



UNIVERSITY OF AGDER



# Import and plot

## Lecture 3



# Agenda

- Exercise recap
- Import
- Install matplotlib in PyCharm
- Plotting

# Exercise review

- Palindrome
- A palindromic number reads the same both ways. The largest palindrome made from the product of two 2-digit numbers is  $9009 = 91 \times 99$ .

**Find the largest palindrome made from the product of two 3-digit numbers.**

# Import

- How to use different files?
- If you want to use code from *file\_b.py* in *file\_a.py*, you write (in *file\_a.py*):

```
import file_b
```

- **Make sure that *file\_a.py* and *file\_b.py* are in the same folder**
- Imports are usually placed at the top of a file
- What if I have a file in a subfolder?

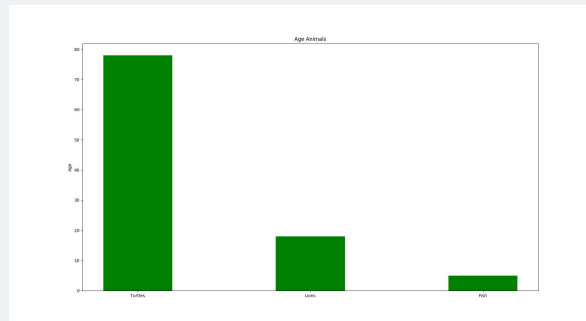
```
import subfolder.file
```

or

```
from subfolder import file
```

# Plotting with Matplotlib

- Visualize our results
- <https://matplotlib.org/>
- The **pyplot** module is the one we will use  
<https://matplotlib.org/tutorials/introductory/pyplot.html#sphx-gl-r-tutorials-introductory-pyplot-py>
- Browsing *examples* is really useful  
<https://matplotlib.org/gallery/index.html#pyplot>



# Install matplotlib in PyCharm

- Open PyCharm
- Press *PyCharm / file* in the menu bar
- Go to *preferences / settings*
- On the left, select *project:<your-project-name>*
- Select *project interpreter*
- Click on the + (pluss) button
- Search for and install **matplotlib**

# Basic plot

- Remember to import matplotlib, it's not part of core Python.
- Plotting a line:

```
import matplotlib.pyplot as plt  
plt.plot([1,2,3])  
plt.show() # don't forget this
```

- Use the `as` keyword to “rename” your module
- If you only give `plt.plot()` a single parameter (usually a list), it will figure out the x values by itself



# More plot

- There are several types of plot: standard, scatter, bar, etc.
- Use the documentation actively while plotting, the pyplot tutorial is really useful and shows how to do really common plots:

<https://matplotlib.org/tutorials/introductory/pyplot.html#pyplot-tutorial>

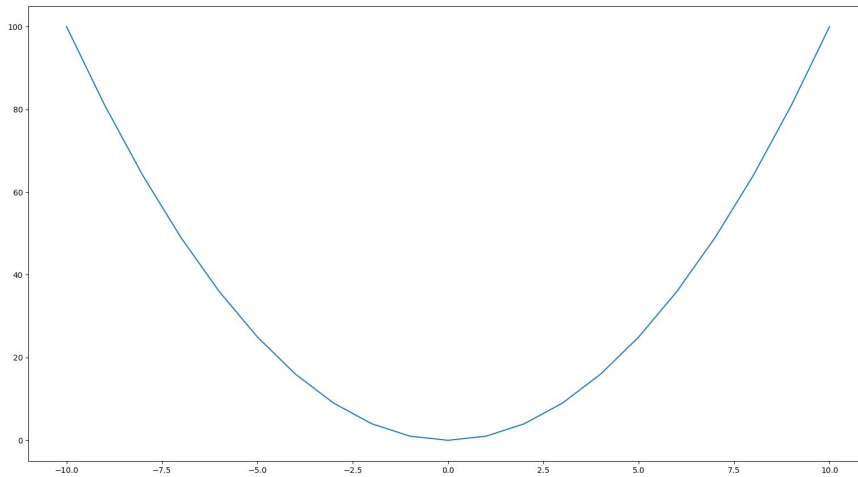
# Plotting a function

$$f(x) = x^3$$

- Generate  $y$  values for a “reasonable” set of  $x$  values
- Store  $x$  and  $y$  values in lists
- Pass lists to `plt.plot(x_list, y_list)`

# Try yourself - 3 min

- Try to plot:  $f(x) = x^2$



# Subplots

- Several plots together
- Again, nice example in the official pyplot tutorial

