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QR CODES AND USEFUL APPS FOR ACADEMIC LIBRARIES

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Abstract

This article specifically discusses the use of QR codes in libraries. The full format of a QR code is a quick response code. QR code technology is similar to barcode technology. The differences between barcode technology and QR code technology is that barcode technology can handle the information only in horizontal direction and QR code technology can handle the information in both horizontal and vertical direction. QR code technology is widely used as a medium to deliver a message to end users. The QR codes are mainly used by libraries for the purpose of promoting their services. Now a days the QR code technology is widely used by many libraries for providing quickly access to their resources.

Keywords: *QR Barcode Technology, QR Code Reader, Barcode Technology*

Introduction:

We all know that mobile is one of the powerful devices that people use in day-to-day life. Mobile devices are mainly used for voice communication. Along with the means of voice communication, these devices also provide different types of services to customers. These days, there are a wide variety of mobile phones with a wide variety of features available at very affordable prices. It has a camera and supports Android or Windows operating systems. With the advent of ICT, the concept of a library has changed. Libraries purchase e-journals, magazines, CDs, DVDs, etc. Libraries now offer online services, reference services, and RFID-based distribution systems. Recently, European countries have used QR codes in their existing library systems.

A QR encoder is a technology that can deliver information to users in the form of codes. A quick response code (QR code) is a two-dimensional image that, when scanned with your smartphone's camera, prompts your smartphone to open a web page or display an image, video, or text.

What is a QR code?

A QR code (Quick Response) is a type of two-dimensional barcode in the shape of a small white square with a black geometric shape that encrypts data based on the location and combination of black dots read by a smartphone/Android with a camera. Also called mobile code. If not, you can still call it a matrix barcode that is read by a smartphone using a mobile camera. QR codes can contain much more information than regular barcodes. The information

encoded in the QR code can be a URL, phone number, SMS message, business card, or text. It is called QR because it can decode content at high speed.

Sample QR Codes and Barcodes:

Bar Code

QR code

QR code barcode A QR code is therefore essentially a symbolic hyperlink that can be embedded in a physical medium. Connecting the physical world (posters, printed materials, rooms, physical objects) with the electronic world and facilitating communic ation adds significant value by improving access to information. In fact, QR codes printed on physical materials, such as posters, handouts, or other objects, redirect to content in electronic format or allow users to communicate electronically.

History of QR Code:

QR code is developed as on improvement to the existing barcodes for application in inventory management by Toyota subsidiary Denso Wave in 1994. Since its introduction, the QR code has gained wide acceptance in such diverse industries such as manufacturing, ware housing and logistics, retailing, health care, life senses, transportation and office automation etc. Now with the explosive growth of smart phones, the QR code is also being used in mobile marketing as a fast and effective way of connecting with customers and providing end user content. Now a days, libraries are also adopting this technology very rapidly in the present scenario. In the western countries like UK, USA, Japan and now in India also using QR codes to cater most crucial user demand for access to information to mobile phones.

Structure of QR Code:

A QR code is actually a black module with a square pattern on a white background. A QR code is made up of many areas with special meanings.

1. Search patterns
2. Alignment Patterns
3. Timeline
4. Quiet Zone
5. data area

The importance of each area is explained as follows.

1. Finder pattern:

This template can be used to determine the location of the QR code. Th e position, size, and angle of the QR code can be checked using the three position detection patterns (finder patterns) located at the upper left, upper right, and lower left corners of the symbol. Samples can be easily detected from any direction.

2. Alignment Patterns:

The layout consists of a 5x5 dark module, a 3x3 light module and one central dark module. This pattern is used to correct

character distortion [9]. To compensate for character distortion, the coordinates of the centre of the alignment pattern are determined.

3. Timeline:

Temporary templates are in both landscape and portrait orientations. It's actually about the same size as one module of a QR code symbol. This pattern is used to determine the centre coordinates of each cell that alternates between the black and white patterns.

4. Quiet Zone:

This area is practicallydevoid of an y markings. Margins are required for accurate reading of barcodes. This area is mainly for storing QR code symbols separately from the outer area. This area is typically 4 modules wide.

5. Data area:

The data area consists of data and error correction codewords. Data is converted to 0 and 1 according to the encoding rules. These binary numbers are then converted to black and white cells and sorted. Reed-Solomon error correction is also used here.

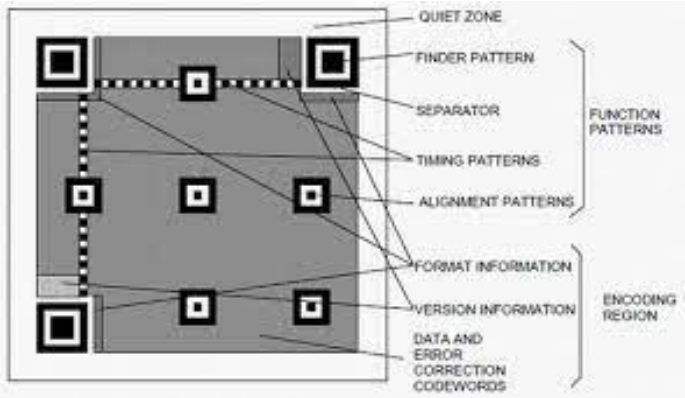

Fig.1 QR CODE STRUCTURE

QR Code Website/Software and Reader:

