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# The generation of scanner QR bar code for security access

**[1]Kavya Shivagouda Padmannavar, [1]Sanjana M. Rao, [1]Teju Raju Gaddadaguli, [1]Harika Sangireddy, [2]Dr. Pavithra G., [3]Dr. Sindhu Sree M., [4]Dr. T.C.Manjunath*, [5]Rajashekher Koyyeda, [6]Aditya T.G.**

[1]First Semester BE (ECE) Students, Dept. of Electronics & Communication Engg., Dayananda Sagar College of Engineering, Bangalore, Karnataka
[2]Associate Prof., Electronics & Communication Engg. Dept., Dayananda Sagar College of Engineering, Bangalore, Karnataka
[3]Assistant Prof., Electronics & Communication Engg. Dept., Dayananda Sagar College of Engineering, Bangalore, Karnataka
[4] Professor & HOD, Electronics & Communication Engg. Dept., Dayananda Sagar College of Engineering, Bangalore, Karnataka
[5]Asst. Prof., EEE Dept., Tatyasaheb Kore Inst. of Engg. & Tech., Warananagar, Kolhapur
[6] Fifth Sem Student, CSE Dept., PES University, Bangalore

**Abstract**

In this paper, the generation of QR codes for biomedical engineering applications is presented. QR codes are two-dimensional barcodes that can be easily scanned and decoded using a smartphone or other image capture device. In biomedical engineering, QR codes have a wide range of potential applications, including drug authentication, patient identification, and medical device tracking. The process of generating QR codes for biomedical engineering applications involves selecting an appropriate QR code generator software or library, determining the data to be encoded, selecting an appropriate error correction level, and generating the QR code. Various factors such as size, resolution, and contrast must also be considered during QR code generation to ensure that the code can be easily scanned and decoded in the intended application. Overall, the generation of QR codes for biomedical engineering applications has the potential to improve patient safety and streamline healthcare operations. In conclusion, the generation of QR codes for biomedical engineering applications is a useful tool that can enhance patient safety and streamline healthcare operations. QR codes can be easily scanned and decoded using a smartphone or other image capture device, making them an ideal option for applications such as drug authentication, patient identification, and medical device tracking. Generating QR codes for biomedical engineering applications involves selecting an appropriate QR code generator software or library, determining the data to be encoded, selecting an appropriate error correction level, and ensuring that the code can be easily scanned and decoded. As the field of biomedical engineering continues to evolve, the use of QR codes is likely to become more widespread, providing additional benefits for patients and healthcare providers alike. In this paper, the generation of QR codes is presented. A QR code, short for Quick Response code, is a type of 2D barcode that can be read by a smartphone or QR code reader. It contains encoded information in the form of black and white squares arranged on a square grid. The process of generating a QR code involves encoding the data into a binary format using an algorithm, dividing it into codewords based on error correction level, adding error correction codes, arranging the codewords into a specific pattern with synchronization patterns, alignment patterns, and quiet zones, and finally converting the pattern into a black and white image. This image can be printed or displayed on a screen and read by a smartphone or QR code reader to retrieve the encoded information. The work done & presented in this paper is the result of the mini-project work that has been done by the first sem engineering students of the college and as such there is little novelty in it and the references are being taken from various sources from the internet, the paper is being written by the students to test their writing skills in the starting of their engineering career and also to test the presentation skills during their mini-project presentation. The work done & presented in this paper is the report of the assignment / alternate

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assessment tool as a part and parcel of the academic assignment of the first year subject on nanotechnology & IoT.

