Data Loading, Storage, and File Formats

Part 5

Interacting with Web APIs

- Many websites have public APIs providing data feeds via JSON or some other format.
- There are a number of ways to access these APIs from Python; one easy-to-use method is the requests package.

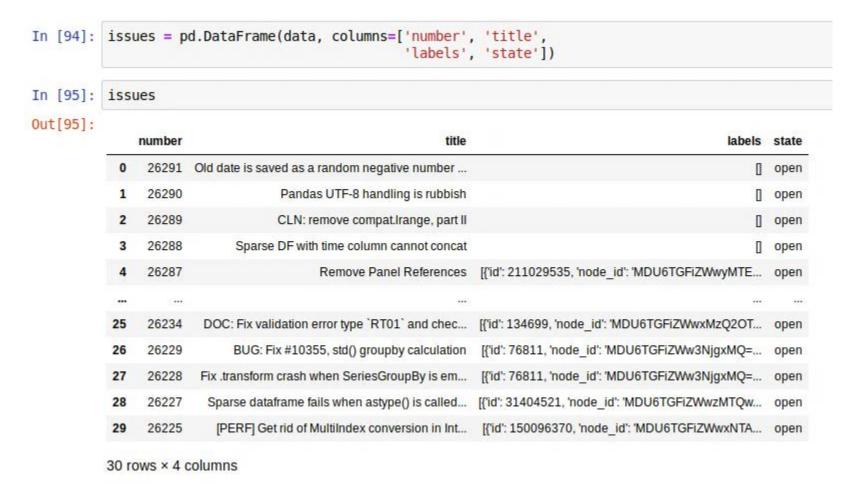
• To find the last 30 GitHub issues for pandas on GitHub, we can make a GET HTTP request using the add-on requests library:

```
In [88]: import requests
In [89]: url = 'https://api.github.com/repos/pandas-dev/pandas/issues'
In [90]: resp = requests.get(url)
In [91]: resp
Out[91]: <Response [200]>
```

• The Response object's json method will return a dictionary containing JSON parsed into native Python objects:

```
In [92]: data = resp.json()
In [93]: data[0]['title']
Out[93]: 'Old date is saved as a random negative number in Excel file'
```

- Each element in data is a dictionary containing all of the data found on a GitHub issue page (except for the comments).
- We can pass data directly to DataFrame and extract fields of interest:



Interacting with Databases

- Loading data from SQL into a DataFrame is fairly straightforward, and pandas has some functions to simplify the process.
- As an example, a SQLite database will be created using Python's builtin sqlite3 driver:

• Then, insert a few rows of data:

 Most Python SQL drivers (PyODBC, psycopg2, MySQLdb, pymssql, etc.) return a list of tuples when selecting data from a table:

 You can pass the list of tuples to the DataFrame constructor, but you also need the column names, contained in the cursor's description attribute:

- This is quite a bit of munging that you'd rather not repeat each time you query the database.
- The SQLAlchemy project is a popular Python SQL toolkit that abstracts away many of the common differences between SQL databases.
- pandas has a read sql function that enables you to read data easily from a general SQLAlchemy connection.
- Here, we'll connect to the same SQLite database with SQLAlchemy and read data from the table created before: