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Digital Marksheet Generator by Using QR Code

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Abstract— In today's digital world we have often hear the news about fake marksheet and unauthenticated certificate, so it is a big challenge to provide security and authenticity of digital data. Our aim is to provide a digital marksheet which can't be modified from third party and and also user can access their marksheet in any smart device. For that we are using encryption and decryption technique with the help of QR code based system.

Keywords: -QR Code, Encryption, Decryption.

I. INTRODUCTION

As we know that in this era we are moving towards digital world, so many of the people are using internet for storing the data on the cloud so that data can be accessed efficiently from any corner of the world. Also many of the people avoid carrying the hard copies of their documents wherever they are going, as taking care of these documents is a tedious task for them. And due to this, there may be a chance of getting lost of their documents which will be probably more difficult for them to get these lost documents back again, as they have to follow some procedures to get their lost documents back. So to avoid all these stuffs, we mostly used to put it all on the internet like google drive or cloud etc, we just scan our certificates and useful documents and kept it on any of the cloud as these documents can be use in emergency work. And nowadays we often hear about fake marksheets as many of the unauthorized users are creating the certificate with their own name and if someone wants to verify that certificate then long procedure she/he have to follow like first write an application to the University or the Institution in which certificate number is mentioned and then the University or Institution will search for that certificate by its certificate number and if they found then cross verification will be done and if they didn't found then that particular certificate is said to be fake as its details are not available with University or Institute in their databases. So now the question is how to get rid from all these things. For that reason we are proposing a system to overcome all these things, the system will provide digital marksheet with the help of QR code i.e user can view marksheet by just scanning the QR code of that particular marksheet. QR code used to store very less amount of data in it around 4KB, so to store whole marksheet in QR code we will use some compression techniques. Generally QR code consists a machine readable code consisting of an array of black and white squares, typically used for storing URL or other information for reading by the camera on a smartphone.

A. What is QR Code?

A QR code (abbreviated from Quick Response code) is a type of matrix - barcode (or two-dimensional bar code)[5]. QR Codes were introduced by the Japanese corporation Den so Wave Incorporated[10]. Originally it was designed to be used to track parts in the vehicle manufacturing industry, but its use has since grown tremendously[8]. QR codes are increasing their popularity as they appear more place in the Urban environment.Apart from marketing, QR Codes have been also adopted in different areas such as the on-line payments. The use of QR codes is license-free. A bar code is 2 dimensional code that contains data in only one direction but QR Code contains information in both the vertical and horizontal directions therefore QR code can hold considerably greater information than a bar code[11]. These Quick Response (QR) codes are versatile. In this new mark-sheet system, we embed a QR code in the mark sheet which encodes the mark detail of the student, grades obtained, student's name, roll number,year, semester etc. So any HR or any employer who needs to verify the the marksheet can just take his mobile phone and use the QR code reader application which is available for free of cost and scan the code. If the student or alumni wants to see his marks digitally or wants to send his own academic data to any other educational institute in digital format, then he has to just scan the QRCode, decrypt the data and send the information.[9]This system can easily be implemented and it is virtually impossible to alter the QR code that is embedded within a marksheet. So it increases the complexity of the forget process and hence it is computationally secure as per the laws of security. The system ensured several layers

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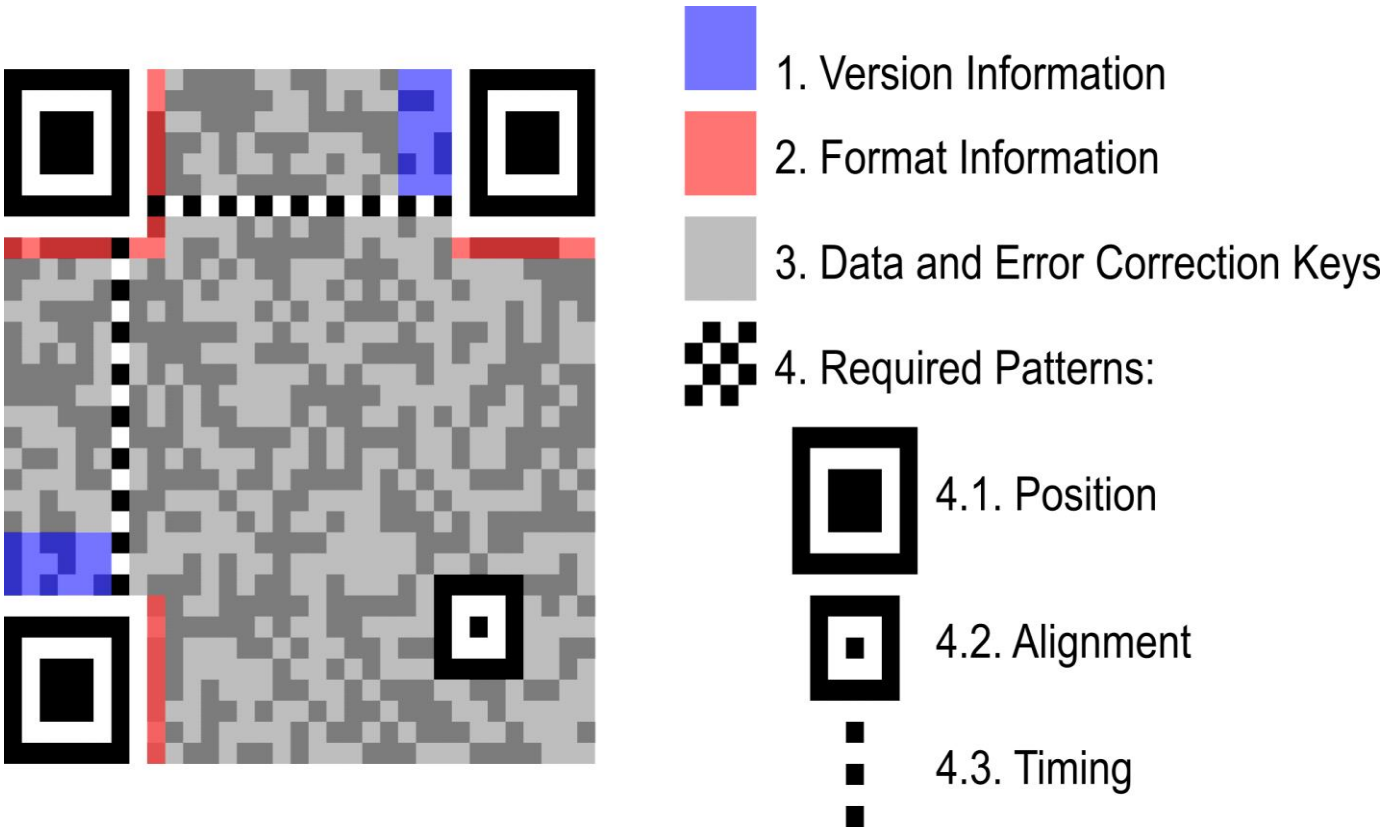

In the above figure, the three prominent boxes in the Corners of each node indicates the location of the image(so it can be centered by the image parser). Another smaller box in the lower right aligns the image. The rest of the blocks indicate the information specific to the international standards and finally the identifying data contained within the code[7][6].

B. What is Digital Marksheet?

Digital Marksheet is a softcopy of the marksheet which is generated by scanning the QR code. Digital Marksheet consists of all the information of the student like student's Name, Roll number, Marks, Percentage, etc.

C. Need of Digital Marksheet

In today's world we are often hear the news about fake marksheets and unauthenticated certificates so that we should have such system in which the modification can't be possible. And also if someone wants to verify whether the marksheet is genuine or fake then instead of writing applications to Universities and Institutes, we just have to scan the QR code which is there on the marksheet. If it displays the same marksheet after scanning the QR code then it means that the marksheet is genuine and if it doesn't display the marksheet or not displaying the same marksheet then it means that this marksheet is not genuine. So this saves our time for verification process. And also students did not have to stand and waste their time in queue for getting the marksheets from the exam cell instead they can just go to this system's website and from there they can get the QR code through which they get their marksheet's softcopy after scanning it.

