The program begins in main.py. The program first reads in the input images using cv2 and uses those images to pass in as arguments into the subsequent objects. Each class performs a separate part of the assignment.

KmeansGray – K means algorithm for grayscale images

* Creates empty arrays to hold clusters and centroids
* Picks random points and adds to centroid array based on K argument
* In perform algorithm the loop is performed, adding points to clusters, averaging, creating new centroids and performing that over and over again until no more changes are made
* Intensity is used instead of geometrical distance
* Algorithm analysis is printed to console

KmeansColor – K means algorithm for color images

* Creates empty arrays to hold clusters and centroids
* Picks random points and adds to centroid array based on K argument
* In perform algorithm the loop is performed, adding points to clusters, averaging, creating new centroids and performing that over and over again until no more changes are made
* Intensity is used instead of geometrical distance
* The Euclidean distance algorithm is used to computed difference in intensities

NOTE: If k = 2 the images are in binary, if k > 2 the colors of the clusters are randomly generated

A sample output "Result" is given in folder next to other images.