Academic Intership Academic Internship Project report
On
CUSTOMIZED QR GENERATOR
In partial fulfilment of the requirements for the award of
BACHELOR OF TECHNOLOGY
In
Computer Science and Engineering (Data Science)

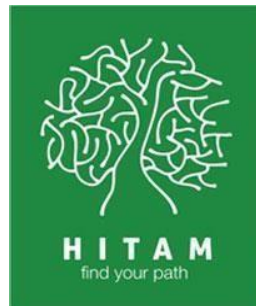**A.MANISH   (21E51A6702)**
R.P.KAUSHIK NAIDU   (21E51A6744)
V.RAMESH   (21E51A6762)
Under the guidance of
Mrs.P.Swathy
Professor
Department of ET, HITAM

HYDERABAD INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Autonomous, Approved by AICTE, Accredited by NAAC, NBA.

Gowdavelly (Village), Medchal (Mandal), Medchal - Malkajgiri (Dist.), Hyderabad, TS-501401.

2022–2023

HYDERABAD INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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DEPARTMENT OF EMERGING TECHNOLOGY

<u>CERTIFICATE</u>

This is to certify that the internship project work entitled **"CUSTOMIZED QR GENERATOR"** is being submitted by **A.MANISH, RP.KAUSHIK NAIDU, V.RAMESH** bearing Roll No. **21E151A6702, 21E51A6744, 21E51A6762** in partial fulfilment of the academic requirement, at Hyderabad Institute of Technology and Management, Hyderabad is a record of bonafied work carried out by them under our guidance. The matter contained in this document has not been submitted to any other University or institute

Internal Guide   **Head of Department**

Mrs. P.Swathy   **Dr P.Ila Chandana Kumari**

Associate professor   Professor & Head

Department of ET, HITAM   Department of ET, HITAM

DECLARATION

We here by declare that the internship project entitled **"CUSTOMIZED QR GENERATOR"** submitted to **Hyderabad Institute of Technology and Management affiliated to Jawaharlal Nehru technological university.** Hyderabad (JNTUH) as part of academic requirement, is a result of original research work and done by us. It is further declared that the internship project report or any part thereof has not been previously submitted to any other university or institute.

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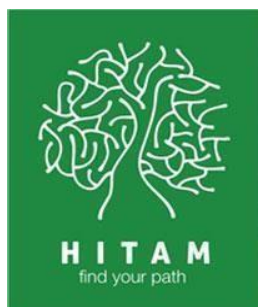Autonomous, Approved by AICTE, Accredited by NAAC, NBA.

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ABSTRACT

The **"Customized QR Generator"** project aims to develop a web application that allows users to generate various types of QR codes. The application is designed to offer four main features: Basic QR, Colour QR, Social Media QR, and Image QR. Each feature provides users with different customization options, expanding the traditional use of QR codes for diverse purposes. The project utilizes HTML, CSS, JavaScript, and Flask to create a user-friendly interface and efficiently handle QR code generation and customization.

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INTRODUCTION

CHAPTER 1

1.1 INTRODUCTION

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.

The QR Code: A brief history

In 1994, DENSO WAVE, a subsidiary manufacturing company, required a better, faster, stronger technology to the Barcode to process higher amounts of characters and to aid them in tracking vehicles and parts. Masahiro Hara with a team of two, undertook the task of developing what we now know and recognize as the QR Code.

Some of the most challenging problems for Hara and his team were figuring out a way to make 2D codes read as fast as possible, while preventing false recognition once the shape of the position detection pattern was added. It needed to be unique, which meant the development team spent the better part of a year doing a survey of the white to black areas' ratio after reducing them to patterns on printed material. The results? They identified the ideal ratio as 1:1:3:1:1.

By identifying this number, they were able to determine the black and white areas in the position detection pattern which enabled the Code to be detected regardless of the scanning angle. In short, this unique ratio simply meant you could scan it from up, down, left or right.

