AUTHENTICATION SYSTEM USING QUICK RESPONSE CODE

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Abstract

The need of authentication system is increase due to the some unauthorized data access. If authentication system is not present in any organization then any user can access an unauthorized data. Current authentication system use in much organization is a Barcode System. Through the Barcode system many type of product got their own unique image that will help to access the product information. There are verities of different methods that you can use to print the barcodes. Some alternative methods to authenticate a product or any identity in the world are through the Quick Response Code. Quick Response Code is also helpful to unauthorized computer access.

Keywords: QR Code, Development, Characteristics, Example, symbol.

Introduction

QR Code is a two-dimensional symbol. It was invented in 1994 by Denso, one of major Toyota group companies, and approved as an ISO international standard (ISO/IEC18004) in June 2000. This two-dimensional symbol was initially intended for use in production control of automotive parts, but it has become widespread in other fields. Now QR Code is seen and used everyday everywhere in Japan for the following reasons:

• Several characteristics superior to linear bar codes: much higher data density, support Kanji/Chinese, character, etc.

• It can be used by anybody free of charge as Denso has released the patent into the public domain.

• Data structure standard is not prerequisite for current usages.

• Most mobile phones in Japan equipped with cameras that enable reading of QR Codes can access Internet addresses automatically by simply reading a URL encoded in the QR Code.

Storage

QR Code data capacity

Numeric only Max. 7,089 characters

Alphanumeric Max. 4,296 characters

Binary (8 bits) Max. 2,953 bytes

Kanji/Kana Max. 1,817 characters

Error correction capacity

Level L 7% of codewords can be restored.

Level M 15% of codewords can be restored.

Level Q 25% of codewords can be restored.

Level H 30% of codewords can be restored.

The Background Of Qr Code Development

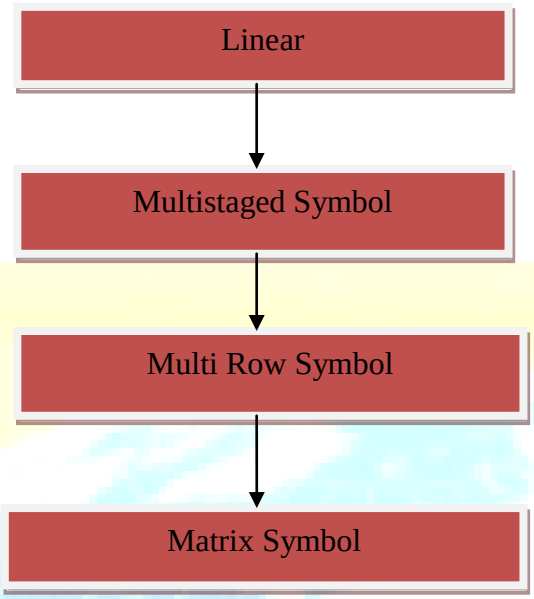


Figure 1. Development of Symbol

When seeing them from the technology's aspect. Firstly, Interleaved 2 of 5 and Coda bar which can encode (symbolize) numbers were developed, followed by the development of Code 39 which can encode alphanumerical characters. Along with the informatisation developments, it had become necessary to have full ASCII encoded, and this resulted in the development of Code 128. Then, multistaged symbols were developed where these linear symbols were arranged in several stages. Toyota Motor's Kanban Code is the world's first multistage symbol. As computers became popular, these codes developed into multi-row symbols where multistaged codes were extended and into matrix symbols where data were arranged in matrix. The printing area for matrix symbols are the smallest among all, and is seen as highly prospective as the main symbol for the future. QR Code is a matrix symbol which has been developed as the one enabling all of high capacity PDF417, high densityprinting of data matrix, and high speed reading of maxi code based on the research made on their characteristics.

Two-dimensional symbols generally contain much more data amount when compared with linear symbols (approx.100 times more), and therefore require much longer data processing time and more complex process. Therefore,QR Code has had much consideration for its finder pattern to enable high-speed

