Uranium Image Cleanup Program User Manual

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Installation Overview

- The Uranium-Image-Cleanup program Is compatible with **Linux** & **Windows** OS

- The program has **2 methods** of installation & use:
  - Via executable (easiest)
  - Via terminal (alternative)

- Executable:
  - If you have the executable on **Windows**, proceed to the **How To Use** section.

  - If you have the executable on **Linux**, proceed to the **How To Run Executable File/s on Linux** section and then consult the **How To Use** section.

  - If you *do no*t have the executable on either platform, start at the **Executable Setup** section.

- Terminal:
  - A software environment must be set up to modify or use this program from a terminal.

  - If python and pip *are already* installed on your **Windows** computer, proceed to the **Program Installation on Windows** section. This also assumes Python's folders are added to Windows path.

    Python by default does not add itself to Windows path. This is noted in the **Terminal Setup on Windows** section. You will encounter an error if this is not added. Windows will be unable to see any Python scripts or packages installed on the computer.

    See: **https://www.geeksforgeeks.org/how-to-add-python-to-windows-path/** for more info on setting up Python in Windows.

  - If you do not have python or pip installed on **Windows**, proceed to the **'Terminal Setup on Windows'** section.

  - If you are using **Linux** proceed to the **Terminal Setup on Linux** section.

- View the Program Notes section to learn more about the program.

Executable Setup

The executable does not require Python. It has been tested with Linux and Windows and has not been tested on Mac or other OS's. Although, any OS capable of running executable files can run the program.

Executable download link

https://drive.google.com/file/d/1PQ2ROzLB5HEbHGVaiH7tyDTsmo7SphgO/view?usp=sharing

- To download the executable, click on google drive download link above.
    - You may get warnings about the file being malicious. Our executable is not harmful to the computer.
- Below a video is provided demonstrating this process.

How to Download Video Tutorial

https://drive.google.com/file/d/13P_wMmzDqbY8oun15fGpCpYvILx77_7I/view?usp=sharing

- Once downloaded, place uic.exe in a convenient location and double click the program.
- The program will start.
- Proceed to the **How To Use** section.

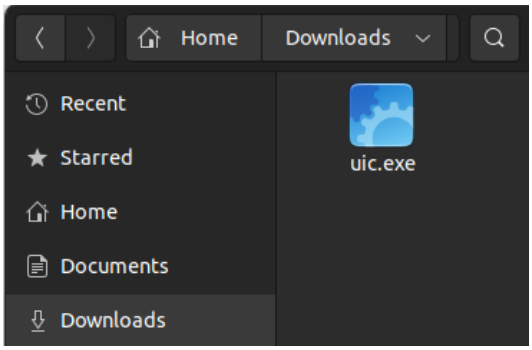
How To Run the Executable on Linux:

Linux does not support .exe files integrally, however the Wine library does:

- **How To:** Install Wine:

```
:~$ sudo apt install wine
```

  - To Install, run the command: (can copy) `sudo apt-get install wine`
- **Locate Exe. File:**
  - Here, our executable file "uic.exe" is located in our "Downloads" folder



    - We can verify the location of "uic.exe" with the `ls` command

```
makhmud-m@makhmudm-VirtualBox:~/Downloads$ ls
uic.exe
```

You are now ready to run the program.

- **How To:** Run Executable

  To run an executable with Wine: (can copy) `wine uic.exe`

    - Simply enter "Wine (followed by the executable name) and begin using our program!

      Ignore secur32 Warning Message (Using A Windows Exe File)

```
makhmud-m@makhmudm-VirtualBox:~/Downloads$ wine uic.exe
002e:err:winediag:SECUR32_initNTLMSP ntlm_auth was not found or is outdated.
Make sure that ntlm_auth >= 3.0.25 is in your path. Usually, you can find it
in the winbind package of your distribution.

*** Uranium Image Cleanup Tool ***
----------------------------------------
[1]: New Directory
[2]: Quit

Input:
```

- Now proceed to the **How To Use** section

Terminal Setup on Windows

A software environment must be set up to modify or use this program from the Windows terminal.

