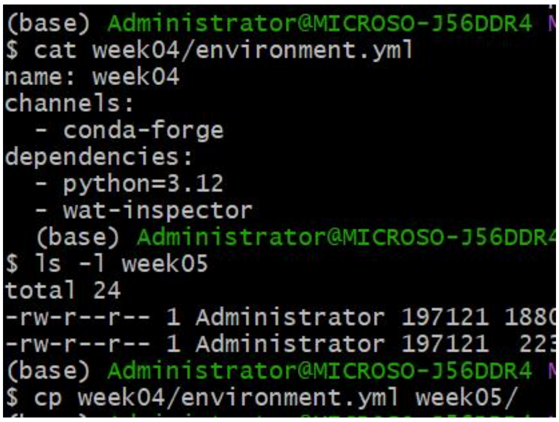
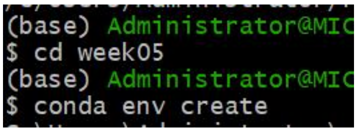
第 5 周学习笔记

1. 将 environment.yml 从 week04 复制到 week05



```
(base) Administrator@MICROSO-J56DDR4 M
$ cat week04/environment.yml
name: week04
channels:
  - conda-forge
dependencies:
  - python=3.12
  - wat-inspector
  (base) Administrator@MICROSO-J56DDR4
$ ls -l week05
total 24
-rw-r--r-- 1 Administrator 197121 1880
-rw-r--r-- 1 Administrator 197121  223
(base) Administrator@MICROSO-J56DDR4 M
$ cp week04/environment.yml week05/
```

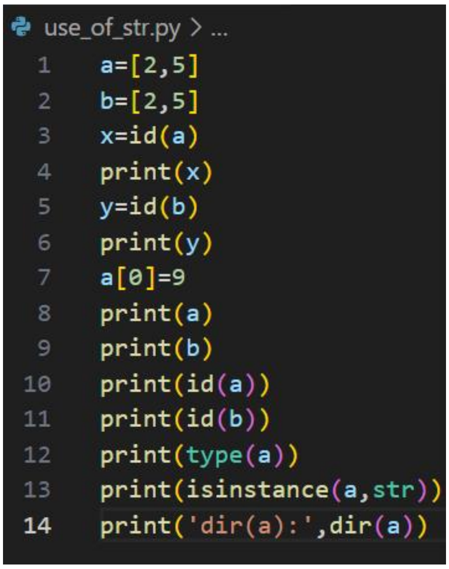
创建 conda 环境



```
(base) Administrator@MIC
$ cd week05
(base) Administrator@MIC
$ conda env create
```

2

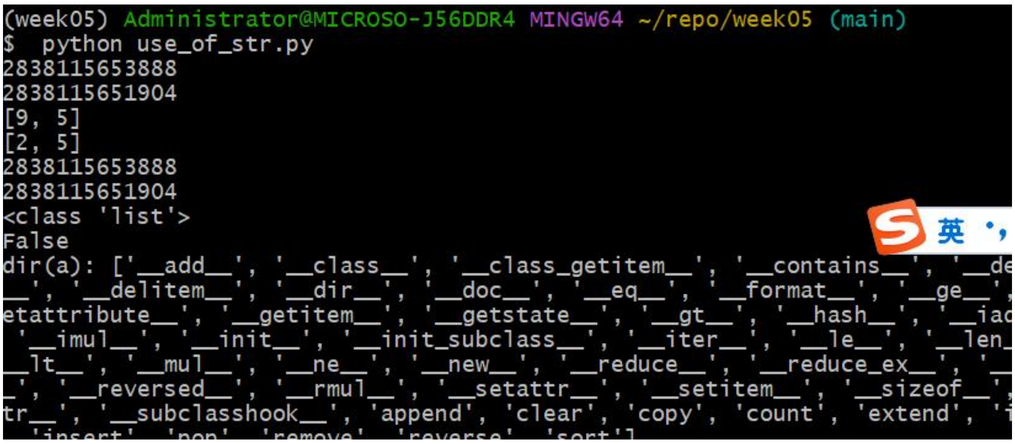
id()；type()；isinstance();dir()



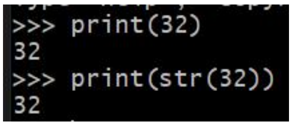
use_of_str.py > ...

```python
a=[2,5]
b=[2,5]
x=id(a)
print(x)
y=id(b)
print(y)
a[0]=9
print(a)
print(b)
print(id(a))
print(id(b))
print(type(a))
print(isinstance(a,str))
print('dir(a):',dir(a))
```

