
MATH1401

Fall 2021

Lecture 3

Python

Class Checklist

- **Lab 1 – Due Date** : Tuesday 8/31 – 5 PM
- Graded Questions : 3.1.2, 3.3.1, 3.3.2, 4.1.1, 5.1, 5.1.1
- **Quiz 2** – Tuesday: 8/27 – Covers Chapter 3

By end of class be able to:

- Open the hub
 - Edit cells, run cells, and save the assignment
 - Turn in the notebook to D2L
-

Lecture 3 Checklist

Textbook: Chapter 3

- Expressions and Operators
 - Names and Assignment
 - Call Expressions (Functions)
 - Table
-

Lecture 3 Checklist - Programming

- Be able to use the math operators `+`, `-`, `*`, `/`, `**`
 - Be able to assign values to a name
 - Understand Python only effects code below current line
 - Call basic functions like `min`, `max`, `abs`
 - Call functions
 - Create a simple table, display it, and sort it
-

Python

Python

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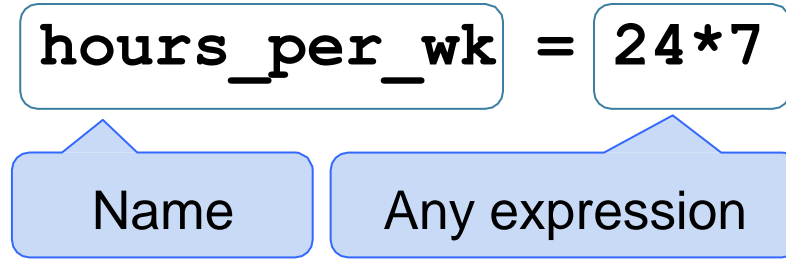
(Demo)

Names

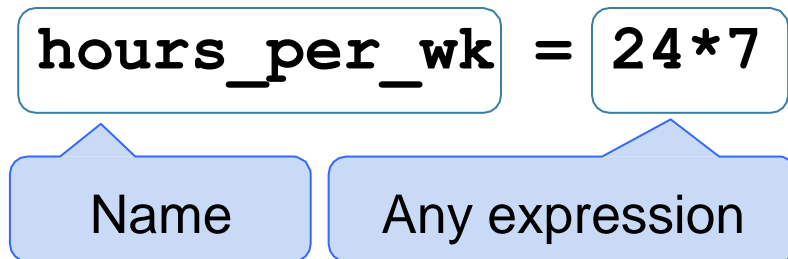
Assignment Statements

`hours_per_wk` = `24*7`

Assignment Statements

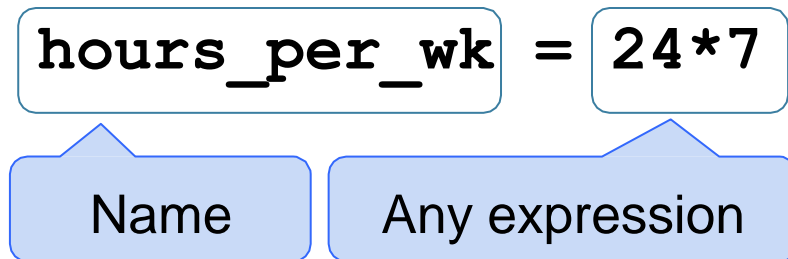


Assignment Statements



- The name is bound to a value (not an equation)
-

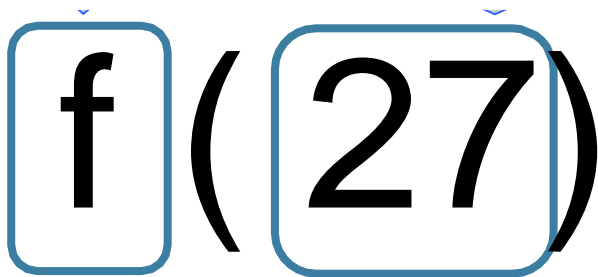
Assignment Statements



- The name is bound to a value (not an equation)
(Demo)

Functions

Anatomy of a Call Expression



The diagram shows the expression `f(27)`. The character `f` is enclosed in a blue rounded rectangle. The character `27` is also enclosed in a blue rounded rectangle. Above the `f` box is a small blue arrow pointing downwards. Above the `27` box is a small blue arrow pointing downwards.

"Call f on 27."

