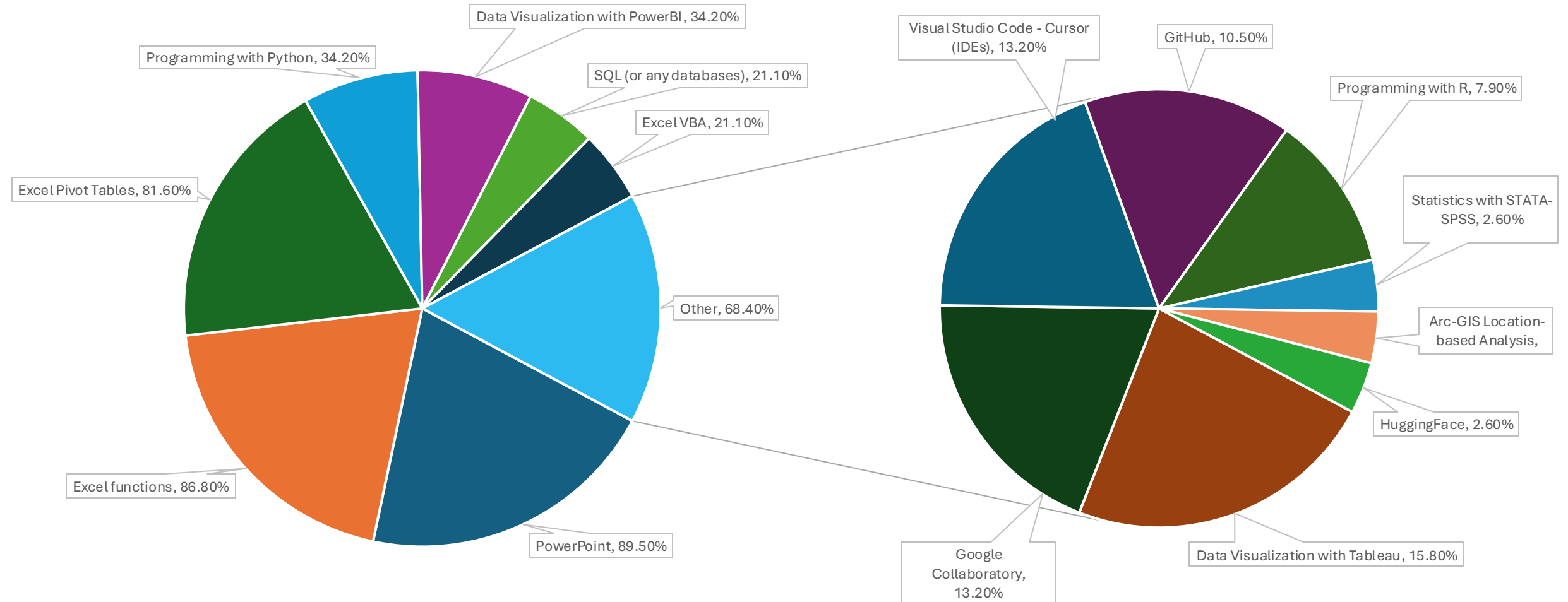




Fall 2025 – Ali Ahmadi

# AI coding use cases for non-tech commerce students

# The survey results from the beginning of the class



# Agenda

- Intro
- Coding tasks:
  - Getting data from APIs
    - FRED
    - Open Breweries
    - SEC
  - Data Visualization with Plotly
  - Data Scraping with BeautifulSoup
  - Using HuggingFace online models for data interpretation
  - Text Classification with OpenAI API

# Where is data?

Every website and service  
that you use online

[Kaggle Open Datasets](#)

