My choice of Data Structure: Objects within Arrays

Storing objects within arrays is a very versatile way of working with data. Objects allow use to store a fixed set of arbitrary data. These objects are then stored in arrays. This can be seen as a 2-dimensional array. Objects allow us to use names for their properties, i.e. the CSV files columns. This made iterating through each animal easy. Then we can go deeper within that animal’s information by referring to the attributes of that object. All information can be called by searching the animals ID. This means we can edit multiple columns or rows at once. Since we store all the data as strings, comparing objects is also possible, with the use of operator functions. This is because python gives all characters a value. So A is < B. This allows us to sort the information alphabetically and numerically.

There are some disadvantages to using this method of storing data. For example, inserting a row of data, in a file which has 10,000 rows would mean you have to shift all that data in memory.

All arrays are sorted using bubble sort. This is an expensive algorithm to use (O(n2)). I used this because it was simple to implement, and easy to understand. It also uses little memory. I would choose to use a different algorithm if I had written this again.

On the other hand, the search algorithm I decided to use is very efficient (O(log n)). This algorithm is a divide and conquer algorithm which relies on having an already sorted array.