Mini-Project Report on

QR Code Generator

Submitted in partial fulfillment of the requirements
for the degree of
BACHELOR OF ENGINEERING
IN
Computer Science & Engineering
Artificial Intelligence & Machine Learning

by

Sudhiksha Aradhyula - (22106010)
Aditi Gadhave - (22106079)
Aabha Bhide - (22106093)
Niharika Bandekar - (22106136)

Under the guidance of

Prof. Taruna Sharma

Department of Computer Science & Engineering
(Artificial Intelligence & Machine Learning)
A. P. Shah Institute of Technology
G. B. Road, Kasarvadavali, Thane (W)-400615
University Of Mumbai
2023-2024

A. P. SHAH INSTITUTE OF TECHNOLOGY

CERTIFICATE

This is to certify that the project entitled "**QR Code Generator"** is a bonafide work of Sudhiksha Aradhyula (22106010), Aditi Gadhave (22106079), Aabha Bhide (22106093), Niharika Bandekar (22106136) submitted to the University of Mumbai in partial fulfillment of the requirement for the award of **Bachelor of Engineering** in **Computer Science & Engineering (Artificial Intelligence & Machine Learning).**

Prof. Taruna Sharma	Dr. Jaya Gupta
Mini Project Guide	Head of Department

A. P. SHAH INSTITUTE OF TECHNOLOGY

Project Report Approval

This Mini project report entitled "**QR code Generator"** by **Aabha Bhide, Sudhiksha Aradhyula, Niharika Bandekar, Aditi Gadhave** is approved for the degree of ***Bachelor of Engineering*** in ***Computer Science &Engineering***, (AIML) ***2022-23***.

External Examiner: _____

Internal Examiner: _____

Place: APSIT, Thane
Date:

DECLARATION

We declare that this written submission represents my ideas in my own words and whereothers' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission hasnot been taken when needed.

Sudhiksha Aradhyula (22106010)	Aditi Gadhave (22106079)	Aabha Bhide (22106093)	Niharika Bandekar (22106136)

ABSTRACT

QR codes, a two-dimensional barcode has become integral to our daily lives, enabling swift access to information through smartphone scanning. QR code generators allow users to convert various data types, such as URLs, text, contact details, and more, into QR codes effortlessly. They offer customization options, allowing for size, color, and design modifications, making them ideal for branding and marketing efforts. QR code generators find widespread use in marketing, retail, logistics, healthcare, education, tourism, and more. They enhance user engagement, streamline processes, and facilitate quick access to information in our increasingly digital world. QR code generators empower users to encode diverse data types, including URLs, contact details, and more, into QR codes. In this project, a QR code of a website link given by the user is generated. Scanning this QR code, the user gets directed back to the same link given before.

Keywords: two-dimensional barcodes, customization, widespread use.

INDEX

CHAPTER 1

INTRODUCTION

INTRODUCTION

A Quick Response (QR) code is a two-dimensional barcode that has become widely recognized and utilized in various aspects of modern life. Originally developed in Japan in the 1990s, QR codes have evolved into a versatile and efficient means of encoding information, which can be quickly and easily scanned by a mobile device or QR code reader. QR codes consist of black squares arranged on a white background, often resembling a pixelated square pattern. These codes are designed to store a wide range of data, including text, URLs, contact information, and more. QR codes have gained popularity for their ability to store large amounts of data in a small, square space, making them a valuable tool for businesses, advertisers, and individuals alike. The versatility and ease of use of QR code generators make them valuable tools for encoding and sharing information in a compact and scannable format. QR codes have become common in consumer advertising. Typically, a smartphone is used as a QR code scanner, displaying the code and converting it to some useful form (such as a standard URL for a website, thereby obviating the need for a user to type it into a web browser). QR code has become a focus of advertising strategy, since it provides a way to access a brand's website more quickly than by manually entering a URL. QR codes storing addresses and URLs may appear in magazines, on signs, on buses, on business cards, or on almost any object about which users might want information. Users with a camera phone equipped with the correct reader application can scan the image of the QR code to display text, contact information, connect to a wireless network, or open a web page in the phone's browser. This act of linking from physical world objects is termed hard linking or object hyperlinking. QR codes also may be linked to a location to track where a code has been scanned. Either the application that scans the QR code retrieves the geo information by using GPS and cell tower triangulation (aGPS) or the URL encoded in the QR code itself is associated with a location. A QR code generator is a software tool or online service that allows users to create QR (Quick Response) codes. QR code generators are valuable tools for businesses and individuals because they simplify the process of creating QR codes for various purposes, such as marketing, contact sharing, ticketing, and authentication. They eliminate the need for manually encoding complex data and ensure that QR codes are generated.

CHAPTER 2

LITERATURE SURVEY

LITERATURE SURVEY

1-HISTORY

The QR code was invented in Japan by a development team led by Masahiro Hara for the company Denso Wave. Hara is widely credited as the creator of the QR code. Mara's team's task was to create a barcode that could easily track automobiles and automobile parts during manufacturing. They invented the QR code. They did not expect it to be used outside of the automotive industry. Hara recently stated that the current use of QR codes by the general public is totally unexpected, especially for QR code uses such as contactless payment:

"At the time, I felt that I had developed something great, and predicted that it would be widely used in the industry in the future. But it was widely used by general users, which I did not expect. It was used as a payment method. It was completely unexpected."