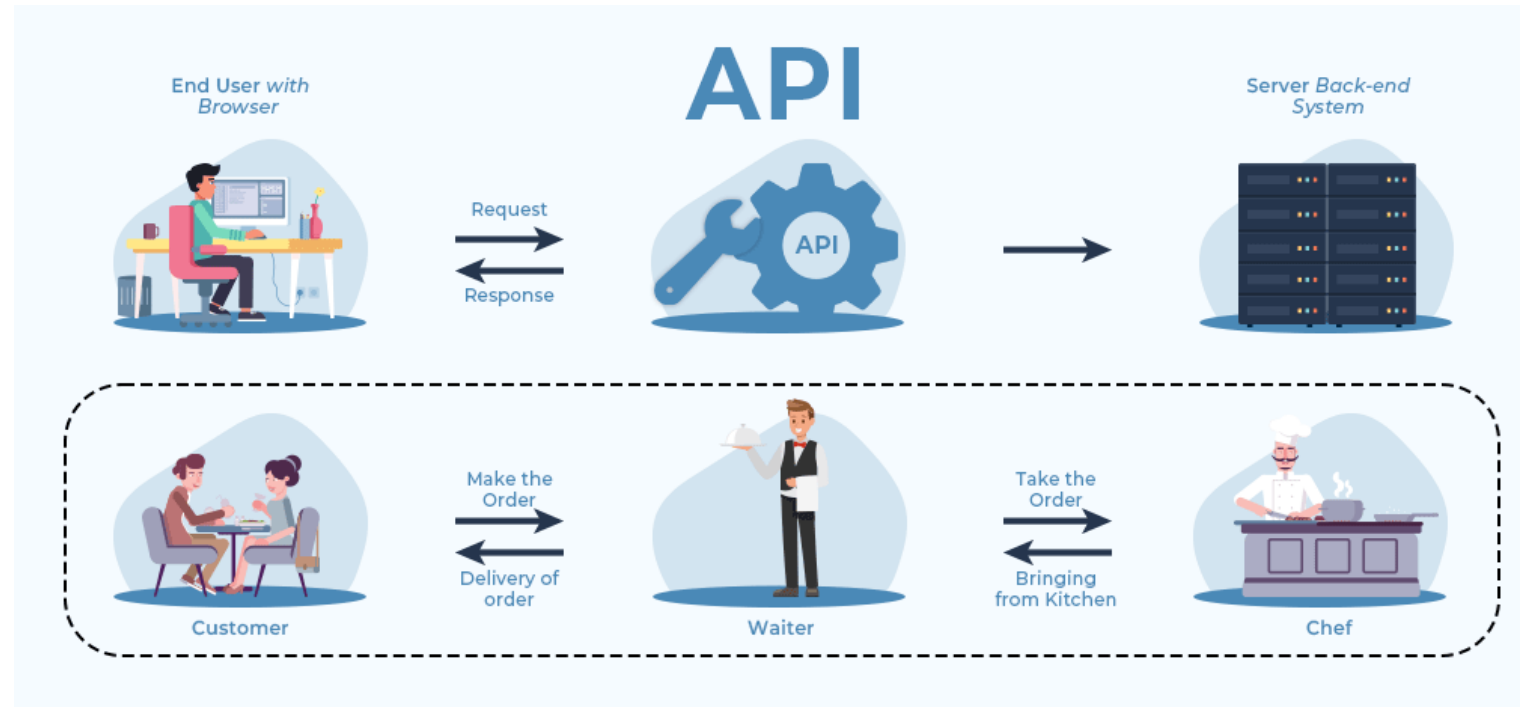
[Google Dataset Search](#)

[HuggingFace Datasets](#)

[Wharton Research Data Services](#)

# What is an API?

An **API (Application Programming Interface)** is a set of protocols and tools that allow different software applications to communicate with each other.



