Problem 1

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1a Load image and display

```
A = imread('lena.bmp');
figure(1)
imshow(A);
title('Loaded Image Displayed');
```

1b Convert image to grayscale

```
B = rgb2gray(A);
figure(2)
imshow(B);
title('Image Converted to Gray-scale')
```

1c write own function for color to gray

```
gray = my_rgb2gray(A);
figure(3)
imshow(gray);
title('Image Converted to Gray-scale using own function');
```

1d Save grayscale

```
imwrite(gray,'lena_gray.jpg')
```

Loaded Image Displayed

Image Converted to Gray-scale

Problem 2

2a Read and Show image

```
clear all;
A = imread('lowcontrast.jpg');
figure(4)
imshow(A);
title('Loaded Lowcontrast Image Displayed')
```

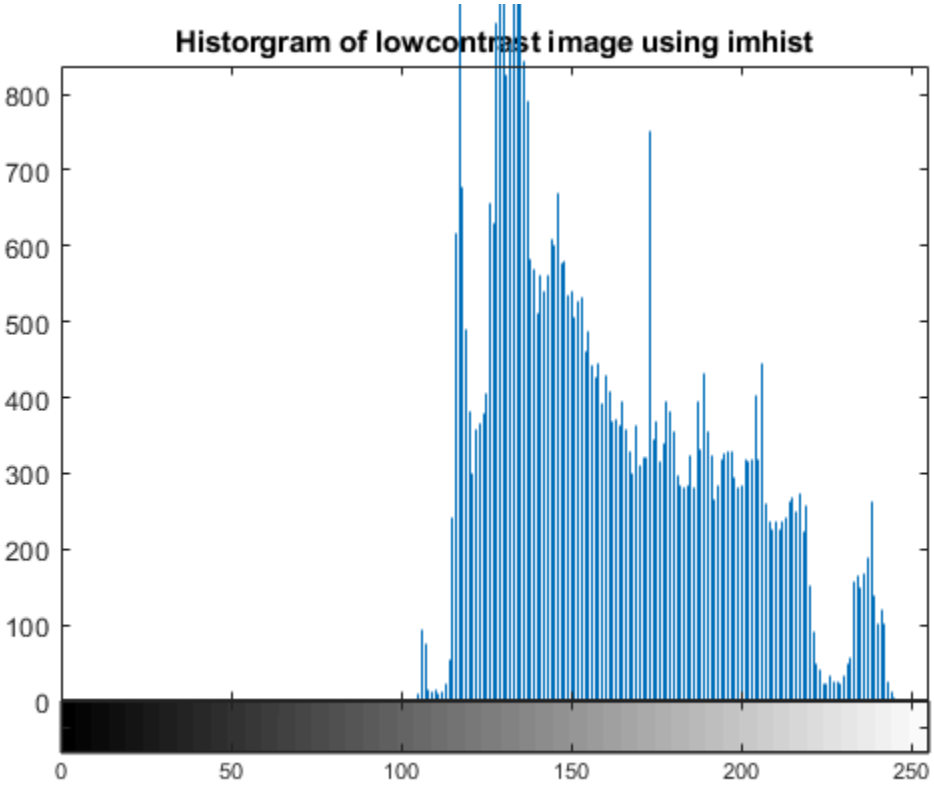
2b Show histogram of image

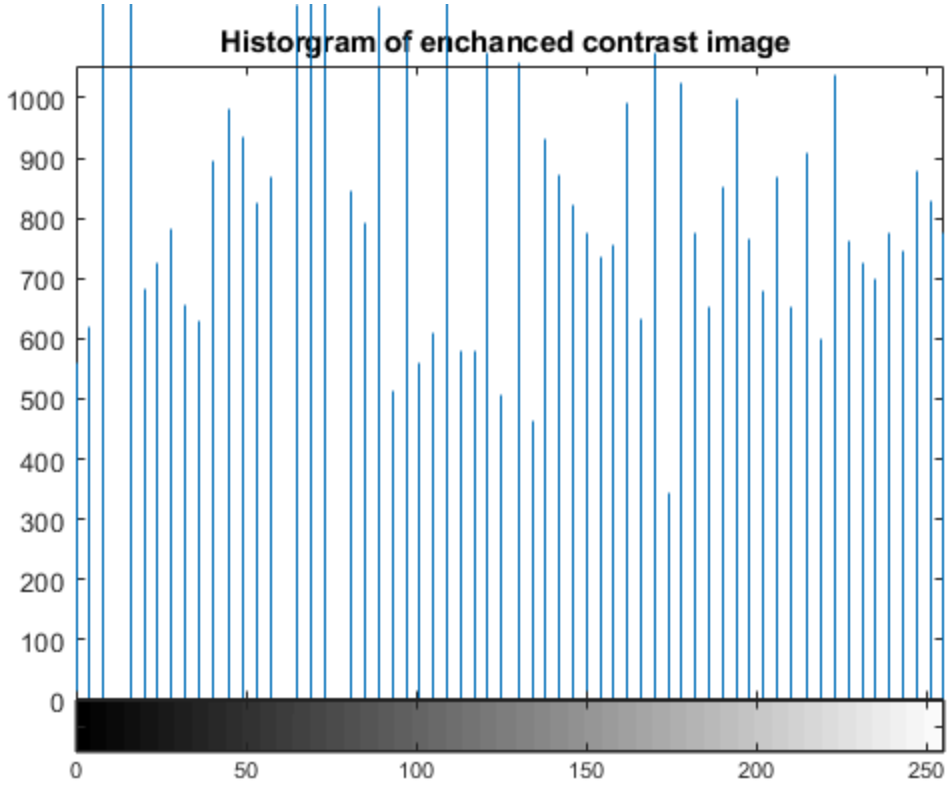
```
figure(5)
set(gcf,'WindowState','normal');
imhist(A);
title('Historgram of lowcontrast image using imhist');
```

