

Python Camp — Day 3

Data Visualization

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Today

- Lists (from Day 1) — the data behind every chart
- matplotlib — turning numbers into pictures
- Reading data from a CSV file
- Chart types: bar, scatter, line

Install first:

```
pip install matplotlib pandas
```

Making Charts

Quick recall: lists

You met lists on Day 1 — nothing new here.

```
1 names = ["Bulbasaur", "Charmander", "Squirtle"]  
2 hp     = [45, 39, 44]
```

The whole trick today: **two lists that line up** — one for labels, one for numbers — is all you need to draw a chart.

A bar chart in five lines

```
1 import matplotlib.pyplot as plt
2
3 names = ["Bulbasaur", "Charmander", "Squirtle", "Pikachu"]
4 hp     = [45, 39, 44, 35]
5
6 plt.bar(names, hp)
7 plt.title("Pokemon HP Comparison")
8 plt.xlabel("Pokemon")
9 plt.ylabel("HP")
10 plt.show()
```

Reading data from a CSV

Datasets are on the camp website: `pokemon.csv`, `movies.csv`, ...

```
1 import pandas as pd
2
3 data = pd.read_csv("pokemon.csv")
4 print(data.head())           # peek at the first rows
5
6 plt.bar(data["Name"], data["Attack"])
7 plt.show()
```

Used the web on Day 2? Chart the data **you** scraped instead.

Other chart types

```
1  # Scatter: compare two numbers  
2  plt.scatter(data["Attack"], data["Defense"])  
3  
4  # Line: something changing over time  
5  plt.plot(years, gross)
```

Same pattern every time: give it the data, add labels, `plt.show()`.

Stretch goals

- Give each bar its own color
- Put the value on top of each bar
- Make a scatter plot (Attack vs. Defense)
- Make a line chart (movie gross by year)
- Save your chart: `plt.savefig("chart.png")`

Pick-Your-Own Charts

More chart options — pick any

Same recipe every time: two things that line up → a picture.

Starter

- Pie chart of types / genres
- Poll-the-room survey

Standard

- Histogram of one number
- Word-frequency bar chart

Boss challenge

- Two-dataset / dual-axis comparison
- Dashboard: `plt.subplots(2, 2)`
- Chart the data you saved on Day 2

Code for every one of these is on the camp website.