

TWO FACTOR AUTHENTICATION USING MAC ID AND BARCODE

¹ROBIN TOMMY, ²FATHIMA THASNEEM, ³ASWATHY S, ⁴KRISHNA,
⁵RESHMI RAVINDRANATHAN, ⁶ULLAS RAVI

^{1,2,3,4,5,6}Tata Consultancy Services, Trivandrum, India

Abstract— Mainframe, being one of the oldest technologies being used, is known for providing most secure back-end to applications. Providing fully secure environment to customers is what can lead to a great product. An appealing user interface is the reason for using java as front-end and mainframe are used as back end which is actually doing validation. An attractive GUI is must for any application, through which we have a control over the way customers interpret our application. In addition to this, we are able to provide double security through MACID and BARCODE generation as well as mailing the barcode PDF file through java without which there is no possibility of logging in to the system. Additionally, we will also discuss about developing a connection between mainframe and java providing validations through both.

Index Terms— DB2 BACKEND , MACID, BARCODE PDF MAIL THROUGH JAVA.

I. INTRODUCTION

A lot of applications already exist in Java and a lot more are being created each day. Most of these applications lack is a very important component that is "SECURITY". Having responsibility for doing transactions for an organisation on managers's side is an accountable task. Providing validations and authentications is a critical role for an enterprise. Unfortunately this great opportunity to secure the access of the customer goes unrealized for the simple lack of good database management. This has been overcome through using db2 as main database. Here we have developed an application wherein an anonymous person despite knowing the USER-ID and PASSWORD of the authorised person can not access his system

TWO WAY AUTHENTICATION gives the users a better security while logging in to system and creates a protected environment within the system. What if we could develop an application that provide attested interface to the users? In addition to this, wouldn't it be something if we are also able to provide BARCODE AND QRCODE through mails to the user. In this paper, we are proposing a solution to implement these features. Additionally we will also discuss about developing a web application in Java using DB2 and javascript.

Generating the Barcode and fetching MAC-ID through java coding is the most important part of authentication required for user login. The goal is to enhance the efficiency of security for underlying logical design of a stored database.

Methods of matching the barcode generated with the user id and password to ensure verification is well tailored to the screens. For such a purpose we have incorporated the RANDOM BARCODE features of map using java functions. A major feature of harmonizing is the ability to fetch the barcode from the application and match with the mailed barcode to the user.

Access to Mainframe applications through Java environment limits the anonymous user's

accessibility as he can not access the email of the user. Integrating JAVA and Mainframes (DB2) is the key to increase the SECURITY of the application. This not only gives double authentication to the user but also enhances user experience with more and more protected environment.

II. LITERATURE SURVEY

A barcode is an optical machine readable representation of data relating to the object to which it is attached. Originally barcodes systematically represented data by varying the widths and spacings of parallel lines and may be referred to as linear or one-dimensional (1D). Later two-dimensional (2D) codes were developed, using rectangles, dots, hexagons, and other geometric patterns in two dimensions, usually called barcodes although they do not use bars as such. Barcodes originally were scanned by special optical scanners called barcode readers and applications software became available for devices that could read images, such as smartphones with cameras.

The process of authentication is done in two phases, these are known as initial level checking and high level checking. In the first phase which is also called MAC-ID analysis, the userid and password is validated along with the MAC-ID fetched from the system and in second phase the barcode analysis occurs.

There are several methods of providing sheath to the data present for a system and have pros and cons of their own. It is very difficult to find out which is the best one among them. Very promising results have been achieved with barcode and MAC-ID analysis which may arise a potential method in future.

There are many problems related to barcode analysis with usage of FTP, problems occur in pre-processing of QRCODE, through java and transferring the text file to mainframe. One of the significant problem is to use device regarding fetching the barcode from the user therefore we have coded our program in such a way that the user will directly access the BARCODE

file through their mail-id by their password. This leads to even more security that is enhancing the features of our program even more.

Some of the advantages of the barcode and MAC-ID system is as follows:

A barcode reader is used to read the code. The reader uses a laser beam that is sensitive to the reflections from the line and space thickness and variation. The reader translates the reflected light into digital data that is transferred to a computer for immediate action or storage. Bar codes and readers are most often seen in supermarkets and retail stores , but a large number of different uses have been found for them. They are also used to make inventory in retail stores and countless more can be found for them. Very small bar codes have been used to tag honey bees in research. Readers may be attached to a computer (as they often are in retail stores settings) or separate and portable , in which case they store the data they read until it can be fed into a computer.

There are several different bar code standards called symbologies that serve different uses, industries, or geographic needs . Since 1973 , the Uniform Product Code (UPC), regulated by the Uniform Code Council, an industry organisation , has provided a standard bar code used by most retail.

III. IMPLEMENTATION

The application commences with the java front end along with using the mainframe's security as the back end.

The system has been structured into four separate components-

The DB2 database structure is a repository as laid out in the concept of data-centered design. Below is the flow of the whole project-

Manager will open its bank website LOGIN where he/she has to enter username,Password,DB2 Username and DB2 password.

