The purpose of this assignment is to implement K-means clustering algorithm and apply it to image segmentation. The images you should work with can be accessed here:
http://www.indiana.edu/~dll/B657/horse.jpg
http://www.indiana.edu/~dll/B657/fruits.jpg
http://www.indiana.edu/~dll/B657/frog.jpg
http://www.indiana.edu/~dll/B657/girl.jpg

You are to implement the following two or three functions:

1. `[imageOut] = imseg_kmeans1(imageFile, k)`. This function outputs a segmented image based on K-means clustering on the 3D color space. The pixels in the same segment should be rendered with the same `[r g b]` values corresponding to the center of the cluster.

2. `[imageOut] = imseg_kmeans2(imageFile, k)`. This function is the same with the above one except that you will apply K-means on a 5-dimensional space `[r g b x y]`. In this way, the segmentation algorithm takes advantage of spatial information as well as color information.

3. (bonus) `[imageOut] = imseg_kmeans3(imageFile, k)`. Develop your own segmentation program that can do a better job than the above two functions.

4. Report your results including:
   a. How well your code works on each image sample.
   b. Comparison of different approaches.
   c. Discussion on how to improve your results if they are not perfect.

You will hand in your Matlab code and report. You will need to zip/tar/rar all the files into one with the name B657_(hw #)_(your last name).zip(or tgz/rar), and send it to chenyu@indiana.edu.