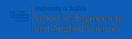
# Programming and Database Fundamentals for Data Scientists

Python Lists

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#### Outline

Recap

Basic Data Types

Lists

#### What do we know so far?

- ▶ Python is awesome!!
- Forced indentations, simultaneous assignments, swapping values in one line
- ▶ Read The Zen of Python
- ▶ What next?

### Basic Data Types

- ▶ float real numbers
- ▶ int integers
- ▶ str string, text
- ▶ bool true, false

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- ▶ float real numbers
- ▶ int integers
- ▶ str string, text
- ▶ bool true, false
- ► Each type refers to one value

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### Numeric Data Types

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  - ▶ Use in-built function type
- Why not use float instead of using float and int?
  - Most mathematical algorithms are very efficient with integers
- Quick question
  - ▶ What is 7/3?
  - ▶ What is 7//3?
    - Also known as integer division.

## Type Conversions

- Python supports valid type conversions
- ▶ float(3)
- ▶ int(''3'')
- A good way to validate inputs
- ▶ try-catch primer

#### **Errors and Exceptions**

- ► Typically two types of errors are encountered: *syntax errors* and *exceptions*
- Syntax errors are reported by the parser and are (relatively) easier to fix
- Exceptions occur during run time
- Unhandled exceptions crash the application
- ▶ How to explicitly handle exceptions?
  - try and except (with optional else)
- Cleaning up
  - Use finally

#### Lists

- ► In Data Science we work with many data points (recall the Chicago Crime example)
- ▶ Creating one variable for each data point is inefficient
- ► Introducing Python Lists

#### Python Lists

- A collection of values
- ► Can contain any type
- ► Can contain several different types

### **Indexing Lists**

- ► Zero based indexing
- ▶ Accessing from the end of the list

# Manipulating Lists

► Allows adding, appending, deleting elements

#### References