Data Formats

Data Formats

We will look at the two most common data formats used to bring real world data into our p5 sketches, **CSV** (Comma-Separated Values) and **JSON** (JavaScript Object Notation).

CSV

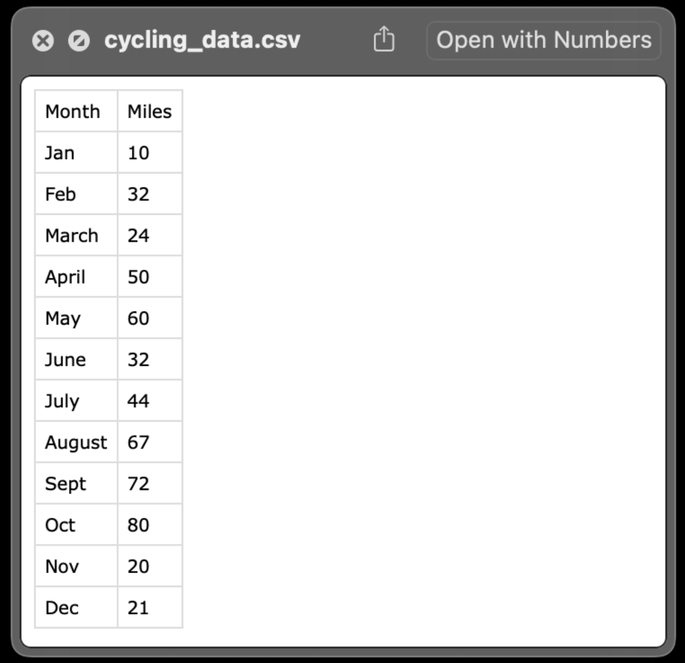
- CSV is a plain text format that represents tabular data as a sequence of text lines.
- Data fields in CSV are separated by a specific character, commonly a comma, hence the name.
- Each line in a CSV file typically represents a single row of a table.
- CSV does not support hierarchical or relational data; it's flat.

CSV

How does CSV data look like?

cycling_data.csv

```
1  Month,Miles
2  Jan,10
3  Feb,32
4  March,24
5  April,50
6  May,60
7  June,32
8  July,44
9  August,67
10 Sept,72
11 Oct,80
12 Nov,20
13 Dec,21
```



Month	Miles
Jan	10
Feb	32
March	24
April	50
May	60
June	32
July	44
August	67
Sept	72
Oct	80
Nov	20
Dec	21

Cyling Data Example

Let’s create a base sketch together to read the CSV data and plot it on a graph.

Task

- Modify the data, use something you are passionate about or download an existing dataset.
- Add another column/dimension to the data.
- Display the data using something different from what we built together.

JSON

- JSON is a lightweight data format that uses human-readable text to store and transmit data.
- It's based on JavaScript object syntax, but can be used independently of JavaScript.
- JSON supports hierarchical data structures. It can represent complex relationships through nested objects and arrays.
- JSON supports different data types.

JSON

How does JSON look like?

weather.json > ...