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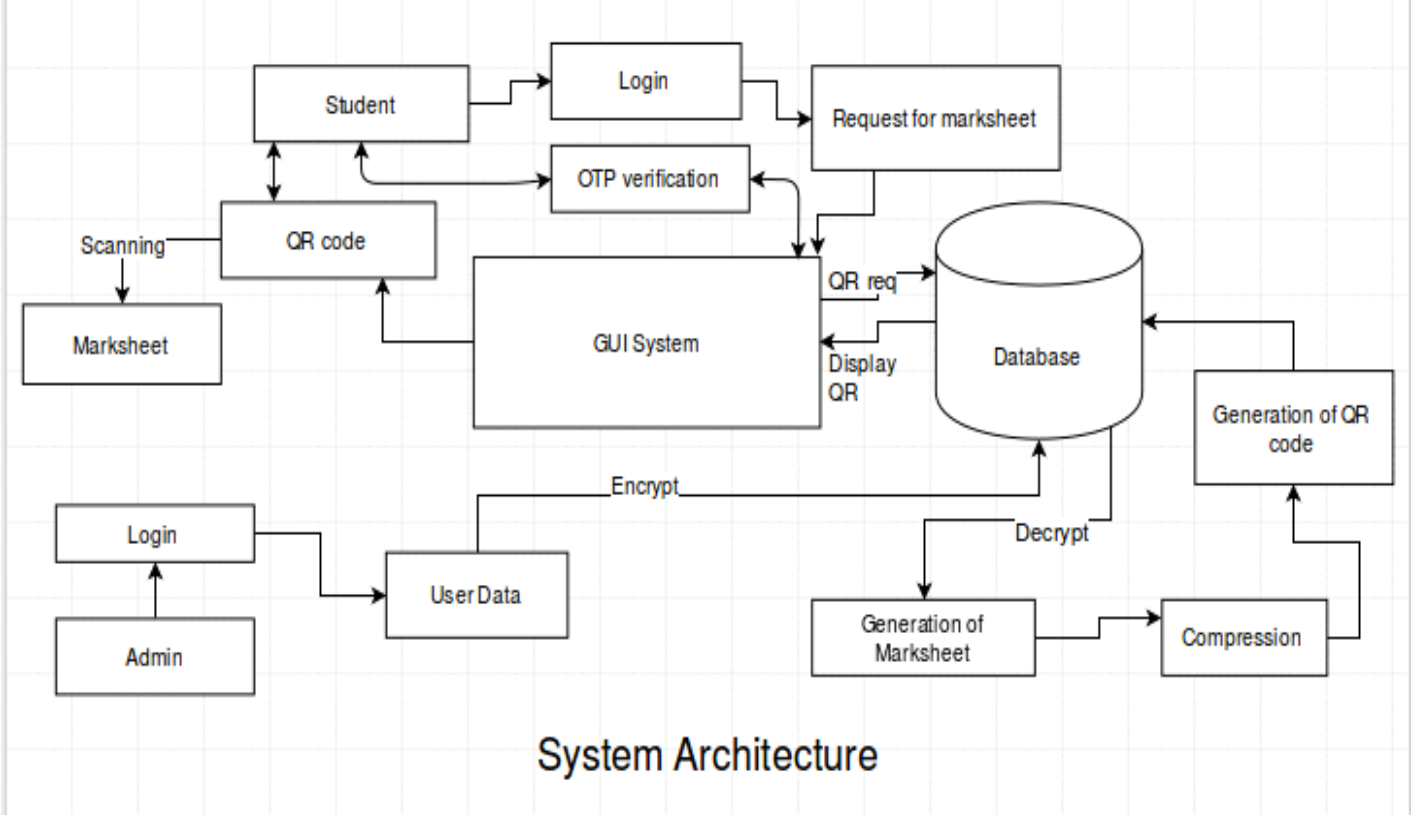
II. SYSTEM ARCHITECTURE



There are two Ends of the system:

- Admin End.
- User End.

A. *Admin End*

All the back-end work is done by the Admin. Admin will login with its credential. After login Admin will enter the information of students which will be get stored into the database in an encrypted form and by using these information marksheet will be created by the system itself. System will generate the QR code for particular marksheet of the student and keep the QR code stored in the database.

B. *User End*

Students will enter their information such as Name, Seat Number and semester then OTP verification will be done. After successful verification, system will display the QR code. As the student scan QR code, marksheet will be displayed and student has two options, either to save the marksheet or to print it.

