

High Level Design (HLD)

QR CODE GENERATOR

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KARISHMA

Document Version Control

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Abstract

A QR code is much like a **bar code**, except that because it carries data in two dimensions (horizontally and vertically), it is able to hold much more information than a one-dimensional bar code. In fact, compared to a bar code's 20 alphanumeric character limit, a QR code can hold thousands of characters of data. As a result, a QR code can be used to share multimedia content, a landing page or an entire **e-book**. However, QR codes can do much more than that – they can actually direct a phone to perform certain actions. For example, a theatre company might provide a QR code that not only sends the person who scans it to the company's website for show times and ticket information, but also embeds information about the dates, times and locations of upcoming shows into the phone's calendar.

QR codes were designed by DENSO WAVE in Japan and first came into use in 1994. Although the term "QR code" is a registered trademark, the technology itself has not been patented and is therefore available for anyone to use. One key benefit of these codes for the Japanese is that they are one of the most efficient ways of encoding Japanese characters. However, their high data capacity, small print-out size and resistance to dirt and damage (QR codes can still be read when up to 30 percent of the code has been corrupted) ensured the proliferation of this technology to other applications.

Introduction

1. Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- Present all the design aspects and define them in detail
- Describe the user interface being implemented
- Describe the hardware and software interfaces
- Describe the performance requirements
- Include design features and the architecture of the project

2. Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly technical terms which should be understandable to the administrators of the system.

3. Definition

Although QR codes are most popular in Japan and South Korea, their popularity is growing in the U.S. and Europe as businesses and individuals continue to come up with new and creative ways to use them. QR codes also represent another step away from the use of keyboards as input devices in mobile computing, so although the technology and uses for QR codes are likely to evolve, the new direction in mobile computing they represent is likely to continue.

General Description

4. Product Perspective

1. Brand design is ever-evolving. We've seen it with world-renowned brands, such as Starbucks, Apple, Microsoft, PepsiCo, and many others.
2. Since brands are well aware of the vast QR Code usage that has started taking place over the past few years, the above quote applies to this technology as well.
3. QR Code design isn't what it used to be. It started with the traditional black and white design to a customizable color scheme that matches the brand using it.
4. Today, brands have started using different **QR Code shapes**, too—circular ones being the most popular.
5. So, let's dive into the different custom QR Code shapes and how they benefit your brand and delight your customer base.

5. Problem Statement

Problem: when the QR Code was designed, it was too small or not of high enough quality. So when the QR Code was printed, the image now appears blurry and can't be scanned. It also detracts from the design of the total print material and deters customers.

6. Problem Solution

Solution: Make sure to always leave enough space for the quiet zone. The ideal size would be if the quiet zone is at minimum four times larger than the width of your QR Code modules. When in original form, the modules are the black pixels that make up the QR Code (or also come in color when customized). The more data that you add to a QR Code, the smaller those pixels will become. Nevertheless, this is not a reason to reduce the quiet zone perimeter to compensate.

7. Further Improvement

As they are still a novelty, QR Codes are a cool way of garnering attention. With decorative frames, customizable edges, and colors, you stand out while streamlining people's online experience, using your website as a jumping-off point for them to discover your different digital platforms.

Famed as the great bridges linking the offline to the online world, QR Codes can also lead from desktop to mobile seamlessly. Here are four reasons why they are the Holy Grail of boosting the user experience on your website.

Direct traffic from your website to your offline locations

Advertise your business online, but better.

It's one thing to inform your customers of your stores, it's another to give them mobile-optimized location services, complete with your opening hours and list of services to take on-the-go. Your visitors no longer have to take a screenshot of your webpage, memorize the location, or google halfway out the door: what's the address? The Business Page QR Code is all about that magically convenient, mobile-friendly information sharing. It connects people through Google maps, so they can find you in the muggle world without a hitch.

A streamlined solution for linking to mobile apps

Yes, you should definitely send your visitors on a scavenger hunt from your website through the Android's Playstore or Mac's Applestore in order to find your newly launched mobile app. You know, a la Raiders of the Lost Ark. No.

Mobile-friendly content on-the-go

Are you in the consumer electronics industry? Or tourism? If you are offering any documents on your desktop that are really useful in a mobile-friendly format, such as instruction manuals or travel guides, then consider using the PDF QR Code.

If your customers need to fix their washing machine, they probably don't want to take their entire desktop with them. With QR Codes, you can optimize any document to fit a mobile format easily.

Always stay connected to your fans

Consumers want to better connect with their favorite brands.

Want to automatically make it so that people who access your contact information on your website are more likely to save it to their mobile devices? Excellent! So does QR Code Generator PRO. The vCard Plus QR Code displays your phone number, email, and even directions to your office or store. And, with a 'save to phone' button, your details can slip into your customers' and leads' smartphone effortlessly.

If you want customers to grow with your products and services over time, opt for the Social Media QR Code. This Code connects your fans to your brand by allowing them to choose which social media platform they want to engage with you on.

