QR Toolbox Installation Guide

Step 1. Download the QR Tool files

1. Download QR Tool files from https://github.com/USEPA/QR_Tool/tree/master by selecting the green "Clone or download" button on the right side, then clicking "Download ZIP".
2. Then, in the desired location, extract the ZIP files contents. You now have all of the files necessary to run the software.

Step 2. Install Python and pip packages

The QR Toolbox requires Python 3+ and some Python packages to run, along with other setup commands. In order to install this software:

1. First locate the Setup.bat file in the QR_Tool folder, then double-click it to run it. The command line and Python installer windows will appear on your screen similar to the example shown below.
2. Before starting the installation of Python, ==_**select the option to "Add Python 3.7 to PATH"**_== (Look at **Figure 1**, your screen should look like this**)**:
   a. **If you already have Python installed,** your screen should look like **Figure 2** below. Select 'Cancel', and then, when prompted if you are sure, click 'Yes'**:**
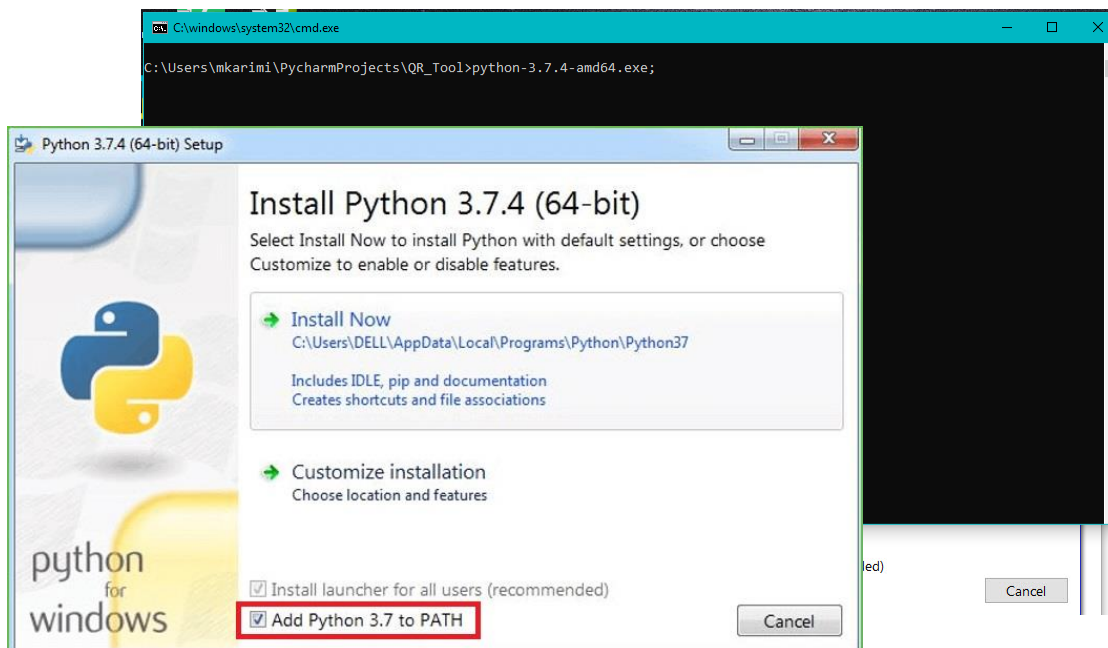