**Keywords:** QR Code, Python, Outcome

## 1. Introduction

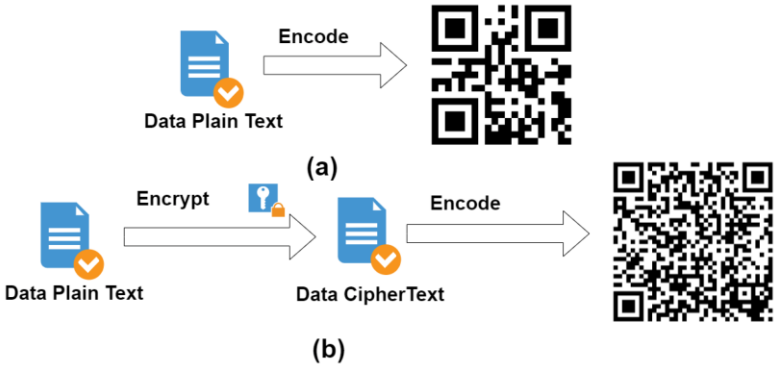


Fig. 1 : Generation of QR Code

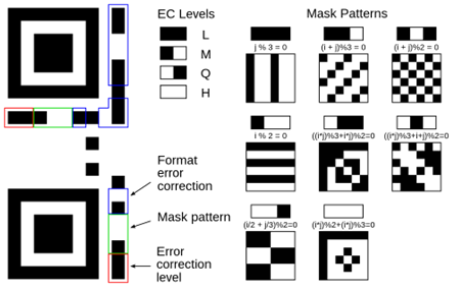


Fig. 2 : Data encoding process

## 2. Literature Survey / Review

The QR code system was introduced in 1994 by Masahiro Hara, an innovator from Denso Wave, a Japanese company. Inspired by the contrasting black and white pieces on a Go board, Hara devised QR codes to streamline the tracking of automotive parts manufactured by Denso. This revolutionary solution replaced the need for multiple individual barcodes on each box, each requiring separate scanning.

Since its inception, QR codes have transcended their original purpose and found applications across a wide range of industries. They serve both commercial tracking needs and cater to the convenience of mobile phone users through a practice known as mobile tagging. QR codes can be employed to present text, open webpages on users' devices, add contact information to their address books, initiate Uniform Resource Identifiers (URIs), connect to wireless networks, or compose emails and messages. Numerous QR code generators exist in the form of software or online tools, offering both free and subscription-based options. Consequently, QR codes have become one of the most widely utilized types of two-dimensional codes.

In June 2011 alone, 14 million mobile users in the United States scanned QR codes or barcodes. Of those users, 58% scanned from the comfort of their homes, while 39% did so within retail stores. Notably, 53% of the 14 million users were men between the ages of 18 and 34, indicating the prevalence of QR code usage among this demographic. Furthermore, a survey conducted in September 2020 revealed that 18.8% of consumers in the United States and the United Kingdom strongly agreed that they had observed an increase in QR code usage during the COVID-19 restrictions implemented several months prior. This highlights the growing reliance on QR codes as a contactless and efficient means of accessing information and services in a pandemic-affected world.

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Several standards govern the encoding of data into QR codes, ensuring consistency and compatibility across different implementations. These standards contribute to the widespread adoption and interoperability of QR codes in various industries and applications.

**3. Generation process**

The generation of scanner QR bar codes for security access is an innovative solution that combines the convenience of QR codes with enhanced security measures to regulate access to protected areas or sensitive information. QR codes, or quick response codes, are two-dimensional barcodes that can be scanned by mobile devices or scanners to retrieve embedded data. In the context of security access, these QR codes are generated specifically for granting or denying entry to restricted locations or confidential resources [2].

The utilization of scanner QR bar codes offers several advantages over traditional access control systems. Firstly, QR codes provide a streamlined and contactless approach to access control, eliminating the need for physical keys, cards, or tokens. Users can simply present their mobile devices or dedicated scanners to read the QR codes, reducing the risk of lost or stolen credentials [3].

**4. Implementation process**

Furthermore, scanner QR bar codes can incorporate robust security features to ensure the integrity and authenticity of the access control process. Advanced encryption techniques can be applied to the QR codes, making them resistant to tampering or unauthorized duplication. This enhances the overall security posture of the system, safeguarding valuable assets, confidential information, or restricted areas [4].

