**Homework 4**

a.

Spearman ranking correlation is calculated using the pagerank list calculated when alpha=1 and the random pagerank list obtained 10,000 times. The final value obtained is 0.9704157271745593. The calculation results prove that the two are very correlated.

B.

When alpha =1, Gini = 0.3242097721605818

When alpha = 0.75, Gini = 0.2464921255988494

When alpha = 0.5, Gini = 0.1662863317889846

When alpha = 0.25, Gini = 0.08426741006867179

According to the observation, as the value of alpha becomes larger, the Gini coefficient becomes smaller. The larger the alpha, the more effective steps, the more uneven the final result obtained.