Though the initially targeted field for QR Code use was the manufacturing industry, with the rise of smartphone use and the fact that it remained without a patent meant it became an open-source technology, available to anyone and everyone.

You can now find QR Codes stylishly delivering great amounts of information and redefining the print to digital marketing scene.

1.2

1.2   OBJECTIVE OF THE PROJECT

- **Developing a user-friendly interface for generating Basic QR codes:**
  Allowing users to easily create standard QR codes by entering text.
- **Implementing customizable options for Colour QR codes:**
  Enabling users to customize the appearance of QR codes with various colours and patterns.
- **Integrating social media logos into QR codes for various platforms:**
  Enhancing QR codes with embedded logos for popular social media platforms.
- **Allowing users to generate QR codes with embedded images and text:**
  Providing a feature for users to upload images and generate QR codes with both image and text components.

FUTURE WORKS

Batch Scanning: Enable users to scan multiple QR codes in sequence without having to go back to the main screen each time.

Secure QR Codes with PIN: Introduce an additional layer of security by allowing users to set a PIN for accessing certain QR codes or information.

CHAPTER 2

HARDWARE AND SOFTWARE REQUIREMENTS

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2.1 HARDWARE REQUIREMENTS:

1.   **Processor:** A modern multicore processor (e.g., Intel Core i5 or AMD Ryzen 5) for smoother performance.

2.   **RAM:** At least 8GB of RAM, but 16GB or more is recommended for seamless multitasking.

3.   **Hard Disk:** A solid-state drive (SSD) with at least 256GB of storage for faster load times and efficient project management.

4.   **Monitor:** A larger and high-resolution display (e.g., 24" Full HD or higher) for better design and development work.

5.   **Keyboard and Mouse:** Standard keyboard and mouse should suffice, but consider investing in ergonomic peripherals for comfort during long work sessions.

2.2 SOFTWARE REQUIREMENTS:

1.Web Development Framework:
Web development framework to build the frontend and backend of the learning dashboard. Common choices include:

   i.   HTML, CSS, JS for the frontend.
   ii. Flask for the backend.

2.Python Flask Framework :
Flask is a micro web framework written in Python. It is classified as a micro framework because it does not require tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were implemented in Flask itself. It provides the user with libraries, modules and tools to help build Web-Applications such as a blog or wiki.

3. The Programming Language Used:
Python flask is an interpreter, high-level, general-purpose dynamic programming language used for everything, from server automation to data science. It is an open source software. Python is a great language for beginners, because it is easy to read and understand. You can also do so many things with Python flask that makes it easier to stick with language for quite a while before needing something else. Python finds itself at home when creating Web Apps like Instagram and helping researchers make

sense of them data

CHAPTER 3

DESIGN AND METHODOLOGY

3.1: BLOCK DIAGRAM

3.2: WORKING

The anatomy of a QR Code

It's the 90s and you have just ejected your video cassette, leaving the square TV screen in a state of static white noise. Visually, that is what comes to mind when some people look at the QR Code. A complex matrix of black and white squares. Though looking like a pixelated image, each one of those squares is actually a marker serving a greater function in the information-sharing capabilities of the Code.

Positioning detection markers

Located at three corners of each code, it allows a scanner to accurately recognize the Code and read it at high speed, while indicating the direction in which the Code is printed. They essentially help quickly identify the presence of a QR Code in an image and it's orientation.

Alignment markings

Smaller than the position detection markers, they help straighten out QR Codes drawn on a curved surface. And, the more information a Code stores, the larger it is and the more alignment patterns it requires.
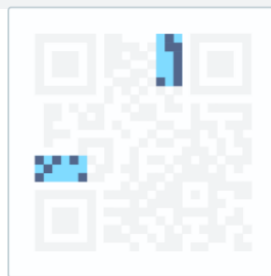

Timing pattern

Alternating black/white modules on the QR Code with the idea of accurately helping configure the data grid. Using these lines, the scanner determines how large the data matrix is.