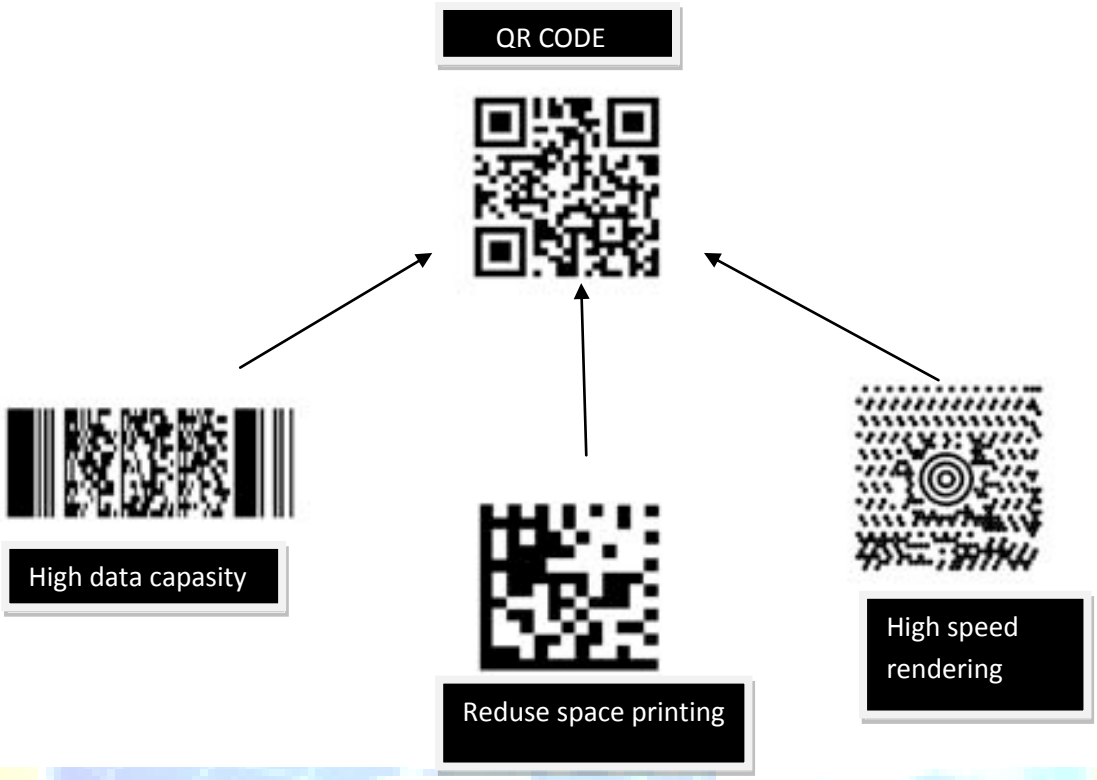


Figure 2. Development of QR Code.

Characteristics

1. QR codes can be in color. Pick one — red, green, purple. Just make sure the contrast is high enough for the readers to pick it up.

2. QR codes can be branded. Because codes can be incomplete (the percentage of allowable incompleteness varies based on the code), they can be branded. QR codes are showing up with logos inserted inside them more and more often.

3. QR codes are really a sub-category under 2D barcodes. 2D barcodes can be proprietary or non-proprietary. There are two primary types of non-proprietary codes used in the United States today — QR codes and Datamatrix.Other 2D codes, such as Microsoft Tag and BeeTag, are proprietary and require proprietary readers. Some proprietary readers can read generic QR codes, as well.Why use proprietary codes when non-proprietary versions are available? For the marketer, proprietary codes work reliably and consistently because they don't have to be all things to all people, as non-proprietary codes do. They do one thing and they do it well. For the

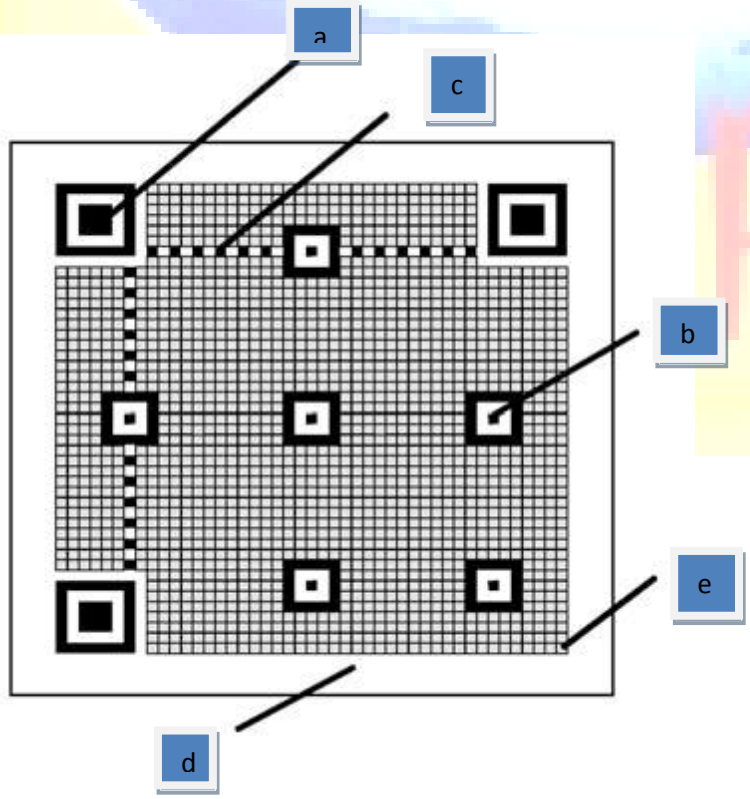
code developer, they provide a revenue stream based on sophisticated back-end services, such as tracking, integration and 1:1 capabilities.