You must install Python:

- Python (Version 2.7 - 4.0)

Required Python Packages:

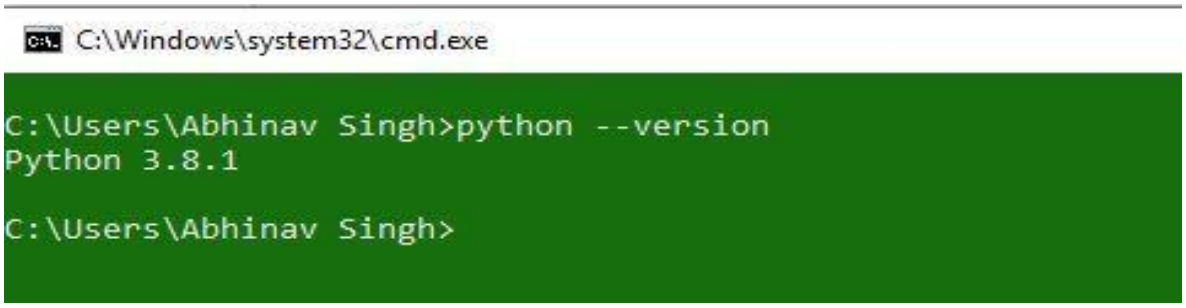
- Tqdm (Version 4.64.0 or greater)
- OpenCV (Version 4.5.5.62 or greater)
- Numpy (Version 1.22.3 or greater)
- Pillow (Version 9.0.1 or greater)
- Colorama (Version 0.4.4 or greater)

- **These packages will be installed automatically when you download the Uranium-Image-Cleanup-Package via pip.**
- **These are noted in case dependent python packages update or cause errors.**

To start, you'll need Python and PIP already installed on your computer. PIP comes with Python, so as long as you have Python you will be set.

Follow the steps below to see if Python is already installed on your system:

- Open a command prompt, Execute the following command now:
  python –version. If Python is already installed, a statement indicating the Python version available will be displayed.



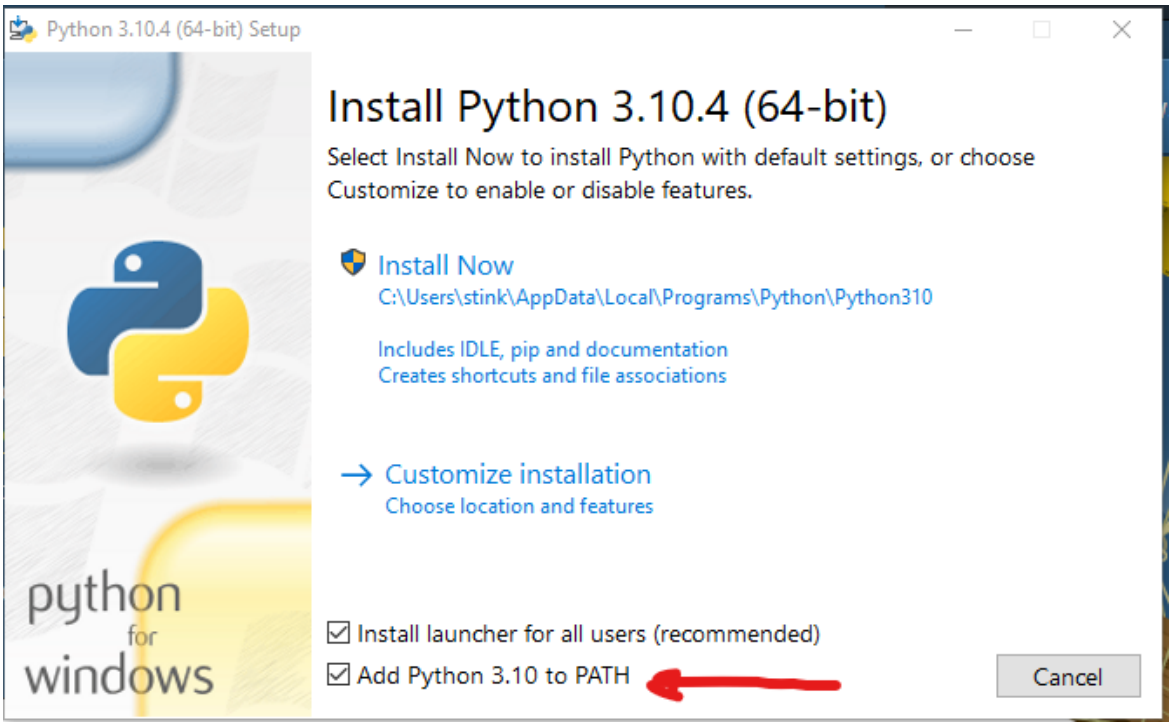
- If Python is not present, continue, otherwise you can skip the next section.

