Assignment 01 Work with Anaconda and Juptyer

▼ **Step 0: Use the these two tutorials as reference: Work with Anaconda and Work with Jupyter Notebook**

▼ Work with Anaconda

conda info

```
(base) C:\Users\hli69>conda info

     active environment : base
    active env location : E:\Anaconda3
            shell level : 1
       user config file : C:\Users\hli69\.condarc
 populated config files : C:\Users\hli69\.condarc
          conda version : 24.7.1
    conda-build version : 24.1.1
         python version : 3.11.7.final.0
                 solver : libmamba (default)
       virtual packages : __archspec=1=skylake_avx512
                          __conda=24.7.1=0
                          __cuda=11.2=0
                          __win=0=0
       base environment : E:\Anaconda3  (read only)
     conda av data dir : E:\Anaconda3\etc\conda
  conda av metadata url : None
          channel URLs : https://repo.anaconda.com/pkgs/main/win-64
                         https://repo.anaconda.com/pkgs/main/noarch
                         https://repo.anaconda.com/pkgs/r/win-64
                         https://repo.anaconda.com/pkgs/r/noarch
                         https://repo.anaconda.com/pkgs/msys2/win-64
                         https://repo.anaconda.com/pkgs/msys2/noarch
         package cache : E:\Anaconda3\pkgs
                         C:\Users\hli69\.conda\pkgs
                         C:\Users\hli69\AppData\Local\conda\conda\pkgs
      envs directories : C:\Users\hli69\.conda\envs
                         E:\Anaconda3\envs
                         C:\Users\hli69\AppData\Local\conda\conda\envs
              platform : win-64
            user-agent : conda/24.7.1 requests/2.31.0 CPython/3.11.7 Windows/10 Windows/10.0.22621 so
lver/libmamba conda-libmamba-solver/24.1.0 libmambapy/1.5.6 aau/0.4.3 c/LDRrgdPgnYhiQPDqNP6J8Q s/y0_r4
3yVXAn6ELNMqjRCmg e/2HHN6QZIwXlJB8T5eCS8Mw
         administrator : False
            netrc file : None
          offline mode : False
```

conda update conda

```
(base) C:\Users\hli69>conda update conda
Retrieving notices: ...working... done
Channels:
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

# All requested packages already installed.
```

conda env list

```
(base) C:\Users\hli69>conda env list
# conda environments:
#
gee                      C:\Users\hli69\.conda\envs\gee
base                  *  E:\Anaconda3
                         E:\KNIME\KNIME\bundling\envs\sdl_harvard_geospatial
```

conda create -n geog4057

```
(base) C:\Users\hli69>conda create -n geog4057
Channels:
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\Users\hli69\.conda\envs\geog4057



Proceed ([y]/n)? y

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate geog4057
#
# To deactivate an active environment, use
#
#     $ conda deactivate
```

conda activate geog4057

```
(base) C:\Users\hli69>conda activate geog4057

(geog4057) C:\Users\hli69>
```

conda deactivate

```
(geog4057) C:\Users\hli69>conda deactivate

(base) C:\Users\hli69>
```

conda create --name arcpy_clone --clone "C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3"

```
(base) C:\Users\hli69>conda create --name arcpy_clone --clone "C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3"
Source:      C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3
Destination: C:\Users\hli69\.conda\envs\arcpy_clone
Packages: 437
Files: 493

Downloading and Extracting Packages:
_py-xgboost-mutex-2. | ################################################################ | 100% |
_tflow_select-2.7.0  | ################################################################ | 100%
arcgispro-3.1        | ################################################################ | 100%
icc_rt-2019.0.5      | ################################################################ | 100%
intel-openmp-2020.0  | ################################################################ | 100%
libsodium-1.0.18     | ################################################################ | 100%
nlohmann_json-3.7.0  | ################################################################ | 100%
openssl-3.0.7        | ################################################################ | 100%
pybind11-2.7.1       | ################################################################ | 100%
pybind11_json-0.2.6  | ################################################################ | 100%
tzdata-2022e         | ################################################################ | 100%
vs2015_runtime-14.27 | ################################################################ | 100%
winpty-0.4.3         | ################################################################ | 100%
xeus-0.24.1          | ################################################################ | 100%
xeus-python-0.8.2    | ################################################################ | 100%
xtl-0.6.15           | ################################################################ | 100%
geos-3.5.0           | ################################################################ | 100%
mkl-2020.0           | ################################################################ | 100%
ninja-base-1.10.2    | ################################################################ | 100%
zeromq-4.3.4         | ################################################################ | 100%
abseil-cpp-20210324. | ################################################################ | 100%
cfitsio-3.470        | ################################################################ | 100%
charls-2.2.0         | ################################################################ | 100%
cppzmq-4.4.1         | ################################################################ | 100%
cudatoolkit-11.1.1   |                                                                  |   0%
flatbuffers-2.0.0    | ################################################################ | 100%
giflib-5.2.1         | ################################################################ | 100%
graphviz-2.38        | ################################################################ | 100%
icu-68.1             | ################################################################ | 100%
jpeg-9e              | ################################################################ | 100%
krb5-1.19.2          | ################################################################ | 100%
libaec-1.0.4         | ################################################################ | 100%
libbrotlicommon-1.0. | ################################################################ | 100%
libdeflate-1.8       | ################################################################ | 100%
libnghttp2-1.50.0    | ################################################################ | 100%
libuv-1.40.0         | ################################################################ | 100%
libwebp-base-1.2.4   | ################################################################ | 100%
libxgboost-1.5.0     | ################################################################ | 100%
libzopfli-1.0.3      | ################################################################ | 100%
lz4-c-1.9.3          | ################################################################ | 100%
pixman-0.40.0        | ################################################################ | 100%
```

```
(base) C:\Users\hli69>conda env list
# conda environments:
#
arcpy_clone              C:\Users\hli69\.conda\envs\arcpy_clone
gee                      C:\Users\hli69\.conda\envs\gee
geog4057                 C:\Users\hli69\.conda\envs\geog4057
base                  *  E:\Anaconda3
                         E:\KNIME\KNIME\bundling\envs\sdl_harvard_geospatial
```

