

**QA**  
**Light**

**Python**

**Михаил**

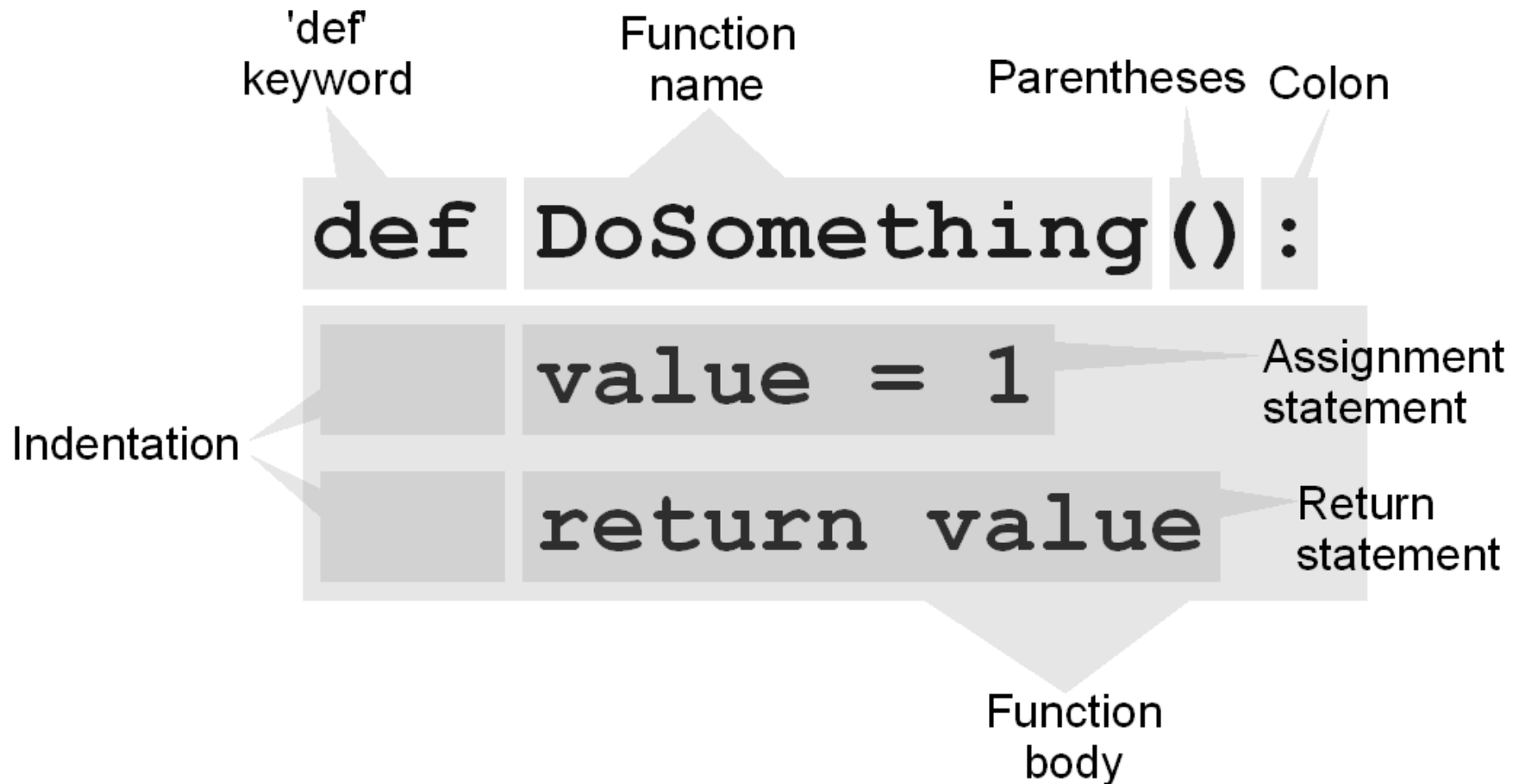
# Именные функции

```
def add(x, y):  
    return x + y
```

```
>>> add(1, 10)  
11
```

```
>>> add('abc', 'def')  
'abcdef'
```

# Функция



# Область видимости

#1

```
>>> X = 'Spam'
>>> def func():
...     print(X)
...
>>> func()
```

#2

```
>>> X = 'Spam'
>>> def func():
...     X = 'NI!'
...
>>> func()
>>> print(X)
```

#3

```
>>> X = 'Spam'
>>> def func():
...     X = 'NI'
...     print(X)
...
>>> func()
>>> print(X)
```

#4

```
>>> X = 'Spam'
>>> def func():
...     global X
...     X = 'NI'
...
>>> func()
>>> print(X)
```

#5

```
>>> X = 'Spam'
>>> def func():
...     X = 'NI'
...     def nested():
...         print(X)
...     nested()
...
>>> func()
>>> X
```

#6 (Py3)

```
>>> def func():
...     X = 'NI'
...     def nested():
...         nonlocal X
...         X = 'Spam'
...     nested()
...     print(X)
...
>>> func()
```

## Принимать аргумент функцию

```
>>> def cube(x):  
    return x**3
```

```
>>> def func(foo, x):  
    return foo(x)
```

```
>>> func(cube, 10)  
1000
```

## Замыкания

```
>>> def newfunc(n):  
...     def myfunc(x):  
...         return x + n  
...     return myfunc  
...  
>>> new = newfunc(100) # new - это  
    функция  
>>> new(200)  
300
```

# Аргументы функции

```
>>> def func(a, b, c=2): # c - необязательный аргумент
...     return a + b + c
```

```
...
```

```
>>> func(1, 2) # a = 1, b = 2, c = 2 (по умолчанию)
```

```
5
```

```
>>> func(1, 2, 3) # a = 1, b = 2, c = 3
```

```
6
```

```
>>> func(a=1, b=3) # a = 1, b = 3, c = 2
```

```
6
```

```
>>> func(a=3, c=6) # a = 3, c = 6, b не определен
```

```
TypeError: func() takes at least 2 arguments (2 given)
```

## Сбор аргументов в коллекцию

```
>>> def func(*args):  
...     return args  
  
...  
>>> func(1, 2, 3, 'abc')  
(1, 2, 3, 'abc')  
>>> func()  
()  
>>> func(1)  
(1,)
```



## Сбор аргументов в словарь

```
>>> def func(**kwargs):  
...     return kwargs
```

```
...
```

```
>>> func(a=1, b=2, c=3)  
{'a': 1, 'c': 3, 'b': 2}
```

```
>>> func()  
{}
```

```
>>> func(a='python')  
{'a': 'python'}
```

## Распаковка

```
>>> def add(a, b, c):  
    return a+b+c
```

```
>>> l = [1, 2, 3]
```

```
>>> add(*l)
```

6

```
>>> d = {"a":1, "b":2, "c":3}
```

```
>>> add(**d)
```

6

# Декораторы

```
>>> def func(**kwargs):  
...     return kwargs  
...  
>>> func(a=1, b=2, c=3)  
{'a': 1, 'c': 3, 'b': 2}  
>>> func()  
{  
>>> func(a='python')  
{'a': 'python'}
```

## Python

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