How to install python on Windows:

You must first download the latest version of python before proceeding with the installation.

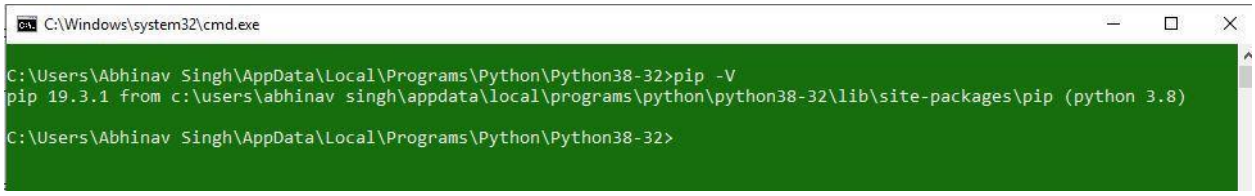
https://www.python.org/downloads/

Note when installing Python, be sure to check the box at the bottom of the first page of the installation. This will prevent errors with PIP and any scripts you run from.



To verify the installation, type *python* in the command prompt. This will show the version. PIP is a Python package management system that allows you to install and manage Python software packages and libraries. To see if PIP is already installed on your system, type the following command at the command prompt: *pip -V*

Pip comes with the latest python.



If not, Pip can be downloaded and installed via the command line by following the procedures below:

- Get the get-pip.py file and save it in the same directory as you installed Python.
- Run the command: *python get-pip.py*
- For verification run *pip -V,* it should show the version of pip.

Now proceed to the **Program Installation on Windows** section.

Program Installation on Windows

Walkthrough ‘How to Install’ video finding and using the executable script:
https://drive.google.com/file/d/1SIeLyEoBeGtV8JXAaMNdwEZ_ciwiVzeI/view?usp=sharing

To install our package, start up a command prompt.

Run the command: pip install uranium-image-cleanup

```
pip install uranium-image-cleanup
```

If an error occurs and Windows cannot find PIP, run the terminal as Admin and try again or consult: **https://www.geeksforgeeks.org/how-to-add-python-to-windows-path/**

The output will look something like this depending on which dependencies you have installed.

```
C:\Users\Brien>pip install uranium-image-cleanup
Collecting uranium-image-cleanup
  Downloading uranium_image_cleanup-0.9.0b11-py3-none-any.whl (8.0 kB)
Requirement already satisfied: tqdm in c:\users\brien\appdata\local\prog
anium-image-cleanup) (4.63.0)
Requirement already satisfied: pillow in c:\users\brien\appdata\local\pr
uranium-image-cleanup) (9.0.1)
Requirement already satisfied: opencv-python in c:\users\brien\appdata\l
 (from uranium-image-cleanup) (4.5.5.62)
Requirement already satisfied: numpy in c:\users\brien\appdata\local\pro
ranium-image-cleanup) (1.22.3)
Requirement already satisfied: colorama in c:\users\brien\appdata\local\
m tqdm->uranium-image-cleanup) (0.4.4)
Installing collected packages: uranium-image-cleanup
Successfully installed uranium-image-cleanup-0.9.0b11

C:\Users\Brien>
```

At this point, you have installed the Uranium-Image-Cleanup package. The Uranium-Image-Cleanup program may now be run on your device.

To run the program, type “uic” and hit **ENTER**:

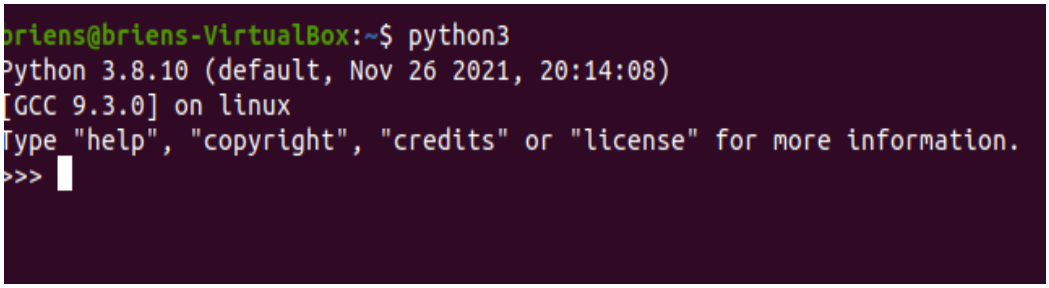
```
C:\Users\Brien>uic
```

```
*** Uranium Image Cleanup Tool ***
------------------------------------------
[1]: New Directory
[2]: Quit

Input:
```

