QR GENERATOR USING PYTHON

ABSTRACT

This project aims to develop a QR Code Generator using Python, a versatile and widely-used programming language. QR (Quick Response) codes have become an integral part of modern communication, enabling efficient data transfer and sharing. The proposed QR Code Generator application will provide users with a convenient way to create QR codes for various purposes, such as website URLs, text, contact information, and more.

The QR code generator project will use the qrcode library in Python. This library provides functions for generating QR codes of different sizes and versions. The project will also allow users to specify the type of information to be stored in the QR code, such as text, a URL, or contact information.

The QR code generator project will be a valuable tool for businesses and individuals who want to create QR codes for a variety of purposes. It will be easy to use and will allow users to generate QR codes quickly and easily. The project will also be open source, so that others can modify and improve it.

INTRODUCTION

QR codes (Quick Response Codes) are two-dimensional barcodes that can store a variety of information, such as text, URLs, contact information, and more. They are becoming increasingly popular, as they can be scanned by smartphones and other mobile devices to quickly access information.QR code generators are software applications that allow users to create QR codes. They typically include features for specifying the type of information to be stored in the QR code, the size and version of the QR code, and the output format of the QR code.

This project will develop a QR code generator in Python. Python is a popular programming language that is known for its simplicity and readability. This makes it a good choice for developing QR code generators, as it can be easily learned and used by beginners.

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SOFTWARE AND HARDWARE REQUIREMENTS

Hardware Requirements

- LAPTOP (OS: WINDOWS 10 OR LATEST)

Software Requirements

- Python IDLE (3.7.4 version or latest version)

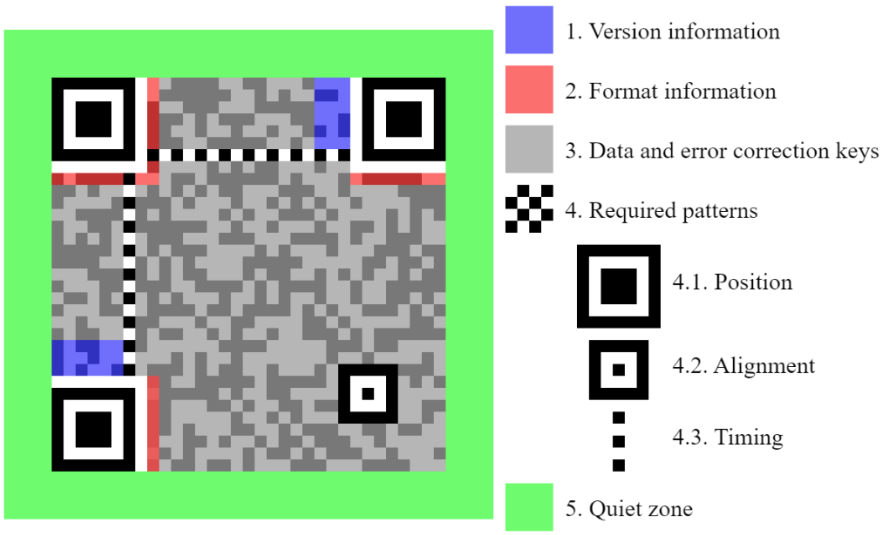
What is QR code?

Fig: Quick Response Code

The QR (Quick Response) Code is a two-dimensional (2-D) matrix code that belongs to alarger set of machine-readable codes, all of which are often referred to as barcodes, regardlessof whether they are made up of bars, squares or other-shaped elements.Compared with 1-D codes, 2-D codes can hold a larger amount of data in a smaller space,and compared with other 2-D codes, QR Code Essentials.

The QR Code can hold much more data still. In addition, an advanced error-correctionmethod and other unique characteristics allow the QR Code to be read more reliably andat higher speeds than other codes. Like written language, barcodes are visual representationsof information. Unlike language, however, which humans can read, barcodes are designed to be read and understood (decoded) by computers, using machine-vision systems consisting of optical laser scanners or cameras and barcode-interpreting software.