[Public APIs — A directory of free and public apis](#)

[Free Public APIs](#)

# Browse by Category

## Development

125

APIs for developers and coding tools

[Browse Development](#)

## Finance

89

Payment, banking, and financial data APIs

[Browse Finance](#)

## Social

67

Social media and communication APIs

[Browse Social](#)

## Media

54

Image, video, and multimedia APIs

[Browse Media](#)

## Weather

43

Weather data and forecast APIs

[Browse Weather](#)

## Maps

38

Geocoding and mapping services

[Browse Maps](#)

## News

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News and content aggregation APIs

[Browse News](#)

## E-commerce

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Shopping and marketplace APIs

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## Music

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Music streaming and audio APIs

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## Sports

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Sports data and statistics APIs

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## Transportation

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Travel and transportation APIs

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## Government

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Government and public data APIs

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## Health

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Health and medical data APIs

[Browse Health](#)

## Education

17

Educational content and tools

[Browse Education](#)

## Gaming

15

Gaming data and statistics

[Browse Gaming](#)

## Business

13

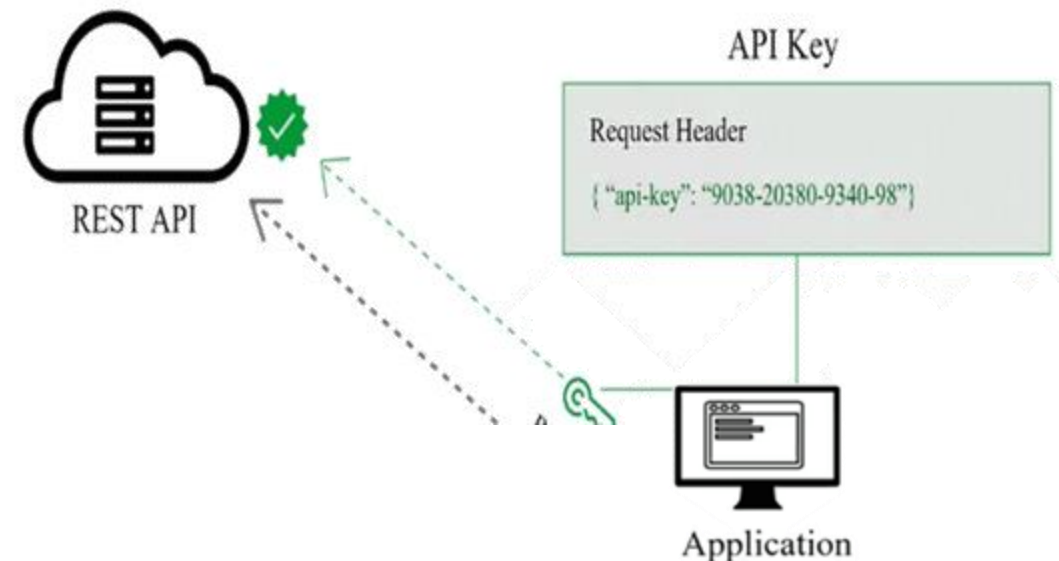
Business tools and productivity

[Browse Business](#)

# How can we work with APIs?

## What we send:

1. **URL:** where you are asking, like <https://api.example.com/weather>
2. **Method:** what action you want  
GET read, POST create, PUT/PATCH update, DELETE remove
3. **Headers:** extra info, often your API key and data type  
Authorization: Bearer YOUR\_TOKEN, Content-Type: application/json
4. **Body:** Your actual request