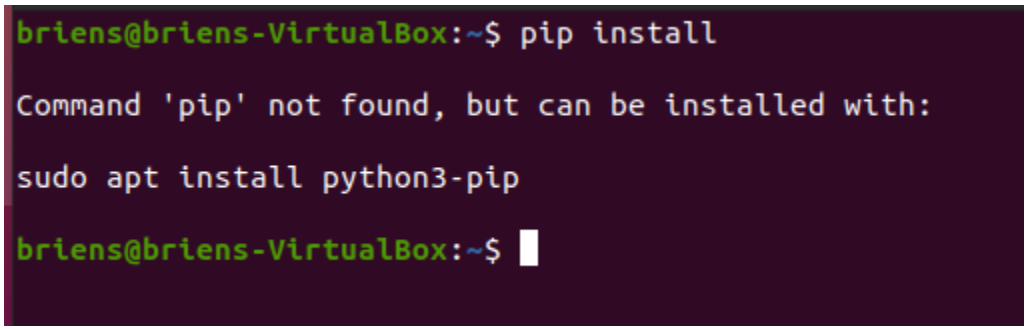
Terminal Setup on Linux

1. Open a terminal and confirm you have python installed by running “python3” or “python”. Ubuntu was developed with python. Python Version 3 comes with Ubuntu 20.04.4

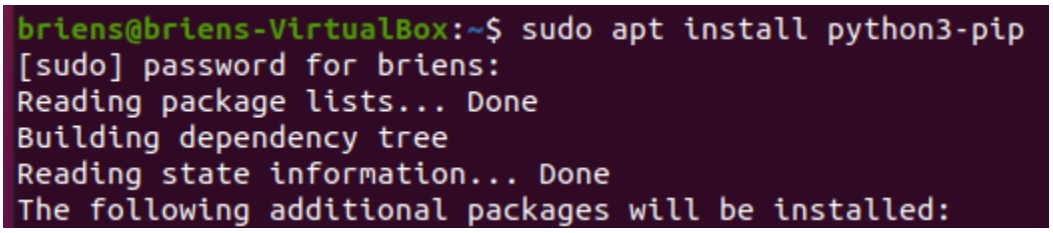


The output should look like this. Hit Ctrl-D to escape.

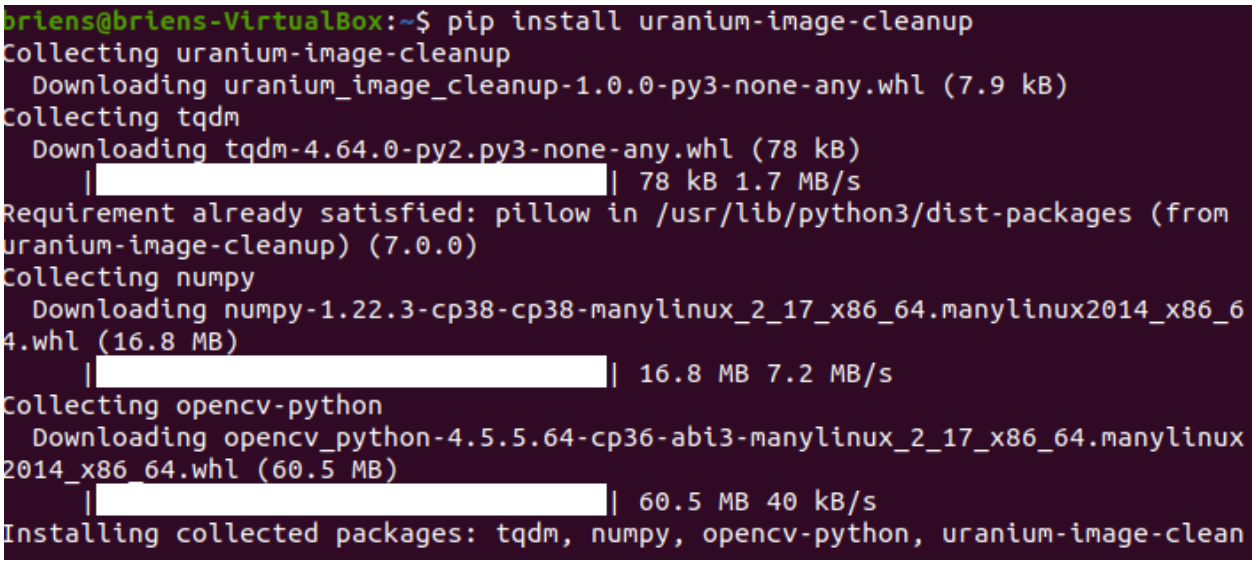
2. Confirm PIP is installed by running “pip install”



