



Lambda, Map, and Filter in Python_bytepe

Lambda

Lambda function is used for creating small, one-time, anonymous function objects in Python.

lambda arguments : expression

(basic syntax)

Lambda can take many arguments but only can have only one expression.

```
1  add = lambda x, y : x + y
2
3  print(add(2, 3))
4  print(type(add))
5
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
→ ~ /opt/homebrew/bin/python3 /Users/tepe/D
5
<class 'function'>
```

In this example, x and y are arguments to the function and x + y is the expression. Its values are returned as output.

See the type is function!!

Map

map(function_object, iterable1, ...)

(basic syntax)

```
7  def square(x):
8      return x ** 2
9
10 map(square, [1, 2, 3, 4, 5, 6])
11 print(list(map(square, [1, 2, 3, 4, 5, 6])))
12 print('-----')
13 squarelist = map(square, [1, 2, 3, 4, 5, 6])
14 print(list(squarelist))
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: Python

```
→ ~ /opt/homebrew/bin/python3 /Users/tepe/Desktop/GitHub/VSCODE/P
[1, 4, 9, 16, 25, 36]
-----
[1, 4, 9, 16, 25, 36]
```

Map executes the square function for each element of list in the above example.

Let's use **map** and **lambda** together

```
17 map(lambda x : x ** 2, [1, 2, 3, 4, 5, 6])
18 print(list(map(lambda x : x ** 2, [1, 2, 3, 4, 5, 6])))
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: Python

```
→ ~ /opt/homebrew/bin/python3 /Users/tepe/Desktop/GitHub/VSCODE/PYTHON/050721_
[1, 4, 9, 16, 25, 36]
```

Use Map and lambda with multiple iterables!!

```
21 list_odd = [1, 3, 5, 7, 9]
22 list_even = [2, 4, 6, 8, 10]
23
24 map(lambda x, y: x + y, list_odd, list_even)
25
26 total = list(map(lambda x, y: x + y, list_odd, list_even))
27 print(total)
28 print('-----')
29 print(list(map(lambda x, y: x + y, list_odd, list_even)))
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: Python

```
→ ~ /opt/homebrew/bin/python3 /Users/tepe/Desktop/GitHub/VSCODE/PYTHON/050721_pc_
[3, 7, 11, 15, 19]
-----
[3, 7, 11, 15, 19]
```

Filter

filter(function_object, iterable)

(basic syntax)

!! Unlike MAP the FILTER FUNCTION only have one ITERABLE!!

```
31 listem = [4, 5, 7, 8, 9, 80, 56, 45, 46, 70, 30, 35]
32
33 filter(lambda x : x % 2 == 0, listem)
34
35 odd_listem = list(filter(lambda x : x % 2 != 0, listem))
36 print(odd_listem)
37 print('-----')
38 print(list(filter(lambda x : x % 2 != 0, listem)))
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: Python

```
→ ~ /opt/homebrew/bin/python3 /Users/tepe/Desktop/GitHub/VSCODE/PYTHON/050721_pc_
[5, 7, 9, 45, 35]
-----
[5, 7, 9, 45, 35]
```

Final REMINDER!!

Similar to map filter function returns object. We can not access object unless we convert it. For example,

```
41 listem = [4, 5, 7, 8, 9, 80, 56, 45, 46, 70, 30, 35]
42
43 filter(lambda x: x % 2 == 0, listem)
44 print(filter(lambda x: x % 2 == 0, listem))
45 # returns <filter object at 0x104702a00>
46
47 print('-----')
48
49 even_listem = tuple(filter(lambda x: x % 2 == 0, listem))
50 print(even_listem)
51 # you can convert it tuple, list etc.
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: Python

```
→ ~ /opt/homebrew/bin/python3 /Users/tepe/Desktop/GitHub/VSCODE/PYTHON/050721_pc
<filter object at 0x105451fd0>
-----
(4, 8, 80, 56, 46, 70, 30)
```