

# Exercise sessions

Welcome to the course “*Introduction to Optimization and Operations Research*”.

At each exercise session, you will be expected to have a computer available, and you will solve exercises using Jupyter notebooks. Jupyter notebook files will be available at the github link [https://github.com/transp-or/optimization\\_2024/tree/main](https://github.com/transp-or/optimization_2024/tree/main). Each session will have one notebook with the questions and another notebook with solutions. We encourage you to try to solve the questions without looking at the solutions and to use Chatgpt or your preferred LLM to assist you with coding questions.

There are different software tools that you can use to run Jupyter notebooks (e.g., conda) but EPFL offers a tool called “noto” which requires no installation, and you can access with your gaspar account.

You can run notebook files with noto.

## **Option 1:**

To get started clik on this link [NOTO exercise 1](#)

Or copy and paste the link on your browser: [https://noto.epfl.ch/hub/user-redirect/git-pull?repo=https%3A%2F%2Fgithub.com%2Ftransp-or%2Foptimization\\_2024&urlpath=lab%2Ftree%2Foptimization\\_2024%2Fweek\\_01%2Flab01\\_coola\\_questions.ipynb%3Fautodecode&branch=main](https://noto.epfl.ch/hub/user-redirect/git-pull?repo=https%3A%2F%2Fgithub.com%2Ftransp-or%2Foptimization_2024&urlpath=lab%2Ftree%2Foptimization_2024%2Fweek_01%2Flab01_coola_questions.ipynb%3Fautodecode&branch=main)

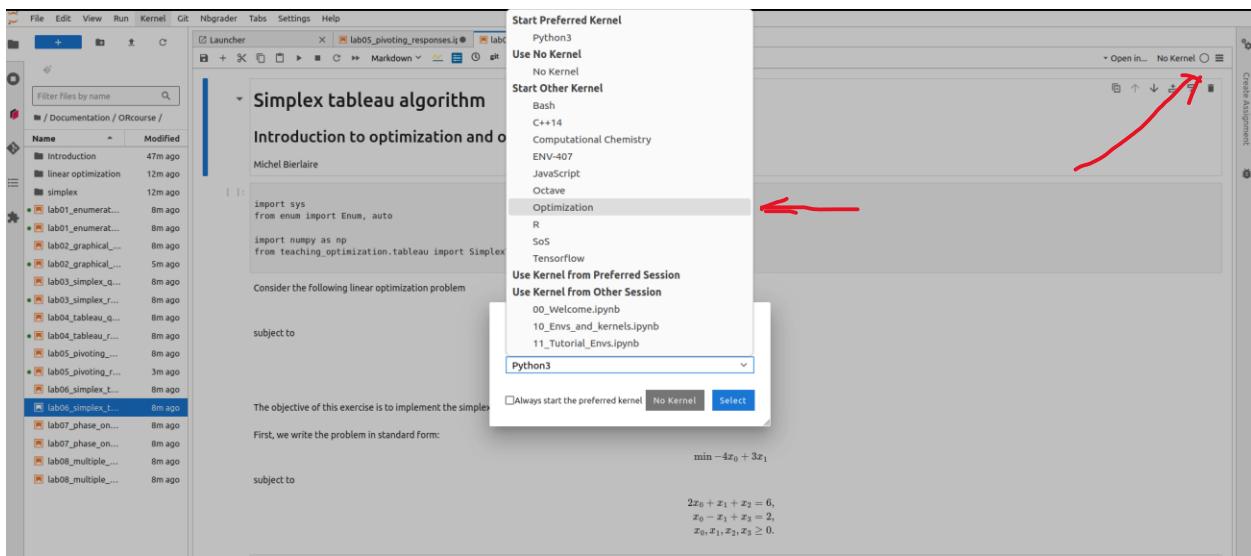
Once the link opens noto, you should select the optimization kernel.

## **Option 2:**

Download files from github and upload them on noto or conda.

Noto:

1. Download exercice files to your computer from [https://github.com/transp-or/optimization\\_2024/tree/main](https://github.com/transp-or/optimization_2024/tree/main).
2. Launch Noto <https://go.epfl.ch/noto-share>
3. Upload exercise files to noto.
4. Open exercise files with the kernel “optimization”



# Example of ChatGPT answer:

How do I merge two lists together in a numpy array in python ?

To merge two lists together into a NumPy array in Python, you can follow these steps:

1. **Import the NumPy library:** Make sure you have NumPy installed and then import it.
2. **Convert the lists to NumPy arrays:** If the lists are not already NumPy arrays, you can convert them.
3. **Use NumPy's concatenation function:** You can use `numpy.concatenate` to merge the arrays.

Here's a simple example:

```
python
import numpy as np

# Example lists
list1 = [1, 2, 3]
list2 = [4, 5, 6]

# Convert lists to numpy arrays
array1 = np.array(list1)
array2 = np.array(list2)

# Merge the arrays
merged_array = np.concatenate((array1, array2))

print(merged_array)
```

This will output:

```
csharp
[1 2 3 4 5 6]
```

**Explanation:**

- `np.array(list1)` and `np.array(list2)` convert the Python lists into NumPy arrays.
- `np.concatenate((array1, array2))` merges the two arrays into a single NumPy array.

If you want to merge them along a different axis (e.g., stacking them vertically or horizontally), you can use `np.vstack`, `np.hstack`, or similar functions depending on your needs.

Message ChatGPT