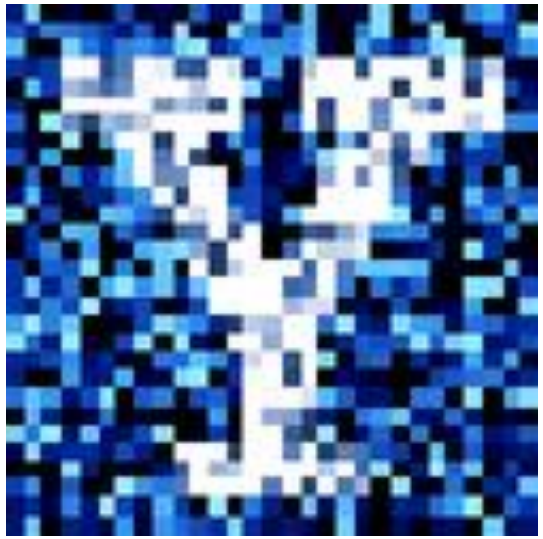
YData: Introduction to Data Science



Lecture 12: Maps and conditional statements

Overview

Review of joining tables

Maps

Comparisons

If there is time: Conditional statements

Announcements

Homework 4 has been posted

- Due Sunday February 27th at 11pm
- Relatively short

Project 1 has been posted

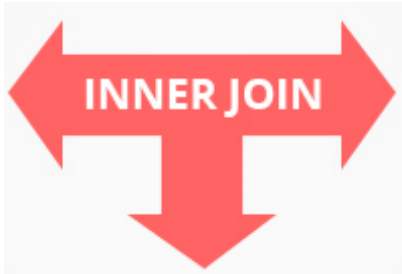
- Due Friday March 4th
- Fairly long, start on this soon!!!
- You are allowed to work with one other person on the project
  - You can not discuss the project with anyone else part from the TAs
- Recommendations:
  - Stay organized! There several tables involved, so writing down column names, and steps to solve particular problems on paper prior to coding will make your life much easier.
  - A pdf with functions/methods discussed in class is on the class Canvas site.

Review of joins

Review: joining tables

prices

Products	Price
Kiwis	$6
Onions	$3
Tomatoes	$7



quantities

Products	Quantity
Kiwis	10
Onions	6
Broccoli	5

Products	Price	Quantity
Kiwis	$6	10
Onions	$3	6

prices.join("Projects", quantities)

Let's explore this in Jupyter!

Maps

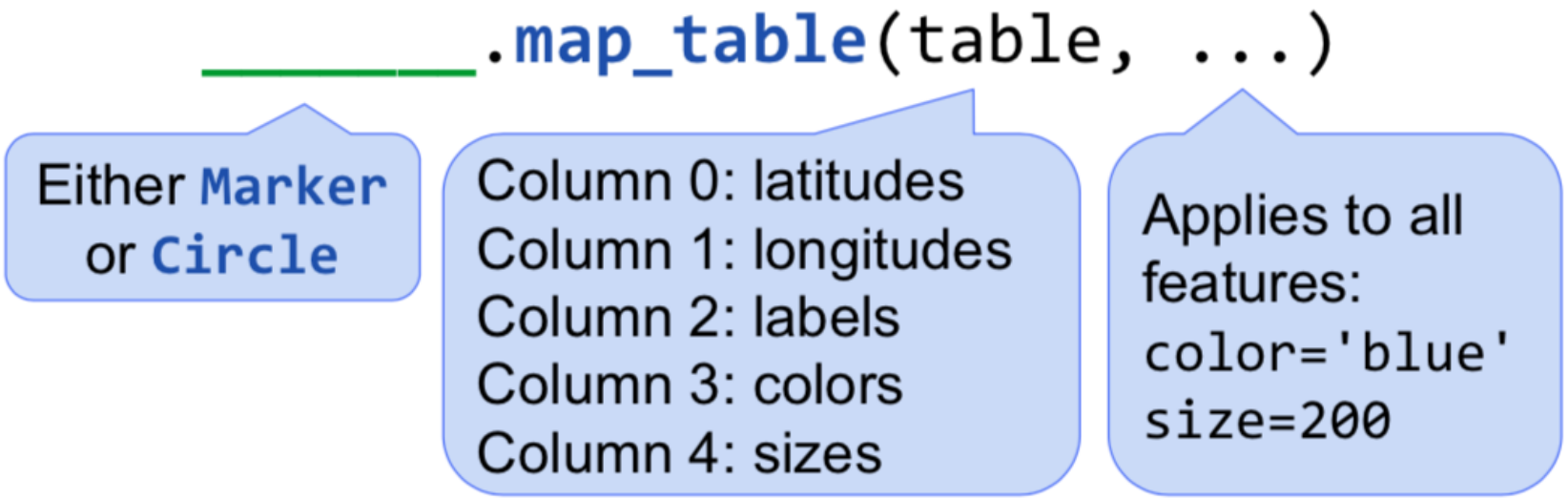
Maps

Visualizing data on a map can be a powerful way to see spatial trends

- Have we seen any examples of this in YData?

