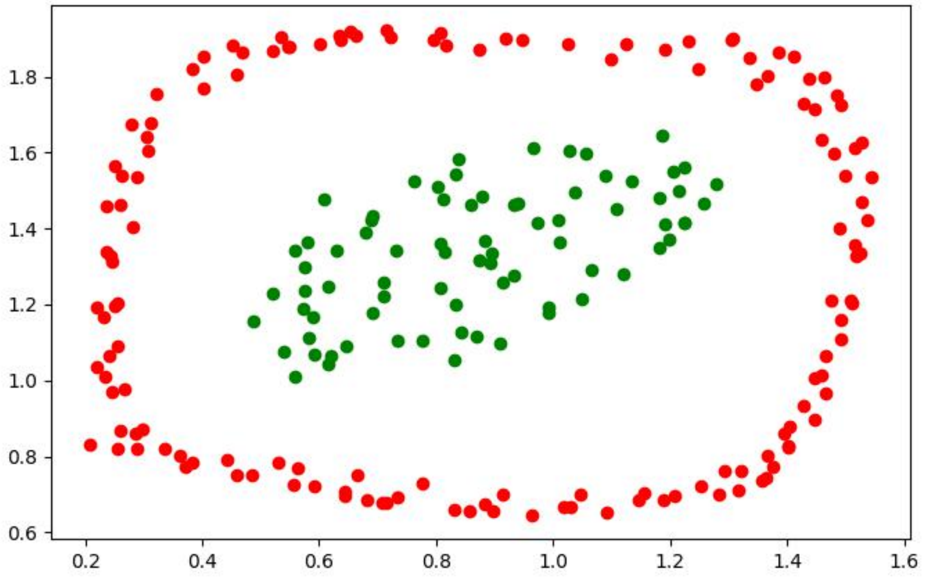
1) For Clustering N points we need N iteration and for each iteration we need to find out the minimum distance by comparing their distances and its given the time complexity to compute distance is O(N^2) and for N iterations we have N times complexity of each iteration . Hence the complexity of Agglomerative Hierarchical Clustering is

Complexity = **O(N^3)** , where N = number of points

2) I have used Euclidean Distance to compute the distances and single-linkage is used to cluster the points . The python code for the same is as follows.

```
 from sklearn.cluster import AgglomerativeClustering
import numpy as np
import matplotlib.pyplot as plt

#Getting the data ready
array_txt = np.loadtxt(r"C:\Users\gutti\Downloads\B.txt",usecols=(0, 1),
skiprows=1)
df = array_txt[:,0:2]

#Creating the model
agg_clustering = AgglomerativeClustering(n_clusters = 2, affinity =
'euclidean', linkage = 'single')

#predicting the labels
labels = agg_clustering.fit_predict(df)

#Plotting the results
plt.figure(figsize = (8,5))
plt.scatter(df[labels == 0 ,0 ] ,df[labels == 0,1 ], c = 'red')
plt.scatter(df[labels == 1 ,0] ,df[labels == 1,1 ] , c = 'green')
plt.show()
```

The output of the code above and the resultant clusters are



Where green is cluster1 and red is cluster 2