. The securities, communication between interfaces are tested

System testing is actually a series of different tests whose primary purpose is tofully exercise the computer based system although each test has a different purpose all work to verify that all system elements properly integrated and perform allocate function.

It involves two kinds of activities namely

1. Unit testing

2. Integrated testing
3. Validation testing

1. Unit Testing

Unit testing is testing changes made in a existing or new program this test is carried out during the programming and each module is found to be working satisfactorily. For example in the registration form after entering all the fields we click the submit button. When submit button is clicked, all the data in form are validated. Only after validation entries will be added to the database.

2. Integrated testing

Data can be lost across an interface, one module can have adverse effect on another sub function when combined it may not produce the desired major functions. Integration testing is a systematic testing for constructing test to uncover errors associated within an interface.

The objectives taken from unit tested modules and a program structure is built for Integrated testing. All the modules are combined and the test is made.

A correction made in this testing is difficult because the vast expenses of the entire program complicated the isolation of causes. In this integration testing step, all the errors are corrected for next testing process.

3. Validation testing

Software validation is achieved through a series of test that demonstrates the conformity and requirements. Thus the proposed system under consideration has to be tested by validation and found to be working satisfactorily. For example in customer enters phone number field should contain number otherwise it produces an error message similarly in all the forms the fields are validated.

4. Testing results

All the tests should be traceable to customer requirements the focus of testing will shift progressively from programs Exhaustive testing is not possible To be more effective testing should be which has probability of finding errors.

The following are the attributes of good test

1. A good test has a probability of finding errors
2. A good test should be “best of breeds”
3. A good test to neither simple nor too complex

5.2 SYSTEM IMPLEMENTATION

System implementation is the stage of the project that the theoretical design is turned into a working system. If the implementation stage is not properly planned and controlled, it can cause error. Thus it can be considered to be the most crucial stage in achieving a successful new system and in giving the user confidence that the new system will work and be effective.

Normally this stage involves setting up a coordinating committee, which will act as a sounding board for ideas; complaints and problem. The first task is implementation planning; i.e., deciding on the methods and time scale to be adopted. Apart from planningtwo major task of preparing for implementation are, education takes place much earlier inthe project; at the implementation stage the emphasis must be on training in new skills to give staff confidence they can use the system. Once staff has been trained, the system canbe tested.

CHAPTER 6

CONCLUSION

The proposed Cued Click Points scheme shows promise as a usable and memorable authentication mechanism. By taking advantage of user's ability to recognize images and the memory trigger associated with seeing a new image, CCP has advantages over Pass Points in terms of usability. Being cued as each images shown and having to remember only one click-point per image appears easier than having to remember an ordered series of clicks on one image. CCP offers a more secure alternative to Pass Points.

CCP increases the workload for attackers by forcing them to first acquire image sets for each user, and then conduct hotspot analysis on each of these images. In future development we can also add challenge response interaction. In challenge response interactions, server will present a challenge to the client and the client need to giveresponse according to the condition given.

If the response is correct then access is granted. Also we can limit the number a user can enter the wrong password

CHAPTER 7

SCOPE FOR FUTURE ENHANCEMENT

In future it has great scope. It can be used everywhere instead of text-based password. We can increase the security of this system by increasing the number of levels used, the number of tolerance squares used. Presently there are many authentication system but they have their own advantages and disadvantages. Text password can be hacked easily with various methods where as biometric authentication can cause more cost.

This system is more secure and cheap than old methodologies. As well as this system allows more reliable and easily recognizable system to the users. As how we have written over this system can be best alternative to the text password.