III. ENCRYPTION

The data entered by the admin get encrypted and saved into the database using PHP's encryption function mcrypt_encrypt() followed by mcrypt_rjindael_256 method (AES encryption) and result will be encoded into base64 by using base64_encoded() function for providing more security to the data.

IV. DECRYPTION

The data which is encrypted in the database is get fetched first from the database and get decrypted using PHP's decryption function mcrypt_decrypt() followed by mcrypt_rjindael_256 method (AES decryption) and result will be decoded into base64 by using base64_decoded() function after that this decrypted data is used for generating the softcopy of the marksheet.

V. COMPRESSION

The marksheet's softcopy will be compress using JPEG image compression technique as the image of the marksheet will be in large size.

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VI. LITERATURE REVIEW

Sr No.	Paper Publication	Author	Title	Published Year	Content	Demerits
1	IEEE	Somdip Dey Steanne Solution Ltd, UK	New Generation of Digital Academic-Transcripts using encrypted QR Code TM Use of encrypted QR Code TM in Mark-sheets (Academic Transcripts)	26 December 2016	Digitize the mark-sheets in the form of encrypted QR Code TM using TTJSA encryption technique.	It is only encrypting the tabular content of the marksheet which is in black & white
2	IJRCSIT	Madhav V Dahigo-nde, Vinod Kadam Dr. Babasa-heb Ambe-dkar Techn-ological Univer-sity	QR Code Based Digitized Marksheet System	26 February 2014	Encrypting the marksheets in the form of QR code and also decrypting it using DES algorithm (56 bits).	It is not storing the data in an encrypted format into the database just encrypting the data in the QR code format.
3	International Journal of Applied Engineering Research	Delphin Raj K. M and Nancy Victor	Secure QR Coding of Images Using the Techniques of Encoding and Encryption	12 November 2014	Converting marksheet's image into QR code using conversion, compression and encryption technique.	It is difficult to implement.
4	International Journal of Cyber-Security and Digital Forensics (IJCSDF)	Somdip Dey Steanne Solution Ltd, UK	An Image Encryption Method: SD-Advanced Image Encryption Standard: SD-AIES	2012	Image encryption using SD-AEIS	It is just encrypting the image and making the image in an unreadable form.

VII. CONCLUSION

We have selected this topic because Marksheet is a sensitive document and to preventing it from getting misused by the unauthorized user. As distribution of the Marksheets takes too much time and maintaining these mark sheets is also a big deal so to overcome all these problems this system is propose.

VIII. ACKNOWLEDGEMENT

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REFERENCES

[1]. New Generation of Digital Academic-Transcripts using encrypted QR Code TM Use of encrypted QR Code TM in Mark-sheets (Academic Transcripts). IEEE.org (26 December 2016).
[2]. QR Code Based Digitized Marksheet System IJRCSIT.com (26 February 2014).
[3]. Secure QR Coding of Images Using the Techniques of Encoding and Encryption. IJAER. (12 November 2014).
[4]. An Image Encryption Method: SD-Advanced Image Encryption Standard: SD-AIES. IJCSDF (2012).
[5]. Vinod J. Kadam, S.P.Vaidya, “Bar Code Technology for Library - SWOT analysis, Strategies, Survey, Cross-case analysis andApplication: A Case study of Dr.Babasaheb AmbedkarTechnological University”, International Conference on Science andTechnology (ICST-2K14),2014,Pune.[accepted]
[6]. http://en.wikipedia.org/wiki/Reed%E2%80%93Solomon_error_correction (Retrieved 2014-01-02)
[7]. Jimmy Rogers,What Are QR Codes? Digitize your World & BackAgain (online) http://www.makeuseof.com 27th October, 2008.
[8]. http://www.whatisaqrcode.co.uk/ (Retrieved 2014-01-02)
[9]. SomdipDey,"New Generation of Digital Academic-Transcriptsusing encrypted QR CodeTM "IEEE 2013 International MultiConference on Automation, Computing, Control, Communicationand Compressed Sensing (iMac4s 2013), Kerala, India, March 2013.
[10]. Cryptography and Network Security, William Stallings, PrenticeHall of India.
[11]. A. SankaraNarayanan,QR Codes and SecuritySolutions,International Journal of Computer Science andTelecommunications [Volume 3, Issue 7, July 2012]