

## Exercise 2.7: Data Analysis and Visualization in Django

### Learning Goals

- Work on elements of two-way communication like creating forms and buttons
- Implement search and visualization (reports/charts) features
- Use QuerySet API, DataFrames (with pandas), and plotting libraries (with matplotlib)

### Reflection Questions

1. Consider your favorite website/application (you can also take CareerFoundry). Think about the various data that your favorite website/application collects. Write down how analyzing the collected data could help the website/application.

Analyzing the data collected from user engagement / usage of the website or application can help give developers insight to what works and what doesn't. If part of the application doesn't see much traffic or users aren't lingering too long on that feature/page, developers can use this information to decide a path. They can either update the feature to draw more engagement or maybe retire the feature to focus on developing/maintaining the parts that users do use.

2. Read the Django [official documentation on QuerySet API](#). Note down the different ways in which you can evaluate a QuerySet.

According to the documentation, QuerySets can be evaluated via iteration, slicing (QuerySets can be sliced using Python's array-slicing syntax), and pickling/caching.

3. In the Exercise, you converted your QuerySet to DataFrame. Now do some research on the advantages and disadvantages of QuerySet and DataFrame, then explain the ways in which DataFrame is better for data processing.

A QuerySet is a collection of data from a database and is built up as a list of objects. One of the advantages to QuerySets is they can usually be passed around without having to touch the database until you do something to evaluate the queryset. Working with QuerySets is fine while the database is small, but once it grows then it can become unmanageable.

DataFrames, on the other hand, are stored as rows and columns – so its structured more like a spreadsheet rather than a list like a QuerySet. This tabular structure makes it much faster and easier to use when looking for specific data compared to searching through a list of objects.