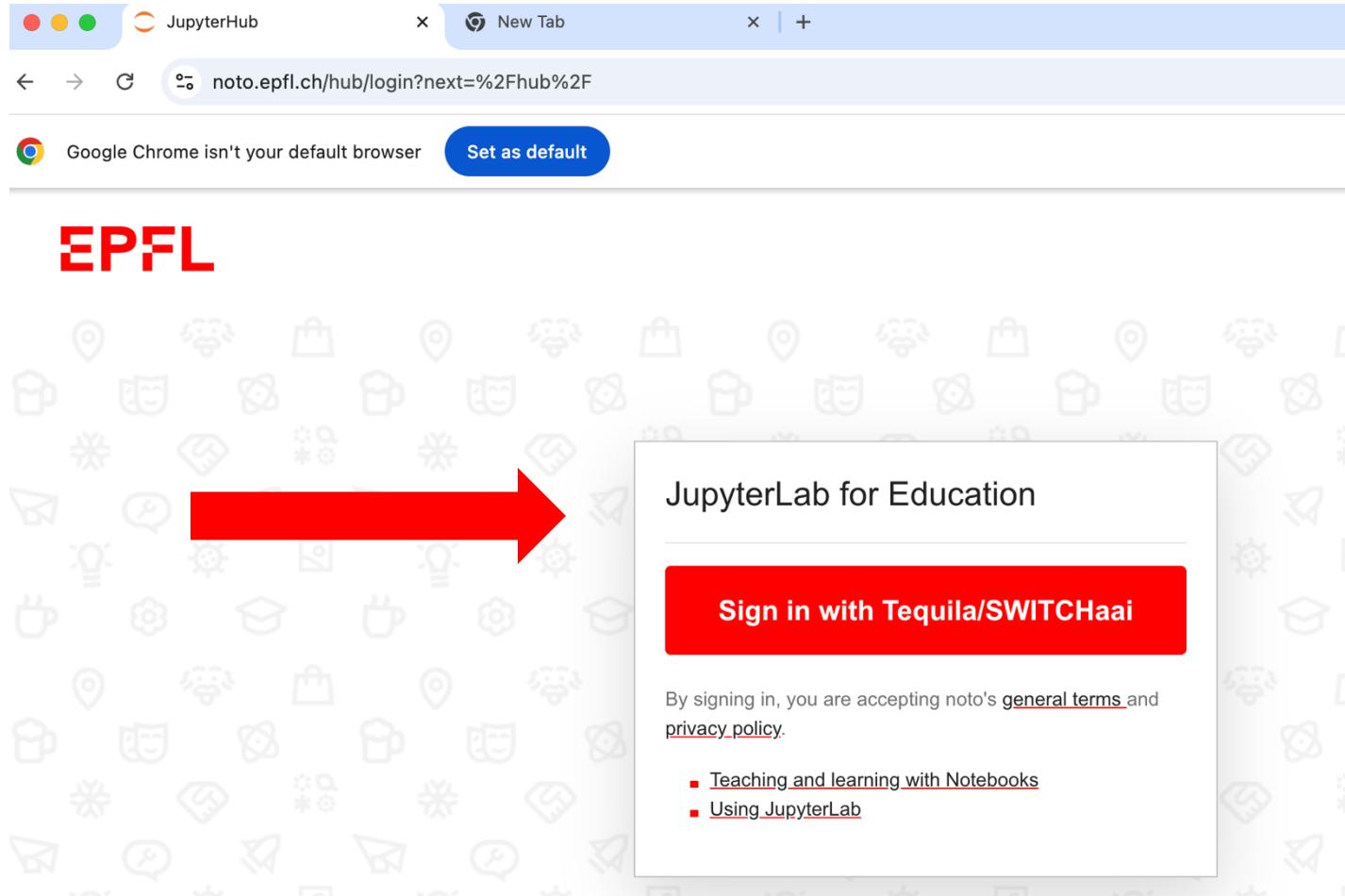


Jupyter Notebook in Noto.epfl

A quick tutorial

