

# Section 4

Week of February 25

# Outline

- A few notes
- OOP
- ORM
- APIs

# A few notes:

- Project 1 due on March 4th

# OOP: Object Oriented Programming

- A programming paradigm based on *objects*
- In python we have *classes*:
  - These can have *variables* and *methods*
- An object, is an *instance* of a class

**Keywords:** class, object, method, instance

# ORM: Object Relational Mapping

- Using python classes with a SQL database
  - Define one class per table
- Using Flask-SQLAlchemy

Do not use ORM for Project 1

# API: Application Programming Interface

- Method for one application communication to another (or another part of the same program)
  - Benefit: you don't need to worry about what the other application is doing
- Pass data using JSON format

# JSON: Javascript Object Notation

```
{  
  "Title": "The Cuckoo's Calling"  
  "Author": "Robert Galbraith",  
  "Genre": "classic crime novel",  
  "Detail": {  
    "Publisher": "Little Brown"  
    "Publication_Year": 2013,  
    "ISBN-13": 9781408704004,  
    "Language": "English",  
    "Pages": 494  
  }  
  "Price": [  
    {  
      "type": "Hardcover",  
      "price": 16.65,  
    }  
    {  
      "type": "Kindle Edition",  
      "price": 7.03,  
    }  
  ]  
}
```

Diagram illustrating JSON syntax with annotations:

- Object Starts**: Points to the opening curly brace `{`.
- Object Starts**: Points to the opening curly brace `{` inside the `"Detail"` object.
- Value string**: Points to the string value `"Little Brown"`.
- Value number**: Points to the numeric value `2013`.
- Object ends**: Points to the closing curly brace `}` of the `"Detail"` object.
- Array starts**: Points to the opening square bracket `[` of the `"Price"` array.
- Object Starts**: Points to the opening curly brace `{` of the first object in the `"Price"` array.
- Object ends**: Points to the closing curly brace `}` of the first object in the `"Price"` array.
- Object Starts**: Points to the opening curly brace `{` of the second object in the `"Price"` array.
- Object ends**: Points to the closing curly brace `}` of the second object in the `"Price"` array.
- Array ends**: Points to the closing square bracket `]` of the `"Price"` array.
- Object ends**: Points to the closing curly brace `}` of the main JSON object.

Any remaining questions?