Foundations of Data Science

Lecture 3

Tables

Announcements

Python

Programming Languages

- Python is popular both for data science & general software development
- Mastering the language fundamentals is critical
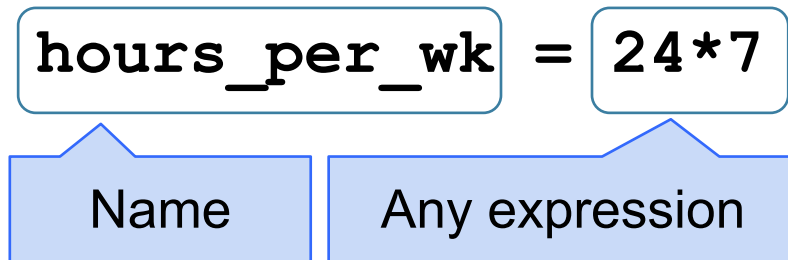- Learn through practice, not by reading or listening
- Follow along: http://datahub.cs.umass.edu

(Demo)

Names

Assignment Statements

`hours_per_wk` = `24*7`

Name | Any expression

- Statements don't have a *value*; they perform an *action*
- The *action* performed by an *assignment statement* is to change the meaning of the *name* to the left of the = symbol to the value of the expression to the right of =.
- The name is said to be *bound* to the value of the expression following assignment.

Call Expressions

Anatomy of a Call Expression
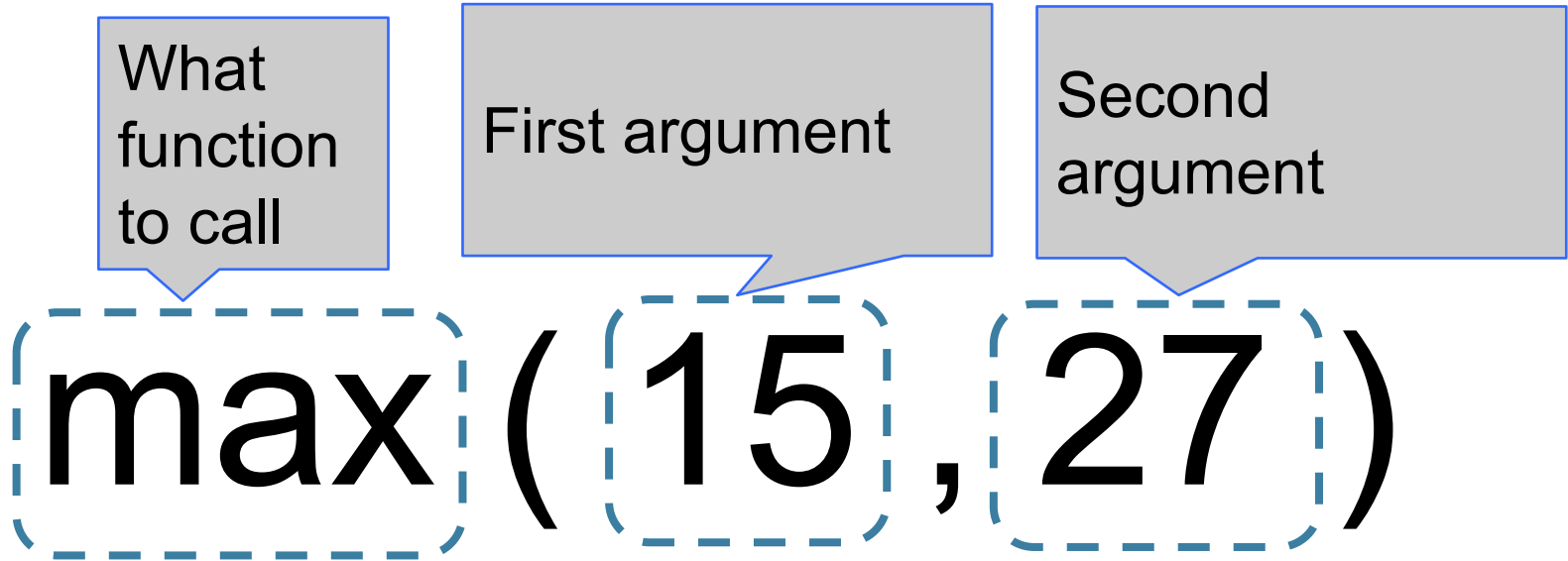
What function to call

Argument to the function

f(27)

"Call f on 27."

Anatomy of a Call Expression

What function to call

First argument

Second argument

max (15 , 27)

Tables

Table Structure

- We organize our data in tables
- A Table is a sequence of labeled columns
- Data within a column should be of the same "type"

Label

Name	Code	Area (m2)
California	CA	163696
Nevada	NV	110567

Table Structure

- We organize our data in tables
- A Table is a sequence of labeled columns
- Data within a column should be of the same "type"

Name	Code	Area (m2)
California	CA	163696
Nevada	NV	110567

Column

Table Structure

- We organize our data in tables
- A Table is a sequence of labeled columns
- Data within a column should be of the same "type"

Name	Code	Area (m2)
California	CA	163696
Nevada	NV	110567

Row

(Demo)

Basic Table Operations: Select

- `t.select(label)` - constructs a new table with just the specified columns
- `t.sort(label)` - constructs a new table, with rows sorted by the specified column

(Demo)

Basic Table Operations: Where

- **`t.where(label, condition)`** - constructs a new table with just the rows that match the condition

(Demo)