Version information

With currently 40 different QR Code versions, these markers specify the one that is being used. The most common ones are versions 1 to 7.

Format information

The format patterns contain information about the error tolerance and the data mask pattern and make it easier to scan the Code.

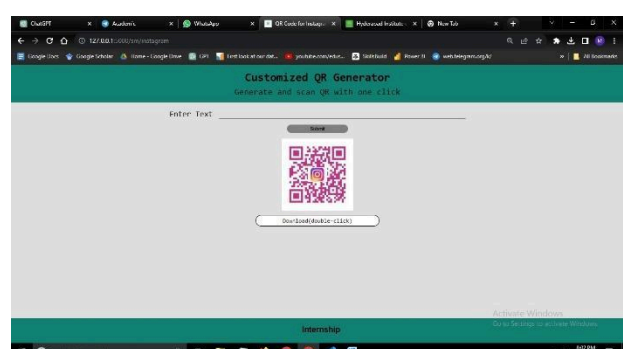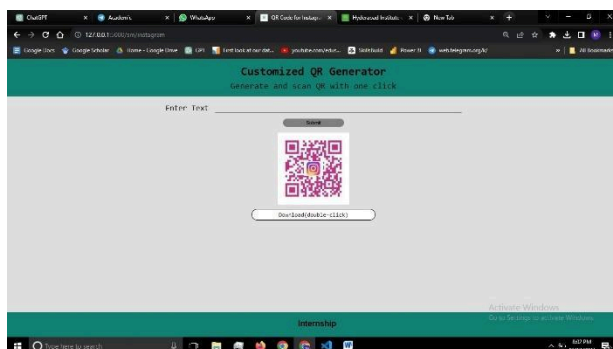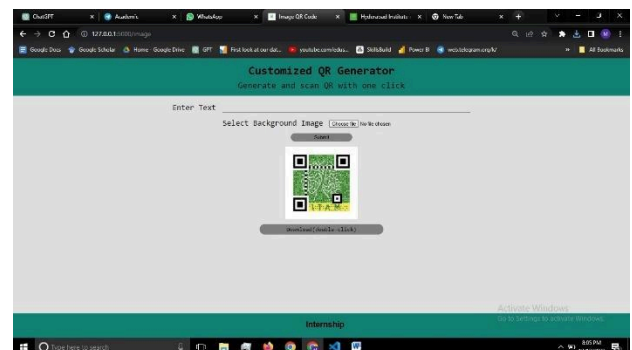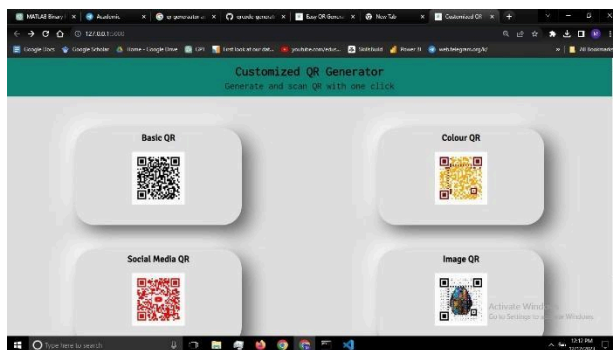
Data and error correction keys

The error correction mechanism inherent in the QR Code structure is where all your data is contained, also sharing the space with the error correction blocks that allow up to 30% of the Code to be damaged.

Quiet zone

This is similar to the importance of white space in design, that is it offers structure and improves comprehension. For whom or what you may ask? For the scanning program. In order to distinguish the QR Code from its surroundings, the quiet zone is vital.

The working section serves as a practical guide for users, offering a step-by-step walkthrough on how to utilize each feature of the Customized QR Generator web application. It includes screenshots, explanations, and examples to enhance user understanding and ensure a seamless experience when interacting with the application.

