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Digital Image Processing

Assignment 1

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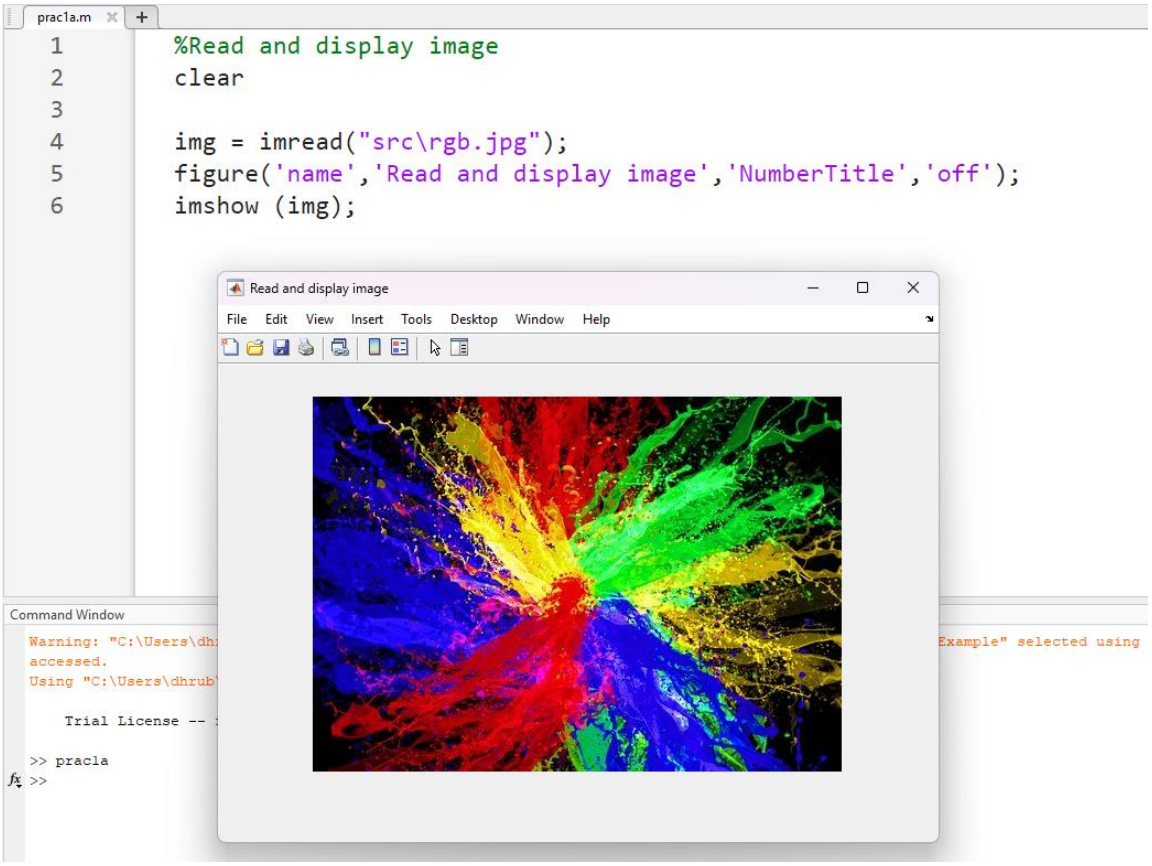
B.SC-(SEM-V)-COMP-O4
VB-2480 OF 2017-18