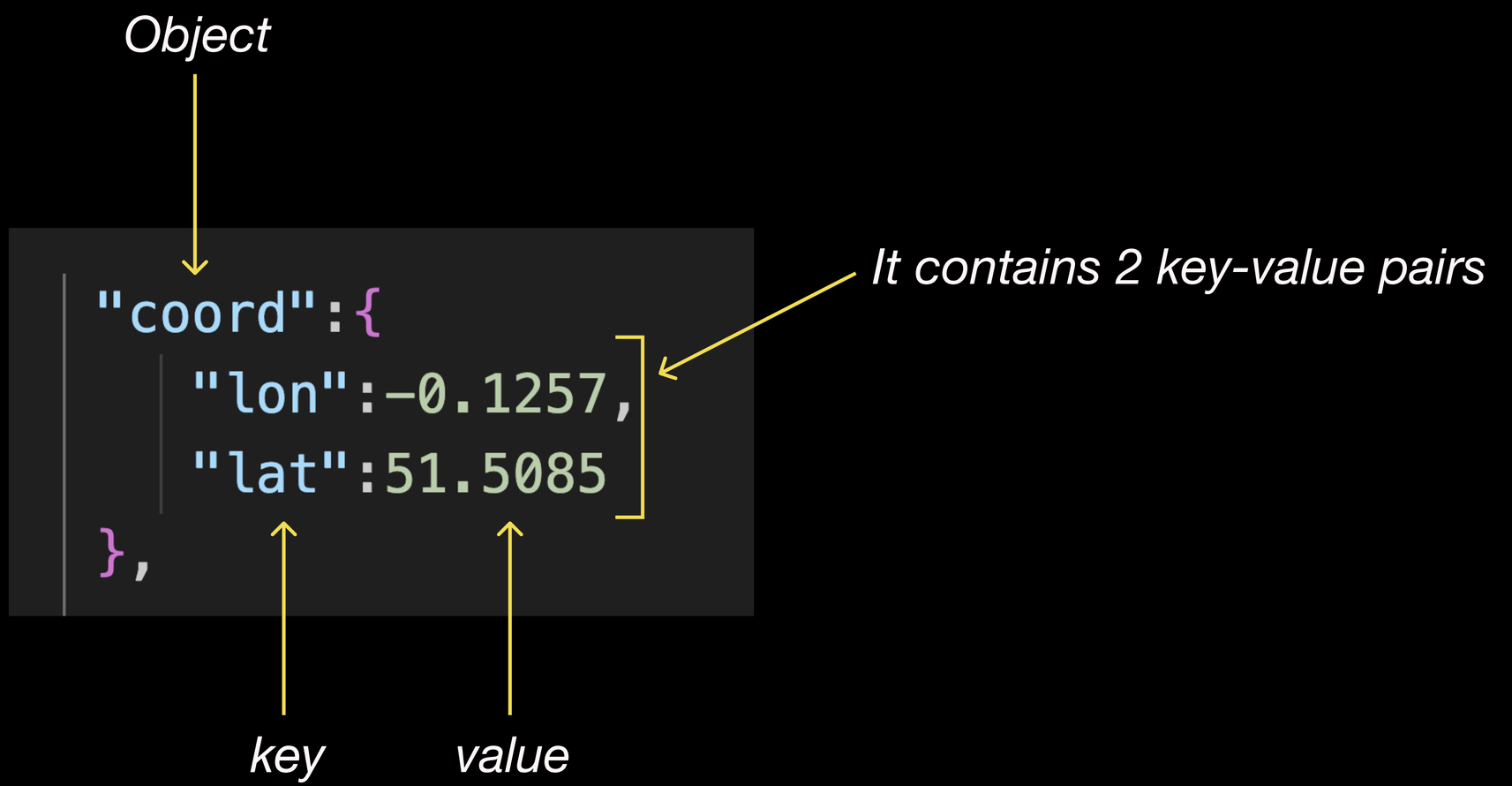

```json
{
    "coord":{
       "lon":-0.1257,
       "lat":51.5085
    },
    "weather":[
       {
          "id":803,
          "main":"Clouds",
          "description":"broken clouds",
          "icon":"04d"
       }
    ],
    "base":"stations",
    "main":{
       "temp":12.83,
       "feels_like":12.02,
       "temp_min":11.4,
       "temp_max":13.97,
       "pressure":997,
       "humidity":71
    },
    "visibility":10000,
    "wind":{
       "speed":5.66,
       "deg":250
    },
    "clouds":{
       "all":75
    },
    "dt":1699272975,
    "sys":{
       "type":2,
       "id":2075535,
       "country":"GB",
       "sunrise":1699254124,
       "sunset":1699287969
    },
    "timezone":0,
    "id":2643743,
    "name":"London",
    "cod":200
}
```

JSON

How does JSON look like?

weather.json > ...


```json
{
    "coord":{
        "lon":-0.1257,
        "lat":51.5085
    },
    "weather":[
        {
            "id":803,
            "main":"Clouds",
            "description":"broken clouds",
            "icon":"04d"
        }
    ],
    "base":"stations",
    "main":{
        "temp":12.83,
        "feels_like":12.02,
        "temp_min":11.4,
        "temp_max":13.97,
        "pressure":997,
        "humidity":71
    },
    "visibility":10000,
    "wind":{
        "speed":5.66,
        "deg":250
    },
    "clouds":{
        "all":75
    },
    "dt":1699272975,
    "sys":{
        "type":2,
        "id":2075535,
        "country":"GB",
        "sunrise":1699254124,
        "sunset":1699287969
    },
    "timezone":0,
    "id":2643743,
    "name":"London",
    "cod":200
}
```

Current Weather Example

Let’s create a base sketch together to read the JSON data print out the current weather.

Task

- Customise your style/canvas/user interface
- Extract another data parameter from the JSON file, display it on the canvas.
- Display an icon or image depending on the weather.