3.3: CODE

3.4: DISCUSSION

QR codes have transformed audience engagement by seamlessly connecting physical objects to digital content. But with QR codes with custom domains, you can take it to the next level.

Imagine users scanning a QR code and being instantly transported to a webpage that embodies your brand's identity, values, and trustworthiness.

Custom domains turn each interaction into a captivating journey.

The advantages of custom domains in QR codes go beyond branding. They enhance credibility, in still trust, and exude professionalism. Users perceive custom domains as reliable and secure, boosting their confidence in the content they're about to explore.

Why is A Custom QR Code Domain Important?

In the dynamic digital landscape, standing out from the crowd is crucial for businesses and individuals alike. That's where the power of custom domains in QR codes comes into play.
A custom domain is a personalized web address that reflects your brand or business name.
You might wonder why a custom QR code domain is important. QR codes with custom domains bring the power of QR codes together with web addresses. By adding your custom domain to QR codes, you create a seamless and branded experience for your audience.

When incorporated into QR codes, custom domains create a seamless connection between the physical and digital realms, leaving a lasting impression on your audience. One of the key importance of using custom domains in QR codes is branding. Your domain becomes an extension of your brand identity, allowing you to reinforce your image, values, and messaging. When users scan a QR code with a custom domain, they are greeted with a web page that aligns perfectly with your brand's aesthetics and resonates with their expectations. Additionally, custom domains enable you to track and analyze the performance of your QR codes. With analytics tools and platforms, you can gather valuable insights about user behavior, engagement metrics, and conversion rates. This data-driven approach empowers you to refine your marketing strategies, optimize user experiences, and achieve better results.

In summary, custom domains wield significant power when integrated into QR codes. They elevate your brand by reinforcing its identity, fostering trust among users, simplifying the user experience, and providing valuable data for informed decision-making. Harnessing the power of custom domains in QR codes is a game-changer that can set you apart from the competition and unlock new possibilities for growth and success.

Benefits of QR Codes with Custom Domains

QR codes with custom domains offer a range of remarkable benefits that can transform your brand's digital presence and user experiences. Here are a few of the advantages of incorporating custom domains into QR codes and how they can elevate your marketing efforts, establish credibility, and drive user engagement:

Enhanced Branding and Recognition
By integrating custom domains into QR codes, you create a consistent and branded experience for visitors. Your custom domain becomes an extension of your brand identity,

reinforcing your values and messaging. When people encounter your custom domain in various marketing materials, such as flyers, packaging, or advertisements, it reinforces brand recognition and establishes a strong presence.

Increased Trust and Credibility

Custom domains in QR codes inspire confidence and trust among users. When they see a custom domain associated with a QR code, they perceive it as more reliable and secure compared to generic or unfamiliar URLs. This sense of credibility translates into a higher likelihood of users engaging with your content, products, or services, ultimately boosting conversions.

Seamless User Experience

One of the key benefits of QR codes with custom domains is the seamless user experience they provide. Instead of users needing help remembering complex URLs or searching for your content, a custom domain simplifies the process. People can scan the QR code and effortlessly access your website, promotions, contact details, or other digital assets. This convenience leads to a smoother and more enjoyable user journey, increasing engagement and satisfaction.

Moreover, custom domains provide a memorable and user-friendly experience. Instead of presenting your audience with long and complex URLs to remember, a custom domain simplifies the process. It becomes a recognizable and easy-to-recall gateway for users to access your digital content. This convenience translates into a smoother user journey, increased engagement, and higher chances of return visits.

Streamlined Offline-to-Online Transition

QR codes with custom domains seamlessly bridge the gap between offline and online experiences. By including a custom domain in your QR codes displayed on physical materials like packaging, flyers, or posters, you create a direct pathway for users to transition from the physical world to your digital content. This streamlined transition boosts engagement, encourages interaction, and facilitates conversions.

