Question I

Thresholding is the assignment of pixel values in relation to the threshold value provided. In thresholding, each pixel value is compared with the threshold value. If the pixel value is smaller than the threshold, it is set to 0, otherwise, it is set to a maximum value (generally 255). A threshold is a value which has two regions on its either side i.e. below the threshold or above the threshold.
In Computer Vision, this technique of thresholding is done on grayscale images. So initially, the images have to be converted in grayscale color space. In this assignment, you are asked to implement the algorithm described above. Then you should evaluate and optimize the efficiency of the algorithm using "Landscape Color and Grayscale Images" dataset in which there are many images and their corresponding grayscale version.
The evaluation and optimization phase is considered as minimizing the summation of distances between output and the corresponding grayscale version of input image that is available in the dataset. This should be done through searching for optimal value for thresholding by means of **Simulated Annealing (SA)** or **Hill Climbing** searching algorithms(use all the images).

Question II

Use K-Means clustering algorithm to segment the following RGB images. Find the proper value for K.

0.jpg
1.jpg
10.jpg
100.jpg
1000.jpg
1001.jpg
1002.jpg
1003.jpg
1004.jpg
1005.jpg

Submission

You are should take advantages of 'OpenCV' library for Python language programming in order to for process or manipulate any image. After getting your task to be done, assemble your raw Python code and .ipynb file in which the code has been run and fine-tuning, evaluations, and optimizing are all illustrated.