Python Basics

https://github.com/beilak/PyBook

Инструментарий разработки

- Jupyter Notebook

- Google Colab

- PyCharm

- VS Code (С расширением Jupyter)

1. Типы данных

Int

```
i1 = 1
i2 = 10
i3 = -1000
i4 = int(1000)
i5 = int("1000")
```

```
print(f"{i1 = }")
print(f"{i2 = }")
print(f"{i5 = }")
```

```
# Result

i1 = 1
i2 = 10
i5 = 1000
```

Float

```python
f1 = 10.10
f2 = 0.000001
f3 = float(10)
```

```python
print(f"{f1 = }")
print(f"{f2 = }")
print(f"{f3 = }")
```

```
# Result

f1 = 10.1
f2 = 1e-06
f3 = 10.0
```

String

```python
s1 = "My Text"
s2 = 'It is text'
s3 = f"my text with {i1}"
s4 = f" s1 has type – {type(s1)}"
```

```python
print(f"{s1 = }")
print(f"{s2 = }")
print(f"{s3 = }")
print(f"{s4 = }")
```

```
# Result

s1 = 'My Text'
s2 = 'It is text'
s3 = 'my text with 1'
s4 = " s1 has type – <class 'str'>"
```

List

```python
my_list1 = [1, 2, 3, 4, 5]
my_list2 = ["A", "B", "C", my_list1]
my_list3 = ["A", "B", 1, 2, 3, 4, 5, 9.0]
```

```python
print(f"{my_list1 = }")
print(f"{my_list2 = }")
print(f"{my_list3 = }")
print(type(my_list1))
```

```
# Result

my_list1 = [1, 2, 3, 4, 5]
my_list2 = ['A', 'B', 'C', [1, 2, 3, 4, 5]]
my_list3 = ['A', 'B', 1, 2, 3, 4, 5, 9.0]
<class 'list'>
```

Set

```python
my_set1 = {1, 2, 3, 4, 5, 5, 5, 5, 5}
my_set2 = {'A', 'B', 'C'}
my_set3 = {1, 2, 3, 'A', 'B', 'C'}
my_set4 = {1, 'A', 3, 'B', 'C', 10.24}
```

```python
print(f"{my_set1 = }")
print(f"{my_set2 = }")
print(f"{my_set3 = }")
print(f"{my_set4 = }")
```

```python
# Result

my_set1 = {1, 2, 3, 4, 5}
my_set2 = {'C', 'B', 'A'}
my_set3 = {'B', 1, 2, 3, 'C', 'A'}
my_set4 = {'B', 1, 3, 10.24, 'C', 'A'}
```

Tuple

```python
my_tuple = (1, 2, "A", "B", "C", 1)
my_tuple_1 = 1, 2, "A", 1

print(type(my_tuple))
print(f"{ my_tuple = }")
print(f"{ my_tuple_1 = }")
```

```
# Result

<class 'tuple'>
my_tuple = (1, 2, 'A', 'B', 'C', 1)
my_tuple_1 = (1, 2, 'A', 1)
```

Dictionary

```python
sales = {
    "Shop1": 90,
    "Shop2": 100,
    "Shop3": 20,
    "Shop4": 10,
}

print(f"{ sales = }")
print(f"{ sales['Shop2'] = }")
```

```
# Result

sales = {
'Shop1': 90, 'Shop2': 100,
'Shop3': 20, 'Shop4': 10
}
sales['Shop2'] = 100
```

2. Операции

Арифметические операции

```python
i1 = 90
i2 = 10
sum_2_ints = i1 + i2

print(f"{ sum_2_ints = }")
```

```
# Result

sum_2_ints = 100
```

```python
number_1 = 100
number_1 = number_1 / 2

print(f"{ number_1 = }")
```

```
# Result

number_1 = 50.0
```

Арифметические операции

```python
multiply = 2 * 2
```

```python
print(f"{ multiply = }")
```

Result

multiply = 4

```python
sum_floats = 10.25 + 11.125
```

```python
print(f"{ sum_floats = }")
```

Result

sum_floats = 21.375

Операции со списком

```python
list_1 = [1, 2, 3, 4]
list_2 = [3, 4, 5, "X"]
sum_2_list = list_1 + list_2

print(f"{ sum_2_list = }")
```

```
# Result

sum_2_list = [1, 2, 3, 4, 3, 4, 5, 'X']
```

```python
list_1 = [1, 2, 3, 4]
print(f"{ list_1 = }")

list_1[0] = "_New_"
print(f"{ list_1 = }")

print(f"{ list_1[2] = }")
```

```
# Result

list_1 = [1, 2, 3, 4]
list_1 = ['_New_', 2, 3, 4]
list_1[2] = 3
```

Операции со списком

```python
list_1 = [1, 2, 3, 4]
```

```python
list_1[1] + list_1[2] + list_1[3]
```

```python
# Result

9
```

Операции со множествами

```python
set_1 = {"A", "B", "C", "D"}
set_2 = {1, 2, 3, 4, 5, 6}

new_set = set()

new_set.update(set_1)
new_set.update(set_2)


print(f"{ new_set = }")

# Result

new_set = {1, 2, 3, 4, 5, 6, 'C', 'A', 'D', 'B'}
```

Операции со множествами

```python
my_new_list = [1, 2, 3]            # List
my_new_tuple = (1, 2, 3)          # Tuple


my_new_list[0] = 1234
# my_new_tuple[0] = 1234      # NOT WORKING!!!! It's TUPLE


print(f"{ my_new_list = }")
print(f"{ my_new_tuple = }")



# Result

 my_new_list = [1234, 2, 3]
 my_new_tuple = (1, 2, 3)
```

3. Циклы

For

```python
my_list = [1, 2, 3, "A", "B", "C"]
for i in my_list:
    print(i)
```

Result

1
2
3
A
B
C

For

```python
my_list = [1, 2, 3, 4, 5, 6]
sum_of_list = 0
for i in my_list:
    sum_of_list = sum_of_list + i
print(sum_of_list)
```

Result

21

For

```python
my_text = "Some text"
for i in my_text:
    print(i)
```

```
# Result

S
o
m
e

t
e
x
t
```

For

```python
sales = {
    "Shop1": 90,
    "Shop2": 100,
    "Shop3": 20,
    "Shop4": 10
}
```

```python
sales_sum = 0
for i in sales:
    sales_sum += sales[i]
print(sales_sum)
```

```
# Result

220
```

While

```python
count = 0
while count < 5:
    count += 1
    print(count)
```

```
# Result

1
2
3
4
5
```

4. If…else

If...else

```python
a = 10
b = 5
if a > b:
    print("a > b")
```

```
# Result

a > b
```

```python
a = 3
b = 5
if a > b:
    print("This code is NOT running")
print("This code is running")
```

```
# Result

This code is
running
```

5. Functions

6. Class