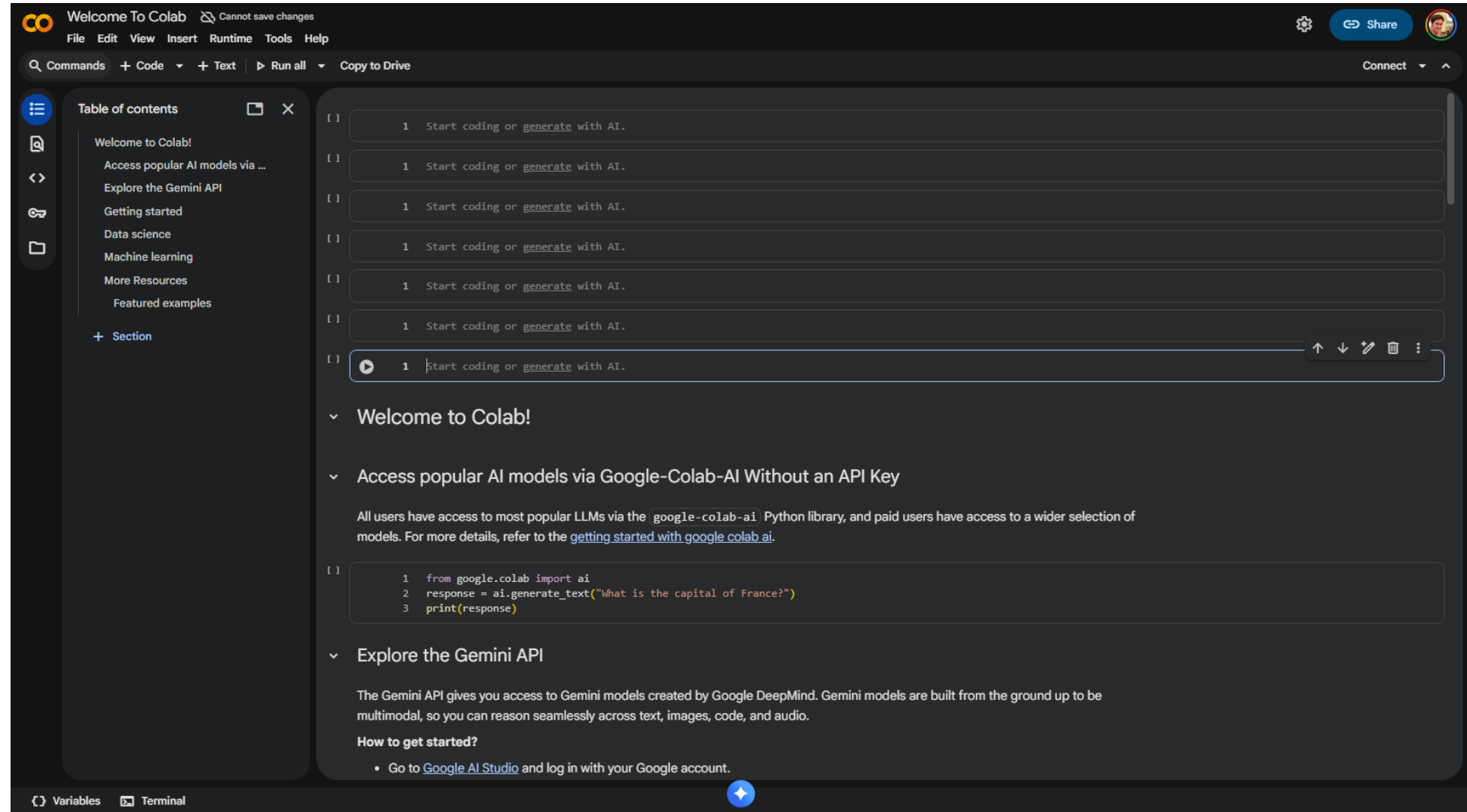
## What we get back:

1. **Status code:** 200 OK, 201 Created, 400 Bad Request, 401 Unauthorized, 404 Not Found, 429 Too Many Requests, 500 Server Error
2. **Body:** the data we asked for
3. **Headers:** extra details like rate limits

What do we code with?



