# Installation Instructions for Geopandas.

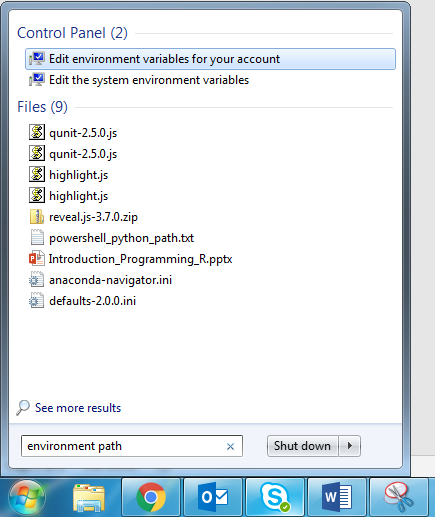
The following instructions assume you are using an ONS Windows laptop, with Anaconda3 (64-bit) and Python 3.6.

There are four steps required to make sure that you can download and install the necessary packages:

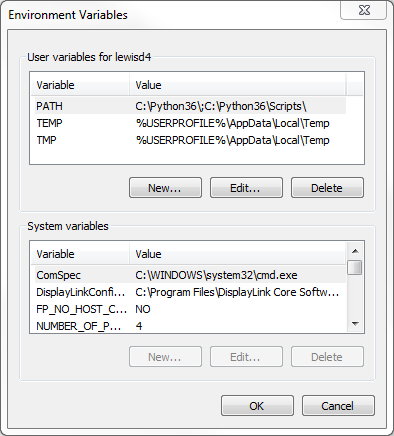
1. Make sure Python is in your PATH.
2. Make sure you have access to the ONS artifactory.
3. Download and install python wheels for the ‘shapely’, ‘rtree’, ‘pyproj’, ‘gdal’ and ‘fiona’ libraries.
4. Install geopandas.

## Make sure Python is in your PATH

The PATH variable tells your operating system the applications that are available from the command line. We need python to be available in the PATH to install the libraries required.



1. Search for the environment path by clicking on the start button and using the search box.
2. Select the “Edit environmental variables for your account” option in Control Panel.



Here’s my PATH variable. It contains:

C:\Python36

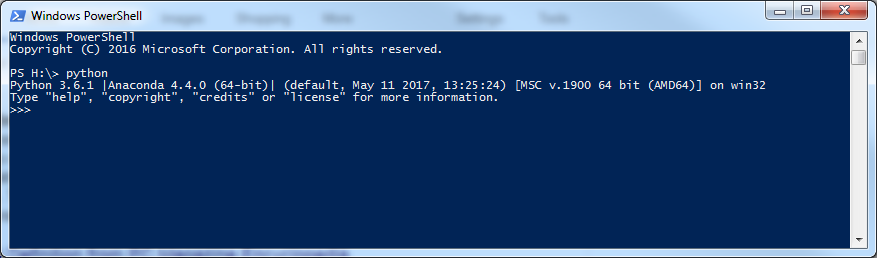
C:\Python36\Scripts\

If you don’t have a PATH variable, add it with “New…”

If you have a PATH variable, but it doesn’t include Python, add the Python links using “Edit…”

If you have to add Python to PATH, double check that your python installation is at “C:\Python36\” like mine is. If it is not, search for ‘python.exe’ and add the path to the folder that contains ‘python.exe’ and to the ‘Scripts’ folder that should be in that directory.

To test whether this has worked, open “Windows PowerShell” from Programs 🡪 Accessories 🡪 Windows Powershell. Then type “python” and press return. You should open a python interpreter in powershell, as below:



You can close Powershell for now.

## Accessing the ONS Artifactory

Access artifactory at: <http://art-p-01/> then login using your ONS username and password.

If you don’t have access, you’ll need to raise a service desk request.