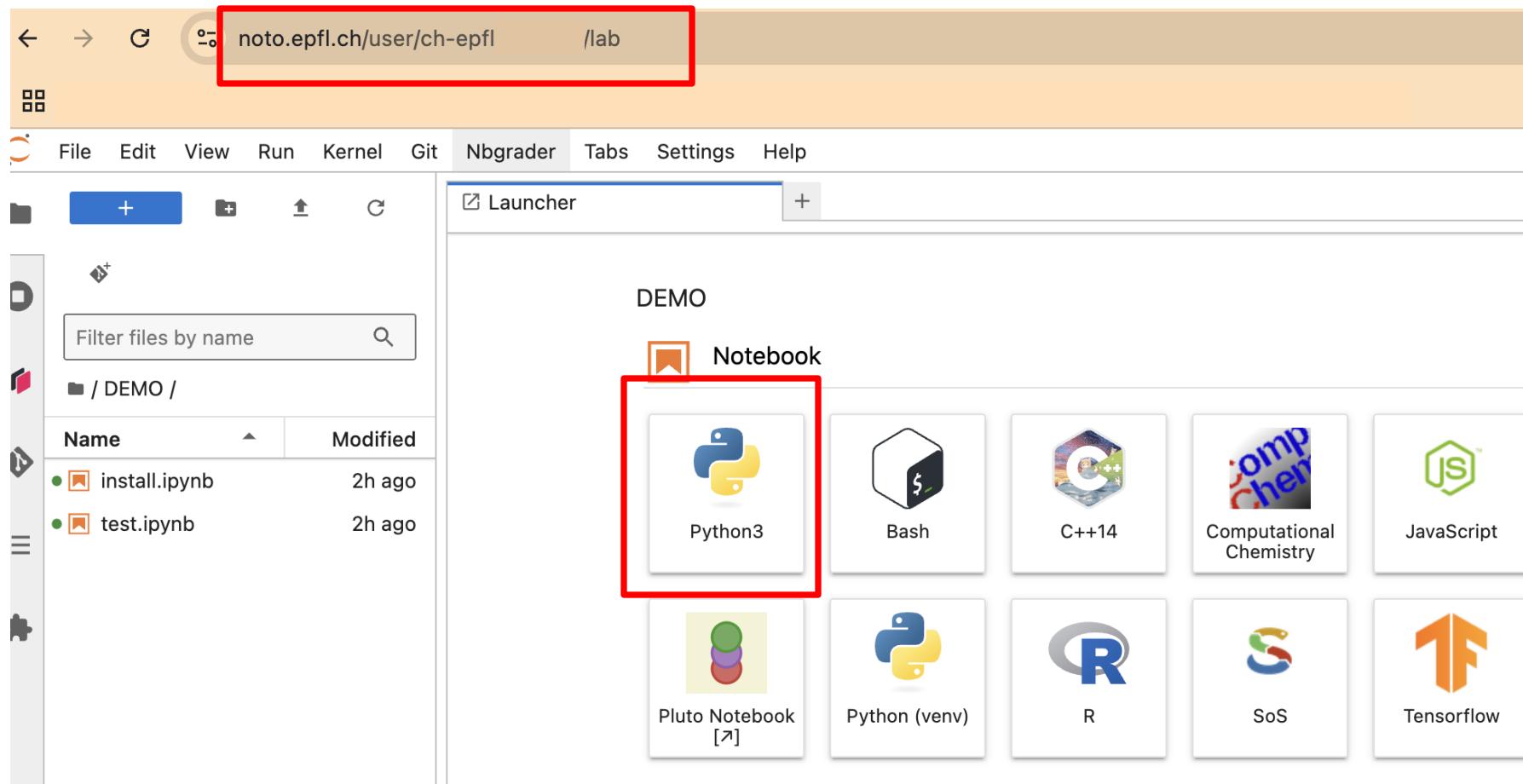
Sai Sudharshan Ravi
Joao Carlos Ferreira Da Silva