conda config --append envs_dirs "C:\Program Files\ArcGIS\Pro\bin\Python\envs"

```
(base) C:\Users\hli69>conda config --append envs_dirs "C:\Program Files\ArcGIS\Pro\bin\Python\envs"

(base) C:\Users\hli69>conda env list
# conda environments:
#
arcgispro-py3            C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3
arcpy_clone              C:\Users\hli69\.conda\envs\arcpy_clone
gee                      C:\Users\hli69\.conda\envs\gee
geog4057                 C:\Users\hli69\.conda\envs\geog4057
base                  *  E:\Anaconda3
                         E:\KNIME\KNIME\bundling\envs\sdl_harvard_geospatial


(base) C:\Users\hli69>
```

▼ Work with Jupyter Notebook

pip install jupyter notebook

```
C:\Users\hli69>pip install jupyter notebook
Collecting jupyter
  Obtaining dependency information for jupyter from https://files.pythonhosted.org/packages/38/64/285f
20a31679bf547b75602702f7800e74dbabae36ef324f716c02804753/jupyter-1.1.1-py2.py3-none-any.whl.metadata
  Downloading jupyter-1.1.1-py2.py3-none-any.whl.metadata (2.0 kB)
Collecting notebook
  Obtaining dependency information for notebook from https://files.pythonhosted.org/packages/46/77/537
32fbf48196af9e51c2a61833471021c1d77d335d57b96ee3588c0c53d/notebook-7.2.2-py3-none-any.whl.metadata
  Downloading notebook-7.2.2-py3-none-any.whl.metadata (10 kB)
Collecting jupyter-console (from jupyter)
  Obtaining dependency information for jupyter-console from https://files.pythonhosted.org/packages/ca
/77/71d78d58f15c22db16328a476426f7ac4a60d3a5a7ba3b9627ee2f7903d4/jupyter_console-6.6.3-py3-none-any.wh
l.metadata
  Downloading jupyter_console-6.6.3-py3-none-any.whl.metadata (5.8 kB)
Collecting nbconvert (from jupyter)
  Obtaining dependency information for nbconvert from https://files.pythonhosted.org/packages/b8/bb/bb
5b6a515d1584aa2fd89965b11db6632e4bdc69495a52374bcc36e56cfa/nbconvert-7.16.4-py3-none-any.whl.metadata
  Downloading nbconvert-7.16.4-py3-none-any.whl.metadata (8.5 kB)
Requirement already satisfied: ipykernel in e:\python\python-3.11.5\lib\site-packages (from jupyter) (
6.25.2)
Collecting ipywidgets (from jupyter)
  Obtaining dependency information for ipywidgets from https://files.pythonhosted.org/packages/22/2d/9
c0b76f2f9cc0ebede1b9371b6f317243028ed60b90705863d493bae622e/ipywidgets-8.1.5-py3-none-any.whl.metadata
  Downloading ipywidgets-8.1.5-py3-none-any.whl.metadata (2.3 kB)
Collecting jupyterlab (from jupyter)
  Obtaining dependency information for jupyterlab from https://files.pythonhosted.org/packages/fd/3f/2
4a0f0ce60959cfd9756a3291cd3a5581e51cbd6f7b4aa121f5bba5320e3/jupyterlab-4.2.5-py3-none-any.whl.metadata
  Downloading jupyterlab-4.2.5-py3-none-any.whl.metadata (16 kB)
Collecting jupyter-server<3,>=2.4.0 (from notebook)
  Obtaining dependency information for jupyter-server<3,>=2.4.0 from https://files.pythonhosted.org/pa
ckages/57/e1/085edea6187a127ca8ea053eb01f4e1792d778b4d192c74d32eb6730fed6/jupyter_server-2.14.2-py3-no
```