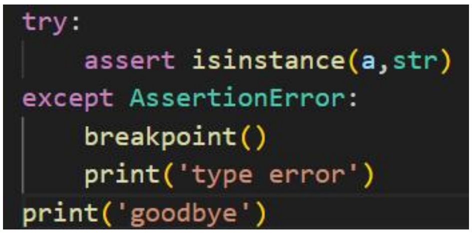
结果如下



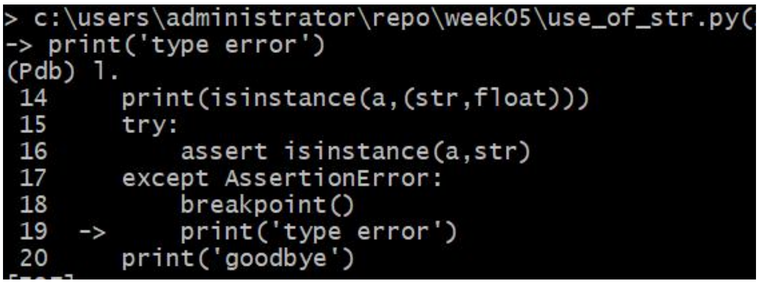
```
(week05) Administrator@MICROSO-J56DDR4 MINGW64 ~/repo/week05 (main)
$  python use_of_str.py
2838115653888
2838115651904
[9, 5]
[2, 5]
2838115653888
2838115651904
<class 'list'>
False
dir(a): ['__add__', '__class__', '__class_getitem__', '__contains__', '__de
__', '__delitem__', '__dir__', '__doc__', '__eq__', '__format__', '__ge__',
etattribute__', '__getitem__', '__getstate__', '__gt__', '__hash__', '__iac
 '__imul__', '__init__', '__init_subclass__', '__iter__', '__le__', '__len_
__lt__', '__mul__', '__ne__', '__new__', '__reduce__', '__reduce_ex__', '__
_', '__reversed__', '__rmul__', '__setattr__', '__setitem__', '__sizeof__',
tr__', '__subclasshook__', 'append', 'clear', 'copy', 'count', 'extend', 'i
 'insert', 'pop', 'remove', 'reverse', 'sort']
```



```
>>> print(32)
32
>>> print(str(32))
32
```



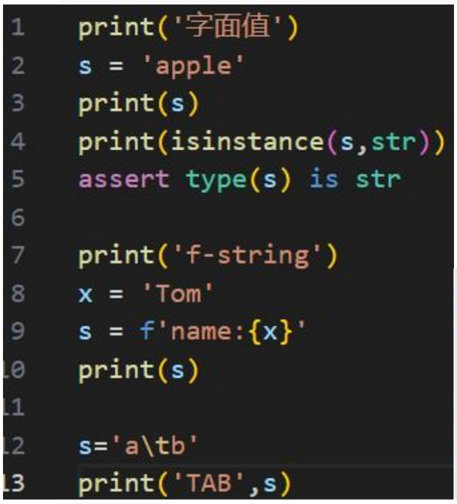
```
try:
    assert isinstance(a,str)
except AssertionError:
    breakpoint()
    print('type error')
print('goodbye')
```



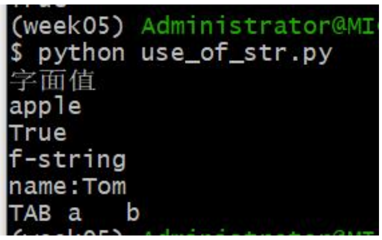
```
> c:\users\administrator\repo\week05\use_of_str.py(
-> print('type error')
(Pdb) l.
 14         print(isinstance(a,(str,float)))
 15         try:
 16             assert isinstance(a,str)
 17         except AssertionError:
 18             breakpoint()
 19  ->         print('type error')
 20         print('goodbye')
```

3. 获取实例

3.1 字面值 (literal) (包括 f-string 语法)

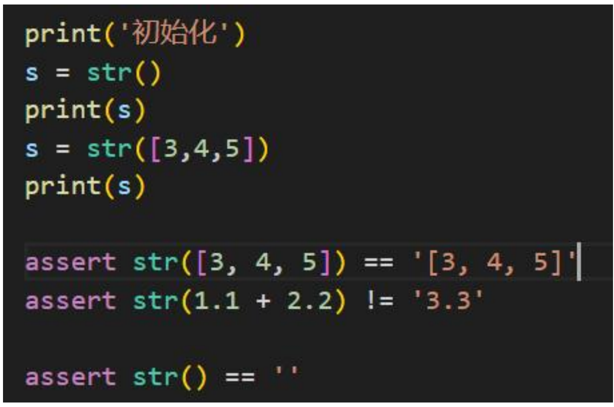


```
print('字面值')
s = 'apple'
print(s)
print(isinstance(s,str))
assert type(s) is str

print('f-string')
x = 'Tom'
s = f'name:{x}'
print(s)

s='a\tb'
print('TAB',s)
```

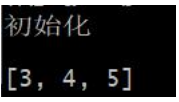


```
(week05) Administrator@MI
$ python use_of_str.py
字面值
apple
True
f-string
name:Tom
TAB a    b
```

3.2 初始化

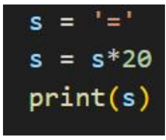


```
print('初始化')
s = str()
print(s)
s = str([3,4,5])
print(s)

assert str([3, 4, 5]) == '[3, 4, 5]'
assert str(1.1 + 2.2) != '3.3'

assert str() == ''
```

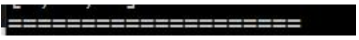


```
初始化

[3, 4, 5]
```

3.3 运算值

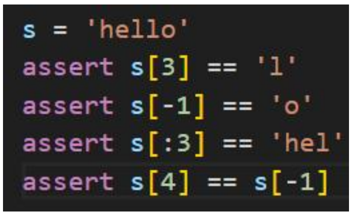


```
s = '='
s = s*20
print(s)
```



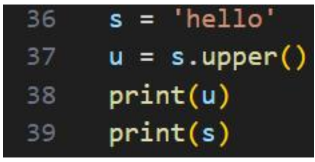
```
====================
```

3.4 索引值

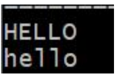


```
s = 'hello'
assert s[3] == 'l'
assert s[-1] == 'o'
assert s[:3] == 'hel'
assert s[4] == s[-1]
```