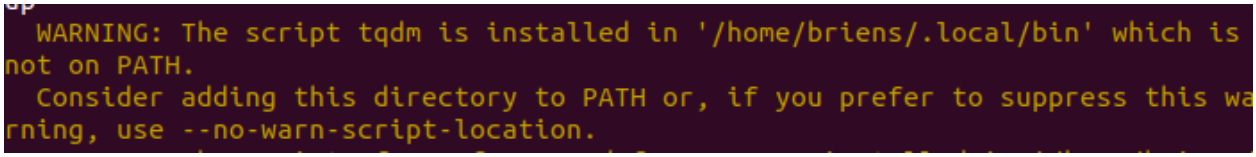
3. Install PIP by running “sudo apt install python-3-pip”



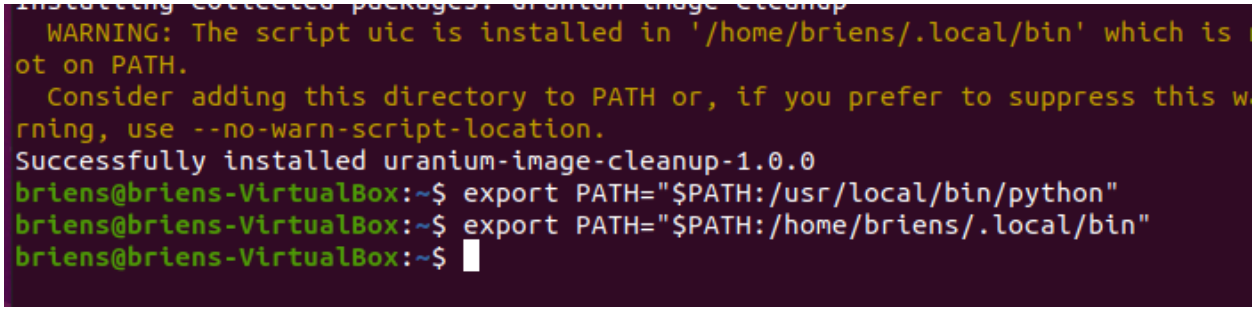
4. Install our package by running “pip install uranium-image-cleanup”



This warning below is normal.



5. To fix the issue related to the above warning, you will need to add python and the scripts folder to the $PATH.

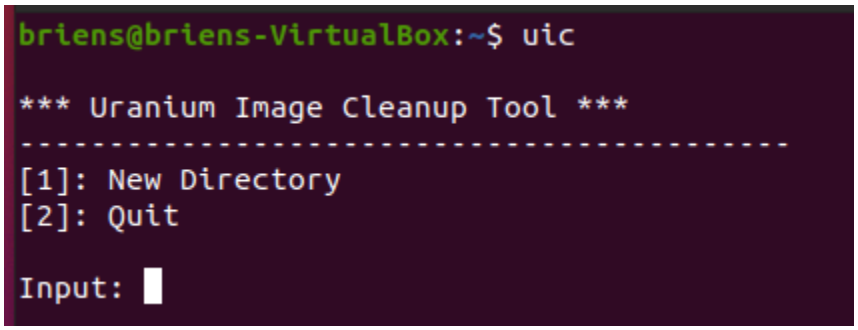


These are the two commands used to do so:

- export PATH="$PATH:/usr/local/bin/python"
- export PATH="$PATH:/home/your_username/.local/bin"

Be sure to replace “your_username” with your Ubuntu username.