Register a kernel by ipykernel

python -m ipykernel install --name test_kernel --display-name "test_kernel" --user

```
(base) C:\Users\hli69>python -m ipykernel install --name test_kernel --display-name "test_kernel" --user
0.00s - Debugger warning: It seems that frozen modules are being used, which may
0.00s - make the debugger miss breakpoints. Please pass -Xfrozen_modules=off
0.00s - to python to disable frozen modules.
0.00s - Note: Debugging will proceed. Set PYDEVD_DISABLE_FILE_VALIDATION=1 to disable this validation.
Installed kernelspec test_kernel in C:\Users\hli69\AppData\Roaming\jupyter\kernels\test_kernel
```

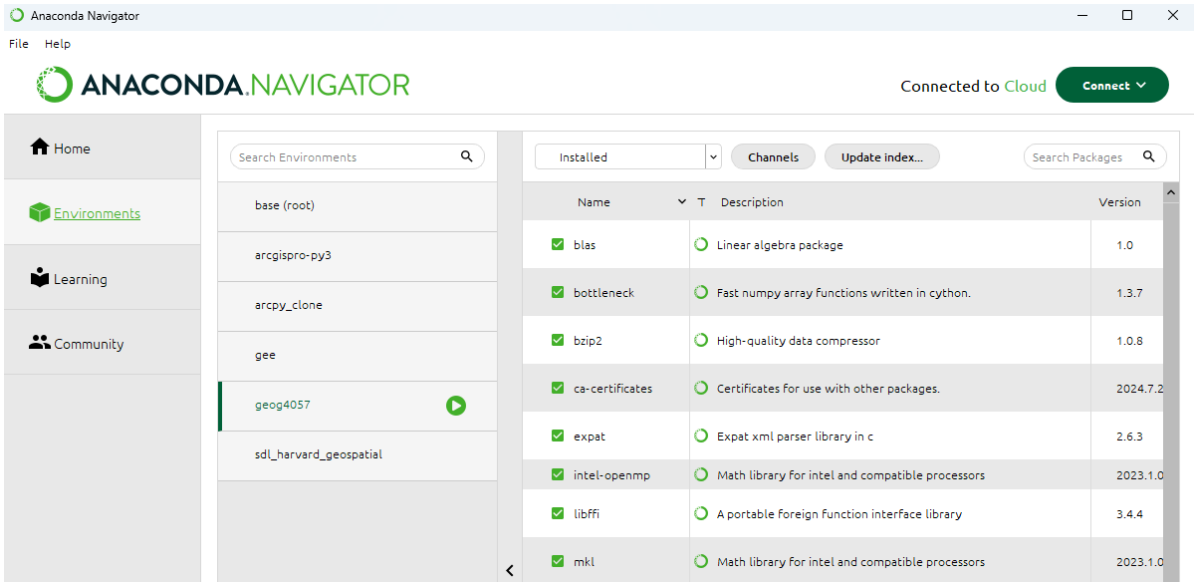
jupyter kernelspec list

```
(base) C:\Users\hli69>jupyter kernelspec list
0.00s - Debugger warning: It seems that frozen modules are being used, which may
0.00s - make the debugger miss breakpoints. Please pass -Xfrozen_modules=off
0.00s - to python to disable frozen modules.
0.00s - Note: Debugging will proceed. Set PYDEVD_DISABLE_FILE_VALIDATION=1 to disable this validation.
Available kernels:
  test_kernel    C:\Users\hli69\AppData\Roaming\jupyter\kernels\test_kernel
  python3        E:\Anaconda3\share\jupyter\kernels\python3
```

Remove a kernel from the list

```
C:\Users\hli69>jupyter kernelspec uninstall test_kernel
Kernel specs to remove:
  test_kernel          C:\Users\hli69\AppData\Roaming\jupyter\kernels\test_kernel
Remove 1 kernel specs [y/N]: y
Removed C:\Users\hli69\AppData\Roaming\jupyter\kernels\test_kernel

C:\Users\hli69>jupyter kernelspec list
0.00s - Debugger warning: It seems that frozen modules are being used, which may
0.00s - make the debugger miss breakpoints. Please pass -Xfrozen_modules=off
0.00s - to python to disable frozen modules.
0.00s - Note: Debugging will proceed. Set PYDEVD_DISABLE_FILE_VALIDATION=1 to disable this validation.
Available kernels:
  python3    E:\Python\Python-3.11.5\share\jupyter\kernels\python3

C:\Users\hli69>
```