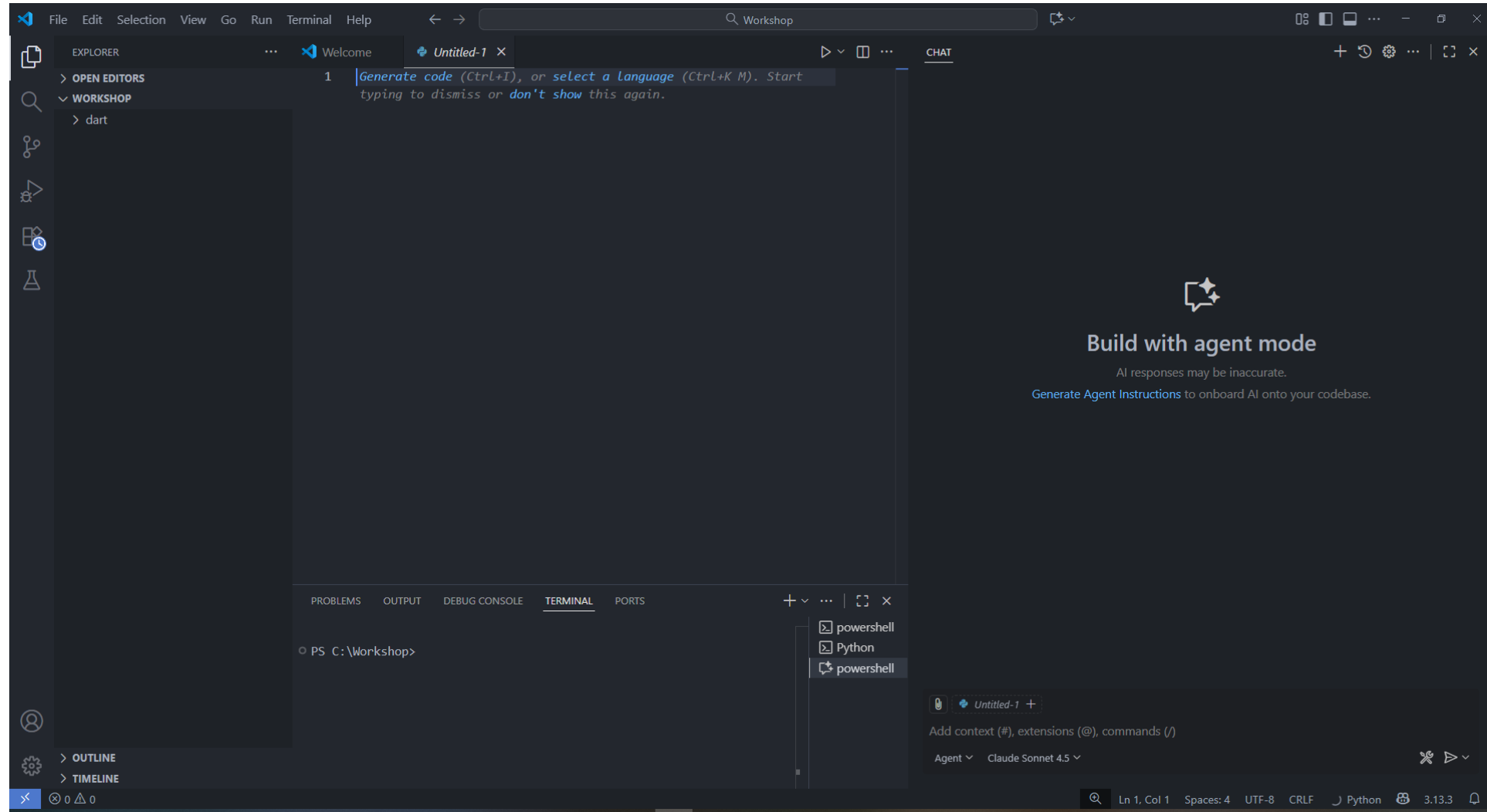
Where do we code?



What do we code with?



Where do we code?



[Download Python | Python.org](https://python.org)

[https://youtu.be/cE84Q5IRR6U?si=SxaKOW\\_s8\\_dR4LDo](https://youtu.be/cE84Q5IRR6U?si=SxaKOW_s8_dR4LDo)

# Download Data from API



Example: Federal Reserve Saint Louis API

- [St. Louis Fed Web Services: FRED® API](#)
- You need to ask for a **FREE API Key**
- You need to understand the API structure and parameters (by asking GPT)

Prompt: I want to use the FRED API from federal reserve with the link attached to track **U.S. inflation** year-over-year and compare it with **unemployment rate**