Accessing Jupyter notebook with NOTO



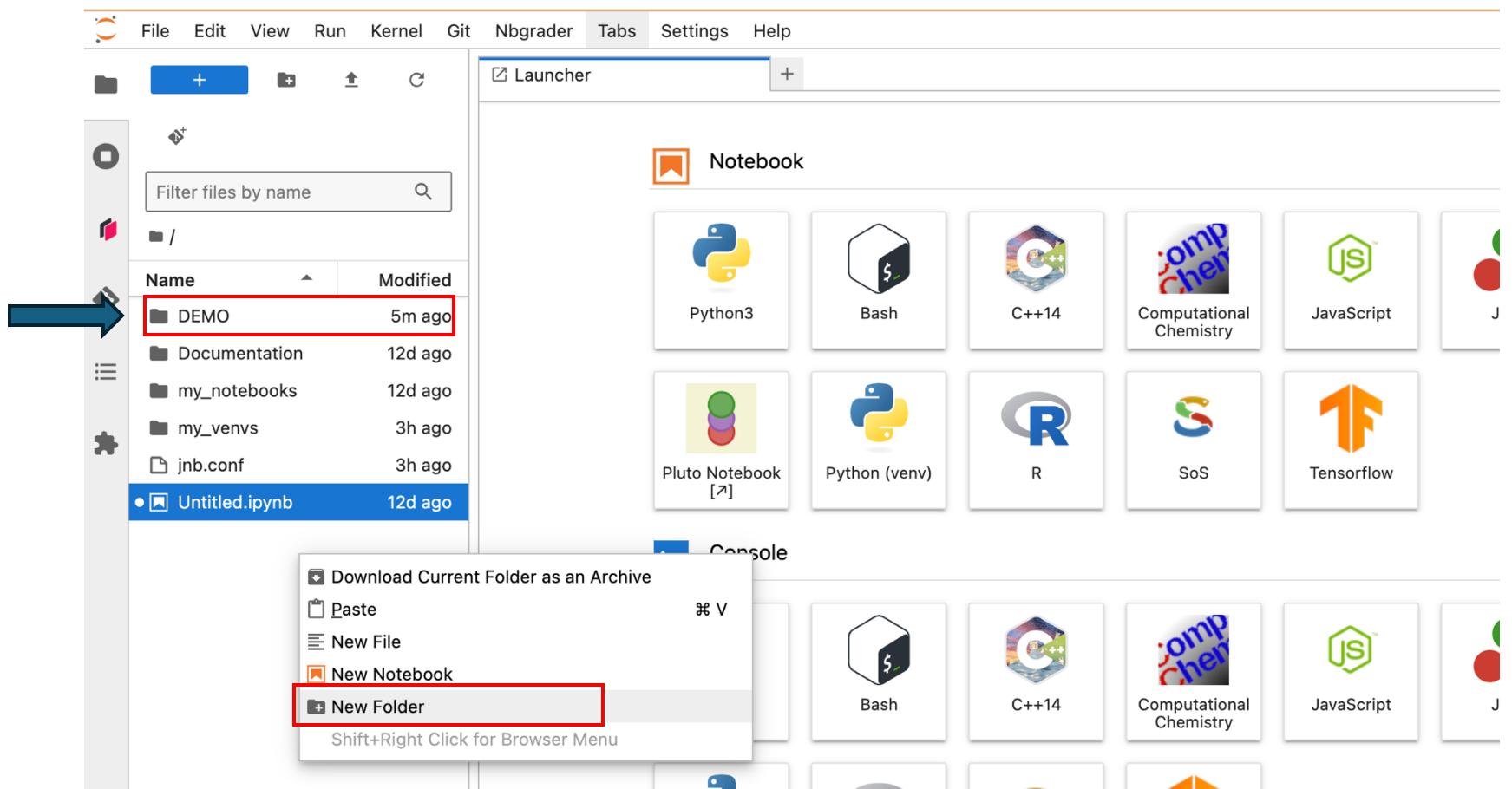
Accessing Jupyter notebook with NOTO

Your sciper ID appears here, ideally



Create a new folder

I have created
'DEMO' folder



Creating virtual environment

- Take the install.ipynb file from moodle, place it in your folder
- Run the following cells to create a new virtual environment. It takes a while. So be patient