The DB2 username and DB2 password is used to establish the connection to the mainframe DB2 system. The username and password of the manager for login into the application is stored in the DB2. Java will send the details of the username, password and MAC-ID fetched from the system to the mainframe. Mainframe will compare that data with DB2 data and put status as 'Y' if comparison is successful else it will put 'N' as status in one of the column used as status flag.

The system will check the status flag, if it is 'Y' then and will generate a random number and that random number will be treated as a decrypted barcode value and will get updated in the DB2.

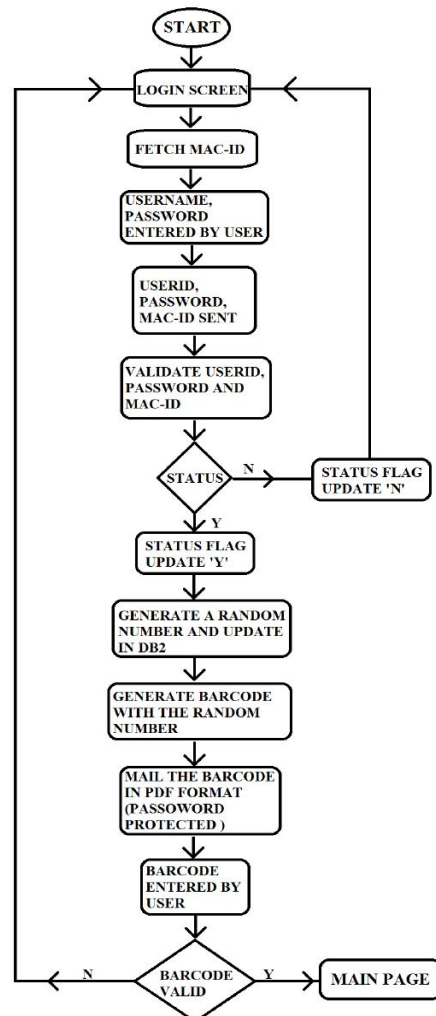
The same number is used to generate the barcode which is sent to the user via mail in a pdf. The pdf is made password protected using simple JAVA coding. The barcode pdf is mailed to the manager and take him/her to the barcode website where he/she has to

enter the barcode. The user has to open his/her mail-id, download the barcode pdf and enter his/her password so that he/she can access the barcode. Now user has to open any scanning app in his phone and scan the barcode and Qrcode which will decode the barcode into a number and user has to insert it on that page. If the barcode decoded number matches with the barcode number updated in the DB2 in previous step, then it will take you to bank's main page.

If there is any error in any step it will show you error screen and after 3 seconds it will redirect you to the first login screen.

The sole motto is even after knowing the USERID and PASSWORD of the manager, a person can not login to his/her system. The application has lead to a secure link between java programming and the mainframe database. This will incorporate a second level of security for the user. The highly interactive system will lead to the most of protected environment. After implementing when we run the application using all ftp and html codings the user faces a two level authentication.

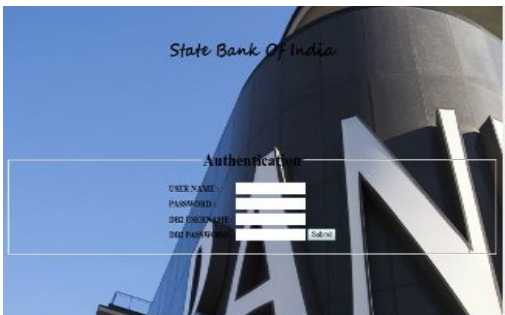
IV. FLOW CHART



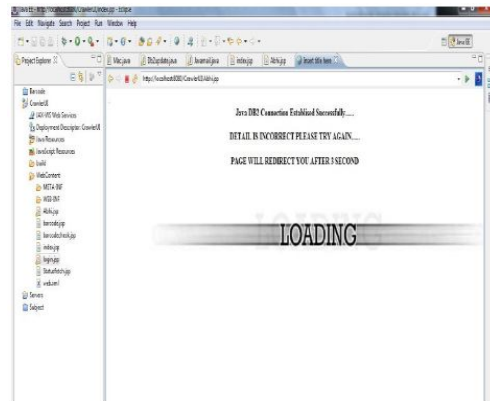
CONCLUSION

As now a days there are many threats of hacking and internet engraving is widely used in everyfield to make the things worse.Hence there should be a pre-defined programming for not letting anyone think about that. We have implemented Barcode and Macid functionality using Java and mainframe technology at the same time. If the user even somehow leaks out his userID and Password, even then an anonymous person can not enter into the screen, as he has to enter the barcode which has been mailed to the User's mail id.Further use of macid checking makes him even more secured. The attitude and intention of a customer towards an application are affected by the ease of use, usefulness, and enjoyment thus by implementing these factors in an application it increases the customer satisfaction and makes him a repeat customer.

LOGIN SCREEN



AFTER LOGIN SCREEN



REFERENCES

- [1] LINES OF COMMUNICATION by craig Harmon(Helmers Publishing)
- [2] http://www.businessrefinery.com/products/barcode/java_barcode_generator.html
- [3] <http://www.mkyong.com/java/how-to-get-mac-address-in-java/>
- [4] http://www.careerbless.com/java/jdbc/DB2_Connection.php

★ ★ ★