

# Guided Exercises

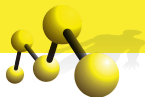
Luis Pedro Coelho

Programming for Scientists

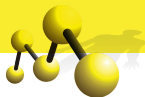
October 22, 2012



# Goals for this hour



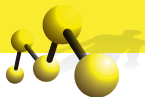
- A quiz
- Do a few exercises.
- Play around.
- You can work alone, in pairs, in triples,...



How do you access the first element of a list?

Assume `list` is a list:

- ① `list[1]`
- ② `list[0]`
- ③ `list[-1]`
- ④ `list(0)`
- ⑤ `list(-1)`
- ⑥ `list(1)`

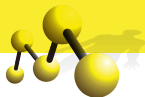


How do you access the last element of a list?

Assume list is a list:

- ① `list[1]`
- ② `list(-0)`
- ③ `list[-1]`
- ④ `list(-1)`
- ⑤ `list(1)`
- ⑥ `list[-0]`

# Exercises



What is the difference between the following two code examples:

A)

```
A = [1, 2, 3]
```

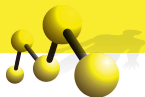
```
B = [1, 2, 3]
```

B)

```
A = [1, 2, 3]
```

```
B = A
```

Write a small piece of code (should be 2 or 3 lines) that behaves differently if you insert it after each of the two segments above.



What is the difference between the following two code examples:

A)

```
A = [1, 2, 3]
```

```
B = [1, 2, 3]
```

B)

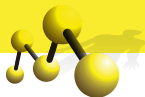
```
A = [1, 2, 3]
```

```
B = A
```

Write a small piece of code (should be 2 or 3 lines) that behaves differently if you insert it after each of the two segments above.

```
B[0] = 0
```

```
print A
```



- 1 Learn about the built-in function `sum`
- 2 Write an implementation of this function





- 1 Learn about the built-in function `sum`
- 2 Write an implementation of this function

```
def sum(xs, start=0):  
    '''  
    s = sum(xs, start=0)
```

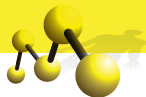
```
    Returns the sum of all values in “xs” + “start” (wh  
    '''
```

```
    for x in xs:  
        start += x  
    return start
```

```
numbers = set([1,2])
for i in xrange(5):
    numbers.add(i)
print len(numbers)
```

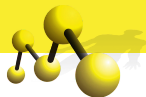
This prints:

- 7
- 6
- 5
- 4



```
import numpy as np
X = np.array([0, 1, 2, 1, 2, 1, 2, 1])
X += 0.1
print X[0]
```

- What does this print?
- Why?



```
import numpy as np
from matplotlib import pyplot as plt
```

```
X = np.linspace(-4, 4, 100)
Y = np.exp(.5-X*X)
```

