**How to run the files**

**1. GeneralGMM.java**

Main argument 0 takes path to Data.txt

Main argument 1 takes the value of k (number of clusters)

**2.SpecificGMM.java**

Main argument takes the path to Data.txt

Value of k = 3 already given.

**Result**

**General GMM**

**K = 1**

Mean List : [15.481698203115913]

Number of iterations : 2

Variance List : [33.75746915184524]

Number of iterations : 2

**K = 2**

Mean List : [20.444114888648958, 5.49987189767878]

Number of iterations :16

Variance List : [13.209343564471371, 0.5042949035670194]

Number of iterations : 16

**K=4**

Mean List :[25.486654429321156, 5.5092793923194785, 15.56211165334128, 15.405247525981348]

Number of iterations :16

Variance List :[0.49904830901870395, 0.5151288175938786, 0.04860470112523469, 0.6492157631503475]

Number of iterations :16

**K=7**

Mean List :[25.936954648050428, 6.498282476041171, 5.514863322622862, 25.41123224558866, 4.454636654088588, 16.230772070665743, 14.706118511739486]

Number of iterations :192

Variance List :[0.008823891531011582, 0.13853372901248143, 0.019271239296698064, 0.5613319551205399, 0.1539883965304771, 0.18048450087755175, 0.2052351071632029]

Number of iterations :192

**SPECIFIC GMM**

**Variance = 1.0**

**K =3**

Mean List : [15.449160787707061, 5.509279392319565, 25.486654429320993]

Number of iterations : 6

Variance List : [0.4835579741190539, 0.5151288175940183, 0.4990483090189571]

Number of iterations : 6

**Initialization Stratergy**

For the GeneralGMM, the value of varience has already been initialized to 1.0.On the same basis the sigma and mean list will be calculated and further xgivenk and bgivenx. Number of clusters have been predefiened to 3.

In SpecificGMM the value of the varience is being calculated by the data given to us.On the same basis the sigma and mean list will be calculated and further xgivenk and bgivenx

**Performance Sensitivity**

As we can see by increasing the value ‘k’ the value of mean increases and the value of variance decreases