Figure 1 Python Installation Windows – If Python not already installed

Note: EPA users may not have permission to install Python and need to ask IT support to give permission. The installation steps after Python is installed <u>do not</u> require IT support permission.
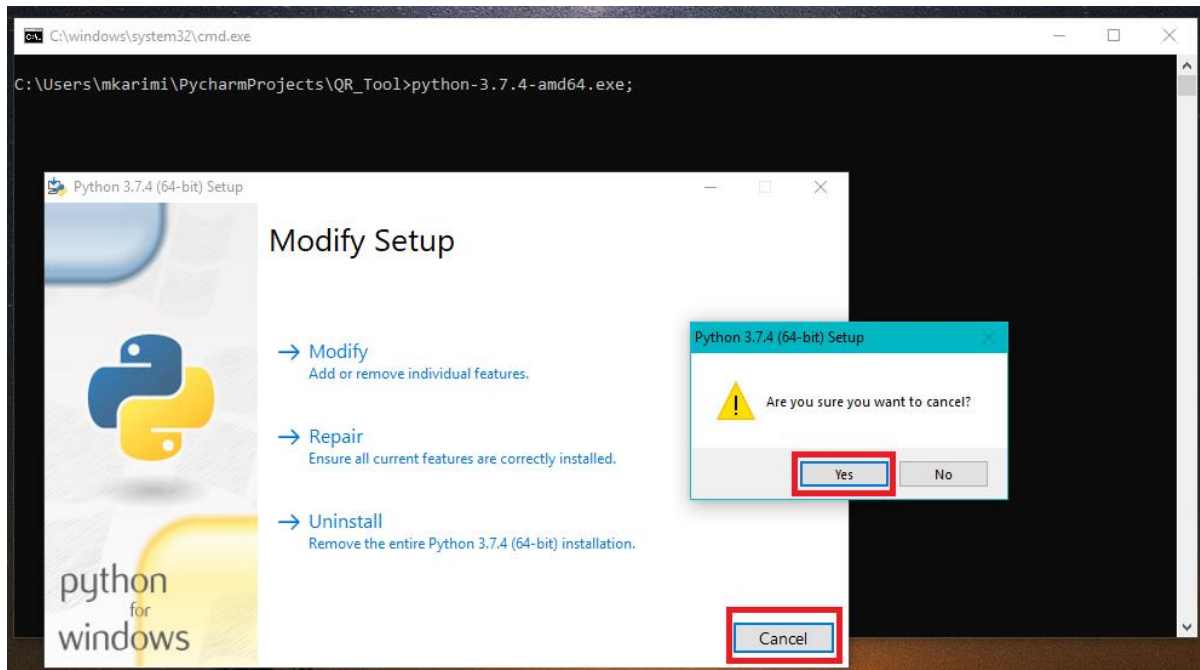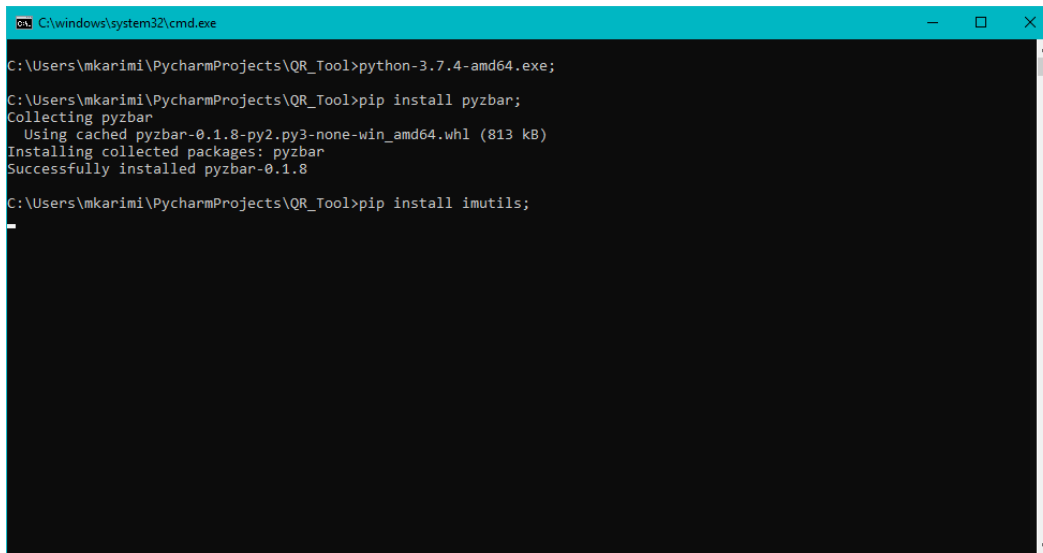
Figure 2 *Python Installation Windows - If Python already installed*

3. Complete the Python installation by following the prompts from the Python Installer, and close it once it is done. If you already had Python installed, look at the instructions in **2a** and at **Figure 2**.

4. Once the Python installation is done, the Setup.bat will automatically install the following required Python packages: pyzbar, imutils, qrcode, Pillow, opencv-python, and office365. This should look similar to the image below (**Figure 3**). *If this does not happen, or the command prompt window closes quickly/abruptly, or there is any other issue, you will need to restart your computer, and then perform the following actions once it has rebooted completely:*

    a. Locate and open the QR_Tool folder and run the Setup.bat file once again. This time, when the Python installation window comes up, it will look different, because you already installed Python. All you need to do is click 'Cancel', and then click 'Yes' to confirm (example image above, **Figure 2**).

    b. After doing that, the Setup.bat file will then run the other commands, and your screen will look similar to **Figure 3** below.

Figure 3 *Python Package Installation Window*

Note: With Python 3+ installed, 'pip' is also installed automatically.

Once the Setup.bat file is done installing it will close by itself. After it does that, you may move on to the next step.

Step 3. Create Application Key for SharePoint Site
If you need to write a QR Code(s) to a SharePoint Site, you need to create an Application Key for the site so the Python script can access the SharePoint site. You'll need to have admin rights to create application key.

