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Final Project

CSC 201

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**FINAL PROJECT REPORT**

The main objectives of this assignment was to solve a complex problem using lists, sets, and dictionaries (including dictionaries of dictionaries) in Python. It was also meant to help appreciate the benefits of good problem decomposition, data structure choice and testing practices. Another objective was to help write Python code to analyze poll and election data and predict the 2012 election.

Many times throughout the program, I had to created empty dictionaries, which ended up being an important part of this assignment. At some points I used the word dict as a way to open an empty dictionary, and other times I used a variable such as reverse\_nest\_dict to show that the results would be a pivoted nested dictionary. Another time I used the variable totalAverage to represent the calculated average error of each given pollster. Adding keys and items to dictionaries was another big part of the assignment as well as using for loops, if statements, and other standard techniques. Most of the times I happened to use the variables that were inside the definition of the function in order to make things much simpler and easier to execute. The whole program as a whole performs and executes a bunch of smaller functions and as a whole leads to one bigger function which is to predict the 2012 election. Throughout the program I had to execute smaller tasks, like finding the weighted average. I did this by manipulating and mapping various lists in order to take the sum of the product of two lists and dividing it by its weights to get the weighted average. I also had to create a dictionary mapping state to its democratic edge. This was done by iterating through each row of the results and obtaining the necessary data. The function extracts the state and calculates the edge and through dictionary manipulation we can map the state to that specific edged. All of these small functions have foundations in the processes and techniques involving lists, sets, dictionaries, and manipulation of such elements. There are so many small components which made this final assignment very time consuming and thus sometimes difficult to get it all correct. There was a lot of trial and error involved because right when you think you have everything right, one small thing can change things and then you have to restruct almost all of your code. Sometimes certain values you didn’t want would become part of the dictionary and sometimes certain processes would not work depending on if you were dealing with lists, sets, or dictionaries. Other times, it would be difficult to extract certain values from dictionaries, especially nested dictionaries. I felt that dealing with nested dictionaries was probably the hardest and toughest part of the assignment as it was conceptually difficult to understand as well as writing code to extract specific values that were necessary to complete the assignment. The final was very time consuming in the end, but taught me a lot about coding, and using lists, sets, dictionaries, and manipulating elements using different techniques.