

# Data Types & Libraries

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Jannusch Bigge

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# Libraries

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→ We have to install them.

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- installing by hand is not a good idea.
- installing in general not the best idea.



Python module that creates "fake environments"

- Isolated from the rest of the system
- Can be deleted without any problems
- Can be shared with others

## Virtual env - activating

First we have to create a virtual environment. In this case called venv.

```
python3 -m venv venv
```

Next we have to activate it.

```
source venv/bin/activate
```

Now we can do our python stuff.

```
...
```

And finally if we are done we can deactivate it.

```
deactivate
```

To install a python library we can use pip.

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```
pip install numpy
```

# Data Types

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# Data Types

Python has built in data types which allow us to store data.

- list  $\rightarrow [1,2,3]$
- tuple  $\rightarrow (1,2,3)$
- dict  $\rightarrow \{1:2, 3:4\}$

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Lists have a lot of helpful functions:

```
my_list = [1,2,3]
my_list.append(4)
my_list[0] = 5
my_list.remove(2)
my_list.pop(0)
my_list.insert(0, 1)
my_list.sort()
my_list.reverse()
```

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```
my_dict = {1:2, "three":4}
my_dict[1] = 5
my_dict["three"] = 6
my_dict.pop(1)
my_dict.popitem()
my_dict.clear()
```

# Task

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## Task - Advent of Code

Excellent way to practice your coding skills.

- Advent of Code is a yearly event
- 25 days of coding
- 2 problems per day
- 50 stars to collect

<https://adventofcode.com/>

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## Task - Advent of Code

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- Understand the problem
- Understand how to solve it with programming
- Work with others together

## Task - Advent of Code

- Solve the first two problems of day 1 (2021)
- There is a test function in the repository.
- You have two data files. One for the test and one for the real problem.
- You can use any library you want.
- Solve the task in groups of two or three.