DIP Assignment № 2

PRAMIT BISWAS, Sem V November 21, 2022

Problem 1

Flip any image without using any built-in function.

```
img = imread("cameraman.tif");

subplot(1,2,1);
imshow(img);
title("Orignal");
flip = img(:,  end:-1:1);
subplot(1,2,2);
imshow(flip);
title("Verticaly Fliped");
```

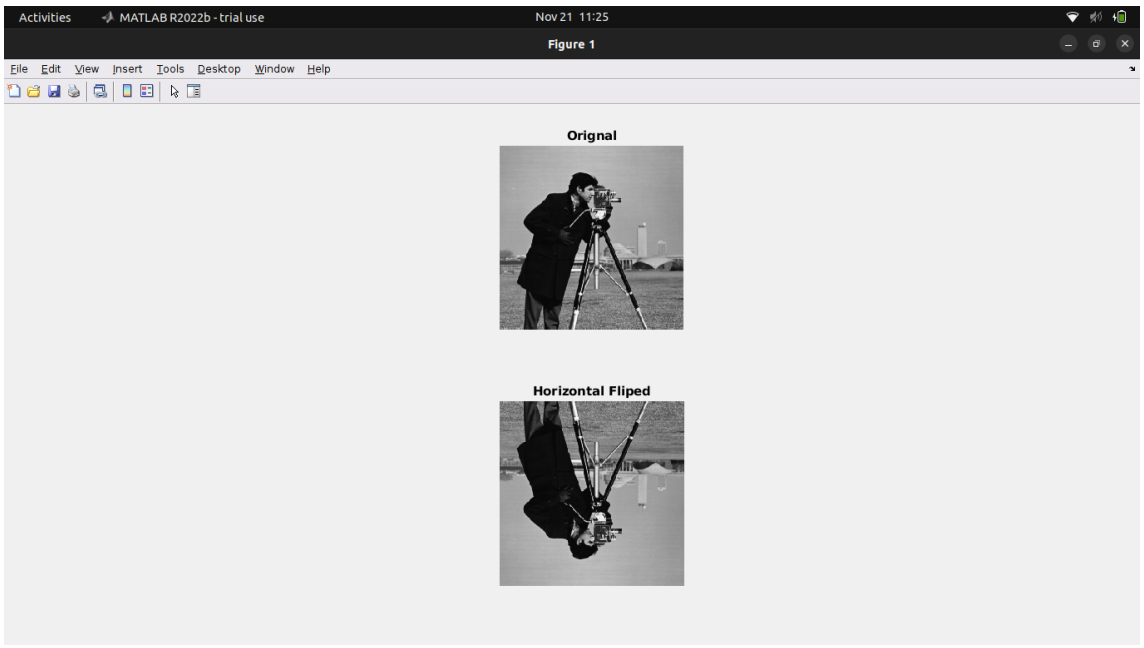
Output

Problem 2

Flip any image upside down without the use of any built-in function.

```
1  img = imread("cameraman.tif");
2
3  subplot(2,1,1);
4  imshow(img);
5  title("Orignal");
6  flip = img(end:-1:1, :);
7  subplot(2,1,2);
8  imshow(flip);
9  title("Horizontal Fliped");
```

Output



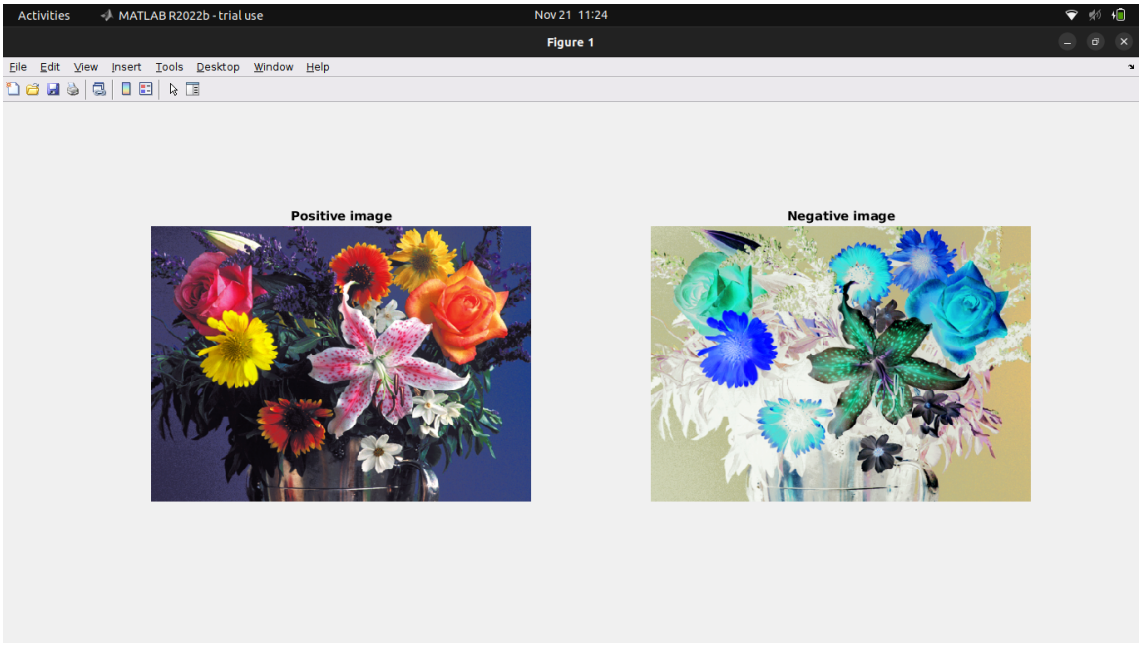
Problem 3

Make Negative image (Without the use of built-in function).

```
img = imread("flowers.ppm");

negative_img = 255 - img;
subplot(1,2,1),imshow(img),title("Positive image");
subplot(1,2,2),imshow(negative_img),title("Negative image");
```

Output



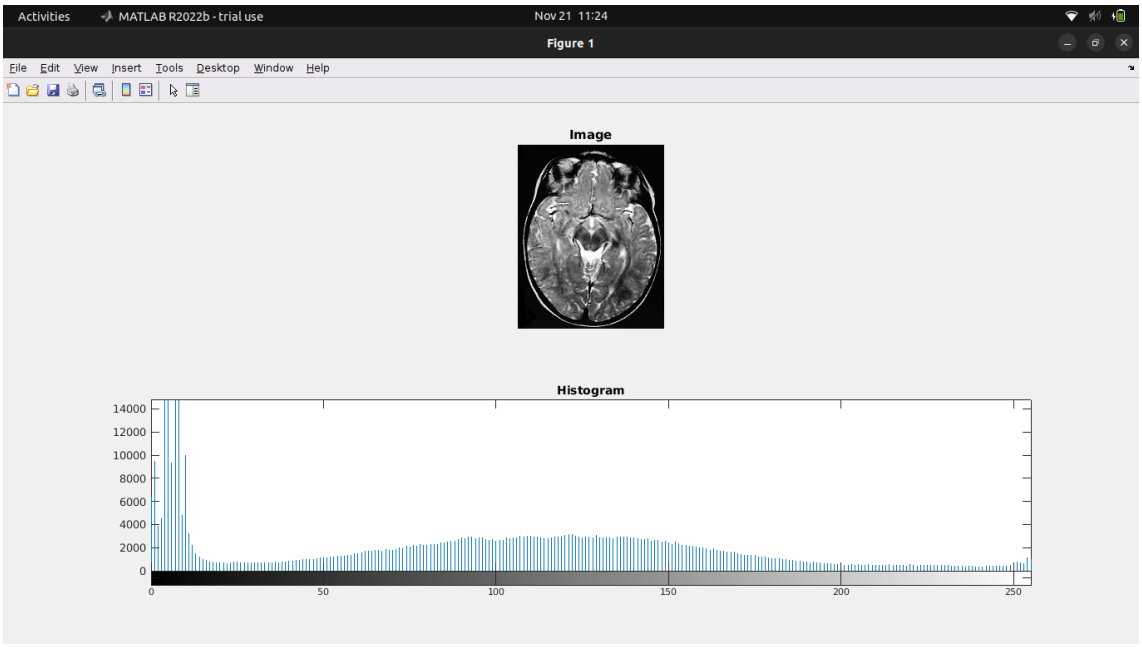
Problem 4

Plot Histogram of a gray scale image.

```
img = imread("Brain3.pgm");

subplot(2,1,1),imshow(img),title("Image");
subplot(2,1,2),imhist(img),title("Histogram");
```

