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Topic- JSON

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OVERVIEW

What is JSON?

- JSON vs XML
- JSON Data Types
- JSON Objects
- JSON Arrays
- JSON Parsing with Python



What is JSON?

- Stands for Javascript Object Notation
- Is a lightweight data interchange format
- Easy for humans to read and right
- Easy for machines to parse and generate
- Built on two structures

1. A collection of name/ value pairs
2. An ordered list of values

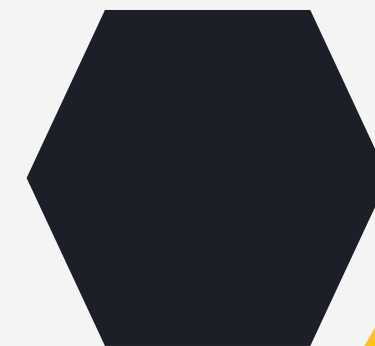
A stylized logo for JSON, featuring the word "JSON" in a blue, sans-serif font. The letter "O" is replaced by a black sphere with a white highlight, giving it a 3D effect. The entire word is enclosed in large, blue curly braces "{ }".

{JSON}



JSON vs XML

- JSON is like XML because both are
 1. Self descriptive
 2. Hierarchical
 3. Can be parsed by many languages
- JSON is unlike XML because it
 1. Does not use end tag
 2. Shorter and easier to write and understand
 3. Can use arrays



JSON vs XML (cont.)

```
<employees>
  <employee>
    <firstName>John</firstName> <lastName>Doe</lastName>
  </employee>
  <employee>
    <firstName>Anna</firstName> <lastName>Smith</lastName>
  </employee>
  <employee>
    <firstName>Peter</firstName> <lastName>Jones</lastName>
  </employee>
</employees>
```

```
{"employees": [
  { "firstName": "John", "lastName": "Doe" },
  { "firstName": "Anna", "lastName": "Smith" },
  { "firstName": "Peter", "lastName": "Jones" }
]}
```

