```
In [55]: !pip install pandas requests
```

Requirement already satisfied: pandas in /usr/local/lib/python3.12/dist-package
s (2.2.2)
Requirement already satisfied: requests in /usr/local/lib/python3.12/dist-packa
ges (2.32.4)
Requirement already satisfied: numpy>=1.26.0 in /usr/local/lib/python3.12/dist-
packages (from pandas) (2.0.2)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python
3.12/dist-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.12/dist-p
ackages (from pandas) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.12/dis
t-packages (from pandas) (2025.2)
Requirement already satisfied: charset_normalizer<4,>=2 in /usr/local/lib/pytho
n3.12/dist-packages (from requests) (3.4.4)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.12/dist-p
ackages (from requests) (3.11)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.12/
dist-packages (from requests) (2.5.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/
dist-packages (from requests) (2025.11.12)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-packa
ges (from python-dateutil>=2.8.2->pandas) (1.17.0)

```
In [56]: import pandas as pd
         import requests
         from io import StringIO
```

```
In [57]: csv_data = """product,category,quantity,price
         Laptop,Electronics,1,899.99
         Shoes,Fashion,3,59.99
         Watch,Fashion,2,120.00
         """
```

```
In [58]: csv_df = pd.read_csv(StringIO(csv_data))
         print("CSV data loaded\n", csv_df.head(), "\n")
```

CSV data loaded
    product   category quantity   price
0   Laptop   Electronics   1 899.99
1   Shoes   Fashion   3   59.99
2   Watch   Fashion   2 120.00


```
In [59]: json_data = [
             {"product": "Headphones", "category": "Electronics", "quantity": 2, "price
             {"product": "T-shirt", "category": "Fashion", "quantity": 5, "price": 25.5
         ]
```

```
In [60]: json_df = pd.DataFrame(json_data)
         print("JSON data loaded\n", json_df.head(), "\n")
```

```
JSON data loaded
        product     category  quantity   price
0  Headphones  Electronics         2  149.99
1     T-shirt      Fashion         5   25.50
```

In [61]: `"https://jsonplaceholder.typicode.com/posts"`

Out[61]: `'https://jsonplaceholder.typicode.com/posts'`

In [62]:
```python
api_raw_response = requests.get(url).json()
```

In [63]:
```python
api_df=pd.DataFrame(
    [{"product":"Tablet","category":"Electronics","quantity":1,"price":499.9},
     {"product":"Jacket","category":"Fashion","quantity":2,"price":89.99}
    ])
```

In [64]:
```python
print("API data loaded\n",api_df.head(),"\n")
```

```
API data loaded
    product     category  quantity   price
0   Tablet  Electronics         1  499.90
1   Jacket      Fashion         2   89.99
```

In [65]:
```python
combined_df=pd.concat([csv_df,json_df,api_df],ignore_index=True)
print("Combined data(before caleaning)\n",combined_df,"\n")
```

```
Combined data(before caleaning)
        product     category  quantity   price
0       Laptop  Electronics         1  899.99
1        Shoes      Fashion         3   59.99
2        Watch      Fashion         2  120.00
3   Headphones  Electronics         2  149.99
4      T-shirt      Fashion         5   25.50
5       Tablet  Electronics         1  499.90
6       Jacket      Fashion         2   89.99
```

In [66]:
```python
combined_df["quantity"]=combined_df["quantity"].astype(int)
combined_df["price"]=combined_df["price"].astype(float)
```

In [67]:
```python
print(combined_df.columns)
```

```
Index(['product', 'category', 'quantity', 'price'], dtype='object')
```

In [68]:
```python
combined_df.drop_duplicates(inplace=True)
```

In [69]:
```python
combined_df.fillna({"category":"unknown"},inplace=True)
```

In [70]:
```python
combined_df["total"] =combined_df["quantity"]*combined_df["price"]
print("cleaned and consistent data:\n")
print(combined_df)
```

cleaned and consistent data:

	product	category	quantity	price	total
0	Laptop	Electronics	1	899.99	899.99
1	Shoes	Fashion	3	59.99	179.97
2	Watch	Fashion	2	120.00	240.00
3	Headphones	Electronics	2	149.99	299.98
4	T-shirt	Fashion	5	25.50	127.50
5	Tablet	Electronics	1	499.90	499.90
6	Jacket	Fashion	2	89.99	179.98