▼ Step 1: Install Anaconda on your work/home computer

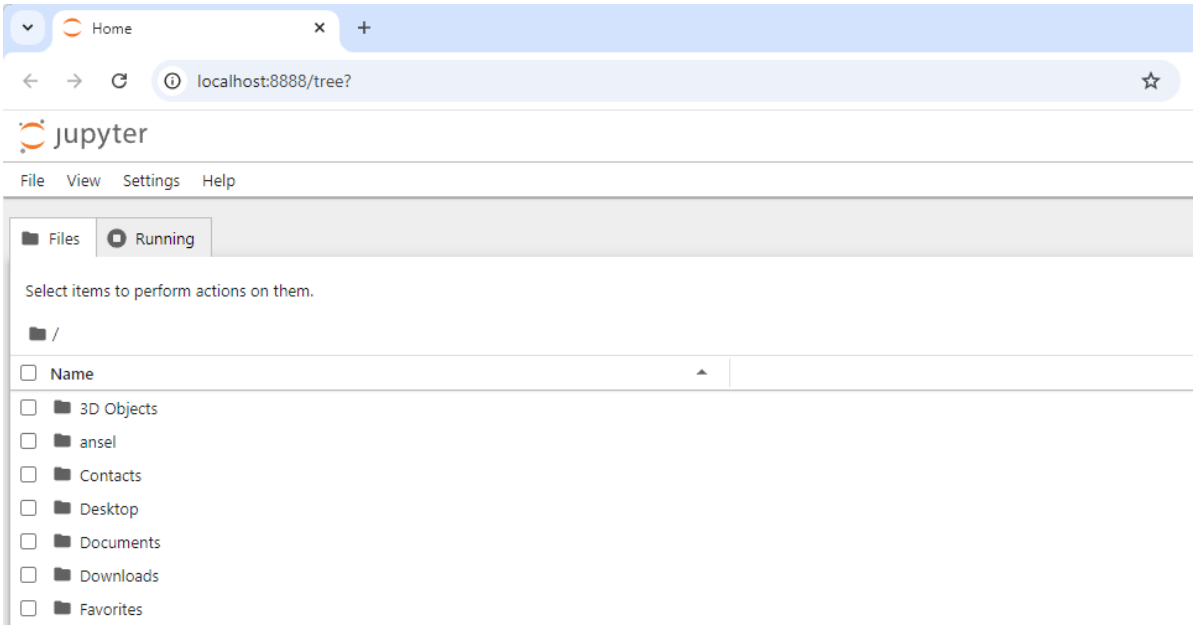


▼ Step 2: Create a new environment using Anaconda with the name of "geog4057" and python 3.9 (remember to activate if you want to install packages)

```
(base) C:\Users\hli69>conda create -n geog4057
Channels:
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\Users\hli69\.conda\envs\geog4057



Proceed ([y]/n)? y

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate geog4057
#
# To deactivate an active environment, use
#
#     $ conda deactivate
```

▼ Step 3: Install jupyter notebook using pip or conda

```
C:\Users\hli69>pip install jupyter notebook
Collecting jupyter
  Obtaining dependency information for jupyter from https://files.pythonhosted.org/packages/38/64/285f
20a31679bf547b75602702f7800e74dbabae36ef324f716c02804753/jupyter-1.1.1-py2.py3-none-any.whl.metadata
  Downloading jupyter-1.1.1-py2.py3-none-any.whl.metadata (2.0 kB)
Collecting notebook
  Obtaining dependency information for notebook from https://files.pythonhosted.org/packages/46/77/537
32fbf48196af9e51c2a61833471021c1d77d335d57b96ee3588c0c53d/notebook-7.2.2-py3-none-any.whl.metadata
  Downloading notebook-7.2.2-py3-none-any.whl.metadata (10 kB)
Collecting jupyter-console (from jupyter)
  Obtaining dependency information for jupyter-console from https://files.pythonhosted.org/packages/ca
/77/71d78d58f15c22db16328a476426f7ac4a60d3a5a7ba3b9627ee2f7903d4/jupyter_console-6.6.3-py3-none-any.wh
l.metadata
  Downloading jupyter_console-6.6.3-py3-none-any.whl.metadata (5.8 kB)
Collecting nbconvert (from jupyter)
  Obtaining dependency information for nbconvert from https://files.pythonhosted.org/packages/b8/bb/bb
5b6a515d1584aa2fd89965b11db6632e4bdc69495a52374bcc36e56cfa/nbconvert-7.16.4-py3-none-any.whl.metadata
  Downloading nbconvert-7.16.4-py3-none-any.whl.metadata (8.5 kB)
Requirement already satisfied: ipykernel in e:\python\python-3.11.5\lib\site-packages (from jupyter) (
6.25.2)
Collecting ipywidgets (from jupyter)
  Obtaining dependency information for ipywidgets from https://files.pythonhosted.org/packages/22/2d/9
c0b76f2f9cc0ebede1b9371b6f317243028ed60b90705863d493bae622e/ipywidgets-8.1.5-py3-none-any.whl.metadata
  Downloading ipywidgets-8.1.5-py3-none-any.whl.metadata (2.3 kB)
Collecting jupyterlab (from jupyter)
  Obtaining dependency information for jupyterlab from https://files.pythonhosted.org/packages/fd/3f/2
4a0f0ce60959cfd9756a3291cd3a5581e51cbd6f7b4aa121f5bba5320e3/jupyterlab-4.2.5-py3-none-any.whl.metadata
  Downloading jupyterlab-4.2.5-py3-none-any.whl.metadata (16 kB)
Collecting jupyter-server<3,>=2.4.0 (from notebook)
  Obtaining dependency information for jupyter-server<3,>=2.4.0 from https://files.pythonhosted.org/pa
ckages/57/e1/085edea6187a127ca8ea053eb01f4e1792d778b4d192c74d32eb6730fed6/jupyter_server-2.14.2-py3-no
```