6. Start the program by typing “uic”

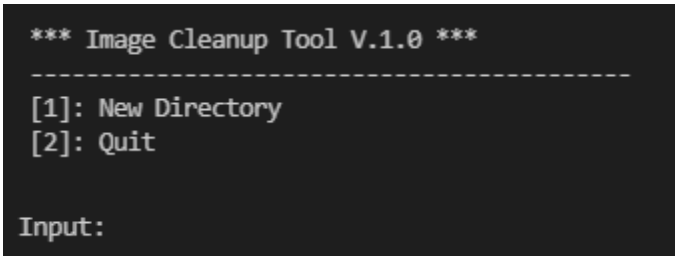


Ubuntu Terminal Demo

https://drive.google.com/file/d/1m-XsVBI1jU4xRtxdSbhoJi1xSGCEY2By/view?usp=sharing

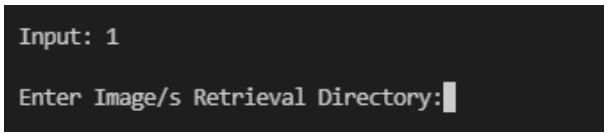
How To Use

Walkthrough 'How To Use' video (windows with uic.exe):
https://drive.google.com/file/d/1JkmP2kRM89SIVzlwVhCHnD7iE4THZPWl/view?usp=sharing



Once the Image Cleanup Tool has started, you will be greeted with an input prompt. Once a selection has been made, the user will simply click "Enter" on their keyboard.

Main Menu Inputs:



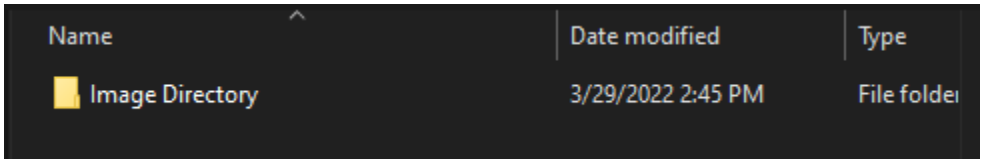
- **[1] - New Directory:**
    - The New Directory option will ask the user to "Enter Image/s Retrieval Directory", meaning it will allow the user to enter a valid directory path name to extract images from for processing.
      [Check The 'How To Load Image/s From Directory' Section.]
        - The program will search through the given pathname and extract any **valid image** files that are stored inside the given directory.
            - Valid image files are .tif or .png files that are not RESULT files previously produced by the program.
            - If the given directory is empty or contains no valid images the program will restart and you will be re-prompted with the menu.
        - The Program will automatically begin processing without more input from the user.
        - The Program will display current activity, (Checking…, Processing…, etc)
        - Once the input images are validated, you will be prompted for an output directory for the processed images to be saved to.
        - Upon passing an output directory to the program, the images found will be processed and saved into the given output directory.

      [Check The 'How To Output Image/s From Directory' Section.]

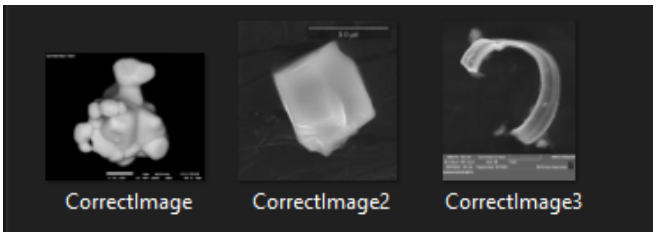
- **[2] - Quit**

    - The Quit option will simply allow the user to end the program.
    - The option to quit **will be given again** after all images have been processed.