How the QR Code works ?



QR codes work by using a grid of black and white squares to encode information. The pattern of the squares is used to represent the data that is stored in the QR code. When a QR code is scanned by a smartphone or other mobile device, the device's camera will read the pattern of the squares and decode the information that is stored in the QR code.

The information that can be stored in a QR code is limited by the size of the QR code. The smallest QR codes can store only a few characters of text, while the largest QR codes can store thousands of characters of text. The most common size for QR codes is around 200x200 pixels.

QR codes are a versatile tool that can be used for a variety of purposes. They are often used for marketing and advertising, as they can be used to direct users to a website or social media page. QR codes can also be used to provide customer service information, such as a link to a FAQ page. QR codes are also becoming increasingly popular in education, as they can be used to provide access to educational content.

ADVANTAGES OF QR CODE

- **High-speed reading**
- **Durability**
- **High Data Capacity**
- **Fast and Convenient**
- **Error Correction**
- **Enhanced Analytics**
- **Environmentally Friendly**
- **Global Standard**

QR Generator using python Project Prerequisites :

- In this project, we will create a python QR code generator application using tkinter library for GUI and pyqrcode library for generating QR codes. The application will take input from the user in the form of text or a URL, generating a QR code that can be saved as a PNG image file.

- to creating GUI applications in Python and demonstrate how to use the pyqrcode library for generating QR codes.

- you should have a basic understanding of Python programming and be familiar with tkinter and pyqrcode libraries. You should also have Python 3 and the required libraries installed on your computer.

- PyQRCode library internally uses pypng library to generate the QR code image. So will also require pypng library

There are a few different libraries and modules that you can use to create a QR code generator project in Python.

- qrcode: This is the most popular library for generating QR codes in Python. It is easy to use and supports a variety of features, such as generating QR codes of different sizes and versions, and specifying the type of information to be stored in the QR code.
- pypng: This module is used to generate PNG images from QR codes. This is useful if you want to save the QR code to a file or display it on a website.
- Pillow: This module is a more powerful image library than pypng. It supports a wider variety of image formats, including JPEG, GIF, and TIFF. This can be useful if you want to generate QR codes in different image formats.

We will be using Tkinter and Qrcode modules in Python to build this project. We use the Tkinter module to build the GUI to take the following inputs: text/URL to convert to QR Code. location to save the QR code with name.

GUI REQUIREMENTS :

We will be using Tkinter and Qrcode modules in Python to build this project. We use the Tkinter module to build the GUI to take the following inputs:

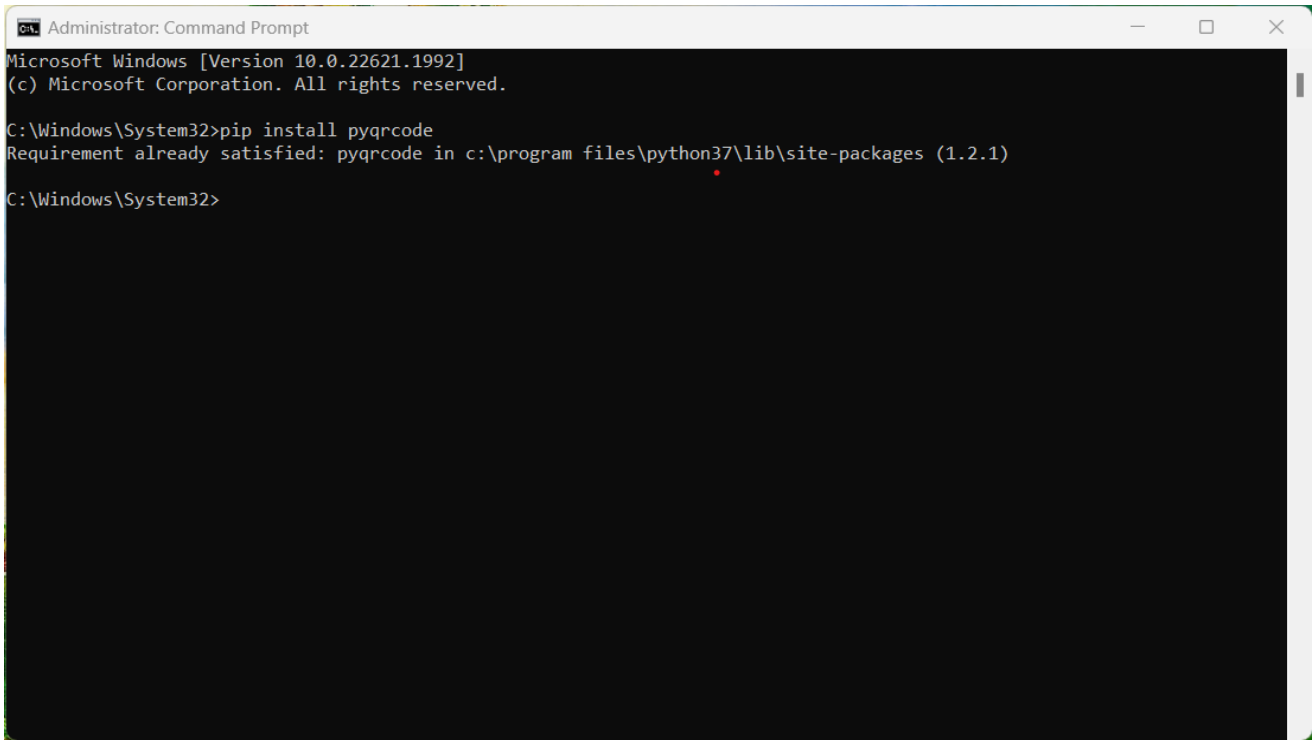
1. text/URL to convert to QR Code
2. location to save the QR code with name
3. size of the QR code.

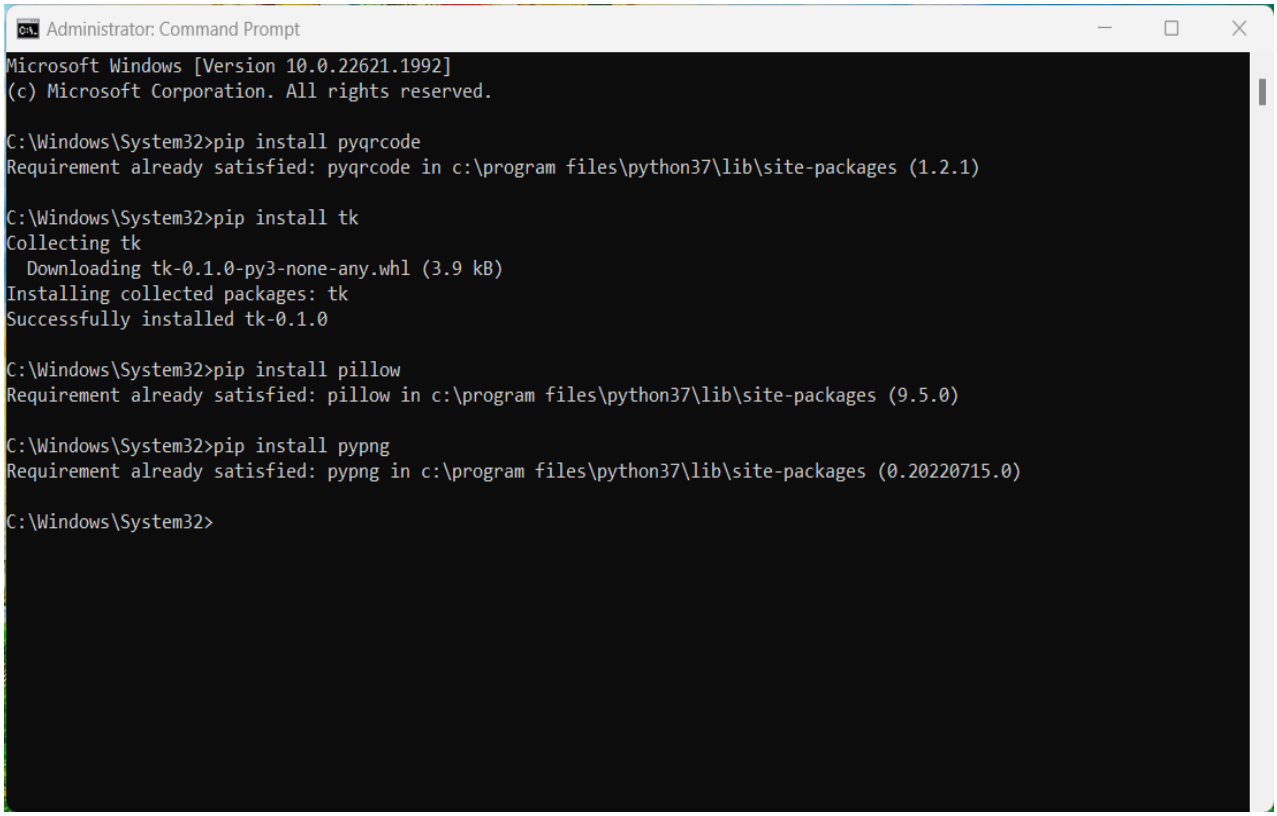
Then we generate the QR code from the above inputs and save in the given location using the qrcode module.

INSTALLATION OF LIBRARIES:

You can install these libraries by typing the following commands in your terminal.

- pip install pypng.
- pip install pyqrcode.
- pip install tk.
- Pip install pillow.





Steps to build the QR Code Generator in Python:

To build the QR code generator project using Python we need to follow the below steps:

1. Importing the modules.
2. Creating the main window.
3. Taking the input of the text/URL, location to store the QR code, name of the QR code and the size of the QR code.
4. Writing the function to generate and save the QR Code.

1. Importing modules :

The first step is to import the qrcode and the tkinter module. We use the messagebox in the tkinter module to show the pop up messages.

```
import qrcode
from tkinter import *
from tkinter import messagebox
```

2. Creating the main window :

```
# Creating the window
wn = Tk()
wn.title('PACE ITS QRCode generatorS')
wn.geometry('700x700')
wn.config(bg='green')
```

3. Taking the inputs :

Now, we take the inputs from the user to create the QR Code. We take the following inputs:

1. Text/URL as Entry() named as ‘text’

2. Location to save the QR Code as Entry() named as ‘loc’

3. Name of the QR Code image when saved in the device as Entry() named as ‘name’

4. Size of the QR Code to be generated as Entry() named ‘size’. In this the user has to give the size in the range 1-40. 1 being the smallest size of 21×21.

Then we create a button when clicked generates the QR Code and saves it by executing the generateCode() function.

4. Creating the function to generate QR code and save it

Finally, we create the function to generate the code that runs on clicking the button. In this,

➔ First we create the QRCode object with the version/size that user gave as input in the size() entry

➔ Then we add the text that we need to encode by getting from the

entry ‘text’.

➔ Then we get the QR code and save it in the directory that user gave as input.

➔ After this, we show the pop up message to confirm the user that the image is saved.

➔ And run the code in python IDLE.