▼ Step 4: Register the anaconda environment "geog4057" with the ipykernel module

conda create -n geog4057

```
(base) C:\Users\hli69>conda create -n geog4057
Channels:
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\Users\hli69\.conda\envs\geog4057



Proceed ([y]/n)? y

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate geog4057
#
# To deactivate an active environment, use
#
#     $ conda deactivate
```

conda activate geog4057

```
(base) C:\Users\hli69>conda activate geog4057

(geog4057) C:\Users\hli69>
```

pip install jupyter notebook

```
(geog4057) C:\Users\hli69>pip install jupyter notebook
Collecting jupyter
  Downloading jupyter-1.1.1-py2.py3-none-any.whl.metadata (2.0 kB)
Collecting notebook
  Using cached notebook-7.2.2-py3-none-any.whl.metadata (10 kB)
Collecting jupyter-console (from jupyter)
  Downloading jupyter_console-6.6.3-py3-none-any.whl.metadata (5.8 kB)
Collecting nbconvert (from jupyter)
  Downloading nbconvert-7.16.4-py3-none-any.whl.metadata (8.5 kB)
Collecting ipykernel (from jupyter)
  Downloading ipykernel-6.29.5-py3-none-any.whl.metadata (6.3 kB)
```

Register a kernel by ipykernel named "geog4057**"**

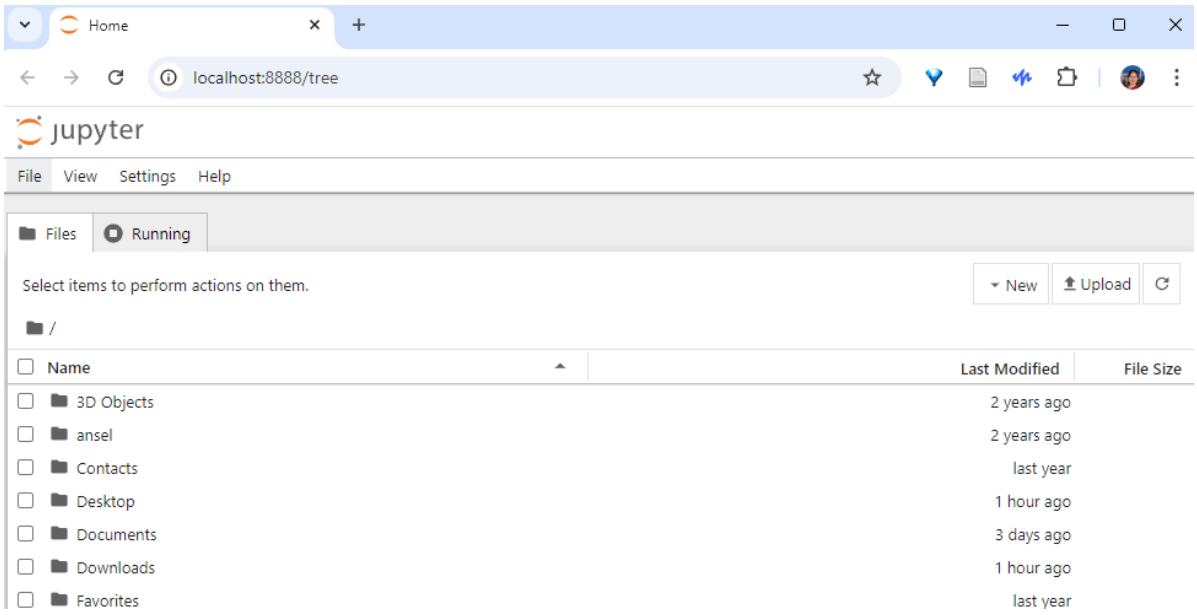
python -m ipykernel install --name geog4057 --display-name "geog4057" --user

```
(geog4057) C:\Users\hli69>python -m ipykernel install --name geog4057 --display-name "geog4057" --user
Installed kernelspec geog4057 in C:\Users\hli69\AppData\Roaming\jupyter\kernels\geog4057
```

