Guided Exercises

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Programming for Scientists

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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
Object Identity

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
Learn about the built-in function `sum`

Write an implementation of this function

```python
def sum(xs, start=0):
    
    Returns the sum of all values in "xs" + "start" (which defaults to 0)

    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)