Denso Wave and Masahiro Hara invented the QR code in 1994, just as automotive manufacturing technology was picking up steam. The requirements of strangely-shaped auto parts moving around factories at high rates of speed is fundamental to QR code history. To this day, the Universal Product Code (UPC) barcode is still the most prevalent tracking tool on the planet. And their very beginnings lie in 1952, when Norman Woodland and Bernard Silver's first patent was issued for barcode technology. At the time, it was known as linear scanning technology. And it looked like a bullseye. For two decades, the technology remained undeveloped and unused. Meanwhile, post-war American suburbs were booming. The birth of the supermarket to feed the suburban masses led to a unique logistical problem. How can so many individual items in one place be processed quickly? As American dissatisfaction with waiting in line grew throughout the 50s and 60s, IBM set to work in the early 1970s to revisit the earlier patented technology. And IBM, in coordination with the grocery industry, developed the vertically-aligned UPC barcode we know today. By the late 1970s, checkout lines had sped up 40%. Throughout the 80s, thousands upon thousands of grocery and retail stores adopted the technology. By the 2000s, the barcode business had a value of around $17 billion. Billions of items are now scanned every day in every industry across the world.

UPC barcodes are one-dimensional. They encode information horizontally, through the width and placement of vertical lines. QR codes encode are two-dimensional. They encode information both horizontally and vertically. That means QR code size can store more information than a UPC

barcode of equal size. At present, custom QR codes can store up to 7,000 characters. That makes them ideal for scenarios where size is at a premium, like food QR codes.

2-LITERATURE REVIEW

QR codes are useful, acceptable, and feasible in the modern-day marketing landscape. Marketers can leverage QR codes to facilitate two-way communication and coordinate customer relationships. Therefore, marketers who strategically implement QR codes can get more sales and improve customer satisfaction. (International Journal of Engineering Business Management)
The research concluded that QR codes are useful, acceptable, and feasible in the modern-day marketing landscape. Marketers can leverage QR codes to facilitate two-way communication and coordinate customer relationships. Therefore, marketers who strategically implement QR codes can get more sales and improve customer satisfaction.

The survey discovered that 84.62% of the respondents had scanned a QR code at least once. Researchers also found that the frequency of QR code usage increased significantly over time, exhibiting a positive relationship between time and QR code acceptance. (International Journal of Commerce, Business, and Management (IJCBM))

This paper gave a statistical analysis on the users using QR codes. Of the participants, 28.85% were 21-30-year-olds, 25% were 11-20-year-olds, and 21.15% were 31-40-year-olds.

QR Codes have become a need of an hour post-pandemic. Cashless payments have contributed the most in the QR scanner activity. (International Journal of Engineering Business Management)

Post pandemic has changed the trajectory of payment modes. Cashless payment mode has gained importance. People rather choose to scan the QR code and pay online rather than paying in physical mode.

CHAPTER 3

Problem Statement

PROBLEM STATEMENT:

Quick Response (QR) codes are not new. These are the digital squares that are found nearly everywhere. QR code has become such an important part of our daily life for an instance, making a payment through GooglePay or paytm requires a QR code to do so.Here we have attempted to make a QR code generator which basically converts a user defined website to a QR code. Thus QR code is generated. When a user scans the code, they will be taken back to the website which was initially used.

CHAPTER 4

Experimental Setup

SOFTWARE SETUP:

VS code:

A source-code editor made by Microsoft with the Electron Framework, for Windows, Linux and macOS. It is a streamlined code editor with support for development operations like debugging, task running, and version control.

There are two libraries used in the making of the project:

1) ‘qrcode’ library: It is a common and widely used method to generate QR codes in Python.
2) ‘png’ library: It is widely used library to view png pictures in python.

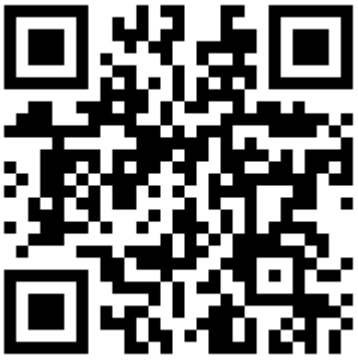
CHAPTER 5

Implementation

Implementation:

```
PS C:\Users\avaka\OneDrive\Documents\Codes> python -u "c:\Users\avaka\OneDrive\Documents\Codes\QR1.py"
Enter a link: https://www.youtube.com/
QR code generated and saved as 'myqr.svg' and 'myqr.png'
PS C:\Users\avaka\OneDrive\Documents\Codes>
```

Name	Date modified	Type	Size
myqr	14-09-2023 13:17	PNG File	1 KB
myqr	14-09-2023 13:17	Microsoft Edge HTM...	1 KB
QR	10-09-2023 13:13	Python File	1 KB
QR1	14-09-2023 13:18	Python File	1 KB



In the output, user enters a link of which the qr code is to be generated. After giving the link as an input QR code is generated in the folders in png format.Thus opening the png file and scanning it directs us towards the link which was initially put as an input.

CHAPTER 6
Conclusion

CONCLUSION:

Thus, we have successfully generated a QR code from any given link by using Python.

The use and applications of QR code generators are continually evolving and expanding. Here are some potential future scopes for QR code generators:

Augmented Reality (AR) and Virtual Reality (VR): QR codes can link physical objects to digital content, including AR and VR experiences. As AR and VR technologies advance, QR codes may be used more extensively to provide enhanced, interactive experiences.

Education: QR codes are used in educational materials to provide links to additional resources. Future applications may involve interactive learning experiences and the integration of QR codes into the learning process.

Integration with Internet of Things (IoT): As IoT devices become more prevalent, QR codes could be used to facilitate the setup and configuration of these devices, making it easier for users to connect and control smart devices.

REFERENCES:

[1] International Journal of Engineering Business Management.

[2] "QR Code Complete" by J.D. Britton and Joe Waters.

[3] "Python Crash Course" by Eric Matthes.

[4] "QR Code Marketing for Small Business" by Jamie Turner and Jeanne Hopkins.