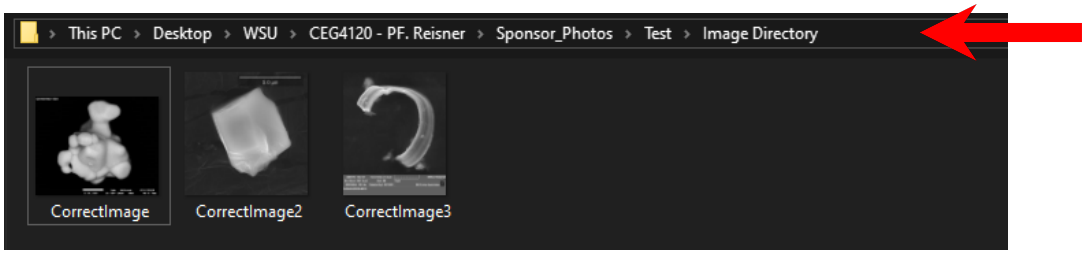
How To Load Image/s From a Directory



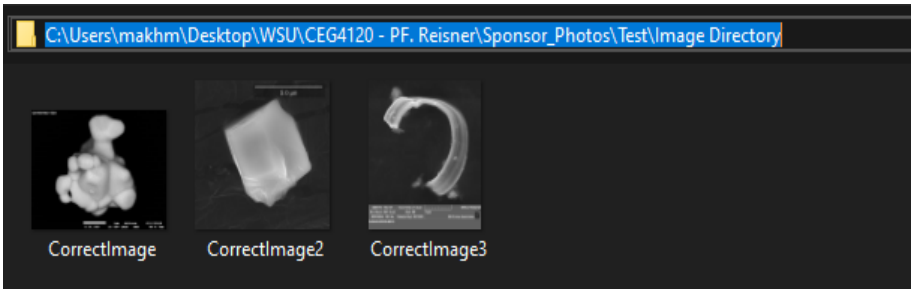
In this example we want to extract the photos from the **"Image Directory"** folder.

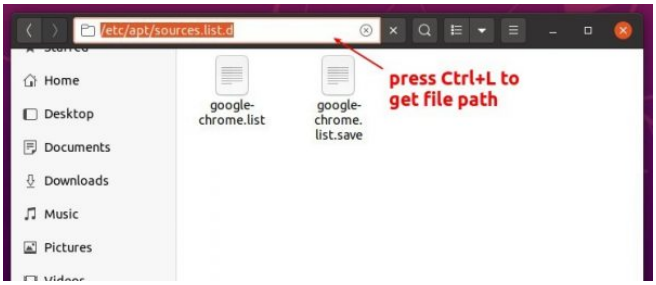


In this example, the directory contains 3 valid images.



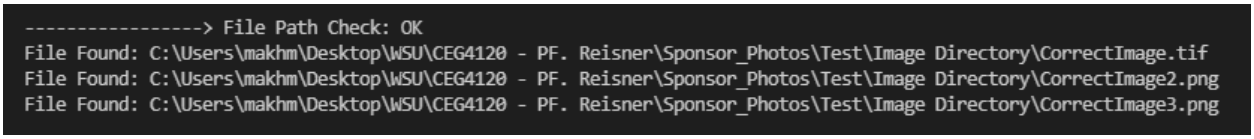
Click on the folder hierarchy on the tab on top of the images in the folder. (**Ctrl+L on Linux**)





Copy the highlighted text and paste into terminal (**Using Ctrl+C Ctrl+V or Right-Click**)

Once the directory path has been entered click **"Enter"** on your keyboard.



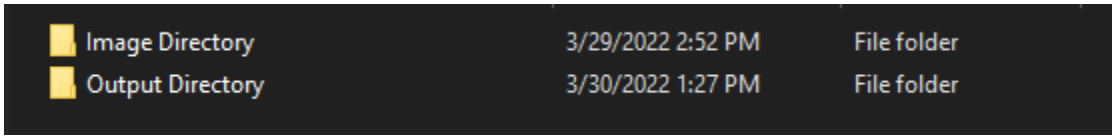
Upon the input file and its contents being found, the user may enter the output directory.

How To Output Image/s To a Directory

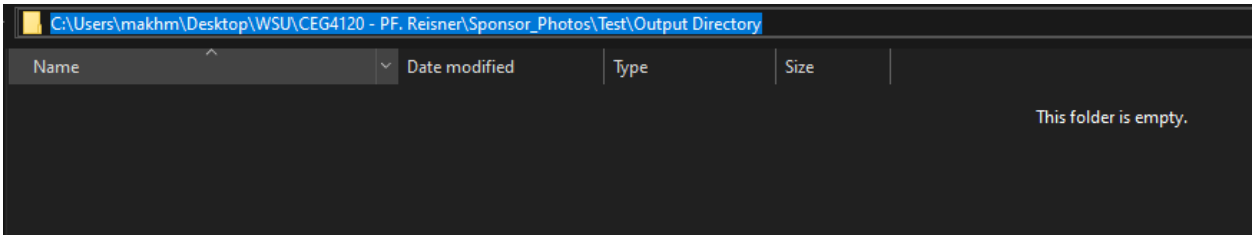
```
Images Ready for Processing:
C:\Users\makhm\Desktop\WSU\CEG4120 - PF. Reisner\Sponsor_Photos\Test\Image Directory\CorrectImage.tif
C:\Users\makhm\Desktop\WSU\CEG4120 - PF. Reisner\Sponsor_Photos\Test\Image Directory\CorrectImage2.png
C:\Users\makhm\Desktop\WSU\CEG4120 - PF. Reisner\Sponsor_Photos\Test\Image Directory\CorrectImage3.png

Enter Image/s Output Directory:
```

Our three images are ready to be processed and output to a directory.