3.5 返回值

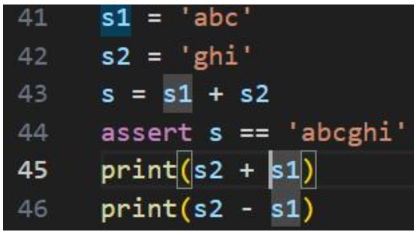


```
s = 'hello'
u = s.upper()
print(u)
print(s)
```

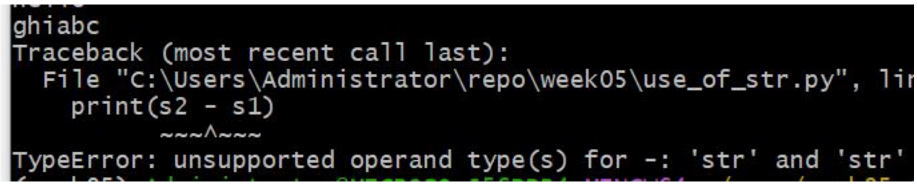


```
HELLO
hello
```

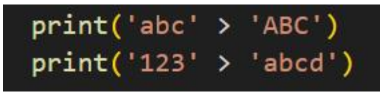
4. 验证属性



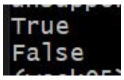
```
s1 = 'abc'
s2 = 'ghi'
s = s1 + s2
assert s == 'abcghi'
print(s2 + s1)
print(s2 - s1)
```



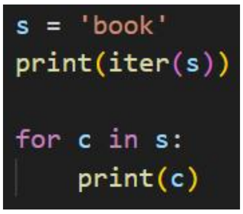
```
ghiabc
Traceback (most recent call last):
  File "C:\Users\Administrator\repo\week05\use_of_str.py", li
    print(s2 - s1)
          ~~~^~~~
TypeError: unsupported operand type(s) for -: 'str' and 'str'
```



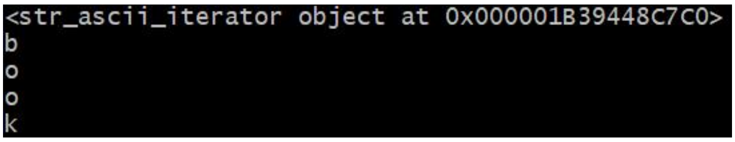
```
print('abc' > 'ABC')
print('123' > 'abcd')
```



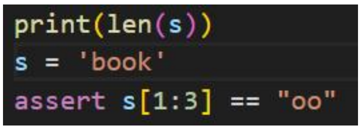
```
True
False
```



```
s = 'book'
print(iter(s))

for c in s:
    print(c)
```

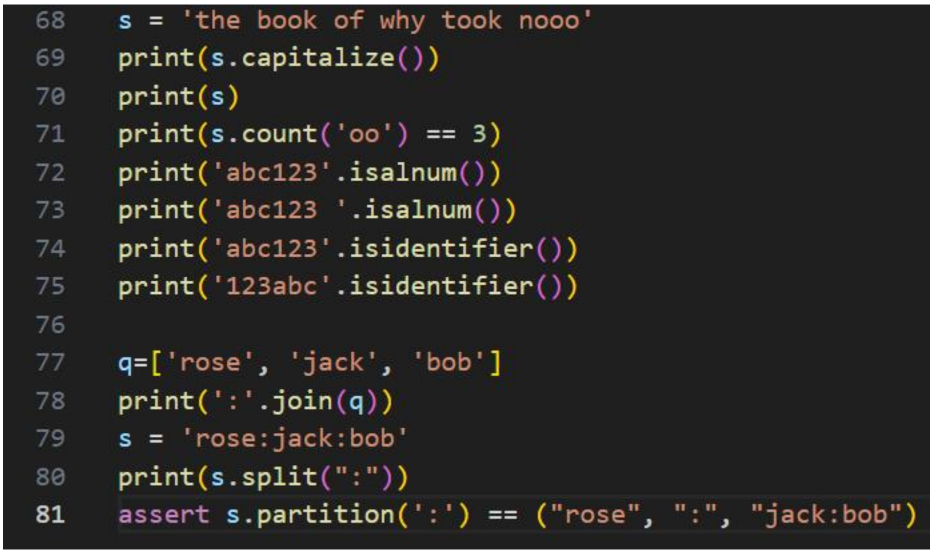


```
<str_ascii_iterator object at 0x000001B39448C7C0>
b
o
o
k
```

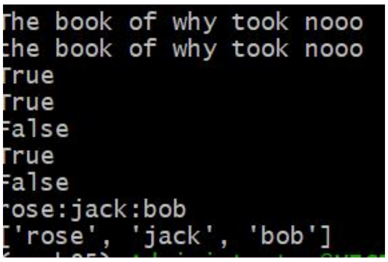


```
print(len(s))
s = 'book'
assert s[1:3] == "oo"
```

