Lecture 13

Iteration
Announcements
Comparison Operators

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

```
Assignment statements

x = 2           y = 3
x > 1           x > y          y >= 3
x == y          x != 2         2 < x < 5
```

Comparison expressions

```
t.where(array_of_bool_values) returns a table with only the rows of t for which the corresponding bool is True.
```
Aggregating Comparisons

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

\[
1 + 0 + 1 = 2 \\
\text{True} + \text{False} + \text{True} = 2 \\
\text{sum}([1, 0, 1]) = 2 \\
\text{sum}([\text{True}, \text{False}, \text{True}]) = 2
\]

(Demo)
Predicates

(Demo)
Appending Arrays
A Longer Array

- `np.append(array_1, value)`
  - array with value appended to array_1
  - value has to be of the same type as elements of array_1

- `np.append(array_1, array_2)`
  - array with array_2 appended to array_1
  - array_2 elements must have the same type as array_1 elements

(Demo)
Random Selection
Random Selection

**np.random.choice**
- Selects uniformly at random
- with replacement
- from an array,
- a specified number of times

```python
ten.random.choice(some_array, sample_size)
```
(Demo)
Control Statements
Control Statements

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

- The keywords if and for begin control statements
- The purpose of if is to define functions that choose different behavior based on their arguments
- The purpose of for is to perform a computation for every element in a list or array

(Demo)