Digital Image Processing - Assignment 01

1. Get to know Digital Image Processing (DIP) in MATLAB:

Download the images given in TronClass for this assignment for practicing displaying and manipulating images. Try the following example using functions from MATLAB Image Processing Toolbox:

```
% load color image and display it
I = imread( 'Lenna.tif' );
figure,
subplot(3,2,1), imshow(I), title( 'Original image' );
% convert it to grayscale if needed
grayI = rgb2gray(I);
subplot(3,2,2), imshow(grayI), title( 'Grayscale image' )
% divide the image into 4 parts with the same size
[row,col] = size(grayI);
I1 = grayI(1:round(row/2), 1:round(col/2));
I2 = grayI(1:round(row/2), round(col/2)+1:end);
I3 = grayI(round(row/2)+1:end, 1:round(col/2));
I4 = grayI(round(row/2)+1:end, round(col/2)+1:end);
subplot(3,2,3), imshow(I1), title( 'UpperLeft' )
subplot(3,2,4), imshow(I2), title( 'UpperRight' )
subplot(3,2,5), imshow(I3), title( 'LowerLeft' )
subplot(3,2,6), imshow(I4), title( 'LowerRight' )
```

Please hand in the plots enclosed in the report.

2. Image Sampling:

Use one of your own images and convert it to grayscale (if needed). Then use the MATLAB function to **shrink the size** of the image by two until you cannot recognize it (e.g. Shrinking from 512x512 to 256x256 and 128x128, …, 16x16 or even 8x8). Redo the work from the shrinking images back to its original size with various **interpolation** approaches. Are you satisfied with the quality of the resulting images? Explain your experimental results and tell us your findings.