

Assignment and Assessment Information

COMP 4433

Assignment 1 (due by midnight MST the day prior to Live Session 2)

• Assignment 1, Part 1: Construct a CSV file, called `elements.csv`, with the first eight elements of the periodic table. Include columns for name, symbol, and atomic_number. Create a function, called `atomic_elements`, which takes in a file name as an argument. The function should read in the file and create a pandas DataFrame out of it. The function should also add a ninth and 10th element. It should also add a column with the atomic weights rounded to the nearest integer. Return the DataFrame.

• Assignment 1, Part 2: Write a function, called `arr_to_df`, which takes no arguments. The function will make a list of strings for nine Greek letters, for example 'alpha', the list should not be in alphabetic order. Then make two 9-element numpy arrays of random floating-point numbers with an estimated mean of 10 and a standard deviation of 1.5. Then make another array of nine elements ranging from zero to two times pi, name it 'angle'. Then make another array holding the cosine of that 'angle' array. Construct a dictionary from all of the above. Create a DataFrame from that dictionary, and print it out. Sort the DataFrame ascending on the Greek letters, drop two columns of your choice, drop one of the rows, and return the DataFrame.

• Assignment 1, Part 3: Write function, called `fib`, which takes no arguments. It should create a list of the first 12 Fibonacci numbers starting with 1, not zero. Then iterate over the last five numbers to build another list with the ratio of each number to its predecessor. Return the list with the ratios. What do you observe about this latter list?

• Assignment 1, Part 4: Write a function, called `k_to_r`, which takes a temperature in Kelvin (float) as an argument. The function will convert the temperature in Kelvin to Rankine, return the Rankine temperature value. Make a list of five Kelvin temperatures, use the function to make the conversion and print out the values after each conversion. Repeat using a lambda function.