8.Data Required

1. Head to qr-code-generator.com.
2. Enter your URL.
3. Customize your QR code's frame, shape, and color.
4. Click 'Download' and save the file to your computer.
5. Add the QR code to print collateral.

6. Tools Used

VS code ,html , Java script , Css , Mysql etc.

7. Constraints

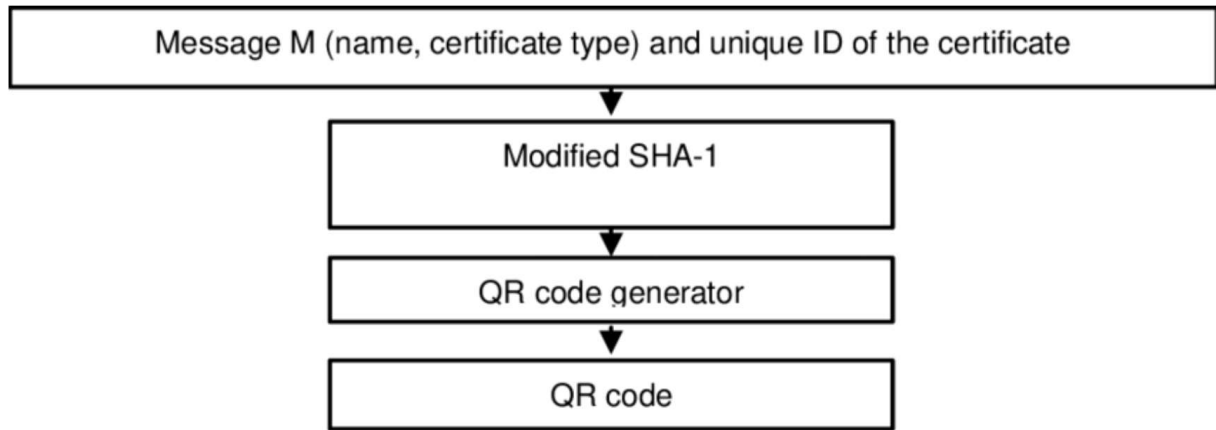
The Quick Response (QR) Code is a recent involvement of digital technology with print media. The Format of QR code looks like a 2-D Matrix Barcode. Basically, the Mobile Codes available today are 2D and 1D barcodes which works under internet on Mobiles. Mobile phones today with good configuration added Camera make it possible to read Mobile Codes as Code Scanner or Reader due to recent advancements in imaging technology. It combines both hardware modeling as well as image processing techniques.

8. Assumptions

Ultimately, the popularity of QR Codes traveled beyond Japan. With the recent overuse of digital technologies, several industries and countries saw an increase in QR Code adoption. A study by 360 research reports supports this and states that the Global QR Code market is expected to reach \$1,268.1 million in 2026 from \$916.7 million in 2020.

Design Details

1. Process Workflow



Performance

1. Reusability

Recyclable QR codes (dynamic QR codes) can be used over and over again. What makes them recyclable is that the code is linked to a mobile landing page. The owner of the recyclable QR code can login to the dashboard of that mobile landing page and make changes to the page whenever they want.

2. Application compatibility

The quick response, or QR, Code is a two-dimensional version of the Barcode able to convey a wide variety of information almost instantly with the scan of a mobile device.

Able to store up to 7089 digits or 4296 characters, including punctuation marks and special characters, the Code can equally encode words and phrases such as internet addresses. One thing to always keep in mind, especially when it comes to designing the Static QR Codes aesthetic is that the more data is added, the more the size increases and its structure becomes more complex.

Even when damaged, the QR Code's structure data keys include duplications. It is thanks to these redundancies that allow up to 30% of the Code structure to take damage without affecting its readability on scanners.

3.Resource utilization

We've taken a look at QR codes before—how they can be used to **empower student voices**, for example.

While the potential is great, in short a QR Code is a physical link that can be scanned by smartphones or tablets in mobile learning circumstances. The following list from listly user Marianna Talei offers a huge variety of QR resources, from QR code generators to attaching images and hosting QR code treasure hunts.

4. Deployment

No, QR codes do not have an expiration date. The QR code has a Quick Link behind it. As long as the Quick Link is active, the QR code will continue to work. Quick links will always be active if not deleted or archived.

Conclusion

QR code store the more information than BAR code. QR Code stores the information matrix form which stores the information on both axes horizontally or vertically. QR code has many advantages like, QR codes are free to generate and free to Scanned. More secure than the BAR code, It is store many types of information. In addition, on the basis of the characteristics description of QR Code, the applications of QR Code in WatsUpWeb, UID, and the benefits of using QR Code for companies are explored and analyzed. Thus we have also generated the QR Code of College data where we are embedded the details of the college like College Logo, Principals name, college mail address, postal address, etc..QR codes can store contents such as text, URL links, automatic SMS messages, or any other information that can be well-established in a two-dimensional barcode. This programmed data can be decoded by scanning the barcode with a mobile device that is equipped with a camera and QR reader software. Although QR codes are very flexible and have been around for over eighteen years, their use in many fields

References

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5. <http://zxing.org/w/decode>
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