▼ Installation of a new environment



```
[1]: # Create new venv
!python3 -m venv ~/my_venvs/venv
!source ~/my_venvs/venv/bin/activate
```

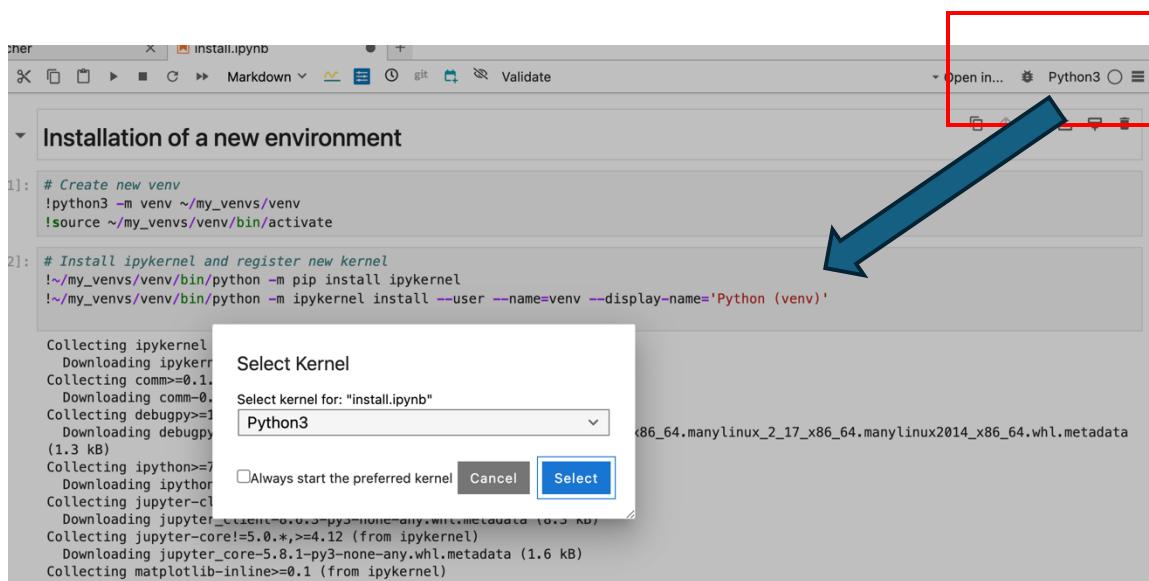
```
[2]: # Install ipykernel and register new kernel
!~/my_venvs/venv/bin/python -m pip install ipykernel
!~/my_venvs/venv/bin/python -m ipykernel install --user --name=venv --display-name='Python (venv)'
```

Cell output placeholder

Switch to the new environment

Use the new venv/kernel

- refresh the page and in "kernel" choose "Change kernel..." and from the dropdown, choose your "Python (venv)"
 - it can also be changed on the top right of the console*
 - check "Always start the preferred kernel" for it to be chosen by default*
- Then we can install amplpy as said in the readme but using {sys.executable} instead of python to make sure we install under the venv
 - This is only needed for terminal commands like this one*



