

PythonTip 01 - Functions

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1 Python Tip #1: Functions

Functions are separately defined code snippets that you can then use in your main code.

```
[1]: def double(number): # arguments = input
      new_number = 2*number
      return new_number # return = output
```

```
[5]: doubled_number = double(17)
```

```
[6]: print(doubled_number)
```

34

```
[7]: def print_hello(x):
      print(x+1)
```

```
[8]: print_hello(5)
```

6

```
[ ]:
```

```
[9]: def double(number=7): # number will default to 7 if you don't specify it
      new_number = 2*number
      return new_number
```

```
[10]: double()
```

[10]: 14

```
[11]: double(5)
```

[11]: 10

```
[12]: double(number=5)
```

[12]: 10

```
[13]: def double(number): # arguments = input
      new_number = 2*number
      return new_number
```

“Lambda Functions” sound very fancy, but they are just a quicker way to define very simple functions.

```
double = lambda x : 2*x
```

```
[name] = lambda [inputs] : [outputs]
```

```
[14]: new_double = lambda number : 2*number
      new_double(5)
```

```
[14]: 10
```

```
[15]: combine = lambda x, y: 2*x + 3 * y**2
```

```
[16]: combine(5,2)
```

```
[16]: 22
```

```
[ ]:
```

They are often useful (as we’ll see later) for extracting one component of a tuple or list.

```
[17]: second_component = lambda r : r[1]
```

```
[18]: second_component([5, -8, 1])
```

```
[18]: -8
```

This is totally equivalent to:

```
def second_component(r):
    return r[1]
```

This is mostly useful when you just want to use the function in one spot, and not define it forever.

When sorting a list, you can give it a “key” function to tell it what to sort by.

```
[19]: L = [-5, 1, 0, 7, -10]
      print(L)
      L.sort()
      print(L)
```

```
[-5, 1, 0, 7, -10]
```

```
[-10, -5, 0, 1, 7]
```

```
[ ]: [5, 1, 0, 7, 10]
```

```
[20]: L.sort(key=lambda x : abs(x))
```

```
[23]: def abs_val(x):  
       return abs(x)  
       L.sort(key=abs_val)
```

```
[25]: L.sort(key=abs)  
       print(L)
```

```
[0, 1, -5, 7, -10]
```

```
[ ]:
```

```
[40]: L = [(0, 3), (-1, 7), (2, 5)]
```

```
[41]: sorted(L)
```

```
[41]: [(-1, 7), (0, 3), (2, 5)]
```

```
[ ]: L
```

```
[29]: sorted_requests = sorted(L, key=lambda x : x[1])
```

```
[30]: sorted_requests[0]
```

```
[30]: (0, 3)
```

```
[ ]:
```