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Salzburg, 02.05.2023

Assignment 2 – Conda Environments

Documetation

Before starting the conda-exercises I cloned the repository where the needed .yml files are located.

After that I imported these files as environments. For all the commands I used a cheatsheet with the most important commands like the import command.

IMPORTING ENVIRONMENTS	
Tip: When importing an environment, conda resolves platform and package specifics.	
from a .yml file	`conda env create -n ENVNAME --file ENV.yml`

In the following screenshot you can now see all available environment:

```
Retrieving notices: ...working... done
(base) PS C:\Users\lukas\repos\geo-software-dev\A2> conda info --envs
# conda environments:
#
arcgispro-py3            C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3
base                  *  C:\Users\lukas\anaconda3
softdev_navigator        C:\Users\lukas\anaconda3\envs\softdev_navigator
software_dev_v1          C:\Users\lukas\anaconda3\envs\software_dev_v1
software_dev_v2          C:\Users\lukas\anaconda3\envs\software_dev_v2
```

In this case the base environment is active.

In the following screenshots you can see several steps that I did to fulfill the task:

Environment 1 (software_dev_v2):

Activate the needed environment:

```
(base) PS C:\Users\lukas\repos\geo-software-dev\A2> conda activate software_dev_v1
(software_dev_v1) PS C:\Users\lukas\repos\geo-software-dev\A2> conda list
```

Install another package in that environment: skykit-learn

```
(software_dev_v1) PS C:\Users\lukas\repos\geo-software-dev\A2> conda install -c anaconda scikit-learn
Collecting package metadata (current_repodata.json): done
Solving environment: done
```

Information about the downloads that are going to be done:

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```
## Package Plan ##

  environment location: C:\Users\lukas\anaconda3\envs\software_dev_v1

  added / updated specs:
    - scikit-learn


The following packages will be downloaded:

    package                    |            build
    ---------------------------|-----------------
    ca-certificates-2023.01.10 |       haa95532_0         158 KB  anaconda
    certifi-2022.12.7          |  py310haa95532_0         153 KB  anaconda
    scikit-learn-1.2.0         |  py310hd77b12b_0         7.7 MB  anaconda
    ------------------------------------------------------------
                                           Total:         8.0 MB
```

Agree that you want to continue:

```
Proceed ([y]/n)? y
```

```
The following packages will be SUPERSEDED by a higher-priority channel:

  certifi            conda-forge/noarch::certifi-2022.12.7~ --> anaconda/win-64::certifi-2022.12.7-py310haa95532_0
  scikit-learn       conda-forge::scikit-learn-1.2.2-py310~ --> anaconda::scikit-learn-1.2.0-py310hd77b12b_0


Proceed ([y]/n)? y
```

Export the modified environment:

```
    Windows 64-bit packages of scikit-learn can be accelerated using scikit-learn-intelex.
    More details are available here: https://intel.github.io/scikit-learn-intelex

    For example:

        $ conda install scikit-learn-intelex
        $ python -m sklearnex my_application.py


done
Retrieving notices: ...working... done
(software_dev_v1) PS C:\Users\lukas\repos\geo-software-dev\A2> conda env export > software_dev_v1new.yml
(software_dev_v1) PS C:\Users\lukas\repos\geo-software-dev\A2> ls


    Verzeichnis: C:\Users\lukas\repos\geo-software-dev\A2
```

```
(software_dev_v1) PS C:\Users\lukas\repos\geo-software-dev\A2> ls


    Verzeichnis: C:\Users\lukas\repos\geo-software-dev\A2


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----         27.04.2023     23:25            883 README.md
-a----         27.04.2023     23:25          16292 software_dev_v1.yml
-a----         28.04.2023     14:10          16438 software_dev_v1new.yml
-a----         27.04.2023     23:25            252 software_dev_v2.yml
```

The new modified file is shown in the folder.

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Environment 2 (software_dev_v2):

Activate environment 2:

```
(base) PS C:\Users\lukas\repos\geo-software-dev\A2> conda activate software_dev_v2
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda list
# packages in environment at C:\Users\lukas\anaconda3\envs\software_dev_v2:
#
```

Since I couldn't import this file in the same way as the first one, I decided to rebuild the environment by myself.

I did following steps:

Look for information about certain packages (e.g. geopandas): Here I got a huge list of all versions of geopandas

```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda list
# packages in environment at C:\Users\lukas\anaconda3\envs\software_dev_v2:
#
# Name                    Version                   Build  Channel
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> python --version
Python 3.9.7
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda search geopandas --info
Loading channels: done
geopandas 0.1.1 py27_0
----------------------
file name   : geopandas-0.1.1-py27_0.tar.bz2
name        : geopandas
version     : 0.1.1
build       : py27_0
build number: 0
size        : 28 KB
license     : BSD
subdir      : win-64
url         : https://conda.anaconda.org/conda-forge/win-64/geopandas-0.1.1-py27_0.tar.bz2
md5         : 016dbafc0bd6866d571e405743f7a278
constraints :
```

Install geopandas:

```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda install -n software_dev_v2 geopandas
Collecting package metadata (current_repodata.json): done
Solving environment: done
```

Information about packages that are needed as well:

```
The following packages will be downloaded:

    package                    |            build
    ---------------------------|-----------------
    brotlipy-0.7.0             |py311ha68e1ae_1005         335 KB  conda-forge
    cairo-1.16.0               |    hdecc03f_1015         1.5 MB  conda-forge
    cffi-1.15.1                |  py311h7d9ee11_3         286 KB  conda-forge
    contourpy-1.0.7            |  py311h005e61a_0         167 KB  conda-forge
    cryptography-40.0.2        |  py311h28e9c30_0         1.1 MB  conda-forge
    curl-8.0.1                 |       h68f0423_0         136 KB  conda-forge
    fiona-1.9.3                |  py311ha4db88c_0         753 KB  conda-forge
    fonttools-4.39.3           |  py311ha68e1ae_0         2.2 MB  conda-forge
```

For the other two packages I tried to install them both at once. This did not work:

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```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda install -n software_dev_v2 jupiterlab rasterio
Collecting package metadata (current_repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Collecting package metadata (repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.

PackagesNotFoundError: The following packages are not available from current channels:

  - jupiterlab
```

Therefor I installed the rasterio first:

```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda install -n software_dev_v2 rasterio
Collecting package metadata (current_repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Solving environment: failed with repodata from current_repodata.json, will retry with next repodata source.
Collecting package metadata (repodata.json): done
Solving environment: done
```

With its dependend packages:

```
## Package Plan ##

  environment location: C:\Users\lukas\anaconda3\envs\software_dev_v2

  added / updated specs:
    - rasterio


The following packages will be downloaded:

    package                    |            build
    ---------------------------|-----------------
    gdal-3.6.3                 |  py311h4bd9738_1         1.5 MB  conda-forge
    pyproj-3.5.0               |  py311h36482e4_0         397 KB  conda-forge
    rasterio-1.3.6             |  py311hc06ee40_0         6.6 MB  conda-forge
    ------------------------------------------------------------
                                           Total:         8.5 MB

The following NEW packages will be INSTALLED:

  affine             conda-forge/noarch::affine-2.4.0-pyhd8ed1ab_0
  rasterio           conda-forge/win-64::rasterio-1.3.6-py311hc06ee40_0
  snuggs             conda-forge/noarch::snuggs-1.4.7-py_0

The following packages will be DOWNGRADED:

  cairo                                1.16.0-hdecc03f_1015 --> 1.16.0-hd694305_1014
  gdal                                3.6.4-py311heaf1029_0 --> 3.6.3-py311h4bd9738_1
```

And then I looked up the needed code for installing jupyterlab as well:

```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda install -c conda-forge jupyterlab
Collecting package metadata (current_repodata.json): done
Solving environment: done
```

As a additional step I looked at the revisions:

```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda list -n software_dev_v2 --revisions
2023-04-28 12:57:05  (rev 0)
```

For example revision 2:

```
2023-04-28 13:23:34  (rev 2)
     cairo  {1.16.0 (conda-forge/win-64) -> 1.16.0 (conda-forge/win-64)}
     gdal  {3.6.4 (conda-forge/win-64) -> 3.6.3 (conda-forge/win-64)}
     geotiff  {1.7.1 (conda-forge/win-64) -> 1.7.1 (conda-forge/win-64)}
     hdf5  {1.14.0 (conda-forge/win-64) -> 1.12.2 (conda-forge/win-64)}
     icu  {72.1 (conda-forge/win-64) -> 70.1 (conda-forge/win-64)}
     kealib  {1.5.0 (conda-forge/win-64) -> 1.5.0 (conda-forge/win-64)}
     libdeflate  {1.18 (conda-forge/win-64) -> 1.17 (conda-forge/win-64)}
     libgdal  {3.6.4 (conda-forge/win-64) -> 3.6.3 (conda-forge/win-64)}
     libnetcdf  {4.9.2 (conda-forge/win-64) -> 4.9.1 (conda-forge/win-64)}
     libspatialite  {5.0.1 (conda-forge/win-64) -> 5.0.1 (conda-forge/win-64)}
     libtiff  {4.5.0 (conda-forge/win-64) -> 4.5.0 (conda-forge/win-64)}
     poppler  {23.04.0 (conda-forge/win-64) -> 23.03.0 (conda-forge/win-64)}
     proj  {9.2.0 (conda-forge/win-64) -> 9.1.1 (conda-forge/win-64)}
     pyproj  {3.5.0 (conda-forge/win-64) -> 3.5.0 (conda-forge/win-64)}
    +affine-2.4.0 (conda-forge/noarch)
    +rasterio-1.3.6 (conda-forge/win-64)
    +snuggs-1.4.7 (conda-forge/noarch)
```

Change the environment to revision 2:

```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda install -n software_dev_v2 --revision 2
```

Some packages will be deleted:

```
The following packages will be REMOVED:

  anyio-3.6.2-pyhd8ed1ab_0
  argon2-cffi-21.3.0-pyhd8ed1ab_0
  argon2-cffi-bindings-21.2.0-py311ha68e1ae_3
```

Agree:

```
Proceed ([y]/n)? y
```

Export the new modified environment:

```
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> conda env export > software_dev_v2new.yml
(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2> ls


    Verzeichnis: C:\Users\lukas\repos\geo-software-dev\A2


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-a----        27.04.2023     23:25            252 software_dev_v2.yml
-a----        28.04.2023     14:46          10762 software_dev_v2new.yml


(software_dev_v2) PS C:\Users\lukas\repos\geo-software-dev\A2>
```

After these steps I **committed** that folder into a new branch, **pushed** it and finally **merged** that branch into the **main** branch of my repo for the course on github.