There are a number of software freely available in the market for creating QR codes and also there are readers for PC and Mobile. The following are some examples of Software's and readers:

Website/software:

1. QRMobilize
2. GoQR.me
3. SnapMaze
4. QR Stuff
5. RACO
6. ZXingDelivr
7. QR-Code Studio
8. SparqCode
9. QR Code Generators

QR code reader

1. TapMedia's
2. QR Reader i-nigma
3. NeoReader

iPhone QR Code Reader Apps

1. Barcode (Free)
2. OptiscanQuickMark
3. ScanLife (Free)

Android QR Code Reader Apps

1. ShopSavvy (Free)
2. ScanLife (Free
3. Barcode Scanner (Free)
4. QuickMark (Free)

Windows Phone 7 QR Code Reader Apps

1. Quickmark (Free)
2. Stripes
3. BeeTagg (Free)

How to Generate QR Code?

Normally the process of QR code generation process and how to use it known as

1. QR Encoding (Generation of QR code)
2. QR Decoding (Accessing the information through QR code)

1. QR Encoding:

The normal encoding of data is done through various steps such as

1. Analyse the data to be encoded. Convert the data to symbol characters. Learn about error correction and detection levels.
2. Encode data.
3. error correction coding
4. Add reminders and data masking templates.
5. Generate format information and version information.

2. QR decoding

1. The process of scanning, decoding, and reading the contents of a 2D barcode such as a QR code with a camera phone is called mobile tagging.
2. You must have a QR code scanner to read QR codes. Usually QR decoding is done using a mobile phone with a camera.
3. The decoding process is the reverse of the encoding procedure used. To decode the correct data, you need to identify the margins. Alignment patterns support the decoding process by correcting symbol corruption.

Features of QR code

1. **High-capacity coding data**

QR codes can process tens to hundreds of times more information than conventional barcodes that can store about 20 digits.

2. **Small print size**

QR codes convey information both horizontally and vertically. Thus, a QR code can contain the same amount of data as a barcode in only 1/10 of its area.

3. **Damage Resistance**

The QR code has the ability to correct errors. Even if the symbol is partially damaged, data can be recovered. Up to 30% of codewords can be restored.

4. 360 degrees reading in any direction

QR codes are omni-directional, meaning they can be read 360 degrees, and high-speed reading does this by using positioning templates on the 3 corners of the symbol. This position sensing pattern ensures stable, high-speed readings.

5. Functionality of Structured Applications

A QR code can be divided into several data areas. One character of data can be divided into 16 characters, allowing printing in a narrow area.

Benefits of QR Code:

- Store huge amount of data
- It’s fast
- Anyone can generate it
- No specific skill is required
- Use anywhere
- Use the Information later
- No additional technology is required
- • Increased customer satisfaction

Application of QR Code Technology in Libraries:

They are free and easy to use as well as embed many types of media. Once you write a code you can also change the appearance to include a picture or logo within the QR code. The usage of library sites are increased as the user don't need to type long URLs. The use of quick response (QR) codes in libraries is just beginning to evolve, with a varied and vast feature. They have been effectively used in library to do deliver information appropriate to the context and location of the user. Library exhibits that include a QR code link to songs, videos, Web sites, surveys, contests, etc. Codes in the library stacks/end caps or magazine/journal areas that point to online electronic holdings of print materials or related subject guides. Some of the important activities, QR codes are applied in libraries are as follows:

Link to website

Link to NLIST e- resources

Link to NDL e-resources

Link to Library Web-OPAC

- Library Audio Tour
- Easy access to previous year question papers
- Marketing /promotional material
- Group study room scheduler
- Providing an electronic alternative to physical books
- Linking from print to electronic journals holdings
- Embedding video help
- Finding appropriate help Promoting online audio visual materials
- Bringing external resources into library
- Seat reservations Wi-fi proper utilization
- Taking the catalogue record with you

Benefits of QR Code Applications to Library Services

- Ability to access Information User Friendly
- Personalized service
- User Participation
- Time Savings
- Limitless access
- Location awareness

Generate QR Codes for...

- YouTube Video
- Website URL
- PDF File
- Image File
- Twitter
- LinkedIn
- Google Maps Location
- Facebook
- Instagram
- Dropbox
- Telephone Number iTunes Link
- Plain text
- SMS Messages
- Skype call
- Contact Details
- E-Mail Address
- E-Mail Messages
- Attendance Tracking
- Digital Business Card
- Wi-fi login

Use of QR Codes in Library Services

- Events and URLs
- SMS Alert and MOPAC
- Reference and Library Resources E-mail and phone numbers
- Twitter and tweets
- Wi-Fi access and Geo-location

Advantages of QR Codes

- Interactive and Simple to use
- Sharing
- Variety of Data
- High Data Capacity
- Small Printout

Limitations of QR Code Application

- Abuse of Technology
- User Awareness
- Installation on Smartphone's

Conclusion:

QR Code is an innovative technology for the libraries helps to the information professional to integrate bidimensional code composed of black and white pixels into a squared matrix, containing information to be enjoyed with the help of smart phones or similar devices. This research paper analyses structures of QR code and process how it is work? Library users can easily obtain information on library collect ions, electronic materials, library homepage, and Web-OPAC in a user-friendly

environment. Many libraries have adopted this technical code and distributed the information around the world. Many QR code generators can also be used to generate QR codes for library collections, library building construction, e-books, business cards, bookmarks, user manuals or blogs.

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