Python
...für Anfänger

Unit 7

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Tupel

```
>>> (1, 2)
(1, 2)
>>> 1, 2
(1, 2)
>>> a = (False, 1, 3.1415926, ”abc”)
(False, 1, 3.1415926, ’abc’)

>>> type(a)
<class ’tuple’>
```

Vertauschung ohne Hilfsvariable - 2

mit einem Tupel? $\rightarrow$ Unpacking!

Vertauschung ohne Hilfsvariable - 2

mit einem Tupel? $\rightarrow$ Unpacking!

```
>>> a, b = 1, 2
>>> a
1
>>> b
2
>>> a, b = b, a
>>> a
2
>>> b
1
```

Tupel - 2

```
>>> p = (1.5, 2, ”Maxi”)
>>> print(p[0], p[2])
1.5 Maxi
>>> p[3]
Traceback (most recent call last):
  File ”<stdin>”, line 1, in <module>
IndexError: tuple index out of range
>>> p[0] = 2.5
Traceback (most recent call last):
  File ”<stdin>”, line 1, in <module>
TypeError: ’tuple’ object does not support item ass
```

Tupel - 3

```
>>> p[-1]
'Maxi'
>>> p[-2]
2
>>> len(p)
3
>>> p[len(p) - 1]
'Maxi'
>>> p[-4]
>>> p[-4]
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
IndexError: tuple index out of range
```

Zählschleife - 1

```
>>> for i in (1, 2, 3, 4, 5):
...     print(i)
...
1
2
3
4
5
>>>
```

Der faule Typ `range`

```
>>> range(5)
range(0, 5)
>>> tuple(range(5))
(0, 1, 2, 3, 4)
>>> tuple(range(2, 7))
(2, 3, 4, 5, 6)
>>> tuple(range(10000))
(0, 1, 2,...

>>> type(range(5))
<class 'range'>
```

Zählschleife - 2

```
>>> for i in range(5):
...     print(i, end=" ")
...
0 1 2 3 4 >>>
>>> for i in range(1, 6):
...     print(i, end=" ")
...
1 2 3 4 5 >>>
>>> len(range(1, 6))
5
>>>
```

Bereichsbasierte Schleife

range-based loop, auch *foreach loop*

```
>>> fruits = (”apple”, ”orange”, ”banana”)
>>> for fruit in fruits:
...     print(fruit)
...
apple
orange
banana
>>> len(fruits)
3
```

Accumulator Pattern - 1

```
>>> res = 0
>>> for i in (1, 2, 3, 4, 5):
...     res = res + i
...
>>> res
15
>>> mean = res / len((1, 2, 3, 4, 5))
3.0
```

Accumulator Pattern - 2

```
>>> i = 1
>>> fruits = (”apple”, ”orange”, ”banana”)
>>> print(”Shopping list:”)
Shopping list:
>>> for fruit in fruits:
...     print(i, fruit)
...     i = i + 1
...
1 apple
2 orange
3 banana
>>>
```

Exceptions - 1

```
>>> def div(a, b):
...     return a / b
...
>>> try:
...     print(div(1/0))
... except:
...     print("Oops")
...
Oops
>>>
```

Exceptions - 2

```
>>> # Von 0 auf v in t Sekunden
>>> def s(v, t):
...     return div(div(v, t), 2) * t * t
...
>>> s(100 / 3.6, 0)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
  File "<stdin>", line 2, in s
  File "<stdin>", line 2, in div
ZeroDivisionError: float division by zero
```

Exceptions - 3

```
>>> s(100/3.6, 3)
41.666666666666667
>>> try:
...     s(100 / 3.6, 0)
... except:
...     print(”Oops”)
...
Oops
```

Exceptions - 4

```
>>> # Von 0 auf v in t Sekunden
>>> def s(v, t):
...     try:
...         return div(div(v, t), 2) * t * t
...     except:
...         return -1
...
>>> s(100 / 3.6, 0)
-1
```