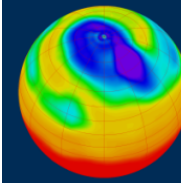




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Python: more on functions

Extracted from material by:



You can assign a function to a variable

```
def threshold(signal):  
    return 1.0 / sum(signal)
```

```
t = threshold  
print t([0.1, 0.4, 0.2])  
1.42857
```

Can put (a reference to) the function in a list

```
def area(r):  
    return PI * r * r
```

```
def circumference(r):  
    return 2 * PI * r
```

```
funcs = [area, circumference]
```

```
for f in funcs:  
    print f(1.0)
```

3.14159

6.28318

Can pass (a reference to) the function into a function

```
def call_it(func, value):  
    return func(value)
```

```
print call_it(area, 1.0)  
3.14159
```

```
print call_it(circumference, 1.0)  
6.28318
```

Must need to know *something* about the function
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```
def add_all(*args):  
    total = 0  
    for a in args:  
        total += a  
    return total
```


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```
def add_all(*args):  
    total = 0  
    for a in args:  
        total += a  
    return total
```

Must need to know *something* about the function
in order to call it

~~Like number of arguments~~

```
def add_all(*args):  
    total = 0  
    for a in args:  
        total += a  
    return total
```

```
print add_all()  
0
```

Must need to know *something* about the function
in order to call it

Like ~~number of arguments~~

```
def add_all(*args):  
    total = 0  
    for a in args:  
        total += a  
    return total
```

```
print add_all()
```

0

```
print add_all(1, 2, 3)
```

6

Connecting functions and sequences (1)

List Comprehensions come in handy:

1. Send a sequence to a function to create a new sequence of only positive numbers:

```
def positive(x):  
    return x >= 0
```

```
print [x for x in [-3, -2, 0, 1, 2] if positive(x)]  
[0, 1, 2]
```

Connecting functions and sequences (2)

2. Send a sequence of numbers to a function that will return the negative value of each item:

```
def negate(x):  
    return -x
```

```
print [negate(x) for x in [-3, -2, 0, 1, 2]]  
[3, 2, 0, -1, -2]
```