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Health Care System Using Qr-Code Strategy

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ABSTRACT: Medical data is an ever growing source of information generated from hospitals consisting of patient records in the form of hard copies which can be made easier and convenient by using QR code of the patient details. This paperwork not only increases the hassles involved in maintaining the file details but also serves as a source of redundancy and stockpiling. Our aim is to build a Health-care Portal system which will provide the features like clinical management, patient records, disease prediction and generate QR code for every patient as per there updated disease information. The patient has to feed his information into the system by setting a unique user-id (here email) and password. The patient will always log into the system using the above username and password. Moreover the patient's records keeps updating thus reducing redundancy. Key-logging or keyboard capturing is the activity of recording (or logging) the keys struck on a keyboard, normally in a secretive way so that the individual utilizing the keyboard is unconscious that their activities are being observed. It likewise has exceptionally authentic uses in investigations of human-computer interaction. We propose two visual authentication protocols: one is a one-time-password protocol, and the other is a password-based authentication protocol. Moreover the implemented project serves more features and e□ciency over previously implemented project.

KEYWORDS: Computer Networks, Security, Unauthorized access, Keylogging, QR Code.

I. INTRODUCTION

Hospitals continuously generate tons of data which is related to the patients. This data contains the general diagnosis of the patients. Managing these hard copies of data is a lot tedious and time consuming process. Even the retrieval of the data is also a hectic process. We propose a paperless scheme to replace the convectional way of storing the data in the wellness centres. We propose a system that accepts the data from the user using a customised graphical interface. The interface requires the user to enter his/her details which include name, dob, email (mandatory), insurance policy number, username, password etc. Once the user submits his information the corresponding QR-Code for his profile is sent to him on his email. The user then can enter the symptoms which bother him. Using knn algorithm we figure out the disease. The generated report is also sent to his email. Using an encrypted scanner the doctor scans the patients QR Code and suggests a prescription to the user. The prescription is again sent to the user. This encoded prescription can be shown to the pharmacist who again scans using his scanner and ultimately gives the medicine.

We also make use of K-Means algorithm to search for the most appropriate doctor. The algorithm tries to find out the most specific doctor for a specific disease. The admin of the system has an access to all the data related to the user, doctor and pharmacist. The previous system [1] just make use of the qr-code strategy to identify the patients in the wellness centres. However there is no provision for the security of the data of the patients. Here we propose AES Algorithm to encrypt the data of the patient so that it becomes free from threats. We propose two visual authentication protocols: one is a one-time-password protocol, and the other is a password-based authentication protocol. Moreover the implemented project serves more features and e□ciency over previously implemented project.

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II. RELATED WORK

In [1] the authors have just made use of the QR-code strategy to identify the patient in the hospitals by embedding it in a bracelet or a necklace. The patient has to wear the bracelet and various QR-Code readers are placed in the hospital premises so that the hospital staff or doctors can easily identify the patient by scanning the QR Code. However the system does not highlight the inclusion of some encryption and corresponding decryption measures incorporated into the system to safeguard the personal details of the patient. It has three components: Website, Database and an application Scanner. In [2] a patient's stay in the hospital involves many transitions between various departments and units. Since numerous basic and complex issues happen at the interfaces of hospitals, protected and proficient changes between the offices inside a healing facility has huge significance. The paper shows a Markov fasten based model to think about patient advances between crisis office, escalated or basic care unit, and healing facility ward in little and medium-sized group clinics. In [3] the authors propose a user authentication scheme named CoverPad for password entry on touchscreen mobile devices. CoverPad improves leakage resilience by safely delivering hidden messages. In [4] the authors evaluate two decades of proposals to replace text passwords for general-purpose user authentication on the web using a broad set of twenty-five usability, deploy ability and security benefits that an ideal scheme might provide. The author provides key insights about the difficulty of replacing passwords. In [5] the author proposes SafeSlinger, a system leveraging the proliferation of smartphones to enable people to securely and privately exchange their public keys. Through the exchanged authentic public keys, SafeSlinger establishes a secure channel o□ering secrecy and authenticity, which we use to support secure messaging and file exchange. In [7] the author present GAnGS, a fullyimplemented system for exchanging authentic information between mobile devices when they are physically present in the same location. GAnGS is scalable, appropriate for two or more devices. In [8] the author presents EyePassword, a system that mitigates the issues of shoulder surfing via a novel approach to user input. With EyePassword, a user enters sensitive input (password, PIN,etc.) by selecting from an on-screen keyboard using only the orientation of their pupils (i.e. the position of their gaze on screen), making eavesdropping by a malicious observer largely impractical..