1. Read and display image

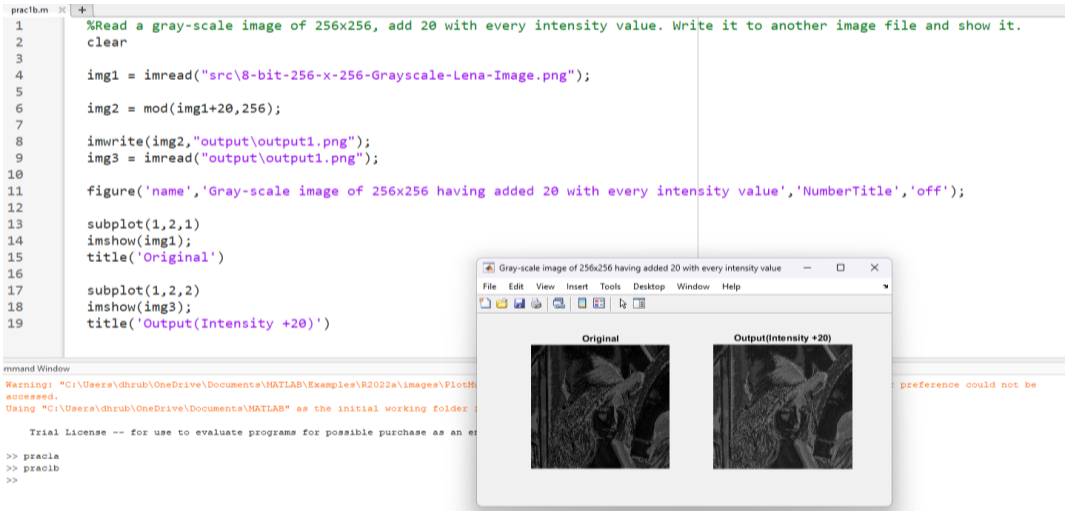
Code:

```
%Read and display image
clear

img = imread("src\rgb.jpg");
figure('name','Read and display image','NumberTitle','off');
imshow (img);
```



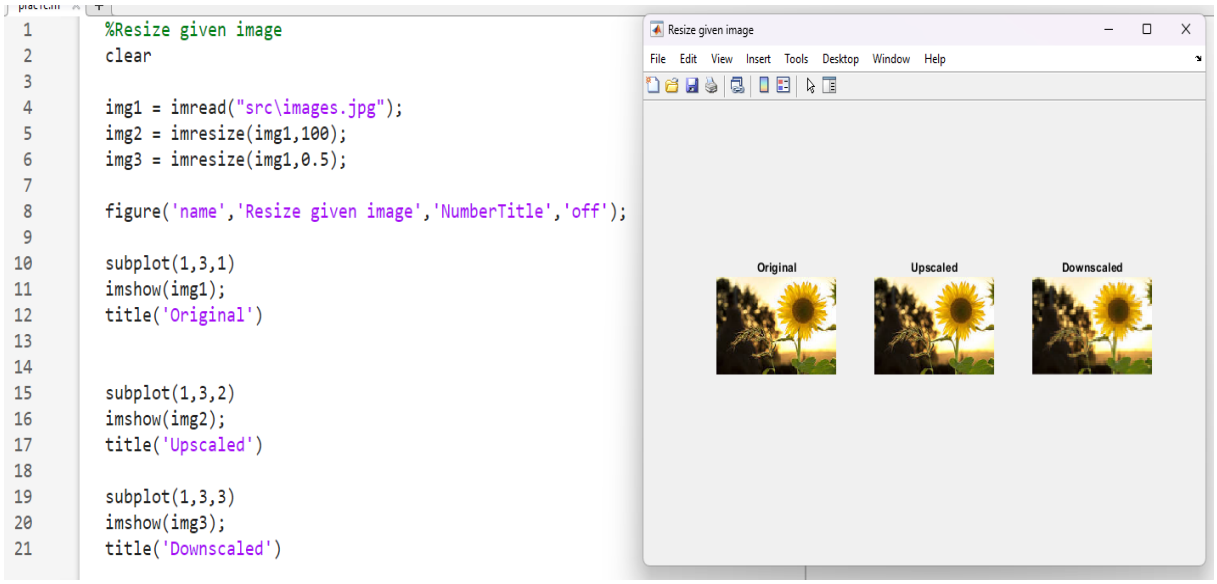
2. Read a gray-scale image of 256x256, add 20 with every intensity value. Write it to another image file and show it.

```
%Read a gray-scale image of 256x256, add 20 with every
intensity value. Write it to another image file and show it.
clear

img1 = imread("src\8-bit-256-x-256-Grayscale-Lena-
Image.png");

img2 = mod(img1+20,256);

imwrite(img2,"output\output1.png");
img3 = imread("output\output1.png");

figure('name','Gray-scale image of 256x256 having added 20
with every intensity value','NumberTitle','off');

subplot(1,2,1)
imshow(img1);
title('Original')

subplot(1,2,2)
imshow(img3);
title('Output(Intensity +20)')
```



3. Resize given image

```
%Resize given image
clear

img1 = imread("src\images.jpg");
img2 = imresize(img1,100);
img3 = imresize(img1,0.5);

figure('name','Resize given image','NumberTitle','off');

subplot(1,3,1)
imshow(img1);
title('Original')


subplot(1,3,2)
imshow(img2);
title('Upscaled')

subplot(1,3,3)
imshow(img3);
title('Downscaled')
```