Output

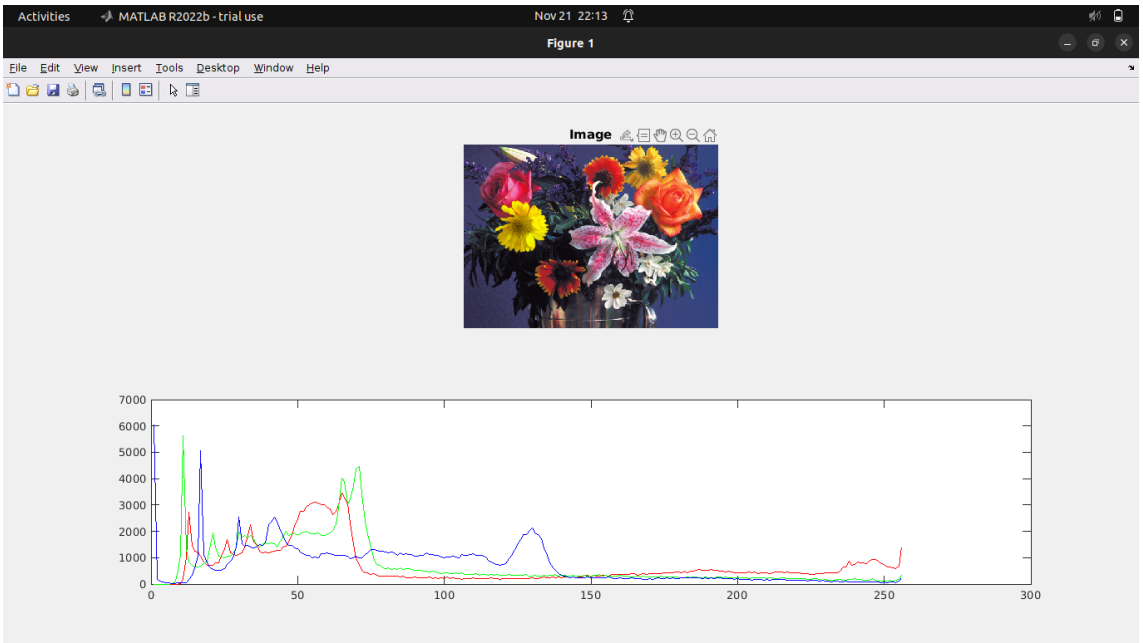


Problem 5

Plot Histogram of a color image.

```
img = imread("flowers.ppm");
[r, g, b] = imsplit(img);
R = imhist(r);
G = imhist(g);
B = imhist(b);
subplot(2,1,1),imshow(img),title("Image");
subplot(2,1,2);
plot(R,"r")
hold on;
plot(G, "g")
plot(B, "b")
hold off;
```