III. PROPOSED METHOD

Our implementation involves three algorithms. They are are enlisted as follows:

A. Knn Algorithm for predicting the disease,
B. AES - Encryption Algorithm.(Advanced Encryption Standard)

I. KNN ALGORITHM:

In this algorithm we first take the inputs from the user in the symptoms page. Ten (10) symptoms are scanned from the user with a drop down list showing possible symptoms. The user scans through the symptoms and chooses the one's which is appropriate. The choice can also be left blank if the user feels that the already mentioned symptoms are satisfying. These results now have a corresponding value in the SQL database and when the user hits the button in the login page to predict the disease then this algorithm gets triggered. In k-NNclassification, the output is a class membership. The disease is classified by a majority vote of its neighbors, with the disease (object) being assigned to the class most common among its *k* nearest neighbors (*k* is a positive integer, typically small). It then implements and shows the 'probable' disease to the patient.

II. AES ENCRYPTION ALGORITHM (ADVANCED ENCRYPTION STANDARD):

This algorithm is used to encrypt the user privacy data such as name, dob, blood group, insurance policy number, password etc from theft. For this we first substitute the first 16 bytes by looking up to a fixed table specified in the design. The resultant is a matrix. Each of the rows of the matrix are shifted to the left such that the row that falls-off is reinserted to the right side of the matrix. Each column is now transformed using a

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mathematical function. This function inputs the old bytes of one column and outputs completely new bytes. The resultant is completely a new matrix. Finally the bytes of the matrix are considered as 128 bits and XORed to the 128 bits of the round bits. The result is the cypher text which is returned by the function. The decryption process is completely same to the encryption process but in reverse order.

Our proposed system mechanism is depicted in figure i. The system involves a website, database containing records and a mobile application.

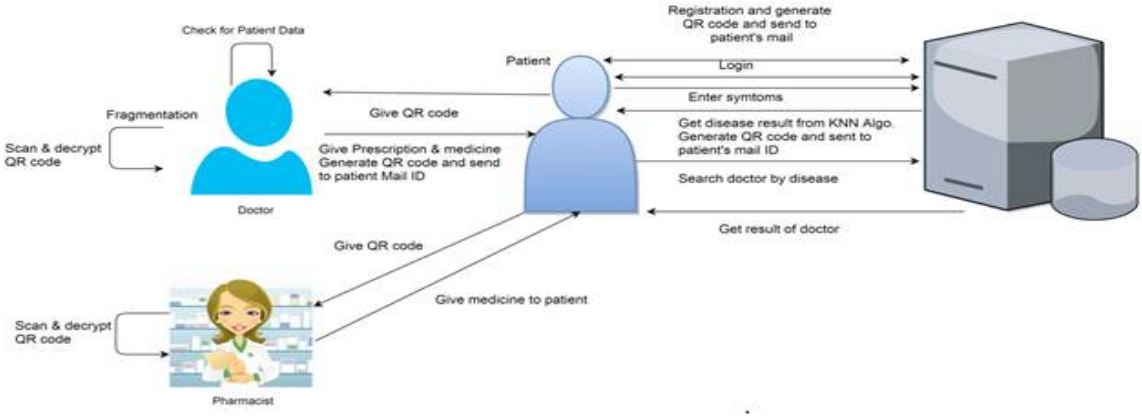
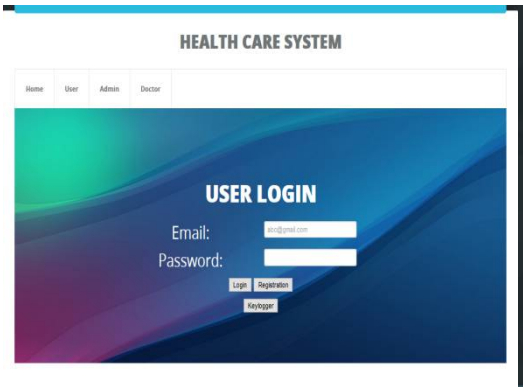


Figure i: Architecture of the proposed system.