4. QR codes can be "smart." They can read the location and characteristics of the phone being used to read them. Then they customize content based on location, time and capabilities of the phone, among other characteristics.

5. QR codes can contain variable data. Not all QR code generation software will create variable data QR codes, but a growing number will. Because heavily data-driven QR codes would be too large to print well (and therefore be readable), QR codes aren't likely to become vehicles for sophisticated 1:1 printing campaigns any time soon. But they can be (and are being) used to contain personalized URLs. Instead of typing in your personalized URL from a printed piece or clicking on a link in an e-mail, just snap it with your camera.

THE QR CODE STRUCTURE

QR Code is a matrix type symbol with a cell structure arranged in a square. It consists of the functionality patterns for making reading easy and the data area where the data is stored. QR Code has finder patterns, alignment patterns, timing patterns, and a quiet zone



a) Finder Pattern

A pattern for detecting the position of the QR Code. By arranging this pattern at the three corners of a symbol, the position, the size, and the angle of the symbol can be detected. This findepattern consists of a structure which can be detected in all directions (360°). (Please refer to 4a)

b) Alignment Pattern

A pattern for correcting the distortion of the QR Code. It is highly effective for correcting nonlinear distortions. The central coordinate of the alignment pattern will be identified to correct the distortion of the symbol. For this purpose, a black isolated cell is placed in the alignment pattern to make it easier to detect the central coordinate of the alignment pattern.

c) Timing Pattern

A pattern for identifying the central coordinate of each cell in the QR Code with black and white patterns arranged alternately. It is used for correcting the central coordinate of the data cell when the symbol is distorted or when thereis an error for the cell pitch. It is arranged in both vertical and horizontal directions.

d) Quiet Zone

A margin space necessary for reading the QR Code. This quiet zone makes it easier to have the symbol detected fromamong the image read by the CCD sensor. Four or more cells are necessary for the quiet zone.

e) Data Area

The QR Code data will be stored (encoded) into the data area. The grey part in Figure 11 represents the data area. The data will be encoded into the binary numbers of '0' and '1' based on the encoding rule. The binary numbers of '0' and '1' will be converted into black and white cells and then will be arranged. The data area will have Reed-Solomon codes incorporated for the stored data and the error correction functionality.

Objectives

1. Tag Items and Inventories with unique images.
2. Identify items and inventories with the images associated and tagged.
3. To reduce information display size and to save advertisement costs.

Problem Definition

1. When user will store information about a product or person a unique ID will be generated.
2. This Unique ID will be Tier 1 identification for the User or Object.
3. Entering this Unique ID as an Input to our Selective algorithm will generate a unique Image for that particular ID.
4. This Unique image will act as Tier 2 identification for User or Object.
5. This image will be hash mapped to the User Unique ID and both will be used to identify an object.When identifiers are used solely within a database, their generation should be left to the database itself.

How Does It Work?

To actually use a QR Code is quite easy. All an individual needs is a smart phone with internet connectivity. QR Codes can be located on anything from business cards, coupons, flyers, postcards, signs and even billboards. Once an individual finds an advertisement to be interesting, all they must do is aim their smart phone camera and snap a picture. The rest is easy as the cell phone does the rest of the work, translating the bar code and finding the relevant information for the individual.

Example

QR Code Used For Passenger Management

System Outline

• QR Codes are printed on the tickets for a casino cruiser.

• The ticket covers passport no., address, and name.

• The printed QR Code is used as a certification, when a passenger receives his passport deposited at his embarkment.

Data Volume : 300 characters
Symbol Size : 20 mm sq.
Data Contents : name, passport no., etc

Merit of Using QR Code

• Deposited passports can be correctly returned.

• Used as a ticket for food and drink.

CONCLUSION

Using this image through scanner or mobile phone camera we can decompile product's information. The product's information can be accessed anywhere if the database is stored and accessed through a web server. This ensures portability and security since the unique number will only be known to the organization. Organization will be using a unique image to access their product information or person or object.

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