Digital Image Processing

Lab Assignment – 1 Section- B

1. Write a function that computes the histogram of the given image ‘lena.jpg’. Do not use inbuilt Python functions for histogram computation.
2. Write a program that applies histogram equalization on any input gray scale image ‘lena.jpg’. Try to incorporate the number of bins, N, information in your code.
3. Write programs *rotate.py* and my *resize.py* which can rotate an image at a user defined angle and scale an input image I to a given size (M, N) respectively.
4. Extract all 8-bit planes of any input gray scale image I. Show the original image and all bit planes using *matplotlib* Python library. Now use the binary image ‘daiict.bmp*’* as a watermark and replace the i^{th} bit plane of the image ‘lena.jpg*’* and reconstruct the gray scale image J_i for $1 \leq i \leq 8$. Show each J_i using subplot and comment on the reconstructed image J_i.
5. Perform contrast stretching on the given image ‘lena.jpg’ and display original image as well as resultant image in the same frame.
6. Reduce the salt-and-pepper noise; submit your code and the output image. The input image is ‘img8.tif’.

Note: Use the given image (convert the color image into grayscale image) as input image for all the problems.