IV. RESULTS

A. . The *Web Application*

Web Application is used to take input data from the user which involves his/her basic information in the registration form. The given figure ii, iii iv shows the web application screenshots. The figure ii shows the initial login page of the user. Similarly figure iii and iv show the corresponding User Registration page where the user enters his/her details and the profile page of the user once he/she registers.



Page Figure ii: Login Page

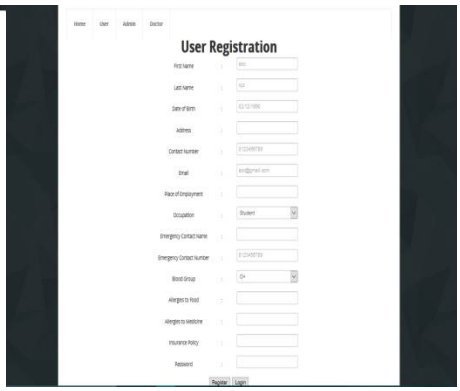


Figure iii: User Registration

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Figure iv: QR-Code Generated

B. Mobile Application

Some screenshots of the mobile application are as follows. Fig v shows the doctor's login page and pharmacist's login page and fig. vi depicts what happens when the QR Code is scanned by the doctors or pharmacist.

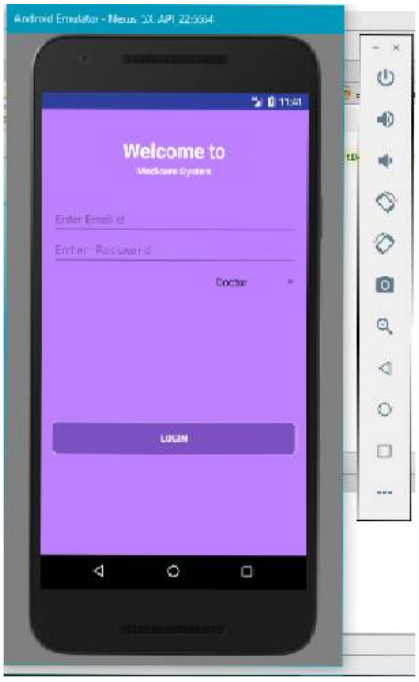

Figure v: Doctor Login page

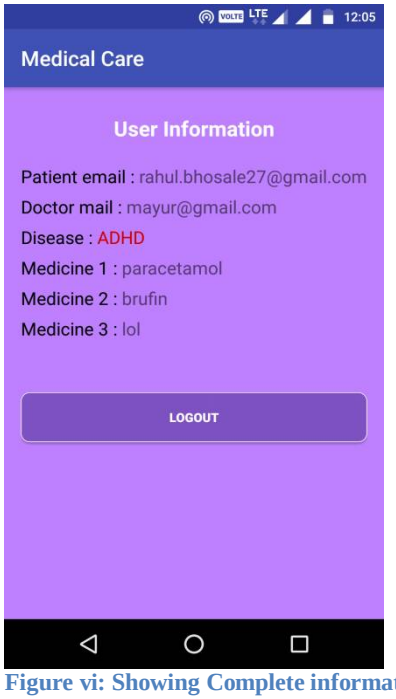

Figure vi: Showing Complete information

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V. CONCLUSION AND FUTURE WORK

We proposed health care system for hospital for this we are using K-NN algorithm. We generate QR code for every patient. We proposed and analyzed the use of user driven visualization to improve security and user-friendliness of authentication approaches. The proposed system uses two conventions that not only improve the user experience but also resist challenging attacks, such as the keylogger and malware attacks. Our protocols utilize simple technologies available in most out-of-the box Smartphone devices. Future expects of QR code involve age check for organizations that are age confinements (eatery, bars, theaters, and so forth.) which can utilize QR code on a client's driver's permit which can be filtered to a□rm a client's age and maintain a strategic distance from legitimate issues. Opening client accounts by filtering QR code of a client's driver's permit, the broker can gather data to open a client record or round out a credit application e□ectively.

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