输出结果为 4，之后无报错。

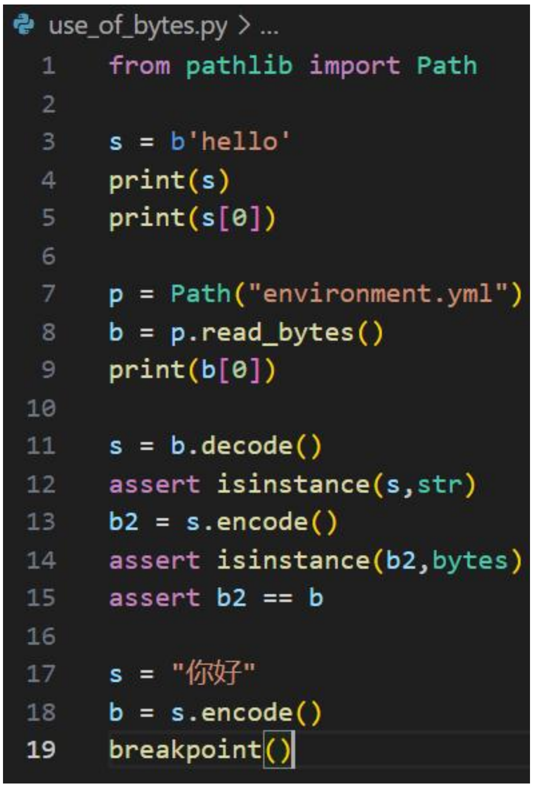


```python
s = 'the book of why took nooo'
print(s.capitalize())
print(s)
print(s.count('oo') == 3)
print('abc123'.isalnum())
print('abc123 '.isalnum())
print('abc123'.isidentifier())
print('123abc'.isidentifier())

q=['rose', 'jack', 'bob']
print(':'.join(q))
s = 'rose:jack:bob'
print(s.split(":"))
assert s.partition(':') == ("rose", ":", "jack:bob")
```

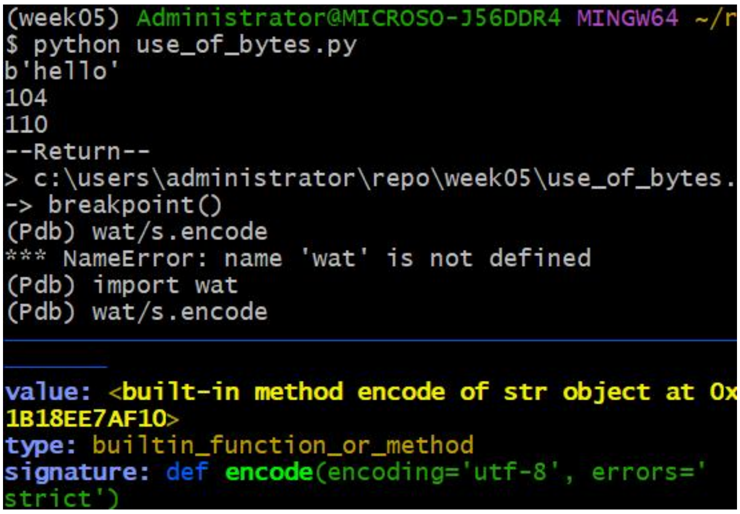


```
The book of why took nooo
the book of why took nooo
True
True
False
True
False
rose:jack:bob
['rose', 'jack', 'bob']
```

5. bytes 编解码

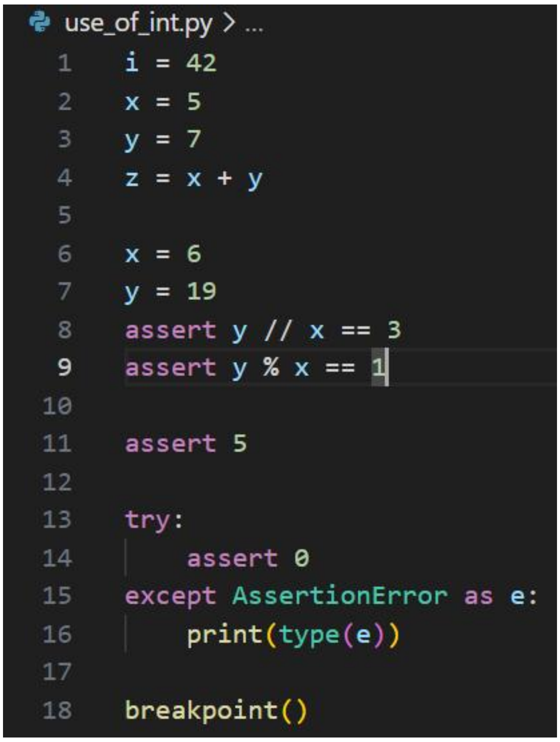


```python
from pathlib import Path

s = b'hello'
print(s)
print(s[0])

p = Path("environment.yml")
b = p.read_bytes()
print(b[0])

s = b.decode()
assert isinstance(s,str)
b2 = s.encode()
assert isinstance(b2,bytes)
assert b2 == b

s = "你好"
b = s.encode()
breakpoint()
```



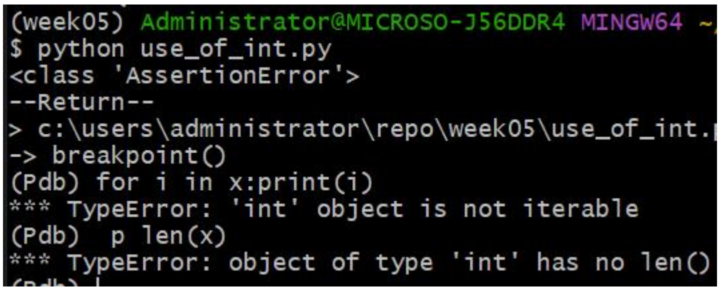
```
(week05) Administrator@MICROSO-J56DDR4 MINGW64 ~/r
$ python use_of_bytes.py
b'hello'
104
110
--Return--
> c:\users\administrator\repo\week05\use_of_bytes.
-> breakpoint()
(Pdb) wat/s.encode
*** NameError: name 'wat' is not defined
(Pdb) import wat
(Pdb) wat/s.encode

value: <built-in method encode of str object at 0x
1B18EE7AF10>
type: builtin_function_or_method
signature: def encode(encoding='utf-8', errors='
strict')
```

