**Homework 9**

2.)

A)

Chart, scatter chart

Description automatically generated

Chart, scatter chart

Description automatically generatedChart, scatter chart

Description automatically generatedB)

Chart, scatter chart

Description automatically generated

C & D)

Chart, scatter chart

Description automatically generatedChart, histogram

Description automatically generated

e)

Chart, scatter chart

Description automatically generatedChart

Description automatically generated

Chart, histogram

Description automatically generated F)

Chart, scatter chart

Description automatically generated

G) For the k-means it found the number of clusters I noticed that it found k clusters, for single linkage I noticed that once I set the threshold based on big vertical gap that the number of clusters produced was small. For average linkage I saw that it had quite a few more than single linkage but it seemed like some of the clusters should have belonged to a larger cluster. Finally for complete linkage I saw that it had more clusters than single but few than average and when looking at the clusters they make sense when I look at them with maybe just a few points on ‘boundaries’ I felt maybe should have been a part of a different cluster than it was. I think the average linkage produced the best clusters because the grouping of the points seemed to make sense as they were close/closely together with the only exception of some on boundaries of cluster seeming like they were in the wrong category. I think this performance is better because there aren’t too many clusters and there aren’t too few and the clusters make sense to the eye.