Instructions: For theory, show all steps involved.

Q1. Restore the degraded image (noiseIm.jpg) using constrained least squares filters discussed in the lecture

- Assume the Laplacian mask and image has origin at top left.
- Report the PSNR for the best restored image
- You can take lambda in the range of [0,1] at an interval of 0.25.
- Display the best restored image.
- Your code should display the CLS filters in Fourier domain. [4]

Q2. Show that the Radon transform of $F(\omega_1, \omega_2)$ at $\theta = 0$ is $e^{-i\omega_1 \rho} F(\rho, \omega_2)$. Note $F(\omega_1, \omega_2)$ is the Fourier transform of f(x,y). This is the basis of Fourier Slice theorem. In practice, the Radon transform is computed in Fourier domain. [2]

Q3. Perform histogram equalization of the RGB image in HSI space provided with the assignment. You need to convert the image to HSI using the equations discussed in the lecture and then perform equalization for intensity channel only. After that, convert equalized image back to RGB space and display. You need to show original and equalized images in RGB domain, and the respective intensity channel histograms. You can use previous equalization codes. [4]