Output



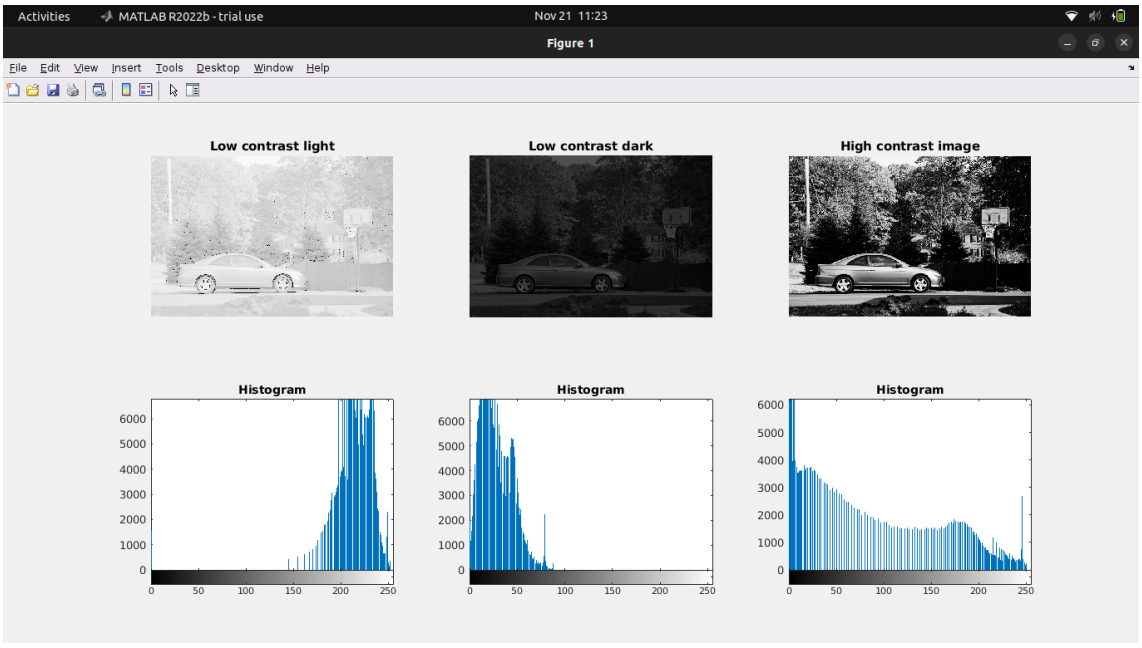
Problem 6

Obtain two images with low contrast (light and dark) and high contrast and plot respective histograms. Observe the difference.

```
img1 = imread("light3.tif");
img2 = imread("dark3.tif");
img3 = imread("high3.tif");

subplot(2,3,1),imshow(img1),title("Low contrast light");
subplot(2,3,4),imhist(img1),title("Histogram");
subplot(2,3,2),imshow(img2),title("Low contrast dark");
subplot(2,3,5),imhist(img2),title("Histogram");
subplot(2,3,3),imshow(img3),title("High contrast image");
subplot(2,3,6),imhist(img3),title("Histogram");
```

Output

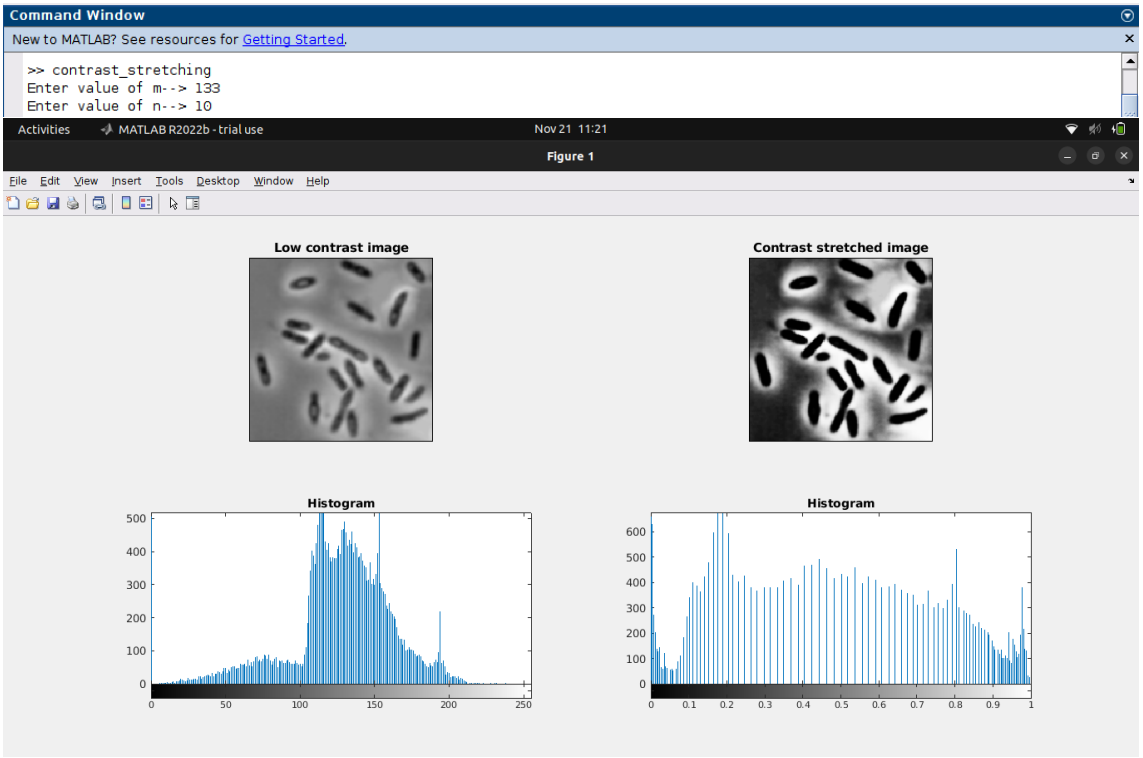


Problem 7

Contrast Stretching: Stretch the contrast of an image and plot the both the images along with their histograms.

```
img = imread("bacteria.tif");
m = input("Enter value of m--> ");
n = input("Enter value of n--> ");
cont_stretch = 1./(1+(m./double(img)-eps).^n);
subplot(2,2,1),imshow(img),title("Low contrast image");
subplot(2,2,3),imhist(img),title("Histogram");
subplot(2,2,2),imshow(cont_stretch),title("Contrast stretched image");
subplot(2,2,4),imhist(cont_stretch),title("Histogram");
```

Output



Assignment 2 Github link: https://github.com/promit-3o20/DIP/tree/main/dip/assignment2