**Week 8 Paper**

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Chapter 7:

1. Normally, data is not stored in databases or files in the way that we need it. Fortunately, pandas provides a very strong set of manipulations and algorithms to make data wrangling easy.
2. Among the manipulations that pandas supports are concatenation, merges, and combine\_first. Merge works similarly to in relational databases such as SQL, and is very flexible, allowing merging on a specific index among other things. Concatenating along an axis, and combining data with overlap are also supported operations.
3. Pandas also has a lot of support for reshaping and pivoting data, including reshaping with hierarchical indexing and pivoting “long” to “wide” format. Data transformation is also supported, including easy duplicate removal, transformation of data using a function or mapping, replacing values, renaming axis indexes, binning, filtering outliers, and random sampling.

Chapter 8:

1. Plotting and visualizing data in Python with this book is primarily done through the matplotlib API, which includes many plugins and extensions allowing for comprehensive 2d and 3d plotting.
2. Some of the supported plot types are line plots, bar plots, histograms and density plots, and scatter plots.
3. Python includes many other tools that can be used for visualizing data besides matplotlib. These include Chaco (a plotting tool allowing interactive visualizations), mayavi (a 3d graphics toolkit allowing for close inspection of 3d plots), and many other tools including PyQwt, Veusz, gnuplot-py, and biggles.