BIBLIOGRAPHY / REFERENCES

Books Used:

- "CUED CLICK POINT TECHNIQUES FOR GRAPHICLA PASSWORD AUTHENTICATION", Vaibhav Moraskar, Sagar Jaikalyani, Mujib Saiyyed, Jaykumar Gurnani, Kalyani Pendke, International Journal Of Computer Science And Mobile Computing,

- "THE DESIGN AND ANALYSIS OF GRAPHICAL PASSWORDS", Ian Jermyn, Alain Mayer, Fabin Monrose, Michael K. Reither, Aviel D. Rubin, Proceeding of The 8th UNISEX Security Symposium, 1999

- "SECURITY OF BIOMETRIC AUTHENTICATION SYSTEM", Vashek Mathyas, Zdenek Riha, International Journal Of Computer Information System And Industrial Management Application, 2011

- "GRAPHICAL PASSWORD AUTHENTICATION USING PERUASIVE CUED CLICK POINT", Iranna A. M., Pankaja Patil, International Journal Advanced Research in Electrical Instrumentation Engineering, Julay 2013.

- "GRAPHICAL PASSWORDS: A SURVEY", Xiaoyuan Suo, Ying Zhu, G.Scott.Owen, (Department of Computer Scince Georgia State University).

- "PERSUASIVE CUED CLICK POINTS WITH CLICK DRAW BASED GRAPHICAL PASSWORD SCHEME", P. R. Davele Shrikala M. Deshmukh, Anil B. Pawar., International Journal of Soft Computing and Engineering (IJSCE), May 2013

References Used:

- https://www.python.org/doc/

- https://www.djangoproject.com/

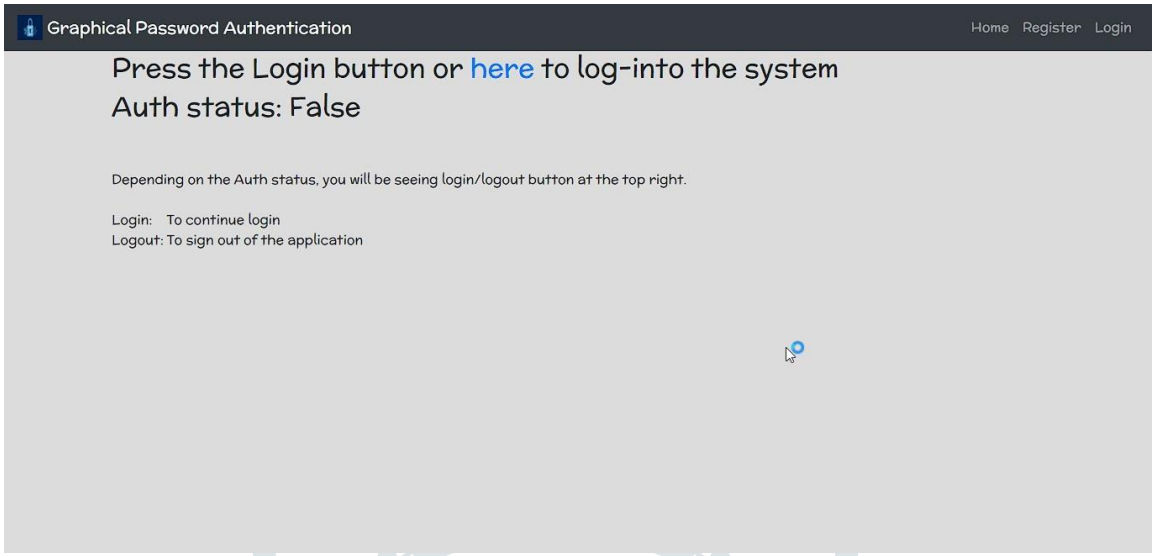
- Wikipedia.org

- www.w3schools.com

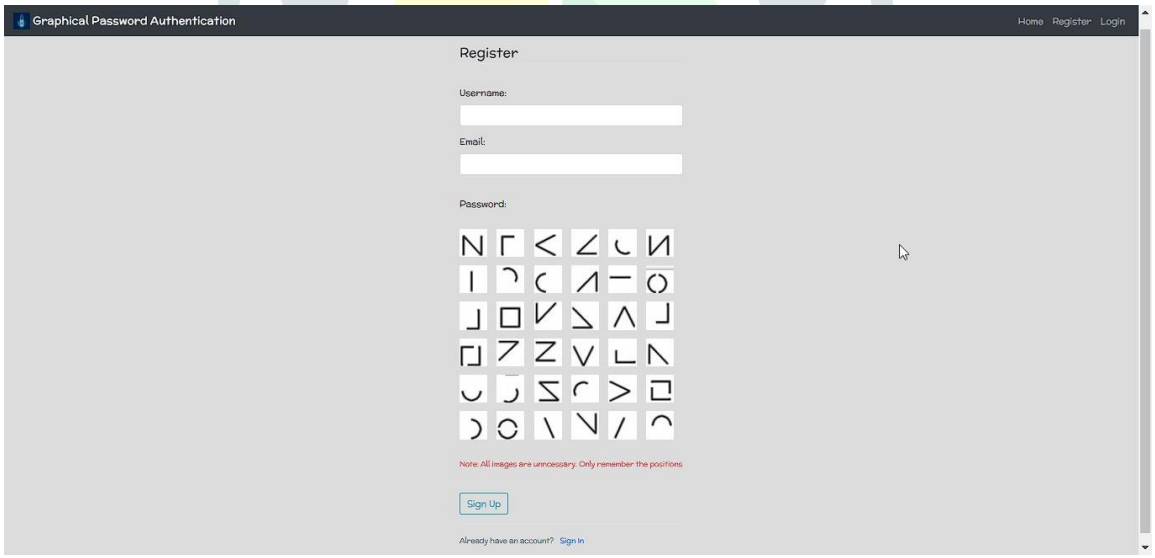
APPENDIX

SCREEN SHOT

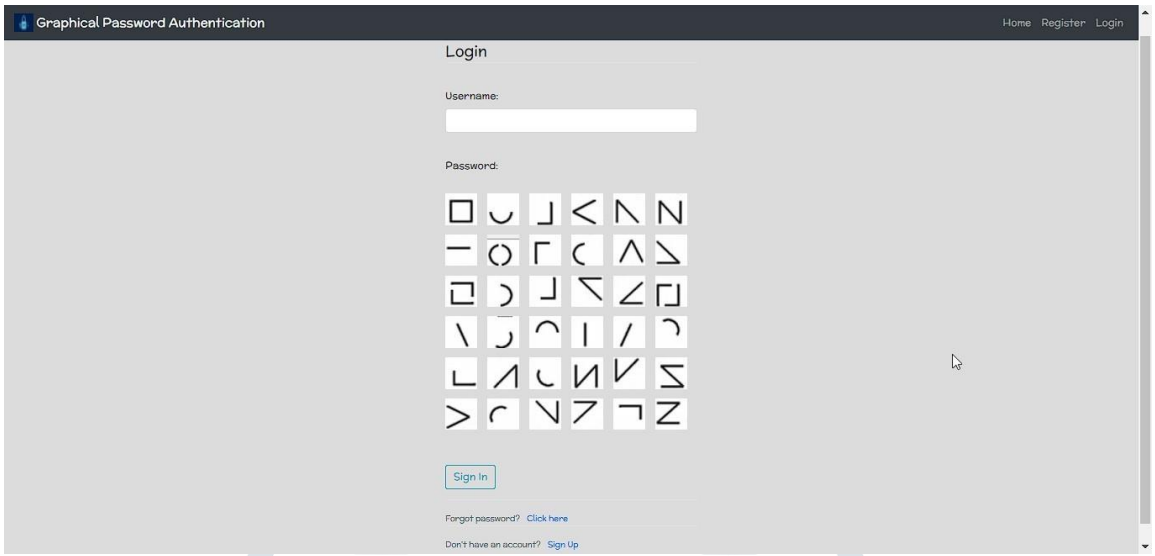
Home Page:



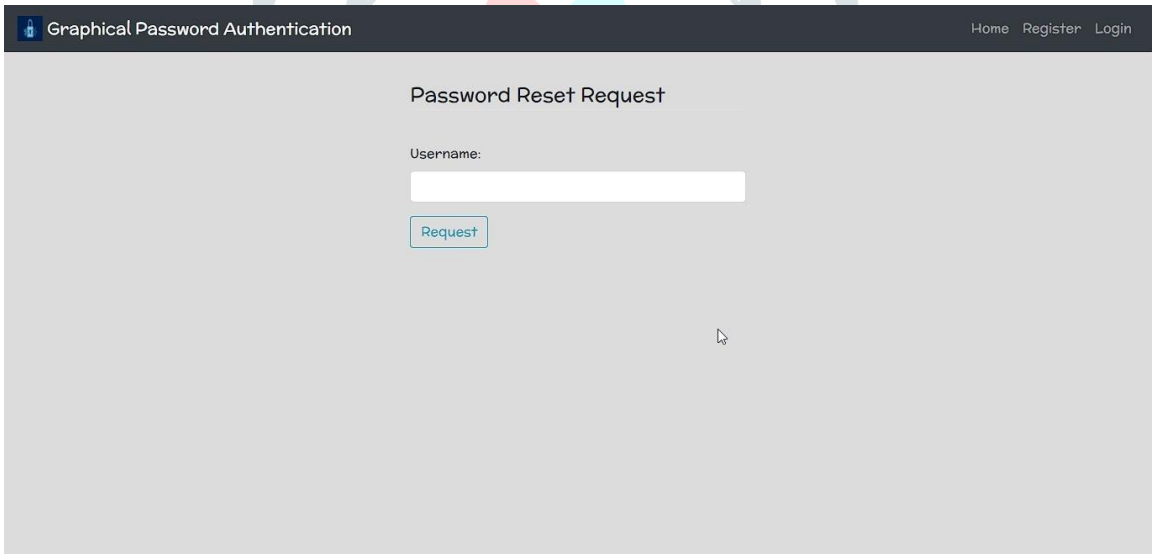
Register:



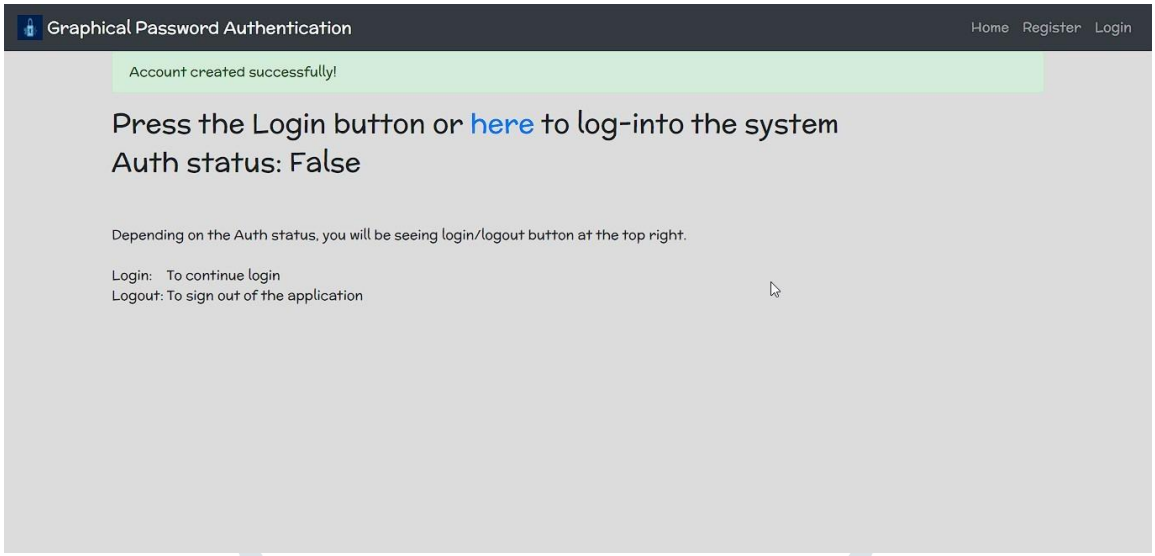
Login:



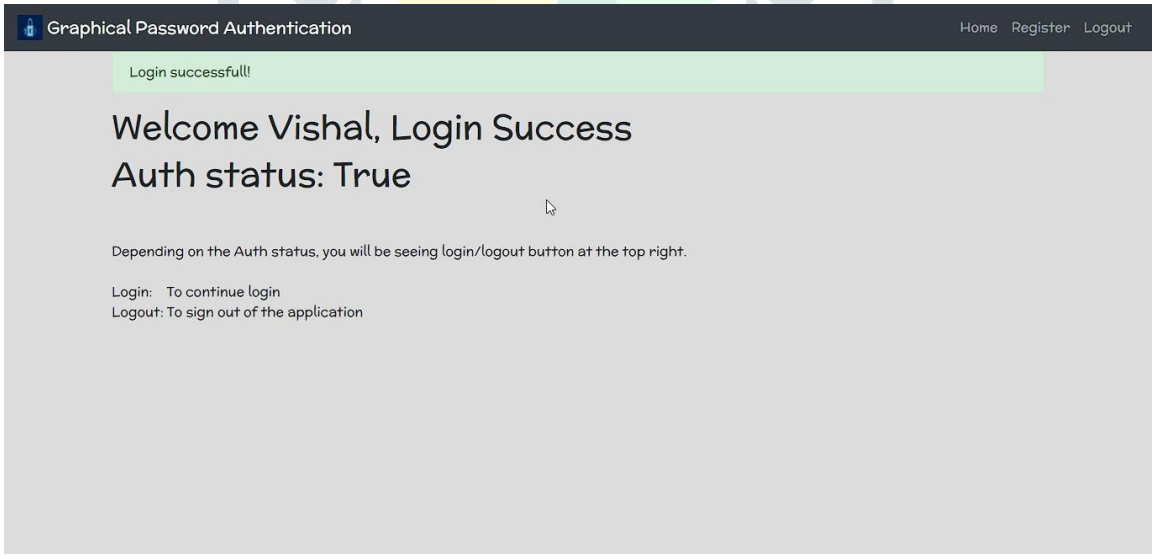
Forget Password:



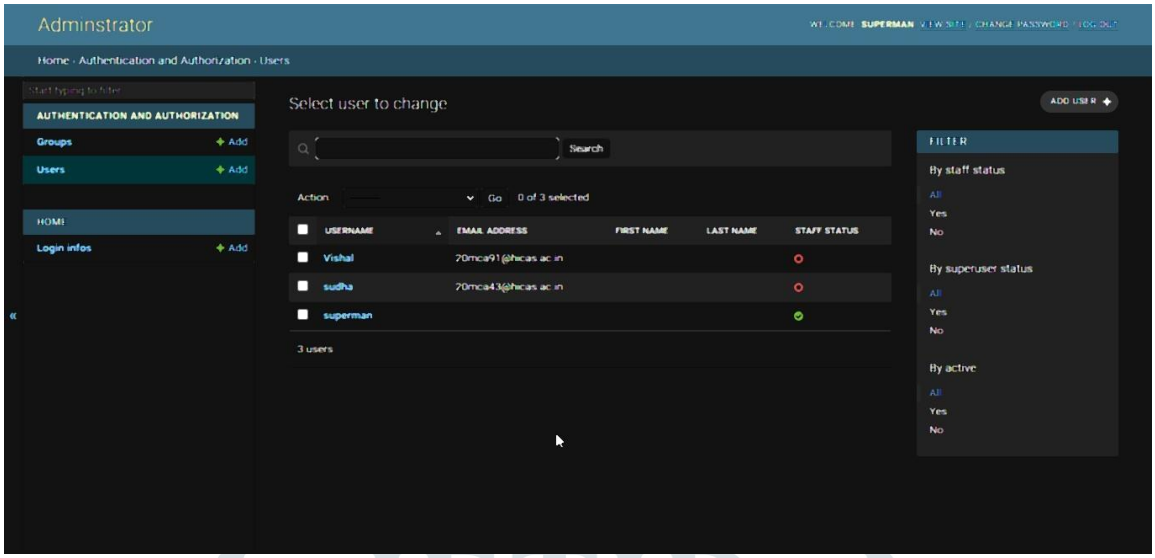
Register Success:



Login Success:



Admin Manage All Users:



Admin Manage User Profile: