

# **DOCTOPRO –A Secure Authenticator Key System**

## **MASTER OF COMPUTER APPLICATION**

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## Motivation

In the rapidly evolving landscape of healthcare, the adoption of a secure web-based authentication system for medical data is a game-changer. This technological advancement offers healthcare providers a flexible and efficient means of accessing and managing patient information while maintaining the highest standards of security. With this system in place, healthcare professionals can securely log in from anywhere with internet access, ensuring timely and accurate patient care. Leveraging state-of-the-art encryption, user verification methods, and stringent access controls, this web-based authentication system fortifies the confidentiality and integrity of sensitive medical data. It empowers healthcare institutions to streamline their operations, enhance collaboration, and embrace the digital transformation, all while upholding the trust and security of the healthcare ecosystem

In the ever-evolving realm of healthcare, the adoption of a robust and secure web-based authentication system for medical data stands as a pivotal advancement. This innovative technology promises to revolutionize the way healthcare providers interact with patient information, ensuring both accessibility and top-tier security. The intrinsic motivation behind the implementation of such a system is rooted in several key factors:

- 1. Accessibility and Flexibility:** With this web-based authentication system, healthcare professionals gain unprecedented access to critical patient data. Regardless of their physical location, as long as they have an internet connection, they can securely log in. This level of accessibility ensures that no matter the circumstances, patients can receive timely and accurate care, even in emergency situations.
- 2. Data Security:** The cornerstone of this authentication system is its unwavering commitment to data security. By deploying state-of-the-art encryption techniques, stringent user verification methods, and meticulous access controls, the system erects an impenetrable fortress around sensitive medical data. The result is a healthcare landscape where patient confidentiality and data integrity are non-negotiable.
- 3. Trust and Integrity:** Maintaining trust and integrity within the healthcare sector is not negotiable. Patients and their families must have complete confidence in the security of their medical data. The implementation of this secure web-based authentication system serves to reinforce that trust. It sends a clear message that healthcare providers are committed to safeguarding patient information, no matter where it is accessed or shared.
- 4. Necessity for the Future:** As the healthcare industry continues to evolve, the need for a secure web-based authentication system becomes increasingly critical. The interconnected nature of modern healthcare demands a digital infrastructure that is not just convenient but a necessity for patient safety and quality care delivery.

## Why we need this System ?

The motivation behind the adoption of a secure web-based authentication system for medical data extends far beyond mere convenience. It embodies a commitment to patient care, data security, operational efficiency, collaboration, trust, and the future of healthcare. It represents a pivotal step forward in ensuring the highest standards of care while preserving the sanctity of sensitive medical information.

Journal Name:-Authentication and Secure Key  
Management in E-Health Services: A Robust and Efficient  
Protocol Using Biometrics  
Publication:- 2019

This article delves into the integration of modern technology within the field of medical science, with a specific focus on Telecare Medicine Information Systems (TMIS). In this context, the protection of patient-related information is of paramount importance. The article explores the introduction of authentication protocols designed to enhance the security of patient data within TMIS.

## Proposed Method

Certainly, elaborate on the use of Public Key Infrastructure (PKI) in a secure authenticator key system, particularly in the context of managing digital profile credential to ensure secure communication and data protection.

### Encryption Keys:

PKI also manages encryption keys used for secure communication. The primary types of keys involved are:

- Public Key:** As mentioned earlier, the public key is included in the digital certificate and can be used for encrypting data that only the certificate holder can decrypt using their private key.
- Private Key:** The private key is kept confidential and is never shared. It is used for decrypting data that has been encrypted with the corresponding public key. In the context of secure communication, this private key is essential for decoding incoming encrypted data.

In summary, Public Key Infrastructure (PKI) forms the backbone of secure communication and data protection in the context of an authenticator key system. It accomplishes this by managing digital certificates and encryption keys, which provide identity verification, confidentiality, data integrity, and strong security against various threats.

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## Interface View

Patients Records

Export

| SL NO | Patient Id | Name       | ID Number | Phone Number | Residence | Guardian       | Action               |
|-------|------------|------------|-----------|--------------|-----------|----------------|----------------------|
| 1     | 3          | Ronit Shaw | 2333056   | 625816669    | Hooghly   | Ram Kumar Shaw | <a href="#">View</a> |
| 2     | 2          | Ravi Gupta | 23456788  | 254716748724 | Kolkata   | Rishi Gupta    | <a href="#">View</a> |
| 3     | 1          | Shakar Rao | 23456789  | 6289330657   | Naihati   | Retesh Rao     | <a href="#">View</a> |

Enter Security code in security key section

Enter 6 digit code

Please avoid special character in order for smooth security checking.

Submit

Enter Security code in security key section

530859

Please avoid special character in order for smooth security checking.

Submit

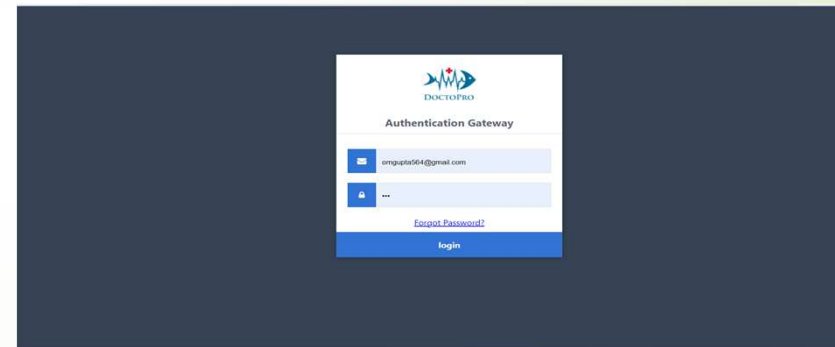
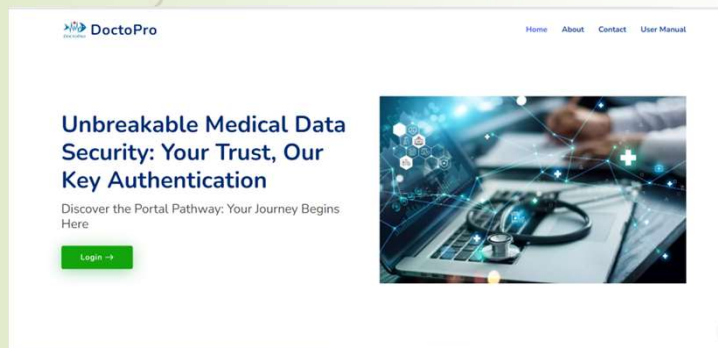
Security Key Record' Records

Refresh page to get a updated security key.

| Patient Id | Security Keys |
|------------|---------------|
| 1          | 205332*****   |
| 2          | 877277*****   |
| 3          | 530859*****   |
| 4          | 316735*****   |
| 5          | 556677*****   |
| 6          | 770703*****   |
| 7          | 300792*****   |



# LOGIN INTERFACE



## Secure Md5 Encryption at login

MD5 (Message Digest Algorithm 5) is a cryptographic hash function that was widely used in the past but is now considered insecure for most security applications due to several vulnerabilities. MD5 generates a fixed-length, 128-bit hash value from input data of arbitrary length.

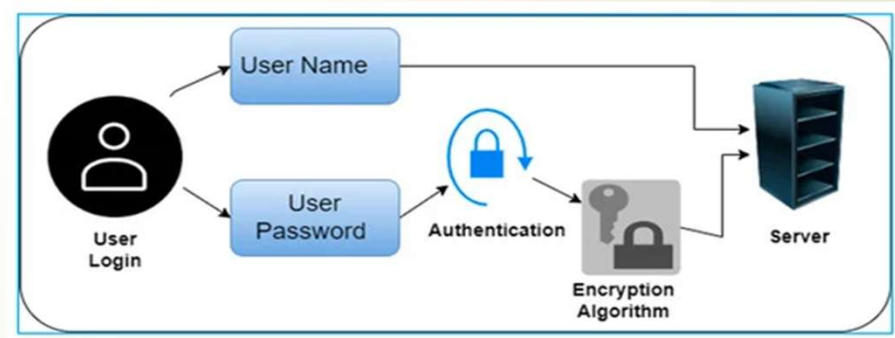
This is the same password

| id | name       | email              | password |
|----|------------|--------------------|----------|
| 1  | John Smith | john@somewhere.com | john856  |

| id | name       | email              | password                         |
|----|------------|--------------------|----------------------------------|
| 1  | John Smith | john@somewhere.com | ad65d5054042fda44ba3fdc97cee80c6 |

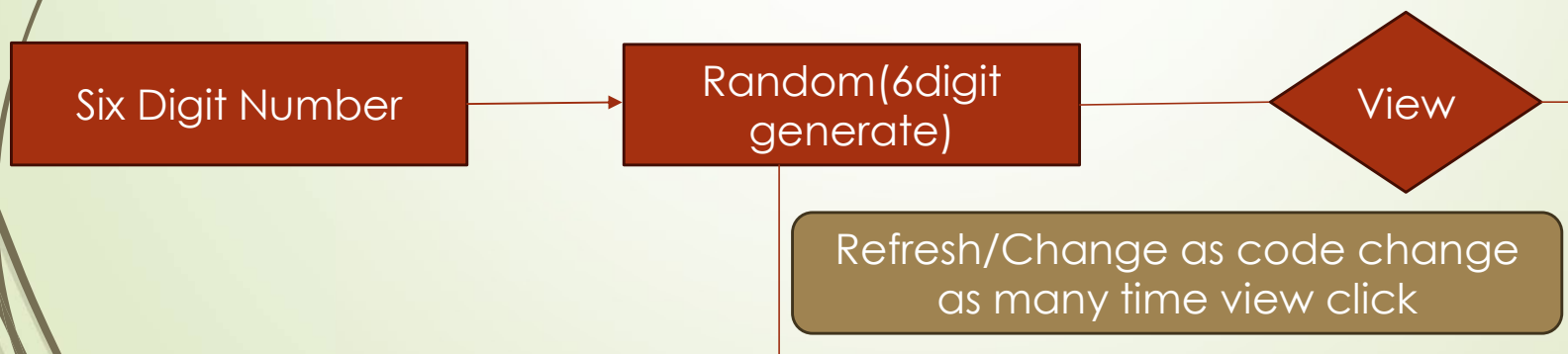
After encrypted "john856"



# Generation of secure Code For Patient Check

Generating a secure code for patient check using a random function is a common requirement in healthcare and other fields. To create a secure code, you can use a combination of cryptographic principles and randomization. Below is a step-by-step algorithm to generate a secure patient check code:

1. Choose a character set: Decide on the character set you want to use for the code. Typically, this includes uppercase letters, lowercase letters, and digits. You can also include special characters for added security.
2. Determine the code length: Define the desired length of the patient check code. Longer codes are generally more secure.
3. Generate a cryptographically secure random code:
  1. Use a cryptographic library or a secure random number generator, depending on your programming language.
  2. Generate random characters from the chosen character set.
  3. Ensure that characters are selected with uniform randomness.



# Admin Interface

The screenshot shows the 'User Profile' page in the DOCTOPRO Admin Interface. The left sidebar contains a menu with the following items: Dashboard, Patients, New Patient, New Hospital, New Doctors, Hospitals, Update Profile, Change Password, Security key, and Logout. The main content area is titled 'User Profile' and contains a 'Your Profile' section with the following fields: Fullname (OM Gupta), Email (omgupta554@gmail.com), Mobile Number (6289330657), Degration (Admin), and Id Number (38988296). A blue 'Change' button is located at the bottom right of the profile section.

DOCTOPRO

Dashboard

Patients

New Patient

New Hospital

New Doctors

Hospitals

Update Profile

Change Password

Security key

Logout

User Profile

Your Profile

Fullname:

OM Gupta

Email:

omgupta554@gmail.com

Mobile Number:

6289330657

Degration:

Admin

Id Number:

38988296

Change

The screenshot shows the 'Change Password' page in the DOCTOPRO Admin Interface. The left sidebar is identical to the previous screenshot. The main content area is titled 'Change Password' and contains a 'Change Your Password' section with the following fields: Current Password, New Password, and Confirm Password. A blue 'Change' button is located at the bottom right of the password section.

DOCTOPRO

Dashboard

Patients

New Patient

New Hospital

New Doctors

Hospitals

Update Profile

Change Password

Security key

Logout

Change Password

Change Your Password

Current Password:

New Password:

Confirm Password:

Change

# Doctor Interface



The screenshot shows the DOCTOPRO Patients Records table. It includes an 'Export' button and a table with columns: SL NO, Patient Id, Name, ID Number, Phone Number, Residence, Guardian, and Action. The table contains three rows of patient data, each with a 'View' button in the Action column.

| SL NO | Patient Id | Name       | ID Number | Phone Number | Residence | Guardian       | Action               |
|-------|------------|------------|-----------|--------------|-----------|----------------|----------------------|
| 1     | 3          | Ronit Shaw | 2333056   | 625816669    | Hooghly   | Ram Kumar Shaw | <a href="#">View</a> |
| 2     | 2          | Ravi Gupta | 23456788  | 254716748724 | Kolkata   | Rishi Gupta    | <a href="#">View</a> |
| 3     | 1          | Shakar Rao | 23456789  | 6289330657   | Naihati   | Retesh Rao     | <a href="#">View</a> |

Function Of Doctor and Responsibility:-

1. To view a patient by secure key method to view the medical history.
2. To Records the symptoms(active) and discharge it automatically

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# Experimental Results

## Admin Result View

The screenshot shows the 'Patient's Information' page in the DOCTOPRO system. It features a sidebar with navigation options: Dashboard, Patients, Security key, Hospitals, Update Profile, Change Password, and Logout. The main content area displays patient details for Ronit Shaw, including a profile picture, name, guardian, ID number, residence, gender, date of birth, status (Inactive), and blood group. Below this is a section for 'Ronit Shaw's Medical History' with a table of admissions and discharges.

**Patient's Information**

**Name:** Ronit Shaw **Guardian:** Ram Kumar Shaw

**IDNumber:** 2333056 **Residence:** Hooghly

**Gender:** Male **DoB:** 2003-10-02

**Status:** Inactive **Bloodgroup:** B+

**NAME: RONIT SHAW**  
**PHONE: 625816669**

**Ronit Shaw's Medical History**

| # | Date Admitted | Diagnosed With | Hospital Admitted         | Medication | Date Discharged |
|---|---------------|----------------|---------------------------|------------|-----------------|
| 1 | 2023-10-16    | Done           | Bardawan Medical Hospital | Done       | 2023-10-16      |
| 2 | 2023-10-16    | done           | Bardawan Medical Hospital | done       | 2023-10-16      |

The screenshot shows the 'Record Visit' page in the DOCTOPRO system. It features a sidebar with navigation options: Dashboard, Patients, Security key, Hospitals, Update Profile, Change Password, and Logout. The main content area has a form for recording a visit, with fields for 'Disease Found:' (containing 'Cough') and 'Drug:' (containing 'Giver'). A 'Submit' button is located at the bottom right of the form.

**Record Visit**


**Disease Found:**  
Cough

**Drug:**  
Giver

**Submit**

## After Update Academic Record is active

**Patient's Information**



NAME: RONIT SHAW  
PHONE: 625816669

**Name:** Ronit Shaw

**IDNumber:** 2333056

**Gender:** Male

**Status:** Active

**Guardian:** Ram Kumar Shaw

**Residence:** Hooghly

**DoB:** 2003-10-02

**Bloodgroup:** B+


**Ronit Shaw's Medical History**

Discharge Record

| # | Date Admitted | Diagnosed With | Hospital Admitted         | Medication | Date Discharged |
|---|---------------|----------------|---------------------------|------------|-----------------|
| 1 | 2023-10-17    | Cough          | Bardawan Medical Hospital | Given      | Not Discharged  |
| 2 | 2023-10-16    | Done           | Bardawan Medical Hospital | Done       | 2023-10-16      |

## After Discharge it is inactive

**Patient's Information**



NAME: RONIT SHAW  
PHONE: 625816669

**Name:** Ronit Shaw

**IDNumber:** 2333056

**Gender:** Male

**Status:** Inactive

**Guardian:** Ram Kumar Shaw

**Residence:** Hooghly

**DoB:** 2003-10-02

**Bloodgroup:** B+

**Ronit Shaw's Medical History**

Discharge Record

| # | Date Admitted | Diagnosed With | Hospital Admitted         | Medication | Date Discharged |
|---|---------------|----------------|---------------------------|------------|-----------------|
| 1 | 2023-10-17    | Cough          | Bardawan Medical Hospital | Given      | 2023-10-17      |
| 2 | 2023-10-16    | Done           | Bardawan Medical Hospital | Done       | 2023-10-16      |

## Output Of Experiments

The experiment will give a clarity that both admin and doctor can view the patients medical history, record, detail and change the active status ,update medicine and feedback by the mean of a random security key that seems to change at the time of the view patients bar will be click and security code for the respective patients id's is update need to refresh the security key option by random function .



# Reset password page

A “Reset Password” page is important for several reasons, as it serves critical functions in ensuring the security and usability of online accounts and systems:

## 1. Security:

- 1. Password Updates:** Passwords can become compromised or leaked over time due to data breaches or other security incidents. Allowing users to change their passwords enables them to react quickly to protect their accounts.
  - 2. Prevent Unauthorized Access:** Regular password changes can help prevent unauthorized access to accounts, especially when users suspect that someone else may have learned their password.
- ## 2. User Control:
- Giving users the ability to change their passwords empowers them to take control of their own account security. This is especially important for maintaining trust and providing a sense of ownership over their accounts.

RESET PASSWORD

Email:

[Reset](#)

Change Password

Change Your Password

Email:

Current Password:

New Password:

Confirm Password:

[Change](#)

