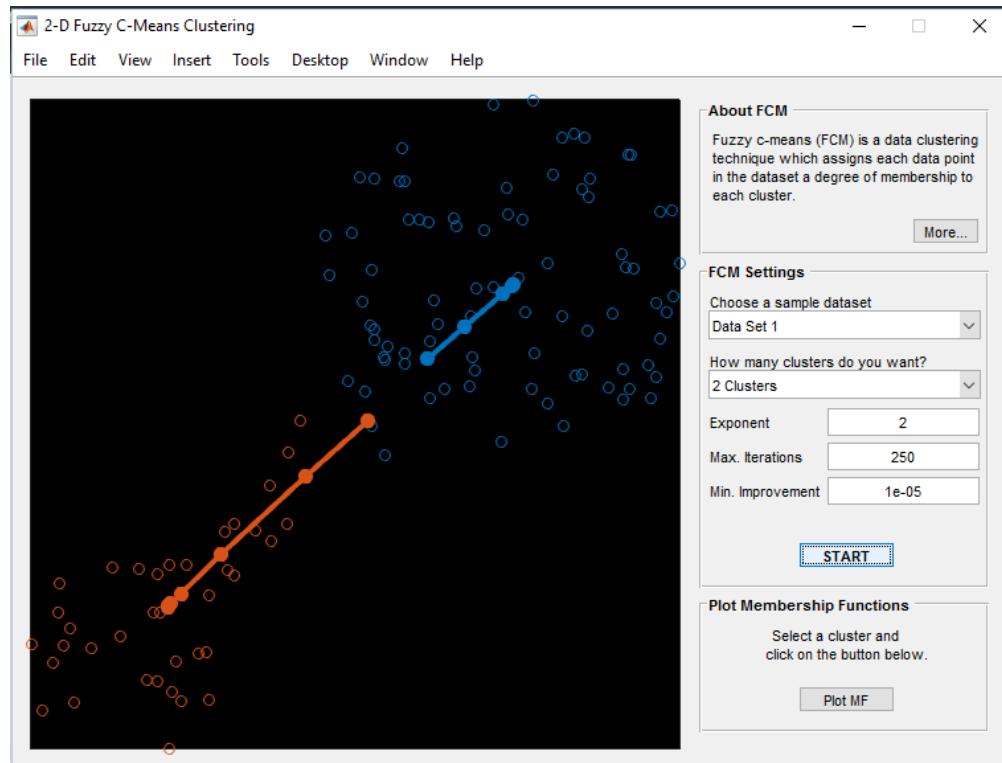
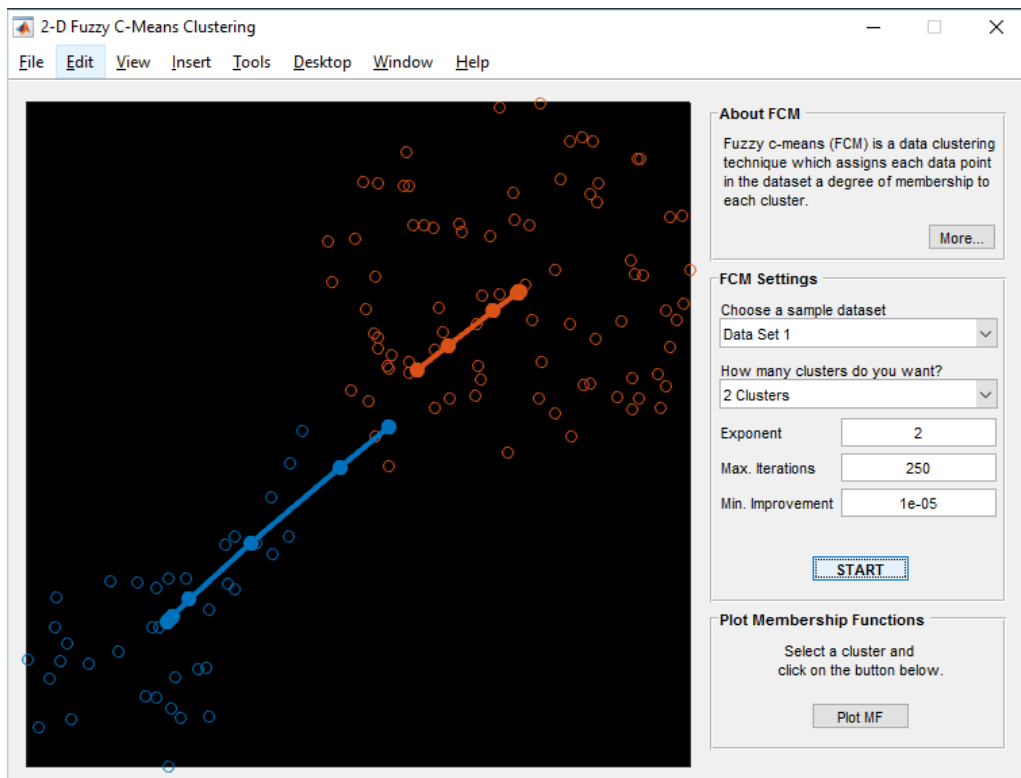


1. 2 clusters,  $m=2$  (i.e.,  $\text{expo}=2$ ), iteration=200 (or large enough), improve= $1e-005$  (i.e., termination criterion is 0.00001). Print the clustering result.



