

### **Exercise 7-1:**

**In the k-means algorithm, we can start with (i) using an initial partition  $\{S_1, S_2, \dots, S_k\}$  or with (ii) using initial centers  $\{c_1, c_2, \dots, c_k\}$ . Design a good initialization method for the k-means algorithm with (i) or (ii).**

## **Exercise 7-2:**

**Clearly demonstrate the difference between the *k*-means algorithm and the k-medoids algorithm using a test data set (i.e., create a test data set which can be used for clearly demonstrating the difference between the *k*-means algorithm and the k-medoids algorithm).**

### Exercise 7-3:

Clearly demonstrate the effects of  $m$  on the clustering results by the fuzzy c-means algorithm through computational experiments on a test data set (i.e., create a test data set which can be used for clearly demonstrating the effects of  $m$ ). **Try to create some beautiful figures.**

### Exercise 7-4:

Clearly demonstrate the difference between the k-means algorithm and the fuzzy c-means algorithm through computational experiments on a test data set (i.e., create a test data set which can be used for clearly demonstrating the difference between the k-means algorithm and the fuzzy c-means algorithm). **Try to create some beautiful figures.**