# Life is Short, I Use Python



@alexwang

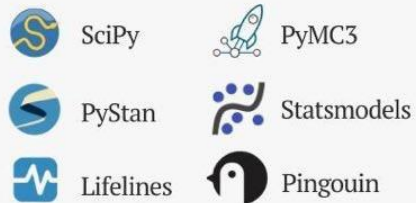
## Data Manipulation



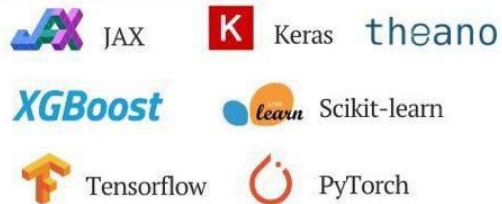
## Data Visualization



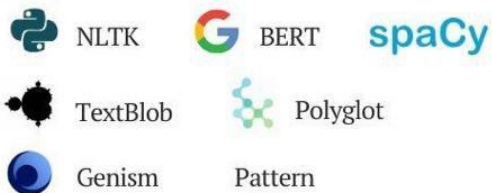
## Statistical Analysis



## Machine Learning



## Natural Language Processing



## Database Operations



## Time Series Analysis



## Web Scraping



**Know your options, learn the libraries**

Each library has a webpage, you can find the whole package at PyPip, and you can chat with GPT about it.

[PyPI · The Python Package Index](https://pypi.org/)

# Scraping with Beautiful Soup

Example: Open Breweries DB



Open Brewery DB is a free dataset and API with public information on breweries, cideries, brewpubs, and bottleshops.

**First**, extract data for breweries in the state of New York

**Second**, map them on a geographical map using **Plotly**

**Third**, scrape the content of the website for every brewery using **Beautiful Soup**

# Using Hugging Face Models



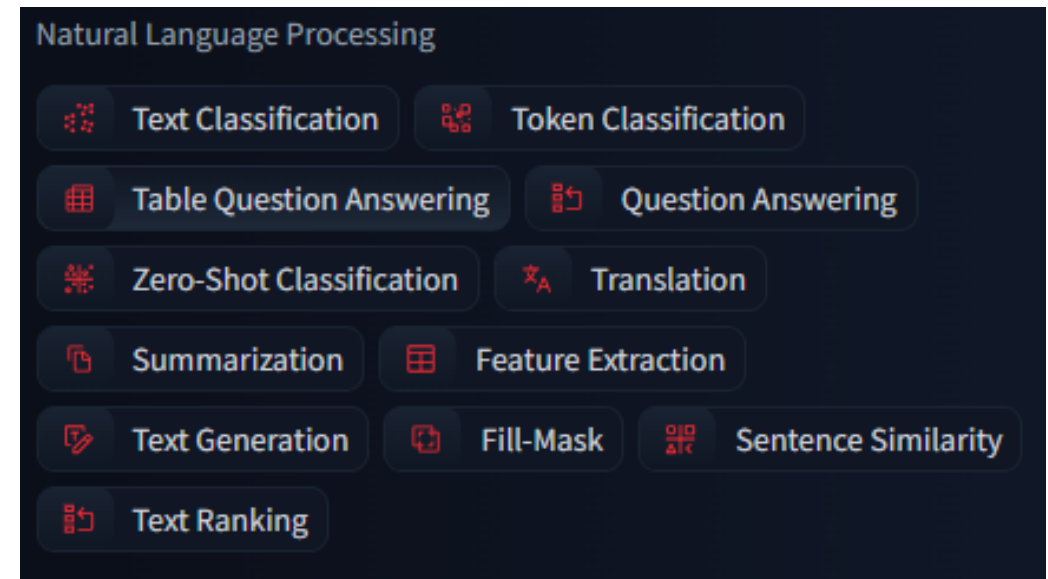
[Models – Hugging Face](#) 2,233,250 Models available

Example: Categorizing Headlines related to ESG  
(Environmental, Social, Governance)

Model Name: [yiyanghkust/finbert-esg](#)  
[yiyanghkust/finbert-esg · Hugging Face](#)

## Prompt:

Take the ESG headlines from the column "text" and send each row to this transformer pipeline and replace the output in the next column of the input file.