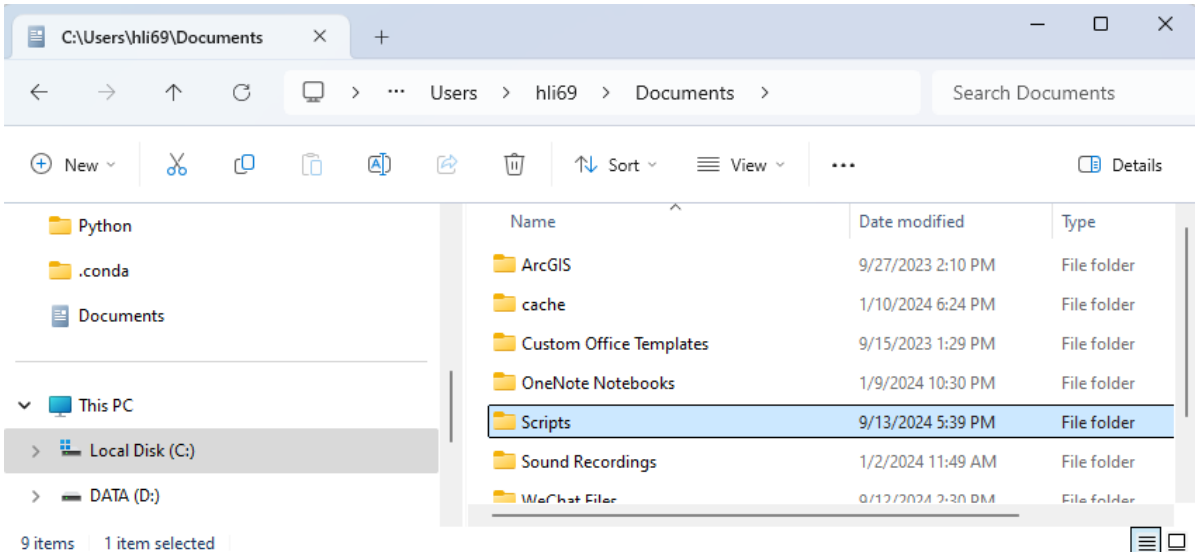
jupyter kernelspec list

```
(geog4057) C:\Users\hli69>jupyter kernelspec list
Available kernels:
  python3     C:\Users\hli69\.conda\envs\geog4057\share\jupyter\kernels\python3
  geog4057    C:\Users\hli69\AppData\Roaming\jupyter\kernels\geog4057
```

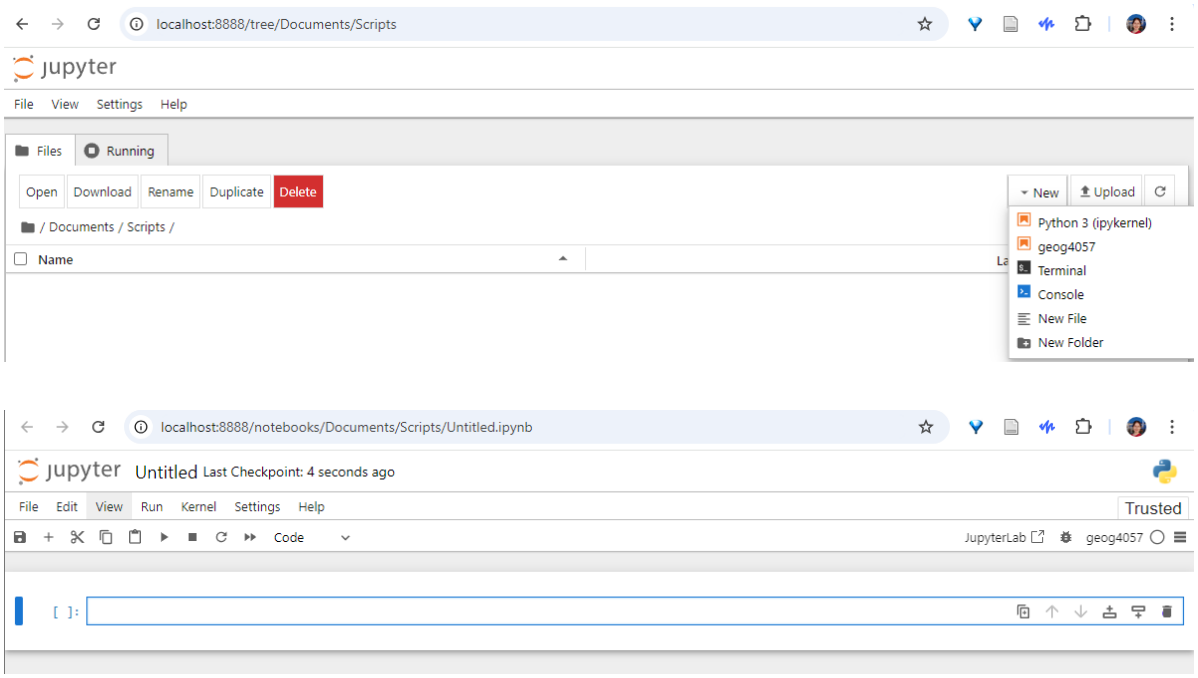
▼ Step 5: Run jupyter notebook from the anaconda prompt



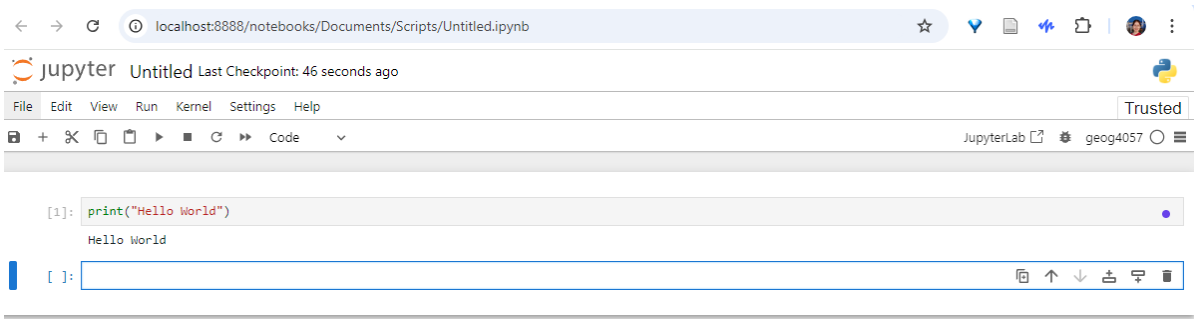
▼ Step 6: Create a new folder called "Scripts" in your "Document" folder