Maps in the datascience package

We can create maps using the datascience package using a table containing columns of latitude and longitude values



Let's explore this in Jupyter!

Important Table methods

t.select(column, ...) or t.drop(column, ...)

t.take([row, ...]), or t.exclude([row, ...])

t.sort(column, descending=False, distinct=False)

t.where(column, are.condition(...))

t.apply(function, column, ...)

t.group(column) or t.group(column, function)

t.group([column, ...]) or t.group([column, ...], function)

t.pivot(cols, rows) or t.pivot(cols, rows, vals, function)

t.join(column, other table, other table column)

More documentation can be found at: http://data8.org/datascience/tables.html

Comparisons

Comparisons

We can use mathematical operators to compare numbers and strings

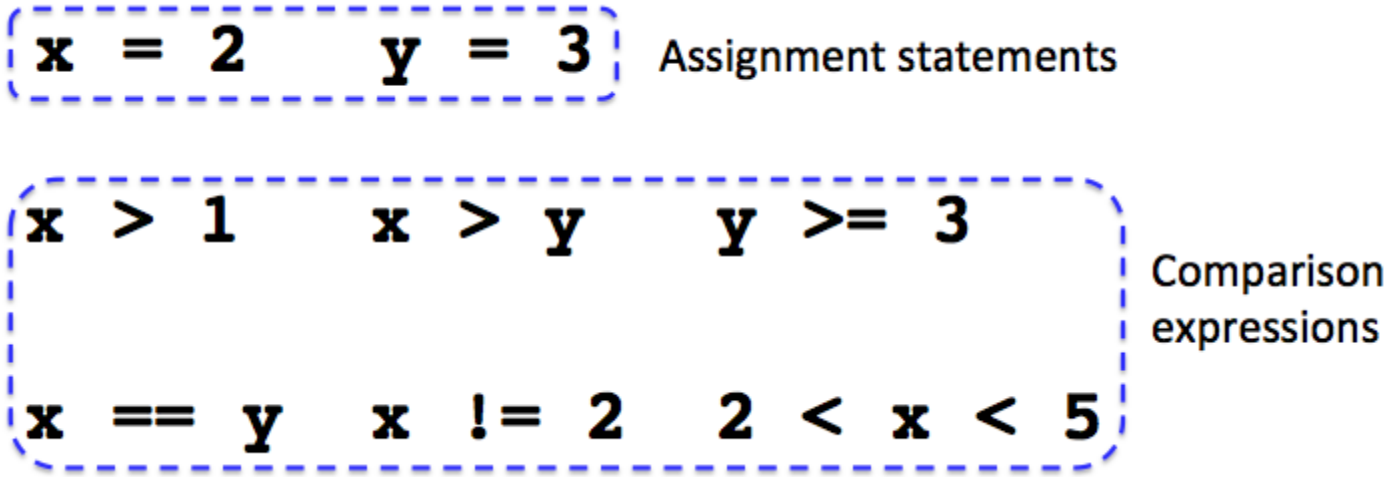
- Results return Boolean values True and False

Comparison	Operator	True example	False Example
Less than	<	2 < 3	2 < 2
Greater than	>	3 > 2	3 > 3
Less than or equal	<=	2 <= 2	3 <= 2
Greater or equal	>=	3 >= 3	2 >= 3
Equal	==	3 == 3	3 == 2
Not equal	!=	3 != 2	2 != 2

Comparisons

Note: when comparing whether to items are equal with use a double equal sign ==

- A single equal sign is used for assigning a value to a name



Let's explore this in Jupyter!

Conditional statements

Conditional statements

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

We use keywords if to begin a conditional statement to only execute lines of code if a particular condition is met.

We can use elif to test additional conditions

We can use an else statement to run code if none of the if or elif conditions have been met.

```
num = 5
if num == 1:
    print("Monday")
elif num == 2:
    print("Tuesday")
elif num == 3:
    print("Wednesday")
elif num == 4:
    print("Thursday")
elif num == 5:
    print("Friday")
elif num == 6:
    print("Saturday")
elif num == 7:
    print("Sunday")
else:
    print("Invalid input")
```

Let's explore this in Jupyter!