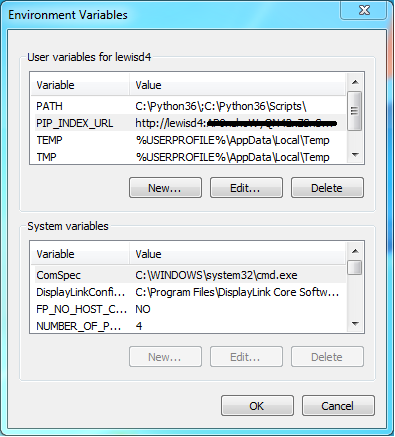
Once you have access, you need to generate an encrypted password that you can use to access artifactory using PIP, python’s package installer.

To do this:

1. Click on your username in the top right of the screen.
2. Input your current password and click the unlock button.
3. Generate an encrypted password.
4. Copy the encrypted password to notepad for now, to use later.

Now, go back to the environment variables window we used to set PATH.

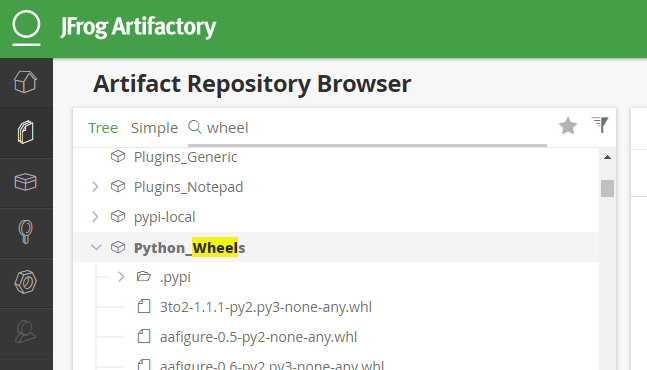
1. Add a new variable called PIP\_INDEX\_URL
2. Set the variable value to: <http://username:encrypted_password@art-p-01/artifactory/api/pypi/yr-python/simple>
   1. username is your ONS username
   2. encrypted\_password is the output from step 4 above.



## Download and install python wheels for the required libraries

We have to download these three python libraries separately. This is because they rely on c libraries that are not downloaded if we use the normal python install approach, and cannot be built on ONS laptops. By downloading the wheels we are also downloading the c libraries that we don’t get otherwise.

In Artifactory, we’ll need to access the “Artifactory Repository Browser”.



1. Click on the “Artifactory Repository Browser” icon (pages)
2. Click on the ‘Tree’ link.
3. Search for wheels.
4. Open the “Python\_Wheels” drop down to reveal all the wheel files!

These Python wheels are Operating System and Python install specific. Most likely you will need to find the following wheels:

1. Rtree-0.8.3-cp36-cp36m-win\_amd64.whl
2. Fiona-1.7.13-cp36-cp36m-win\_amd64.whl
3. pyproj-1.9.5.1-cp36-cp36m-win\_amd64.whl
4. Shapely-1.6.4.post1-cp36-cp36m-win\_amd64.whl
5. GDAL-2.2.4-cp36-cp36m-win\_amd64.whl

These wheels have been built specifically for python 3.6 (cp36) and windows 64-bit (win\_amd64), if your install or OS is different, download the appropriate wheels accordingly.

I’ll assume that you’ve downloaded these wheels into your “Downloads” folder.

Now open PowerShell again.

Navigate to your downloads folder, for me this means giving the instruction:

cd C:\Users\lewisd4\Downloads

Where cd is an instruction to PowerShell to ‘change directory’.

Now type and press return for:

pip install .\Rtree-0.8.3-cp36-cp36m-win\_amd64.whl

pip install .\Fiona-1.7.13-cp36-cp36m-win\_amd64.whl

pip install .\pyproj-1.9.5.1-cp36-cp36m-win\_amd64.whl

pip install .\Shapely-1.6.4.post1-cp36-cp36m-win\_amd64.whl

pip install .\GDAL-2.2.4-cp36-cp36m-win\_amd64.whl

This will install these five libraries from the locally downloaded wheel files.

## Install geopandas

Having installed Rtree, Fiona, shapely, gdal and pyproj, you should now be able to install geopandas. Type and press return for:

pip install geopandas

This should download geopandas and the rest of its dependencies from artifactory.

You should now be ready to use geopandas. Check by opening python and trying:

import geopandas as gpd