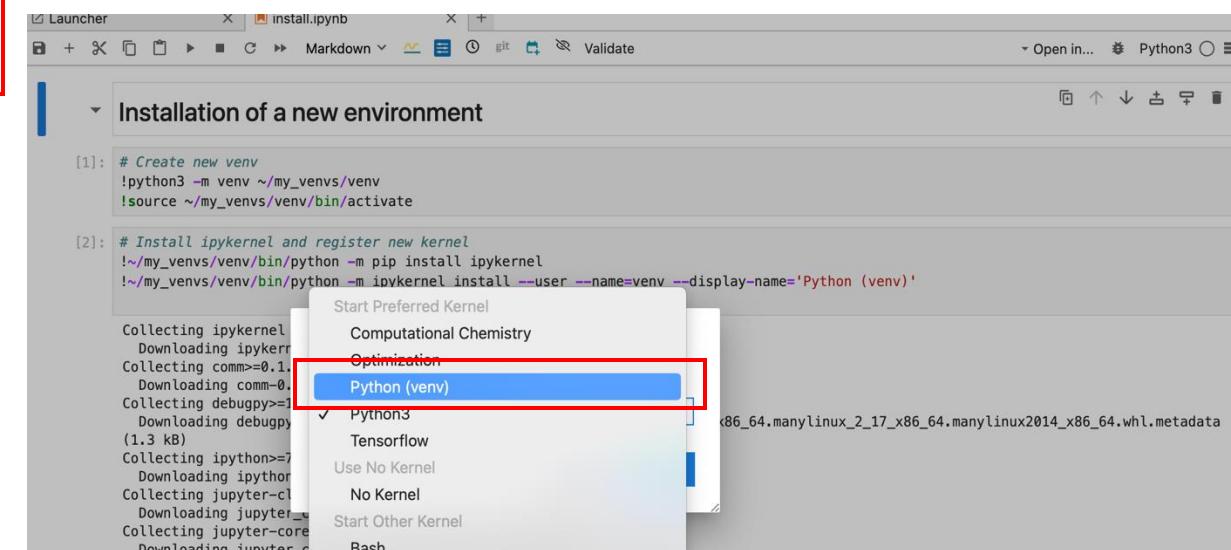
```
# Create new venv
!python3 -m venv ~/my_venvs/venv
!source ~/my_venvs/venv/bin/activate

# Install ipykernel and register new kernel
!~/my_venvs/venv/bin/python -m pip install ipykernel
!~/my_venvs/venv/bin/python -m ipykernel install --user --name=venv --display-name='Python (venv)'

Collecting ipykernel
  Downloading ipykernel-5.1.4-py3-none-any.whl.metadata
Collecting comm>=0.1.2
  Downloading comm-0.1.2-py3-none-any.whl.metadata
Collecting debugpy>1.3.0
  Downloading debugpy-1.3.0-py3-none-any.whl.metadata
Collecting ipython>7.0.0
  Downloading ipython-7.14.0-py3-none-any.whl.metadata
Collecting jupyter-client>7.0.0
  Downloading jupyter-client-7.14.0-py3-none-any.whl.metadata
Collecting jupyter-core!=5.0.*,>=4.12 (from ipykernel)
  Downloading jupyter_core-5.8.1-py3-none-any.whl.metadata (1.6 kB)
Collecting matplotlib-inline>0.1 (from ipykernel)

```

Select Kernel
Select kernel for: "install.ipynb"
Python3
Always start the preferred kernel Cancel Select



```
# Create new venv
!python3 -m venv ~/my_venvs/venv
!source ~/my_venvs/venv/bin/activate

# Install ipykernel and register new kernel
!~/my_venvs/venv/bin/python -m pip install ipykernel
!~/my_venvs/venv/bin/python -m ipykernel install --user --name=venv --display-name='Python (venv)'

Start Preferred Kernel
  Computational Chemistry
  Optimization
  Python (venv)
  Python3
  Tensorflow
  Use No Kernel
  No Kernel
  Start Other Kernel
  Bash
```

Install AMPLPY modules in the new venv

Just run this cell

```
[1]: import sys

# Install Python API for AMPL
!{sys.executable} -m pip install amplpy --upgrade

# Install solver modules (e.g., HiGHS, CBC, Gurobi)
!{sys.executable} -m amplpy.modules install highs cbc gurobi

# Activate your license (e.g., free https://AMPL.com/ce license)
!{sys.executable} -m amplpy.modules activate
```

Your UUID goes here



Test with test.ipynb

- Take the test.ipynb file from moodle, place it in your folder
- This should work If all steps before were followed correctly
- You have solved your first optimisation problem!

```
ampl.solve()

# Show results
print("Objective value (Total Profit):", ampl.obj['TotalProfit'].value())
print("Production plan:")
for p in ampl.set['PRODUCTS']:
    print(f"  {p} = {ampl.var['Production'][p].value()}"")
```

```
HiGHS 1.10.0HiGHS 1.10.0: optimal solution; objective 1200
0 simplex iterations
0 barrier iterations
Objective value (Total Profit): 1200.0
Production plan:
  A = 0.0
  B = 40.0
```