Anatomy of a Call Expression

What
function
to call

Argument to the
function

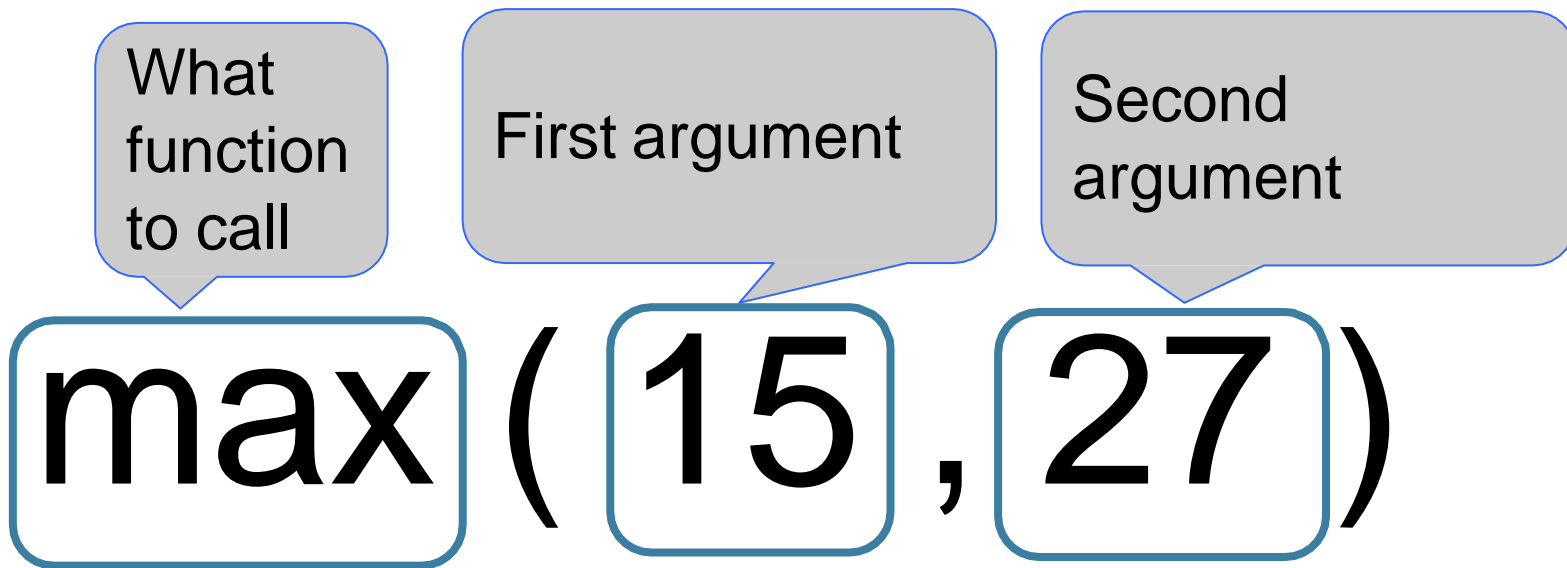
f (**27**)

"Call f on 27."

Anatomy of a Call Expression

`max` (`15` , `27`)

Anatomy of a Call Expression



(Demo)

Tables

Table Structure

- A Table is a sequence of labeled columns
- Each row represents one individual
- Data within a column represents one attribute of the individuals

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

Table Structure

- A Table is a sequence of labeled columns
- Each row represents one individual
- Data within a column represents one attribute of the individuals

The diagram illustrates a table structure with three columns: Name, Code, and Area (m2). The first row contains 'California', 'CA', and '163696'. The second row contains 'Nevada', 'NV', and '110567'. Annotations include a 'Label' box pointing to the 'Code' header, a 'Row' box pointing to the 'Nevada' row, and a 'Column' box pointing to the 'Code' column. A blue box highlights the 'Nevada' row, and a blue box highlights the 'Code' column. The text '(Demo)' is written in blue at the bottom right.

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

(Demo)

Some Table Operations

- `t.select(label)` - constructs a new table with just the specified columns
- `t.drop(label)` - constructs a new table in which the specified columns are omitted

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- `t.select(label)` - constructs a new table with just the specified columns
- `t.drop(label)` - constructs a new table in which the specified columns are omitted
- `t.sort(label)` - constructs a new table with rows sorted by the specified column
- `t.where(label, condition)` - constructs a new table with just the rows that match the condition

Memorize how to use each function listed here!