6. 整数



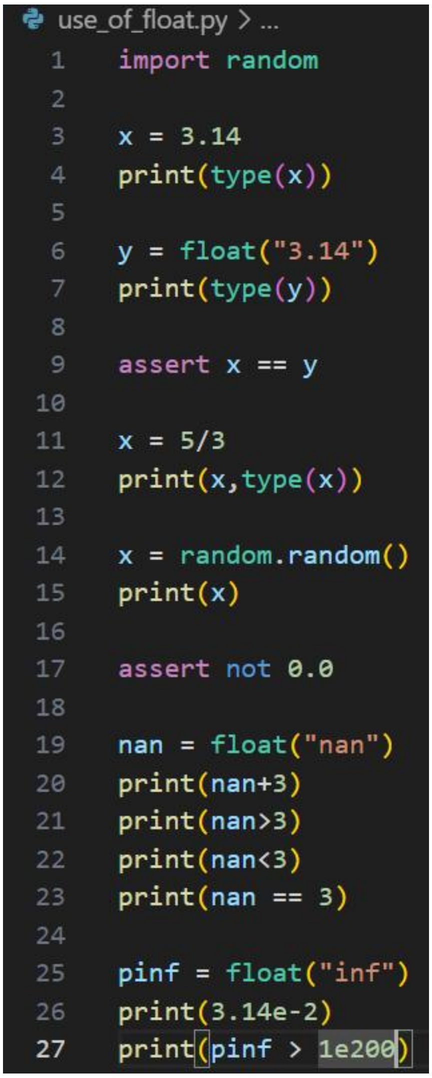
use_of_int.py > ...

```python
i = 42
x = 5
y = 7
z = x + y

x = 6
y = 19
assert y // x == 3
assert y % x == 1

assert 5

try:
    assert 0
except AssertionError as e:
    print(type(e))

breakpoint()
```

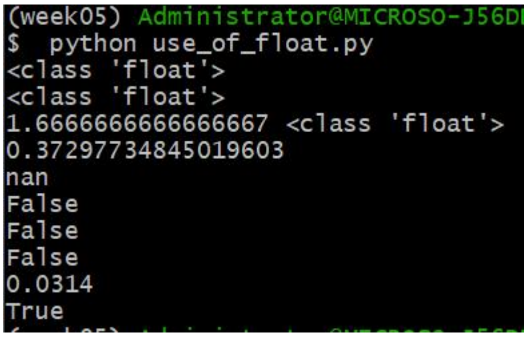


```
(week05) Administrator@MICROSO-J56DDR4 MINGW64 ~
$ python use_of_int.py
<class 'AssertionError'>
--Return--
> c:\users\administrator\repo\week05\use_of_int.
-> breakpoint()
(Pdb) for i in x:print(i)
*** TypeError: 'int' object is not iterable
(Pdb)  p len(x)
*** TypeError: object of type 'int' has no len()
```

7. 浮点数

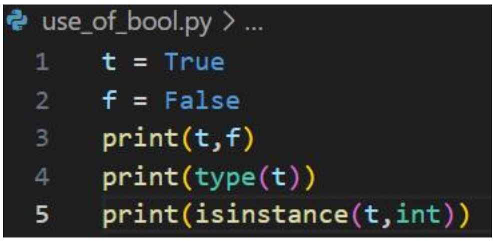


```
use_of_float.py > ...
import random

x = 3.14
print(type(x))

y = float("3.14")
print(type(y))

assert x == y

x = 5/3
print(x,type(x))

x = random.random()
print(x)

assert not 0.0

nan = float("nan")
print(nan+3)
print(nan>3)
print(nan<3)
print(nan == 3)

pinf = float("inf")
print(3.14e-2)
print(pinf > 1e200)
```

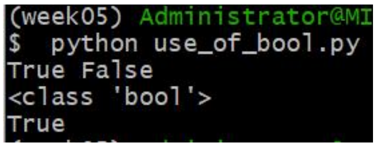


```
(week05) Administrator@MICROSO-J56DI
$  python use_of_float.py
<class 'float'>
<class 'float'>
1.6666666666666667 <class 'float'>
0.37297734845019603
nan
False
False
False
0.0314
True
```

8. 布尔值

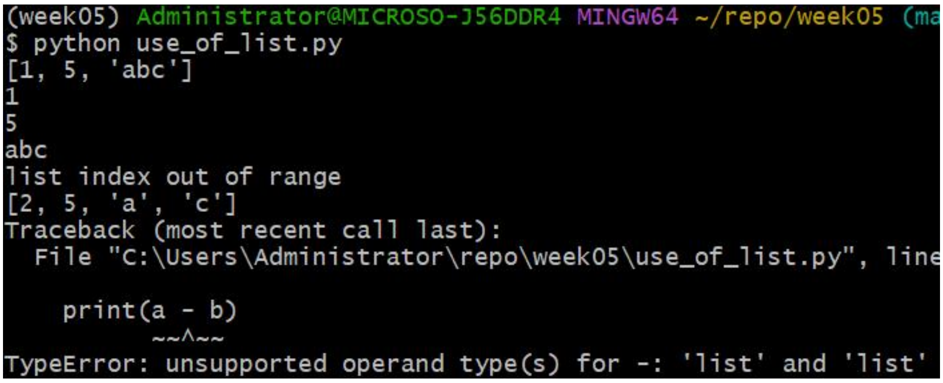


```
use_of_bool.py > ...
t = True
f = False
print(t,f)
print(type(t))
print(isinstance(t,int))
```