▼ Step 7: In the Scripts folder, create a new notebook with the name of "homework1.ipynb" and use the the kernel "geog4057"

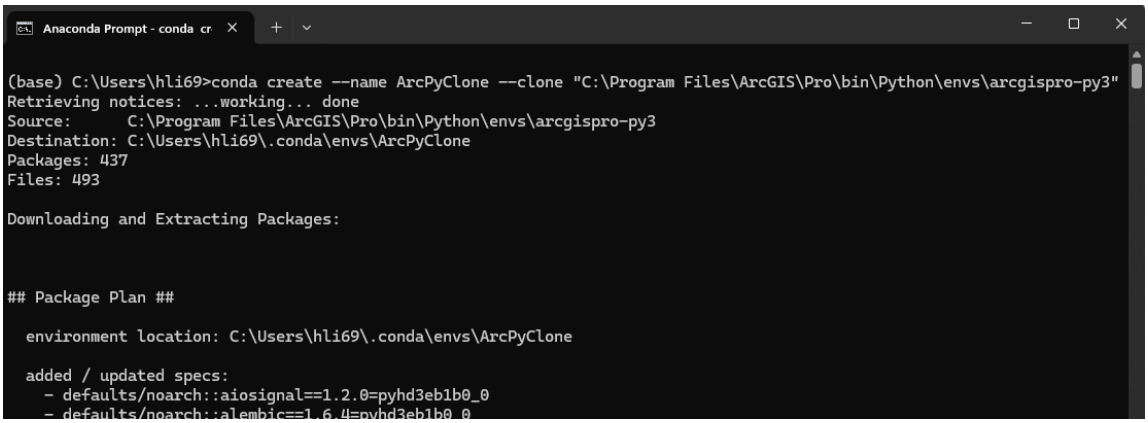


▼ Step 8: In the first cell, type (or copy and paste) the following code

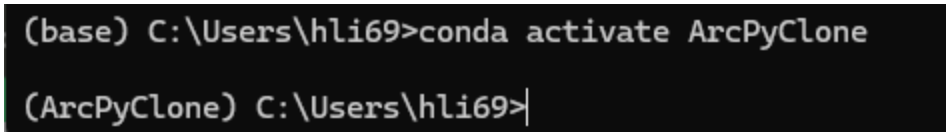


▼ Step 9: Clone the ArcGIS default environment to a new environment called "ArcPyClone"

conda create --name ArcPyClone --clone "C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3"