Data-Driven Insights

Integrating custom domains into QR codes allows you to gather valuable data-driven insights. You can track and analyze QR code performance, user behavior, and conversion metrics by leveraging analytics tools. These insights provide valuable feedback, enabling you to refine your marketing strategies, optimize user experiences, and achieve better results. That way, you can better understand your visitors and QR codes' performance.

Versatile Applications

QR codes with custom domains have versatile applications across industries and use cases. Whether you're a marketer running a campaign, an event organizer managing registrations, a business owner enhancing product packaging, or an operations manager streamlining inventory systems, custom domains in QR codes offer practical solutions that drive engagement, streamline processes, and boost efficiency. According to your use cases, you can make use of connecting custom domains with your QR codes.

In summary, the benefits of QR codes with custom domains are significant. They enhance branding, establish trust, simplify the user experience, streamline offline-to-online transitions, provide data-driven insights, and offer versatile applications. Embrace the power of QR codes with custom domains to unlock these benefits and take your brand's digital presence to new

heights.
Use Cases for QR Codes with Custom Domains

QR codes with custom domains offer a wide array of practical applications across various industries. Let's explore some key use cases where integrating custom domains into QR codes can drive engagement, streamline processes, and enhance user experiences.

Marketing and Advertising
QR codes with custom domains are a powerful tool for marketing and advertising campaigns. Incorporate them into print materials, such as brochures, posters, and flyers, to direct users to specific landing pages or promotional offers. By using custom domains, you create a seamless transition from offline to online, allowing users to explore your products or services with ease.

Event Management
For event organizers, QR codes with custom domains offer a convenient way to manage registrations, ticketing, and information dissemination. Generate QR codes with custom domains that lead attendees to event-specific web pages containing details, schedules, speaker profiles, and interactive features. Simplify the check-in process by scanning QR codes on attendees' mobile devices, reducing the need for printed tickets.

Contact Details and Business Cards
QR codes with custom domains make it effortless for potential clients or partners to save your contact information. Generate QR codes that lead to a custom domain landing page containing your contact details, including phone numbers, email addresses, and social media profiles. This simplifies the process of exchanging information and ensures accurate and up-to-date contact details.

Inventory and Tracking Systems
In warehouses, retail environments, or logistics operations, QR codes with custom domains can streamline inventory management and tracking processes. Attach QR codes with custom domains to products, shelves, or containers to quickly access inventory details, update stock levels, or track shipments. This improves efficiency, reduces errors, and enhances supply chain visibility.

By using QR codes with custom domains, you unlock a world of possibilities across industries. Whether it's marketing campaigns, event management, product packaging, contact details, or inventory systems, integrating custom domains into QR codes creates engaging and efficient experiences for users, driving brand engagement and streamlining operations.

Embrace these use cases to stay ahead of the curve and maximize the potential of QR codes with custom domains.

Product Packaging and Labels
Enhance product packaging and labels by incorporating QR codes with custom domains. These codes can direct users to product-specific information, user manuals, how-to videos, or customer reviews. Providing valuable content through QR codes creates an interactive and informative experience that elevates your brand's credibility and customer satisfaction.

3.5: CONCLUSSION

 QR codes with custom domains revolutionize marketing efforts, enhance user experiences, and bridge the physical and digital realms. You create a memorable user journey by infusing your brand's identity into QR codes. Custom domains simplify user experiences, providing an easy-to-remember gateway to your digital content and increasing engagement and conversions. Across industries, QR codes with custom domains find practical applications in marketing, event management, product packaging, and inventory systems. They streamline processes, elevate user experiences, and drive brand engagement. To make the most of dynamic QR codes with custom domains, follow best practices such as ensuring scannability, tracking performance with analytics tools, and maintaining design consistency. With QR codes, you'll captivate your audience, establish trust, and create remarkable user experiences that set you apart. Unlock the potential of QR codes with custom domains and watch your brand thrive!