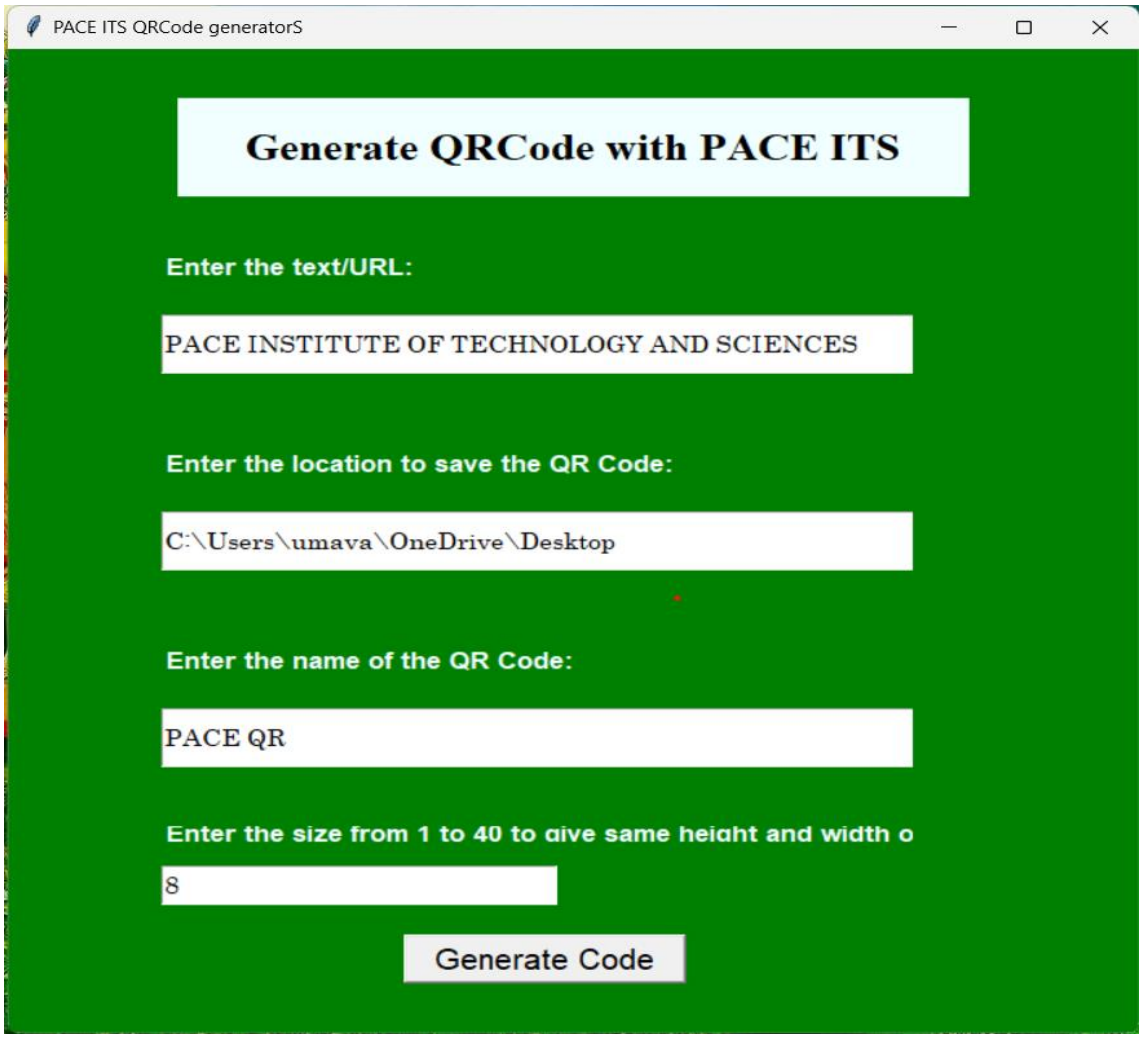
It opens the tkinter GUI window and the UI is ready to the user’s input. Finally it gives the output of the format is .PNG format.

➔ Simply we can scan the QR Code to our mobile and any other devices.