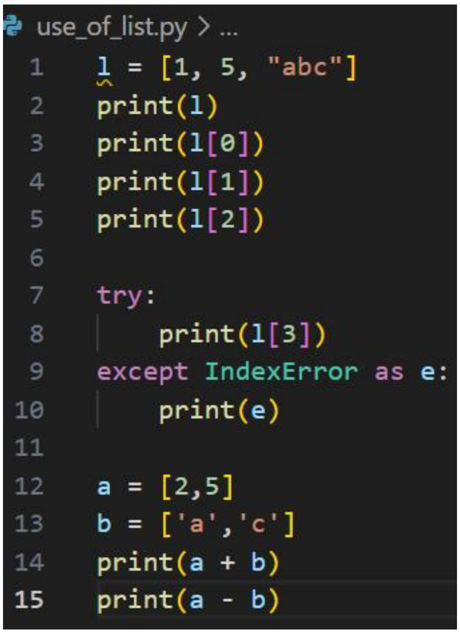


```
(week05) Administrator@MI
$  python use_of_bool.py
True False
<class 'bool'>
True
```

9. 列表

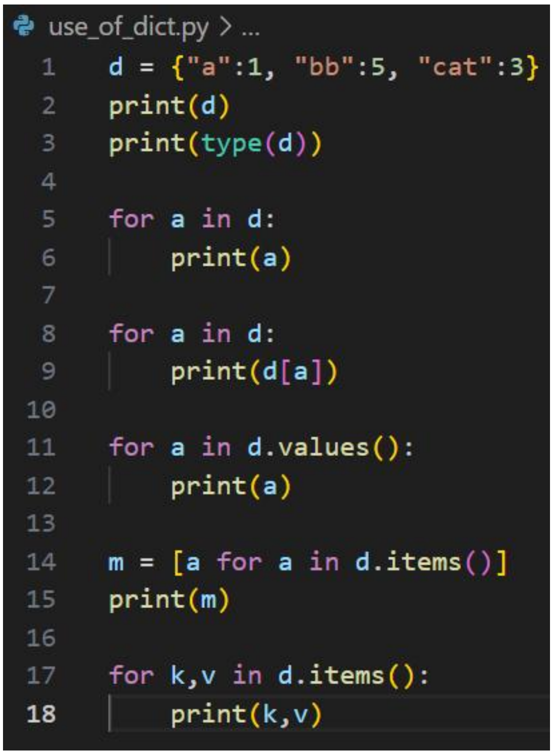


```
(week05) Administrator@MICROSO-J56DDR4 MINGW64 ~/repo/week05 (ma
$ python use_of_list.py
[1, 5, 'abc']
1
5
abc
list index out of range
[2, 5, 'a', 'c']
Traceback (most recent call last):
  File "C:\Users\Administrator\repo\week05\use_of_list.py", line

    print(a - b)
          ~~^~~
TypeError: unsupported operand type(s) for -: 'list' and 'list'
```

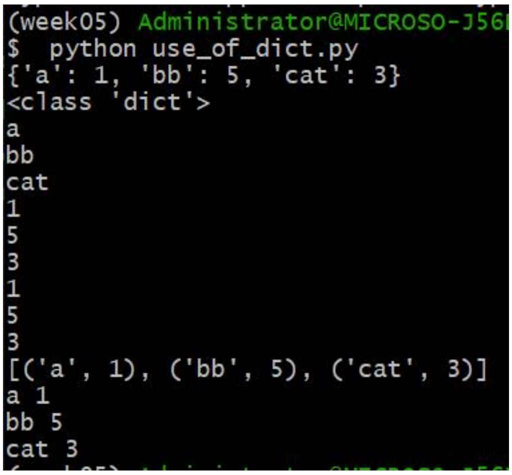


```python
l = [1, 5, "abc"]
print(l)
print(l[0])
print(l[1])
print(l[2])

try:
    print(l[3])
except IndexError as e:
    print(e)

a = [2,5]
b = ['a','c']
print(a + b)
print(a - b)
```

10.字典

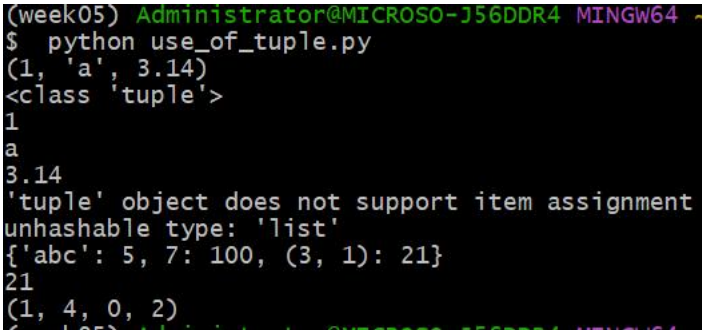


```python
d = {"a":1, "bb":5, "cat":3}
print(d)
print(type(d))

for a in d:
    print(a)

for a in d:
    print(d[a])

for a in d.values():
    print(a)

m = [a for a in d.items()]
print(m)

for k,v in d.items():
    print(k,v)
```