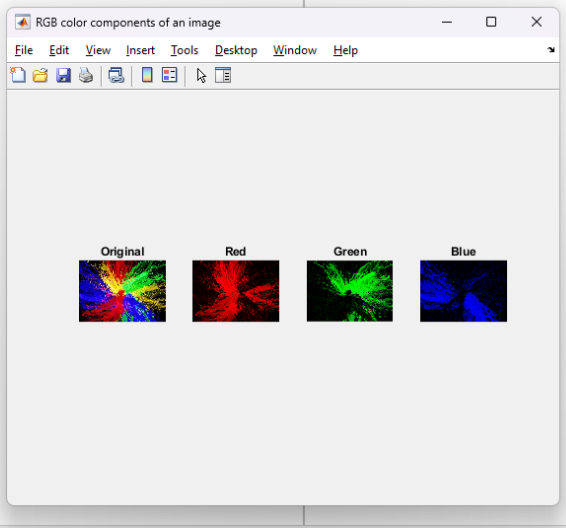
4. Show RGB color components separately of an image (in color)

```
%Show RGB color components separately of an image (in
color)
clear

img = imread("src\rgb.jpg");
figure('name','RGB color components of an
image','NumberTitle','off');

[red, green, blue]=imsplit(img);

allblack = zeros(size(img, 1, 2), class(img));

redimg = cat(3,red,allblack,allblack);
greenimg = cat(3,allblack,green,allblack);
blueimg = cat(3,allblack,allblack,blue);

subplot(1,4,1)
imshow(img);
title('Original')

subplot(1,4,2)
imshow(redimg);
title('Red')

subplot(1,4,3)
imshow(greenimg);
title('Green')

subplot(1,4,4)
imshow(blueimg);
title('Blue')
```

Editor - C:\Users\dhrub\OneDrive\Documents\MATLAB\prac1d.m

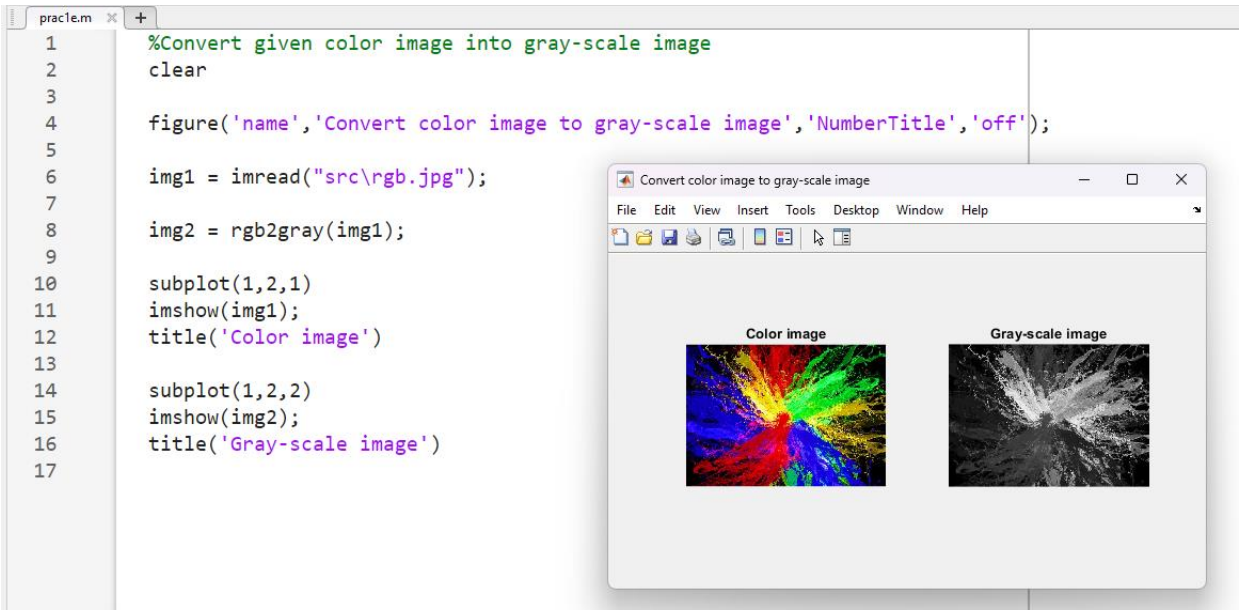
prac1d.m

```
%Show RGB color components separately of an image (in color)
clear

img = imread("src\rgb.jpg");
figure('name','RGB color components of an image','NumberTitle','off');

[red, green, blue]=imsplit(img);

allblack = zeros(size(img, 1, 2), class(img));

redimg = cat(3,red,allblack,allblack);
greenimg = cat(3,allblack,green,allblack);
blueimg = cat(3,allblack,allblack,blue);

subplot(1,4,1)
imshow(img);
title('Original')

subplot(1,4,2)
imshow(redimg);
title('Red')

subplot(1,4,3)
imshow(greenimg);
title('Green')

subplot(1,4,4)
imshow(blueimg);
title('Blue')
```