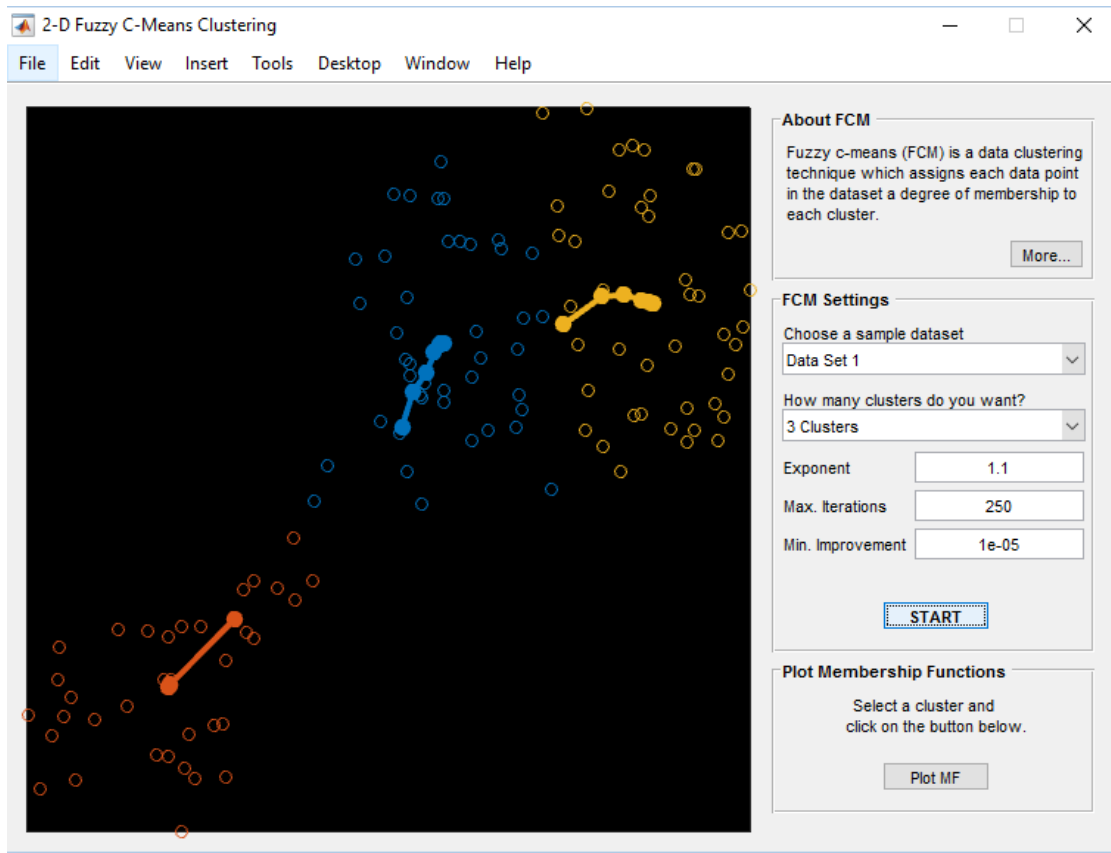
## Second Trail



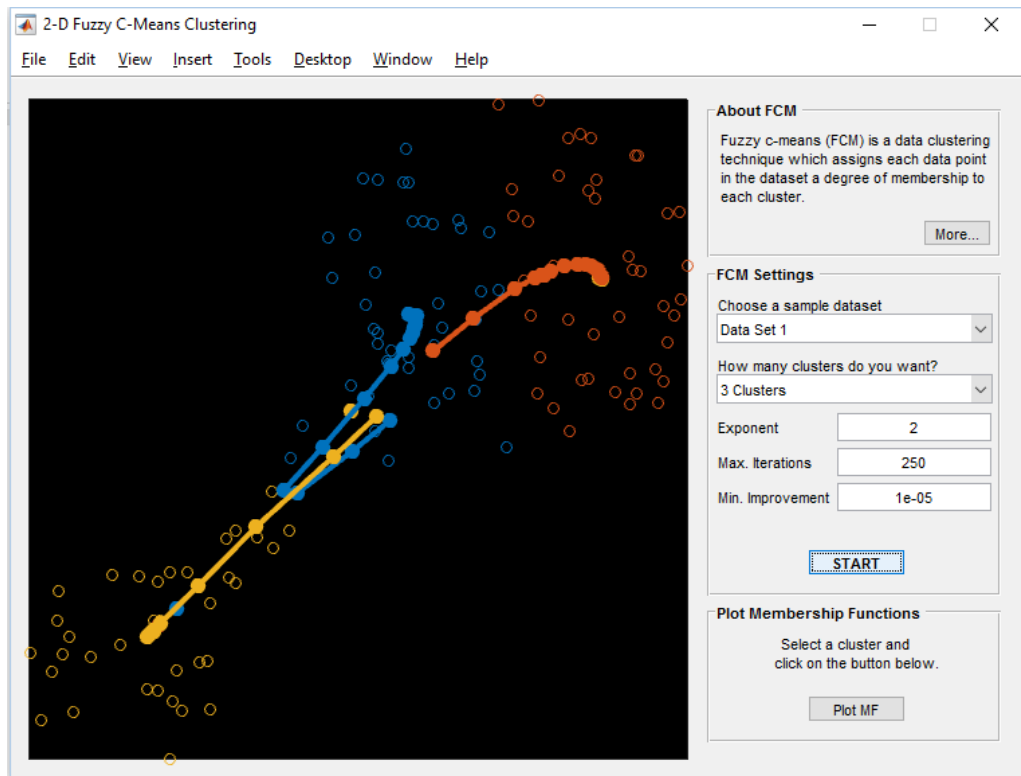
2. 3 clusters,  $m=1.1$ , 2 or 3, iteration=200 (or large enough), improve= $1e-005$ . Print the results. How does the value of  $m$  affect the clustering result?