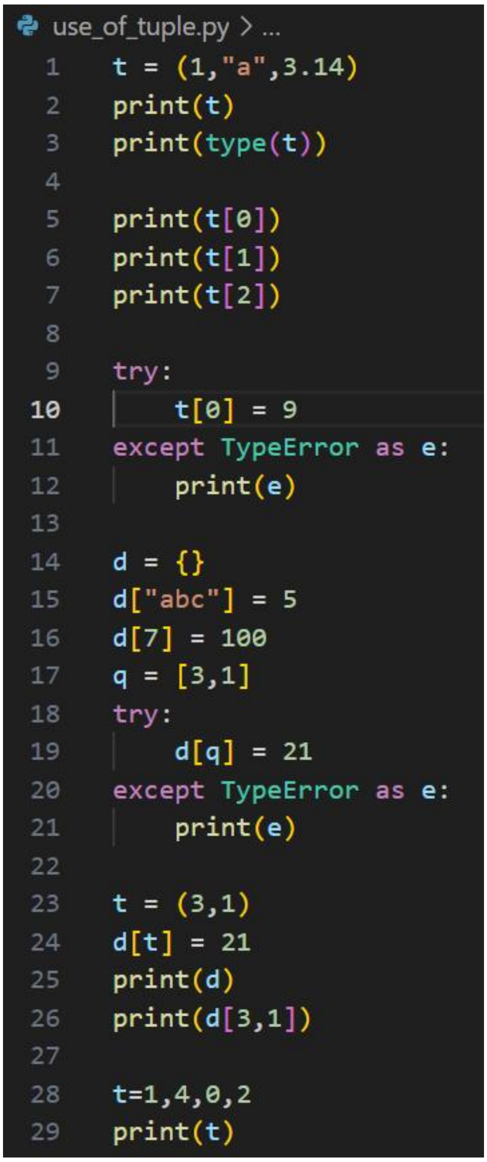


```
(week05) Administrator@MICROSO-J56
$  python use_of_dict.py
{'a': 1, 'bb': 5, 'cat': 3}
<class 'dict'>
a
bb
cat
1
5
3
1
5
3
[('a', 1), ('bb', 5), ('cat', 3)]
a 1
bb 5
cat 3
```

11.元组



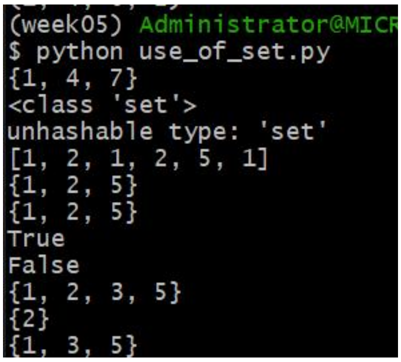
```
(week05) Administrator@MICROSO-J56DDR4 MINGW64 ~
$  python use_of_tuple.py
(1, 'a', 3.14)
<class 'tuple'>
1
a
3.14
'tuple' object does not support item assignment
unhashable type: 'list'
{'abc': 5, 7: 100, (3, 1): 21}
21
(1, 4, 0, 2)
```



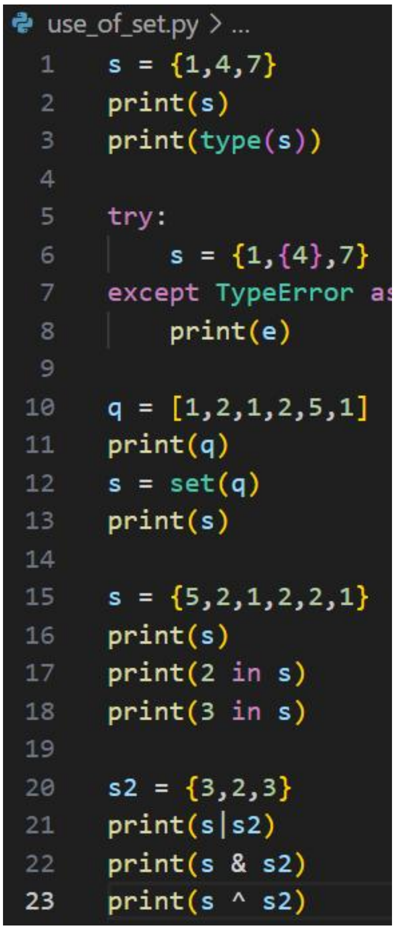
use_of_tuple.py > ...

```python
t = (1,"a",3.14)
print(t)
print(type(t))

print(t[0])
print(t[1])
print(t[2])

try:
    t[0] = 9
except TypeError as e:
    print(e)

d = {}
d["abc"] = 5
d[7] = 100
q = [3,1]
try:
    d[q] = 21
except TypeError as e:
    print(e)

t = (3,1)
d[t] = 21
print(d)
print(d[3,1])

t=1,4,0,2
print(t)
```

12.集合



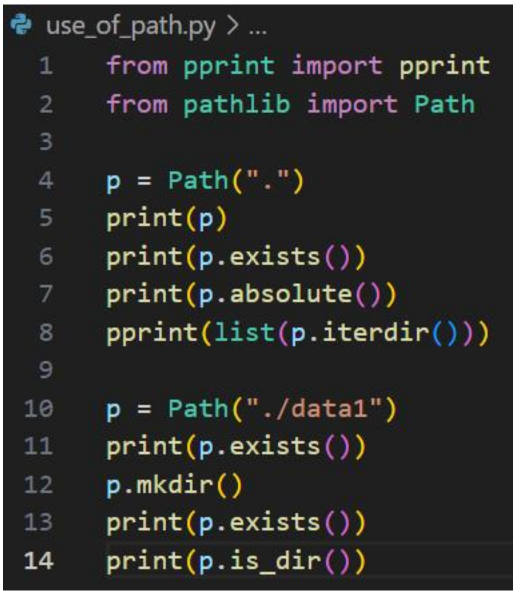
```
(week05) Administrator@MICR
$ python use_of_set.py
{1, 4, 7}
<class 'set'>
unhashable type: 'set'
[1, 2, 1, 2, 5, 1]
{1, 2, 5}
{1, 2, 5}
True
False
{1, 2, 3, 5}
{2}
{1, 3, 5}
```



use_of_set.py > ...