The instructions for setting up the application key are located here:
https://docs.microsoft.com/en-us/sharepoint/dev/solution-guidance/security-apponly-azureacs

Here is the example SharePoint site URL:
https://usepa.sharepoint.com/sites/Emergency%20Response/EOCIncident/

To create an application key, run the URL (example):
https://usepa.sharepoint.com/sites/Emergency%20Response/EOCIncident/_layouts/15/AppRegNew.aspx

The following screen will show:

Click "Generate" button to generate Client Id and Client Secret. Write down Client Id and Client Secret to use in the next step. Enter a Title that is meaningful for you.
Title: your title
App Domain: www.localhost.com
Redirect URI: https://www.localhost.com

Click "Create" button to create.

Then run the following URL (example):
https://usepa.sharepoint.com/sites/Emergency%20Response/EOCIncident/_layouts/15/AppInv.aspx

Enter the Client id and click 'Lookup' button.
In the 'Permission Request XML:' box, enter the following:

```
<AppPermissionRequests AllowAppOnlyPolicy="true">
<AppPermissionRequest Scope="http://sharepoint/content/sitecollection/web"
Right="FullControl"/>
</AppPermissionRequests>
```

Click the 'Create' button to finish.

Step 4. Modify settings.py
Locate and modify the settings.py file using the Client Id and Client Secret generated from the last step and enter the SharePoint site URL for 'url'.

```
settings = {
    'url': '<Your URL>',
    'client_id': '<Your Client Id>',
    'client_secret': '<Your Client Secret>'
}
```

The following lines in QRToolbox.py may need to be modified:
- *listTitle = "QR Timestamps" (this is the SharePoint list name for writing scanned entry to)*
- *qrfolder = "QRCodes" (this is the folder name to store QR Code image files)*
- *bkcsvfolder = "HXWTEST" (this is the folder name to store backup csv files)*
- *qrbatchfile = "names.csv" (this is file name for batch generate QR Code images)*
- *relative_url = "/sites/Emergency%20Response/EOCIncident/EOC%20Documents/QRCodes/names.csv" (this is location that names.csv resides)*

QR Toolbox User Guide

Run the QR-Toolbox

To run the QR-Toolbox, simply double-click the QR-Toolbox.py to run.

** If the user has two versions of Python installed (Python 2 and Python 3), they may need to specify running QR-Toolbox.py in Python 3.

The following is one way to do that:

1. Create a .bat file to run the QR-Toolbox by opening a new notepad file and saving it as a .bat. Add the following line (all on one line) to the .bat file:
    a. *<python 3 exe location>/python.exe <QR Tool location>/QRToolbox.py*
    b. *Example: C:\Users\<user>\AppData\Local\Programs\Python\Python37\python.exe C:\Users\<user>\Desktop\QR_Tool\QR-Toolbox.py*
2. (Optional) Create a shortcut of the .bat file on the desktop by right-clicking and selecting "Create Shortcut", and then dragging that shortcut to the desktop or anywhere else.
3. Double-click the .bat file or the shortcut to run the QR-Toolbox.

Startup Questions

There are 2 questions that are asked when the QR-Toolbox is started:
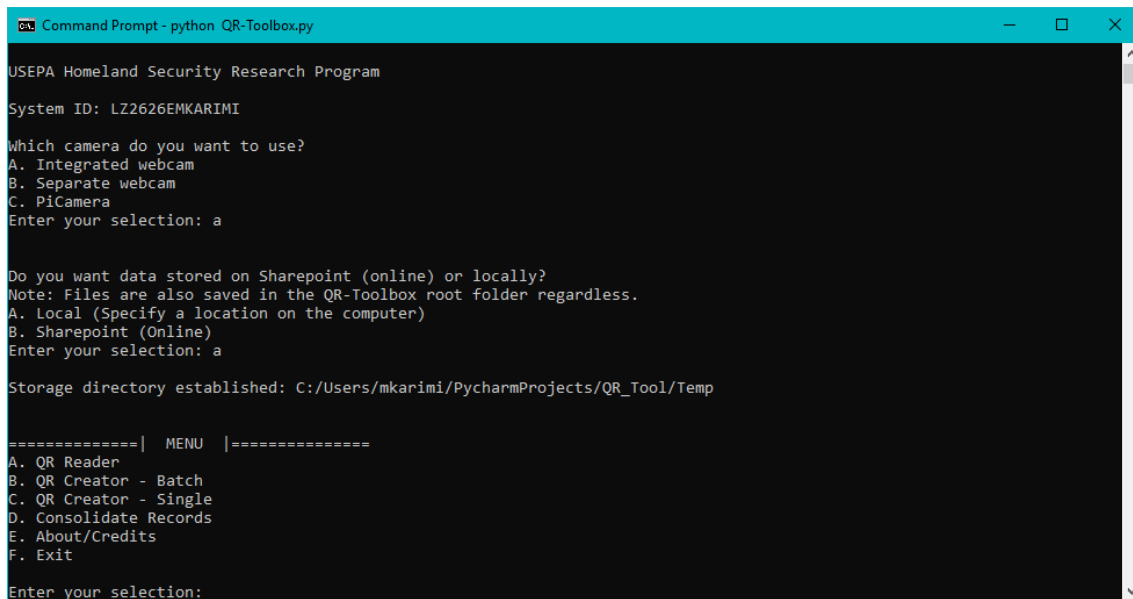

Figure 4 *Startup Questions*

1. Which camera do you want to use?
    a. This question is asking, if the user intends to read QR Codes, which camera should the QR-Toolbox to use. The user can choose from the following options:
        i. Integrated webcam (built in camera, such as in a laptop)
        ii. Separate webcam (camera the user connects via USB port or similar)
        iii. PiCamera (a camera specifically for Raspberry Pis)

b. *Note: These mappings do assume that the computer has default settings regarding webcams. If those settings are different/changed or it is not a Windows computer that is being used, these mappings above may not be accurate. Example: Had plugged in USB Logitech on one laptop, where Option A (which should be integrated webcam) was actually the separate webcam/Logitech, and Option B (which should be the separate webcam) was actually the integrated webcam.*

2. Do you want data stored on SharePoint (online) or locally?
   a. When any data is created by the QR-Toolbox, it is stored in the same folder as the QR-Toolbox.py by default. However, the user has the option of also telling the software to store that data either online on SharePoint, or somewhere else on their computer (locally).

Functions in the QR-Toolbox

There are 6 functions in the QR-Toolbox, each with a local and SharePoint version (the version shown to the user depends on the answer given for the second question):


```
Command Prompt - python QR-Toolbox.py                                    —    □    ×

USEPA Homeland Security Research Program

System ID: LZ2626EMKARIMI

Which camera do you want to use?
A. Integrated webcam
B. Separate webcam
C. PiCamera
Enter your selection: a


Do you want data stored on Sharepoint (online) or locally?
Note: Files are also saved in the QR-Toolbox root folder regardless.
A. Local (Specify a location on the computer)
B. Sharepoint (Online)
Enter your selection: a

Storage directory established: C:/Users/mkarimi/PycharmProjects/QR_Tool/Temp


=============|  MENU  |================
A. QR Reader
B. QR Creator - Batch
C. QR Creator - Single
D. Consolidate Records
E. About/Credits
F. Exit

Enter your selection:
```

Figure 5 Local Version Menu

Figure 6 *SharePoint Version Menu*

1. QR Reader: Scan the QR Code and the entry will be stored.

   a. SharePoint version: QR Code entry is stored in the same folder as QR-Toolbox.py, and on the SharePoint site.

   b. Local version: QR Code entry is stored in root, and in the location the user specified.

   c. *Notes: Program will reject QR codes created by other sources when it detects a compatibility issue.*

2. QR Creator – Batch: Generate QR Code image file for each entry defined in names.csv.

   a. SharePoint version:

      i. Example entries in names.csv:

         1. *Lastname.firstname@epa.gov*

         2. *FirstName LastName*

      ii. The names.csv must be available in the SharePoint site defined in the QRToolbox.py.

         1. *relative URL = "/sites/Emergency%20Response/EOCIncident/EOC%20Documents/QRCodes/names.csv"*

         2. The user can modify the above line in QRToolbox.py to point to another SharePoint site.

      iii. *Note: if there are any special characters (ex. 'È', 'è', etc.), the program cannot store these on SharePoint without replacing those characters with their regular equivalents ('è' = 'e'). The program will ask the user if they would like to do that, and if they respond 'No', that text/entry will be skipped. This will occur for every entry that has special characters.*

    b. Local version:

      i. Same examples as above

      ii. The names.csv must be in the same folder as the QR-Toolbox.py file.

      iii. The generated QR Codes will be stored in the root folder and in the folder the user specified.

3. QR Creator – Single: Generate QR Code for single entry. This option will prompt to enter email or other ID to generate QR Code image file for the entered value.

    a. SharePoint version: The QR Code image file will be stored in the SharePoint Site defined in settings.py and the folder name as defined in QR-Toolbox.py: qrfolder = "QRCodes", and also stored in the same folder as QR-Toolbox.py.

      i. *Note: if there are any special characters (ex. 'È', 'è', etc.), the program cannot store these on SharePoint without replacing those characters with their regular equivalents ('è' = 'e'). The program will ask the user if they would like to do that, and if they respond 'No', that text/entry will be skipped.*

    b. Local version: QR Code image file stored in the root folder and in the location the user specified.

4. Consolidate Records (Local version only): This option is used to consolidate records into one file.

5. About/Credits: Display information about the QR Code Tool.

6. Exit: Exit the QR Code Tool

Access the QR Records in SharePoint

A SharePoint workflow will automatically aggregate and consolidate the QR data from all input devices.