$m$  is fuzzy partition matrix exponent for controlling the degree of fuzzy overlap, with  $m > 1$ . Fuzzy overlap refers to how fuzzy the boundaries between clusters are, that is the number of data points that have significant membership in more than one cluster.

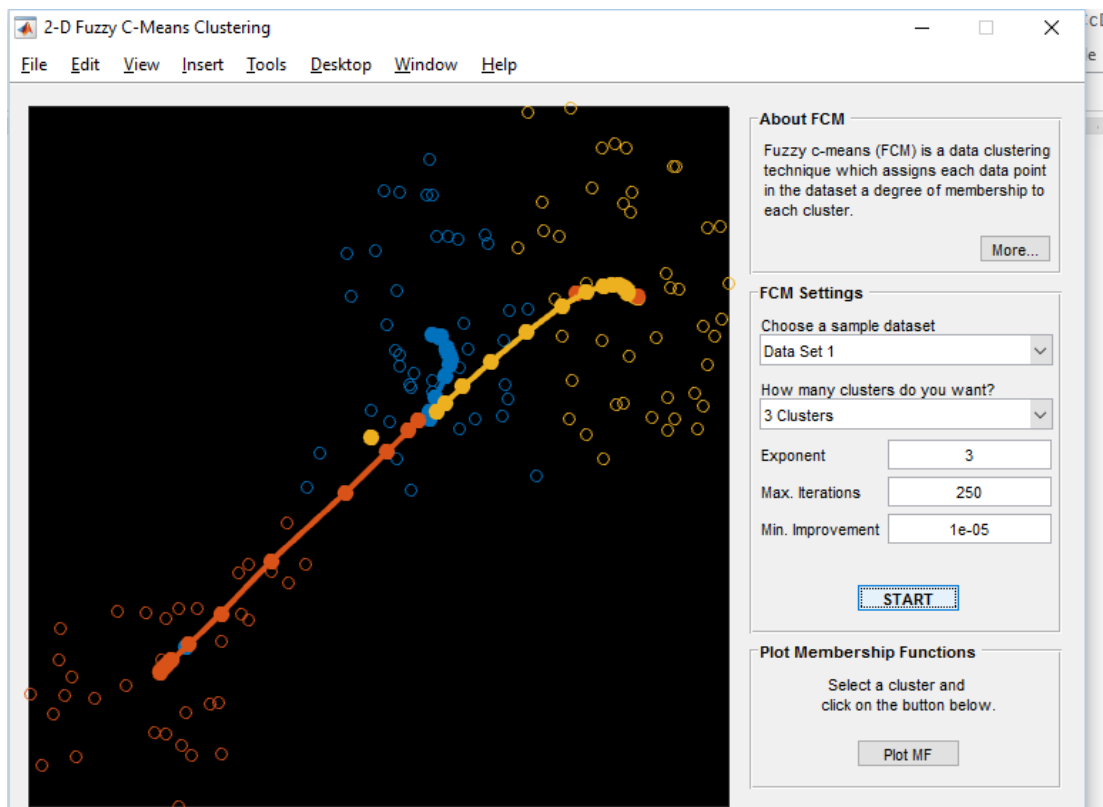
**M = 1.1**



M=2



M=3



3. Load the data in the table below into this example. Repeat the clustering task specified in 1 above.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
x	0	0	0	1	1	1	2	3	4	5	5	5	6	6	6
y	0	2	4	1	2	3	2	2	2	1	2	3	0	2	4

```
>> cmeans
```

Iteration count = 1, obj. fcn = 54.473888

Iteration count = 2, obj. fcn = 32.336901

Iteration count = 3, obj. fcn = 26.642278

Iteration count = 4, obj. fcn = 26.334650

Iteration count = 5, obj. fcn = 26.328303

Iteration count = 6, obj. fcn = 26.328164

Iteration count = 7, obj. fcn = 26.328158

