Home Work 3

Use the PDF files 'fpecial.pdf', 'imfilter.pdf', 'imnoise.pdf', to do this home work

1. Down Load 2 color Images from the 'Imaging Modalities' Document. You may pick the ones you like And read them into MATLAB

   e.g. im1 = imread('leaves.jpg')

2. Use the 'fspecial' to create a 2D Gaussian filter of size (5x5)
3. Use MATALB to transform the color image to YCbCr and pick the Y channel only
4. Use the 'imfilter' function in MATLAB to perform a spatial convolution of the images above with the Gaussian filter, recombine the Cb and Cr channels and convert back to RGB and view the images
5. Run the MATLAB code posted in Ed 'EquivalencOfSpatialAndFrequencyDomainConv.m' and examine the code and the results. Replace the image in the script with your own image and run the code.
6. Run the MATLAB codes 'Lowpass_Filter.m' and 'Sharpening_Filter.m' and examine the code and the results. Replace the image in the script with your own image and run the code.
7. Use the procedure discussed in lecture to perform a frequency domain filter using the same Gaussian spatial domain filter above for the Y channels, recombine the CrCb channels and convert back to RGB and compare the result from spatial domain and frequency domain. They should be identical.
8. Use the DCT to interpolate the images by factors 1.75 and 0.6 to the nearest integer. This means if the original image is 1000x1000 a factor of 1.75 interpolation will result in the output image 1750x1750. Also note that in MATLAB you have to use the function 'dct2' for all 2D image processing applications.