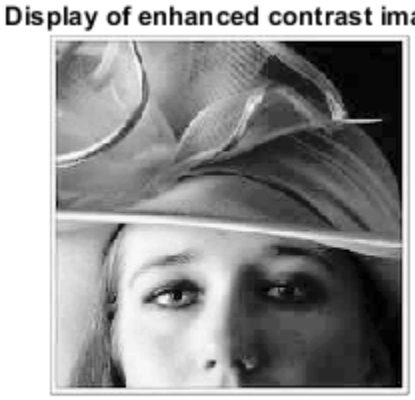
2c Enhanced Contrast Histogram

```
J = histeq(A);
figure(6)
imhist(J);  % histogram of enhance image
title('Historgram of enchanced contrast image ')
figure(7);
imshow(J);  % enhanced contrast of image
title('Display of enhanced contrast image')
```


Loaded Lowcontrast Image Displayed


Historgram of lowcontrast image using imhist
800
700
600
500
400
300
200
100
0
0
50
100
150
200
250





Problem 3

3a Salt and Pepper noisy image

```
A = imread('lena_gray.jpg');
d = 0.05;
J = imnoise(A,'salt & pepper',d);
```

```
figure(8)
imshow(J);
title('Gray-sclae image with salt & pepper noise Added');
```

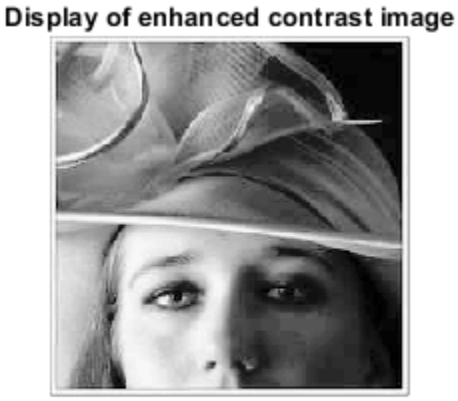
3b Filter noise in image

```
B = medfilt2(J);
figure(9)
imshow(B);
imshowpair(J,B,'montage')
title('Comparison of filtered noise vs noise image');
```

3c Filter noise further and compare to 3b

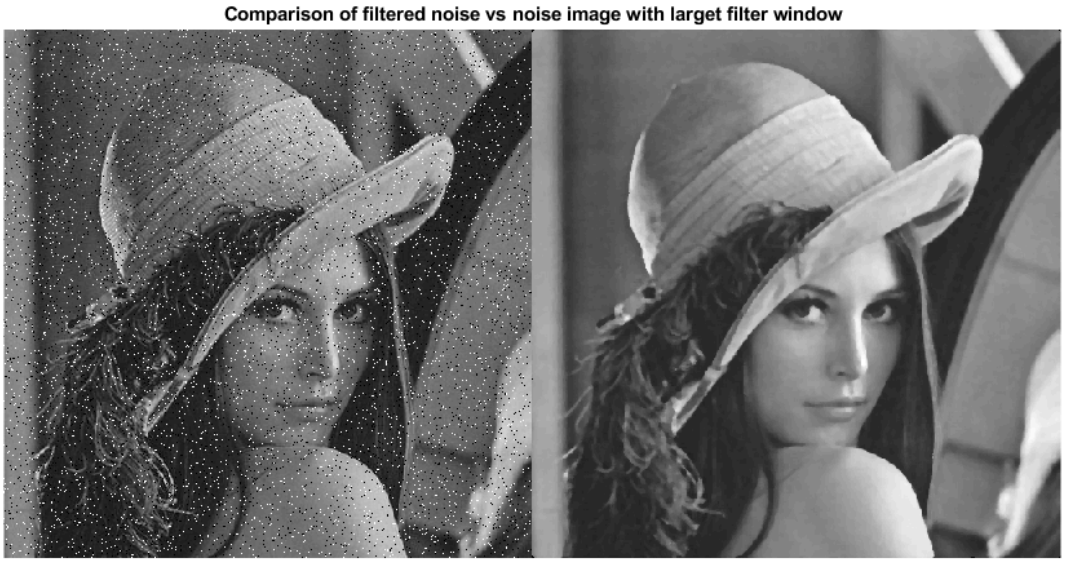
```
m = 5;
n = 5;
C = medfilt2(J, [m,n]);
figure(10)
imshowpair(J,C, 'montage');
title('Comparison of filtered noise vs noise image with larget filter
 window');

% Increasing the window size allows for the noise removal to be more
% accurate. However the resulting image becomes blurrier. The image
% filtered with a 5x5 window has some slighy blur to it. To really see the
% difference you can also do a 10x10 window. This means when removing noise
% drawback is potentially getting a blurry image.
```



Gray-sclae image with salt & pepper noise Added

Comparison of filtered noise vs noise image



RGB to Gray Scale Funciton

```
function grayImage = my_rgb2gray(A)

    grayImage = 0.3 * A(:,:,1) + 0.6*A(:,:,2) + 0.1 *A(:,:,3);   %equation for
 function
end
```

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