XML



JSON

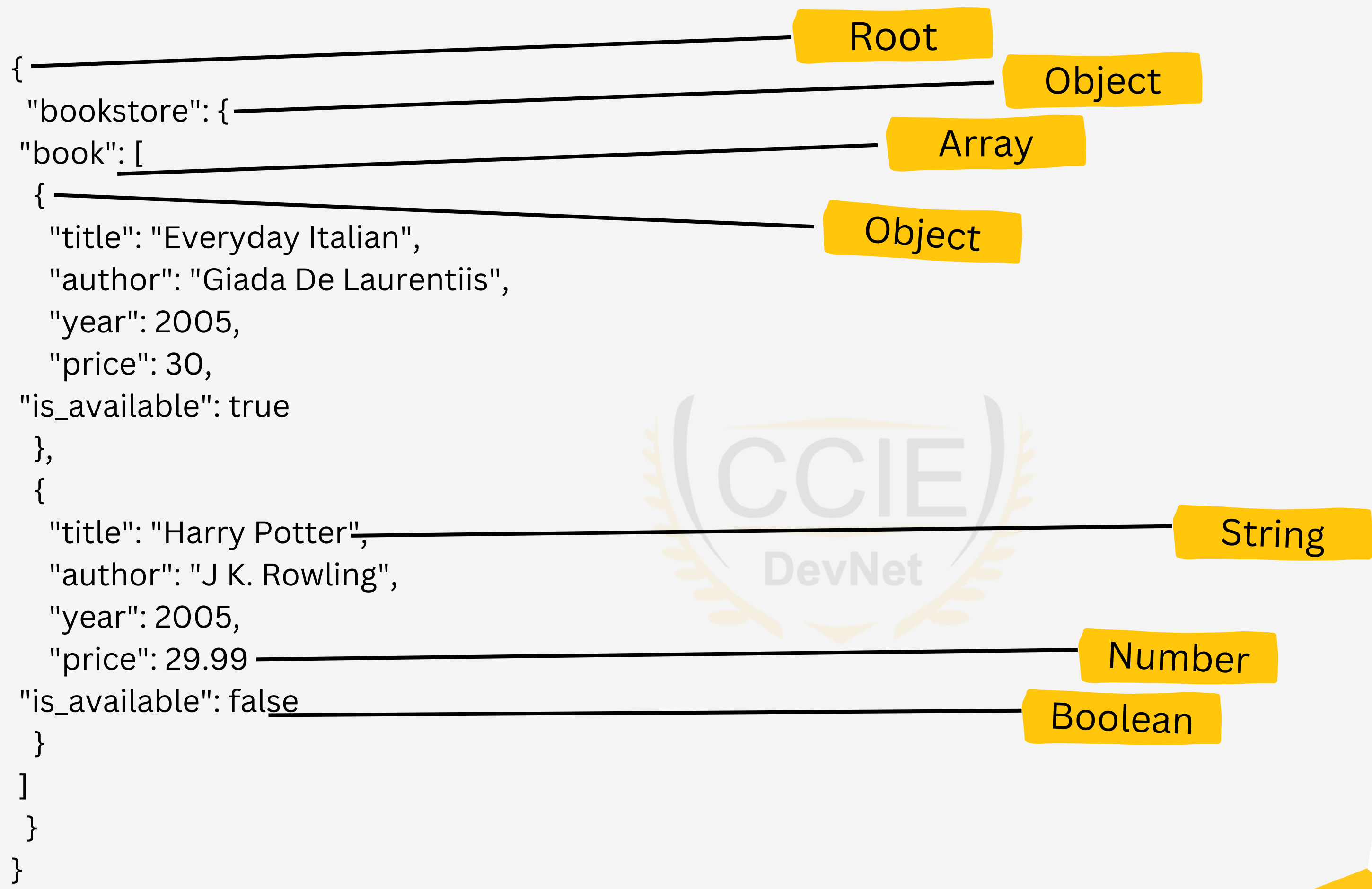


JSON Data Types.

- JSON stores data as a combination of name, value pair
- Value can be one of the following types

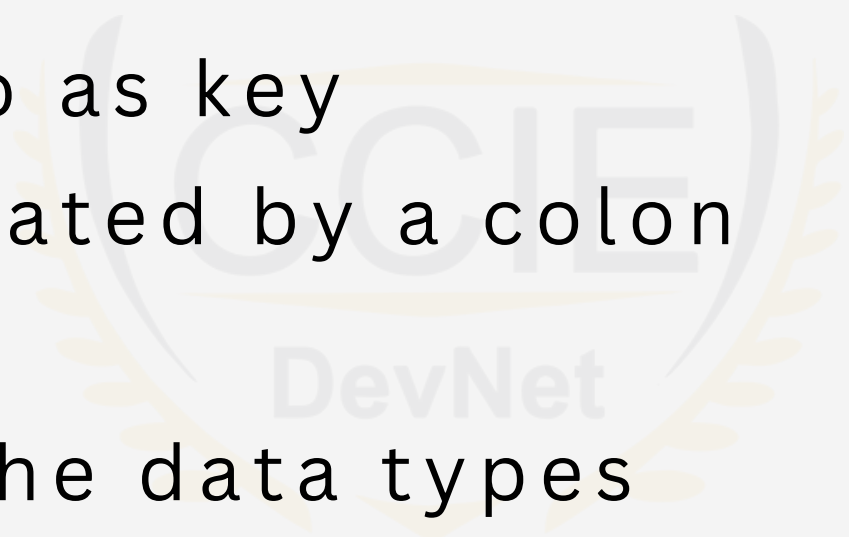
1. A string
2. A number
3. An object (JSON object)
4. An array
5. A boolean
6. null





JSON Objects.

- Object literals are surrounded by curly braces {}
- Contain name/value pairs
- Name is also referred to as key
- Key and value are separated by a colon
- Keys must be strings
- Values must be any of the data types described above
- Each key/ value pair is separated by a comma



JSON Arrays.

- JSON Array is similar to Javascript Array
- Array values must be of type string, number, object, array, boolean or null
- Once JSON document is parsed into any programming language, JSON array is stored in the array object of the programming language
- Can be used the same way as any other array



Parsing JSON with Python.

- Python has an inbuilt package called `json` to work with JSON data
- JSON objects map directly to Python dictionaries
- `json.loads` method takes JSON string and returns JSON object
- `json.dumps` method takes JSON object and returns a string
- Mapping of data types between JSON and Python is shown in the next slide



Parsing JSON with Python. (cont.)

JSON	Python
Object	Dict
Array	List
Array	Tuple
String	Str
Number	Int
Number	Float
True	True
False	False
Null	None



{JSON}

DEMO.