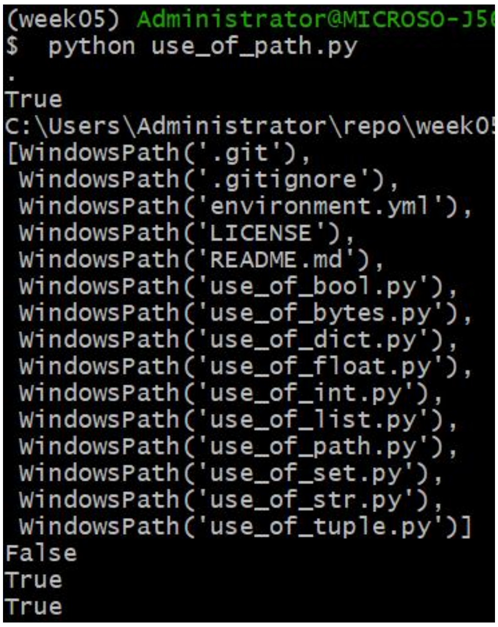
```python
s = {1,4,7}
print(s)
print(type(s))

try:
    s = {1,{4},7}
except TypeError as
    print(e)

q = [1,2,1,2,5,1]
print(q)
s = set(q)
print(s)

s = {5,2,1,2,2,1}
print(s)
print(2 in s)
print(3 in s)

s2 = {3,2,3}
print(s|s2)
print(s & s2)
print(s ^ s2)
```

13.pathlib



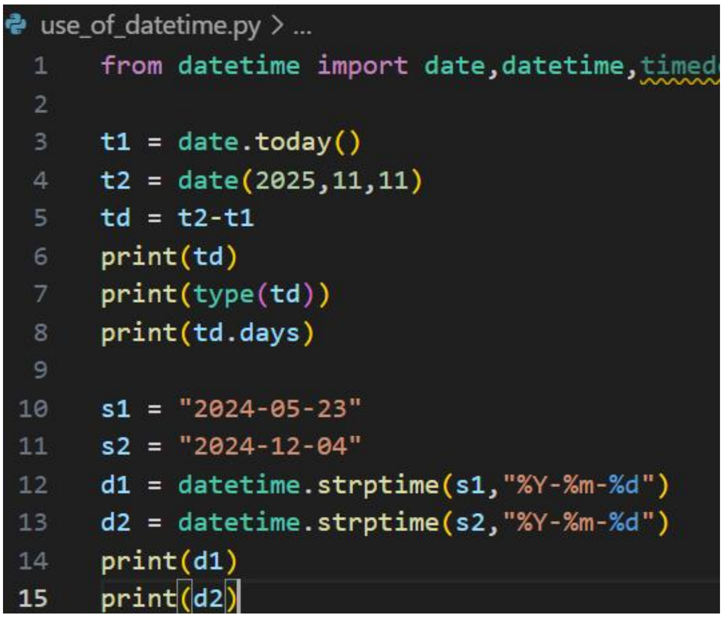
use_of_path.py > ...

```python
from pprint import pprint
from pathlib import Path

p = Path(".")
print(p)
print(p.exists())
print(p.absolute())
pprint(list(p.iterdir()))

p = Path("./data1")
print(p.exists())
p.mkdir()
print(p.exists())
print(p.is_dir())
```



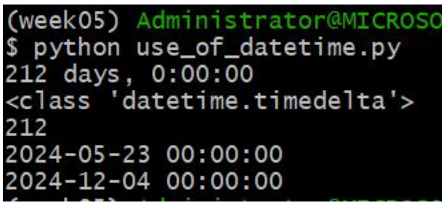
```
(week05) Administrator@MICROSO-J5
$  python use_of_path.py
.
True
C:\Users\Administrator\repo\week0
[WindowsPath('.git'),
 WindowsPath('.gitignore'),
 WindowsPath('environment.yml'),
 WindowsPath('LICENSE'),
 WindowsPath('README.md'),
 WindowsPath('use_of_bool.py'),
 WindowsPath('use_of_bytes.py'),
 WindowsPath('use_of_dict.py'),
 WindowsPath('use_of_float.py'),
 WindowsPath('use_of_int.py'),
 WindowsPath('use_of_list.py'),
 WindowsPath('use_of_path.py'),
 WindowsPath('use_of_set.py'),
 WindowsPath('use_of_str.py'),
 WindowsPath('use_of_tuple.py')]
False
True
True
```

14.Datetime



use_of_datetime.py > ...

```python
from datetime import date,datetime,timed

t1 = date.today()
t2 = date(2025,11,11)
td = t2-t1
print(td)
print(type(td))
print(td.days)

s1 = "2024-05-23"
s2 = "2024-12-04"
d1 = datetime.strptime(s1,"%Y-%m-%d")
d2 = datetime.strptime(s2,"%Y-%m-%d")
print(d1)
print(d2)
```



```
(week05) Administrator@MICROSO
$ python use_of_datetime.py
212 days, 0:00:00
<class 'datetime.timedelta'>
212
2024-05-23 00:00:00
2024-12-04 00:00:00
```