

190F Foundations of Data Science

Lecture 10

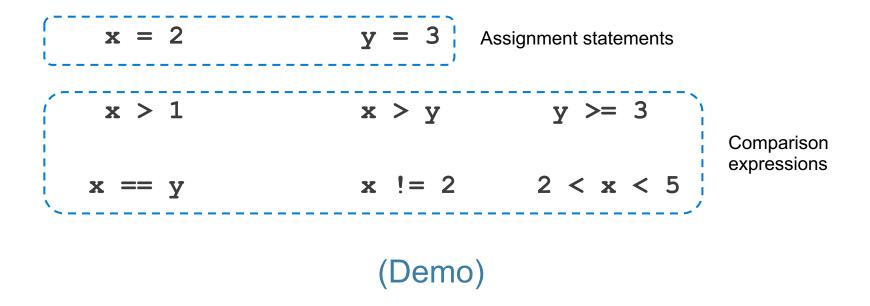
Iteration

Announcements

Comparison

Comparison Operators

The result of a comparison expression is a **bool** value



Combining Comparisons

Boolean operators can be applied to bool values

```
a = True b = False
                           Evaluate to True
not b a or b a and not b
a and b not (a or b) b and b
                           Evaluate to False
                 (Demo)
```

Aggregating Comparisons

Summing an array or list of bool values will count the True values only.

```
1 + 0 + 1 == 2
True + False + True == 2
sum([1 , 0 , 1 )) == 2
sum([True, False, True)) == 2
(Demo)
```

Conditional Statements

These statements *control* the sequence of computations that are performed in a program

- The keyword **if** begins a control statement
- The purpose of if is to define functions that choose different behavior based on their arguments
- if statements use comparisons to choose between different possible behaviors.

(Demo)

Random Selection

Random Selection

np.random.choice

- Selects at random
- with replacement
- from an array
- a specified number of times

Discussion Question

```
d = np.arange(6) + 1
```

What results from evaluating the following 2 expressions? Are they the same? Do they describe the same process?

```
np.random.choice(d, 1000) + np.random.choice(d, 1000)
```

```
2 * np.random.choice(d, 1000)
```

Control Statements

More Control Statements

These statements *control* the sequence of computations that are performed in a program

 The purpose of for is to perform a computation for every element in a list or array

(Demo)