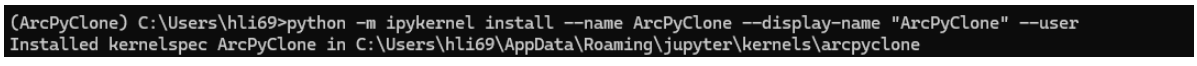


conda activate ArcPyClone

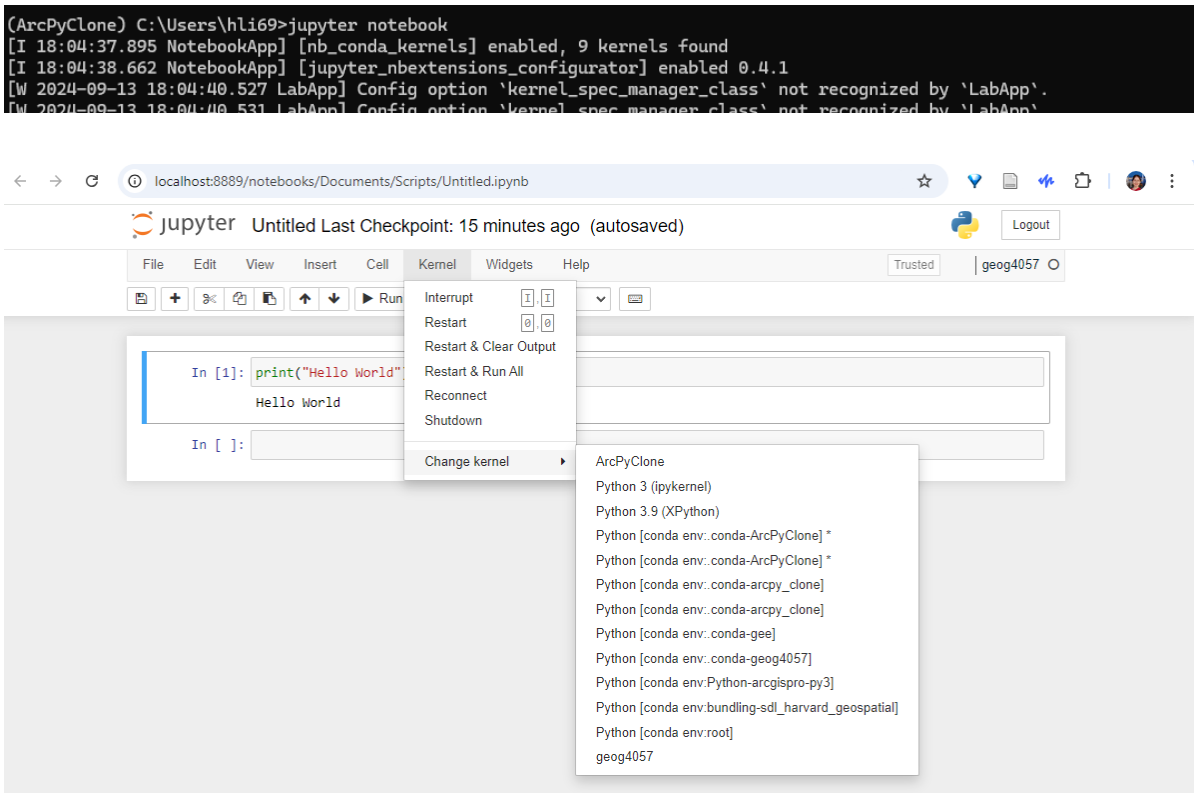


▼ Step 10: Register the ArcPyClone environment with "ipykernel"

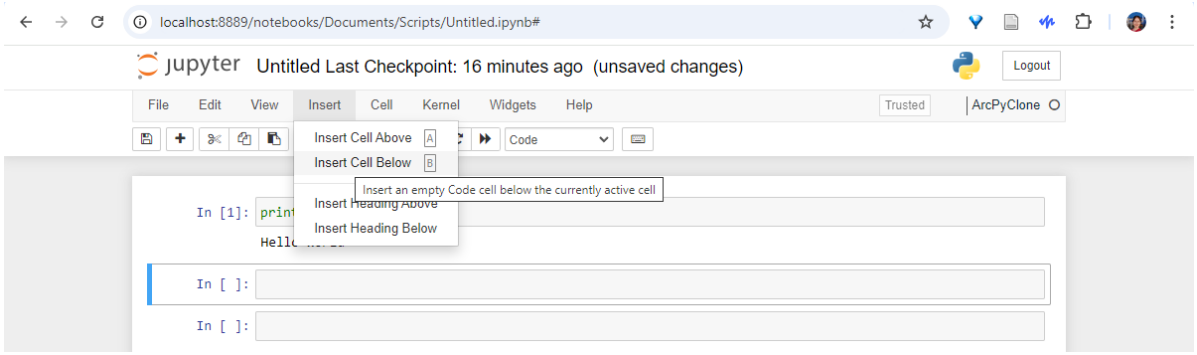
python -m ipykernel install --name ArcPyClone --display-name "ArcPyClone" --user



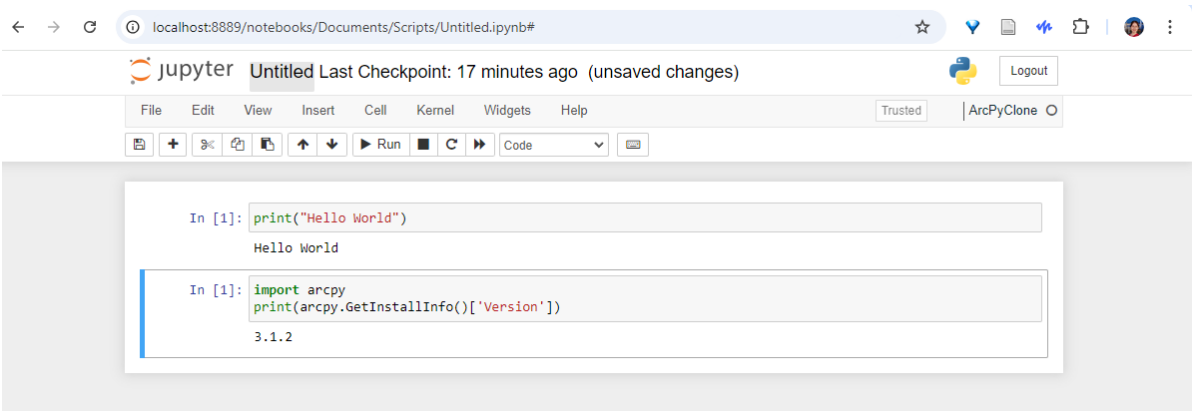
▼ Step 11: In the new notebook, switch the kernel to ArcPyClone



▼ Step 12: Go to menu→Inert → Inser Cel Below to add the second cell in the notebook.



▼ Step 13: In the second cell, run the following code to verify if ArcPy is working.


localhost:8889/notebooks/Documents/Scripts/Untitled.ipynb#
jupyter
Untitled Last Checkpoint: 17 minutes ago (unsaved changes)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
ArcPyClone
Run
Code
In [1]:
print("Hello World")
Hello World
In [1]:
import arcpy
print(arcpy.GetInstallInfo()['Version'])
3.1.2