Homework# 6 - Due day 23:59PM 10th December

- Use whatever your favorite language to code out kmeans clustering, kernel kmeans and spectral clustering. (last 2 both based on RBF kernels)
  - In spectral clustering you are allowed to use any package which provide you solver of eigenvalue problem.
  - **20 points** You need to make **videos** showing the **clustering procedure** (visualize the cluster assignments of data points in each iteration, colorize each cluster with different colors) of your kmeans/kernel kmeans program.
  - **15 points** In addition to cluster data into 2 clusters, try more clusters (e.g. 3 or 4) and show results.
  - **15 points** For the **initialization** of kmeans clustering used in kmeans/kernel kmeans/ spectral clustering, try different ways and show corresponding results.
  - **15 points** For spectral clustering, you can see if data points within the same cluster do have the same coordinates in the eigenspace of graph Laplacian, discuss in the report.
  - **35 points** Submit a report with showing your code and give detailed explanations.
  - Test data will be available on New E3 (2 datasets with points on 2d space, **circle.txt** and **moon.txt**)