#	text
1	Tower Hamlets protesters vent fury over tax at Barclays headquarters
2	United Kingdom is going into reverse on clean energy, says former Environment Agency head
3	Renewables cut Europe's carbon emissions by 10% in 2015, says EEA
5	City of London buys into new Dorset solar farm to help power Square Mile with Lionel Messi

# SEC Edgar API download



You can access all filings through the SEC portal (SEC.gov) but you have to search firm by firm, and access one by one, filing by filing

A screenshot of the SEC Edgar search interface. It features a dark blue background with white text and input fields. On the left, there are three search criteria: "Document word or phrase" with a placeholder "Keywords to search for in filing documents", "Company name, ticker, CIK number or individual's name" with a placeholder "Company name, ticker, CIK number or individual's name", and "Filing category" with a dropdown menu showing "View all" and a link "Browse filing types". On the right, there are two date range filters: "Filed date range" with a dropdown showing "Last 5 years", and "Filed from" and "Filed to" date pickers showing "2018-09-28" and "2023-09-28" respectively. Below these is a "Principal executive offices in" dropdown showing "View all". At the bottom right, there is a link "- less search options" and two buttons: a yellow "SEARCH" button and a blue "Clear all" button.

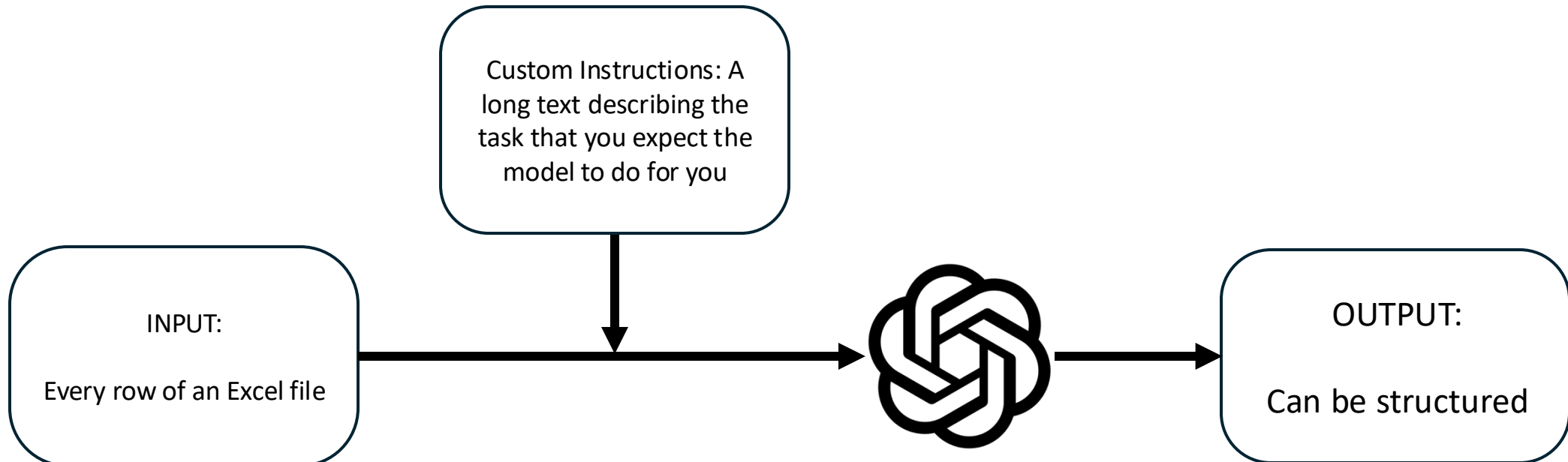
# SEC Edgar API download

- **Prompt:**
- Lets download Apple's 10K filings for the last 5 years using SEC Edgar API.
- For headers put my email and name:  
my email address : 21aa80@queensu.ca  
my name: Ali Ahmadi
- download them and after saving them, extract and parse each section of every file into an excel file.

# OpenAI API

- **Prompt:**

I want to use the responses API by openai. the api key is in the secrets named "GPT" Come up with an example request yourself





Thank you  
Al-Anadi