STRUCTURE AND THE USAGE OF QR CODE IN LIBRARIES

C. SUJATHA
Librarian, Fatima College, Madurai, Tamil Nadu, India

Dr. B. SURESH
University Librarian, Madurai Kamaraj University, Madurai

Abstract
    Quick Response (QR) Code is current technology using in all the fields. Library also includes the emerging technology and provides services through the state-of-art technique. In this paper, helps the librarians to know the structure and the usage of the QR code in library holdings and services.
Keywords: *QR Code, Library*

Introduction

The rapid development of mobile technologies in recent years has facilitated the use of the popular QR code application for various purposes. New generation's knowledge in using emerging technologies make this application spread fast and successfully. The QR code application has developed into a new trend in libraries; it has used in various areas in libraries and promotes variety of services. In the emerging marketing trend QR code has placed in a unique place. Through QR code application, the library has promoted awareness and the promotion of various library activities and services. The spread the knowledge of QR application this paper helps the librarians to identify the various areas to implement the application successfully.

What is QR Code?

QR code stands for Quick Response, which allows the contents to be decode at high speed. A QR code is a kind of barcode readable by the cameras of smart phones. QR is a two dimensional symbol, which was invented in 1994 by DENSO, a Toyota group of companies. It is approved by ISO (ISO/IEC/18004) in June 2000. QR code are now popular and can be seen anywhere. It is optically machine readable label, that is attached to an item and that records information related to that specific item. QR codes are popular due to its readability and greater storage capacity compared to barcode. It can store a wide range of high density information. QR codes are called two dimensional barcodes is because they can carry information both horizontally and vertically, where barcode can store data in vertical. A QR code can hold up to 1,817 Kanji characters, 2,953 binary bytes, 4,296 alphanumeric characters, 7,089 numeric characters or a combination of them.

Structure of QR Code

QR code is divided into eight parts. They are Finder pattern, separators, timing pattern, alignment pattern, format information, data, error correction, and remainder bits.

- **Finder Pattern:** This pattern consists of three similar looking structures, located at the three corners of the QR code. QR code patterns are based on 3 X 3 matrix comprising of alternate

combination of black and white modules. This pattern facilitates the decoder software to determine the right orientation.

- **Separators:** This separator improve to recognize the data from the find pattern and are one pixel wide, usually it is in white colour.
- **Timing Pattern:** It helps to decode software in determining the width of a module.
- **Alignment Pattern:** This facilitates the decoder in compensating for the moderate image distortions. In the initial stage QR code doesn't have this alignment pattern, in later technology this pattern has included.
- **Format Information:** It comprises of information about the chosen masking pattern and the information stored about the error correction level of QR code.
- **Data:** In this the data is transformed into a bit stream and saved in 8 bit parts known as code words inside the data section
- **Error Correction:** In this pattern, the error correction codes are saved in 8 bit long code words inside the error correction section.
- **Remainder Bits:** This section comprises of empty bits, if the data and the error correction bits can't be divided into 8 bit code words without a reminder.

QR code Products and Services in Libraries

Due to the fast growing world, the people would like to get all the information instantly. Libraries are also provided their service one step ahead of the users speed.

- **Library Tour:** To orient the users about the library and library services, to read the QR code of this section will help them to access virtually, that is anywhere, any time.
- **Library New Arrival Catalogue:** To scan the code to know the availability of New books in the library stack.
- **Library Video Catalogue Access:** To read the code to know the videos available in the library.
- **Library Audio Books:** To create code for audio books cases to know the author details and the reviews available URL's.
- **Library Notice Board:** To create code to access library notices month wise
- **Important Topic access from Newspaper**: To create code to access important events published in the Newspaper.
- **Inform Government Schemes:** To create code to know the schemes and awards of Government.
- **Journal Section:** To know the current issues of the journals, magazines and Newsletters.
- **Library Best User:** To create a code to know the library best user, it will motivate the students to use the library in a better way.
- **Library current and future activities:** To create code to know the current activities of the library and the future activities of the library.

Conclusion

Using of QR code makes the user to experience the new technology, so they are very eager to access it. The library products and services can reach the end user very fast. There are lots of QR code applications available, so librarians will try any one to start their library service with this application.

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