A. y=[0 0; 4 4; -4 4; -4 -4; 4 -4]. Write matlab codes to generate mixtures of samples from five normal pdfs whose means are rows of y. Plot generated data and five means.
B. Let X be a 100x2 matrix and y be a 5x2 matrix, respectively collecting generated data and five means in problem A.
  1. Write matlab codes to calculate cross distances between points in X and means in y.
  2. Write matlab codes to determine exclusive memberships of points in X to five clusters respectively centered at five means in y.
  3. Calculate the criterion

$$E = \frac{1}{N} \sum_i \min_j \| x_i - y_j \|$$

C. Draw a while-loop flow chart to illustrate seeking K centers by the K-means method.
D. Write matlab codes to implement your flow chart. Apply your matlab codes to determine five centers of mixture data generated in problem A.