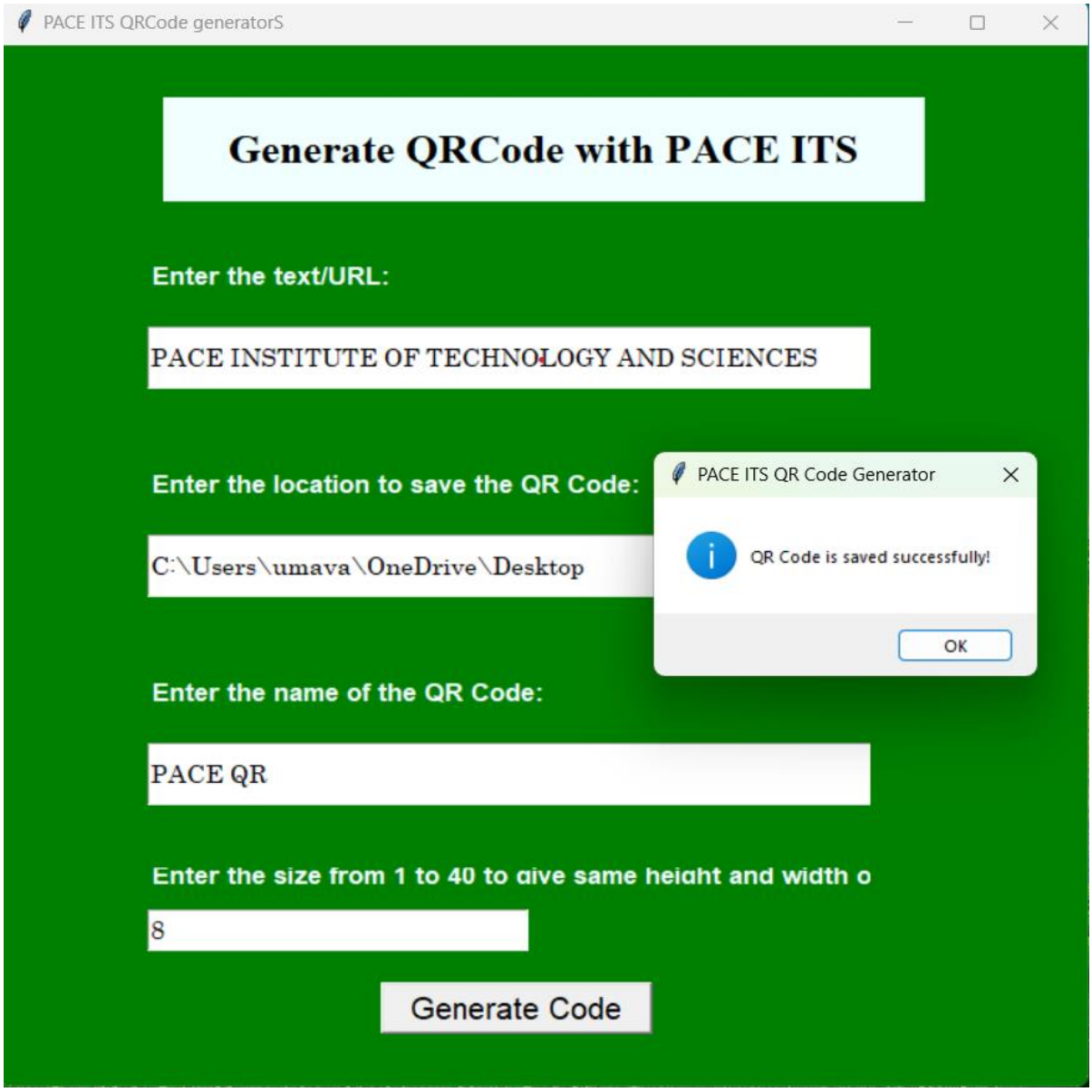
Snapshots and UserInterface of the Application:

➔ This is the GUI of entering the data for text,path,size and name , To using the Tkinter module.

Now we can enter the data.



➔ When Enter the data of the boxes and next to click the generate button.



➔ After that, it shows the pop up message to confirm the user that the image is saved.

It saved to the user given path . Simply it gives the QR Code in png format.

Simply we can scan QR Code in our mobile or any other devices,It shows the user given text/url.

See above snapshots for the final output.

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