In this problem set, you will use Python and pylab to write a agglomerative hierarchical clustering algorithm. You will use your algorithm to cluster cities across the United States according to some information available about each.

* The singleLinkageDist between two clusters is the shortest distance between an element in one cluster to an element in the other cluster. In other words, the distance will be that between the points that are closest to each other, where one point is from one cluster and the other is from the other cluster.
* The maxLinkageDist between two clusters is the largest distance between an element in one cluster to an element in the other cluster. In other words, the distance will be that between the points that are farthest from each other, where one point is from one cluster and the other is from the other cluster.
* The averageLinkageDist between two clusters uses the mean to find the average distance between all possible pais of elements (p1, p2) where p1 is from one cluster and p2 is from the other cluster.
* mergeClusters will create a new cluster containing the union of the points in c1 and points in c2. This new cluster will be added to the cluster set, while c1 and c2 are removed from the cluster set. This funcion does not return anything.
* findClosest will use the "linkage" parameter to find the distance between two clusters. It will iterate over all pairs of clusters in the cluster set and return the tuple (c1,c2) of the clusters within the cluster set that are closest. Note that no matter what linkage criteria we are using, we will always return the cluster pairs that are closest to each other.
* mergeOne will make use of findClosest to determine which pairs of clusters to merge. Then, it will usemergeClusters to perform the merging on these two closest clusters. This function returns the tuple (c1,c2) representing the clusters that were merged.