We want our images to go to our "**Output Directory**"



We follow the same steps as the retrieval directory (Win/Linux) & copy path.

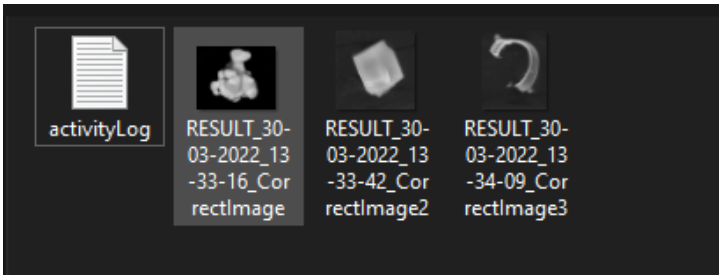
```
Enter Image/s Output Directory: C:\Users\makhm\Desktop\WSU\CEG4120 - PF. Reisner\Sponsor_Photos\Test\Output Directory
Checking Folder Path (C:\Users\makhm\Desktop\WSU\CEG4120 - PF. Reisner\Sponsor_Photos\Test\Output Directory)...
```

We paste the output directory path for validation. If valid, the program will use this as our output directory.

```
100%|
Completed successfully.
```

```
| 3/3 [01:22<00:00, 27.48s/it]
```

Our Program has successfully output our three processed images.



The images have been saved to our **Output Directory** with **RESULT** + **Date & Time** + **Image Name.** An activity log will be created/appended to in the given output directory displaying the program's individual processes.

Program Notes

- The program **works on Windows & Linux with valid .tif and .png uranium images**. If a file extension is given to the program other than .tif or .png, the image will not be accounted for.
- The program checks if the given directories exist (input and output). If a directory does not exist, the user will be re-prompted until an existing directory is given:

```
Enter Image/s Retrieval Directory:C:\InvalidDirectory
Checking Folder Path (C:\InvalidDirectory)...

-----------------> File Path Check: * FAIL * -> Path Does Not Exist
Please Enter a new directiory: _
```

- The program will search through the given pathname and extract any **valid image** files that are in the given directory and use those for processing (excluding invalid files):

```
Checking: [New folder]
File Integrity: *FAIL For Image-> C:\Users\Ashton Williams\OneDrive\Desktop\test Input\New folder
Accepted Extensions: .tif - .png

Removing File...

Removed: C:\Users\Ashton Williams\OneDrive\Desktop\test Input\New folder

Checking: [New Text Document.txt]
File Integrity: *FAIL For Image-> C:\Users\Ashton Williams\OneDrive\Desktop\test Input\New Text Document.txt
Accepted Extensions: .tif - .png

Removing File...

Removed: C:\Users\Ashton Williams\OneDrive\Desktop\test Input\New Text Document.txt

Checking: [Q016312C1020U01.tif]
File Integrity: OK -> C:\Users\Ashton Williams\OneDrive\Desktop\test Input\Q016312C1020U01.tif

Images Ready for Processing:
C:\Users\Ashton Williams\OneDrive\Desktop\test Input\Q016312C1020U01.tif
```

  - Files previously produced by the program (files with “RESULT” in the file name) cannot be reentered into the program.
  - If the given input directory is empty or contains no valid image files, the program will restart and you will be re-prompted with the menu.
- Any number of valid image files can be loaded at a time:

```
Images Ready for Processing:
C:\Users\Ashton Williams\OneDrive\Desktop\test Input\Q016312C1010U01.tif
C:\Users\Ashton Williams\OneDrive\Desktop\test Input\Q016312C1020U01.tif
C:\Users\Ashton Williams\OneDrive\Desktop\test Input\Q016312C1030U01.tif

Enter Image/s Output Directory:
```

- The activityLog.txt file will always be appended to and never overwritten.
- The same directory can be used for both input and output without error.
- Result image files will never be overwritten since the name includes the date & time.

Source Code
https://drive.google.com/file/d/19n4fFHlYw6u_q1EJNHP2AGeZcFu6roEw/view?usp=sharing