Additionally, the generation of scanner QR bar codes enables efficient management and administration of access control permissions. Access rights can be dynamically assigned or revoked by generating new QR codes or updating existing ones. This flexibility allows for swift and scalable access control adjustments, accommodating changes in personnel, visitor access, or security requirements [5].

By implementing scanner QR bar codes for security access, organizations can streamline their access control procedures while bolstering security measures. This technology offers a modern and effective approach to managing access to protected areas or sensitive information, promoting convenience, efficiency, and enhanced security in various sectors such as corporate environments, government facilities, educational institutions, and healthcare settings [6].

**References**

[1]C.P. Rajendra, T.C. Manjunath, Pavithra G., “Recent Advances in the Concept of Field Programmable Gate Array (FPGA)”, 3rd National Conference on Recent Innovations in Science and Engineering (RISE-2017), PES Institute of Technology - Bangalore South Campus (PES School of Engg.-PESSE), Electronic City, Hosur Road, Karnataka, India, Bangalore – 560100, Paper id EC014, Session-Electronics & Communications, 6 May 2017.

[2]Dr. T.C.Manjunath, Pavithra G., Rashmi Jagadisha, “Design of a sophisticated controller using fuzzy logic means for a soap manufacturing unit”, National Conference on Information, Communication, Controls & Computing (NCIC3 – 17), Organized by Dept. of ECE, Sir M. Visvesvaraya Institute of Technology (Sir MVIT), Bengaluru-562 157, Karnataka, India, Organized by IRD India & Sir MVIT, ISBN 2278-8948, 17 May 2017.

[3]Gururaj Pandurangi, Dr. T.C.Manjunath, Pavithra G., “A brief review of the BEACON technologies in the communication world”, 8th National Conference on Advanced Techniques in Electrical & Electronics Engg. (NCATEE-2017), Organized by Dept. of EEE, Shri Jagadguru Balagangadharanatha Institute of Tech. (SJBIT), BGS Health & Education City, Kengeri, Bangalore, Karnataka, India, Paper id 67, pp. 87-92, 10 May 2017.

DOI:10.46647/ijetms.2023.v07i03.102 ISSN: 2581-4621

[4]Pavithra G., Dr. T.C.Manjunath, Rajanish N., "Design & Development of a novel 4-point minimal pick & place trajectory in robotics", 10th Annual KSTA National Conference, Decennial Celebration of Science & Technology for future of Humanity (Sponsored by IIA, DRSC, ISRO, KSCST, Start up Karnataka, KSTePS) Decennial Celebration of Science & Technology for future of Humanity, Dept. of Science & Technology, Govt. of Karnataka, Reva University, Kattigenahalli, Bangalore-64, Karnataka, ISBN 978-81-936187-4-5, Paper id ES-12, Sl. No. 235, pg. 149, 18-19 Jan. 2018.
[5]Dr. T.C.Manjunath, Arunkumar K.M., Rajashekar M. Koyyeda, Satvik M. Kusagur, Pavithra G., "Design of control system for full-fledged automation of a house using CMS & SFD", DST-NSERB Sponsored Nat. Conf. on Recent Innovations in Engg. Science, Tech. & Mgmt., NCRIESTM 2020, Dept. of Mech. Engg., Agnel Inst. of Tech. & Design, Assagao, Bardez, Goa-403507, India, Conference id: IOSRJEN-20-1-20, paper id 5, Sl. No. 6, pp. 17-21, 24-25 Jan. 2020.
[6]Sourabh Shrikanth Kalghatkar, Pavithra G., Dr. T.C.Manjunath, "Face recognition and detection using ANN", Nat. Conf. on Electron. & Commn. Engg. (NCEC-20), Dept. of ECE, IEEE-OX Students Chapter, TOCE, The Oxford College of Engg., Bangalore, Karnataka, India, paper id OX-76, pp. 99-105, abstract no. 76, 9-11 Feb 2020.