5. Convert given color image into gray-scale image

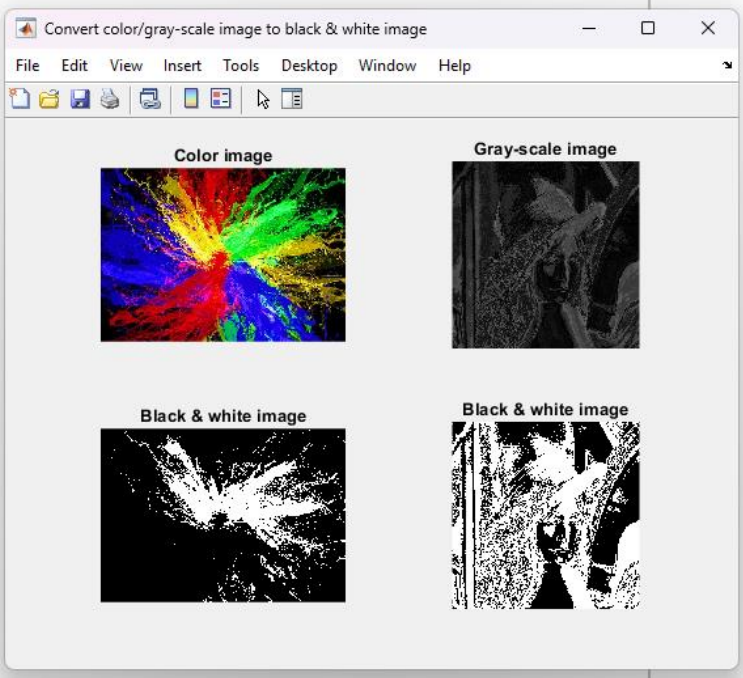
```
%Convert given color image into gray-scale image
clear

figure('name','Convert color image to gray-scale
image','NumberTitle','off');

img1 = imread("src\rgb.jpg");

img2 = rgb2gray(img1);

subplot(1,2,1)
imshow(img1);
title('Color image')

subplot(1,2,2)
imshow(img2);
title('Gray-scale image')
```



6. Convert given color/gray-scale image into black & white image

```
%Convert given color/gray-scale image into black & white
image
clear

figure('name','Convert color/gray-scale image to black &
white image','NumberTitle','off');

img1 = imread('src\rgb.jpg');
img2 = imread('src\8-bit-256-x-256-Grayscale-Lena-
Image.png');

img3 = im2bw(img1,0.5);
img4 = im2bw(img2,0.1);

subplot(2,2,1)
imshow(img1);
title('Color image')

subplot(2,2,2)
imshow(img2);
title('Gray-scale image')

subplot(2,2,3)
imshow(img3);
title('Black & white image')

subplot(2,2,4)
imshow(img4);
title('Black & white image')
```

```m
%Convert given color/gray-scale image into black & white image
clear

figure('name','Convert color/gray-scale image to black & white image','NumberTitle

img1 = imread('src\rgb.jpg');
img2 = imread('src\8-bit-256-x-256-Grayscale-Lena-Image.png');

img3 = im2bw(img1,0.5);
img4 = im2bw(img2,0.1);

subplot(2,2,1)
imshow(img1);
title('Color image')

subplot(2,2,2)
imshow(img2);
title('Gray-scale image')

subplot(2,2,3)
imshow(img3);
title('Black & white image')

subplot(2,2,4)
imshow(img4);
title('Black & white image')
```



7. Write given 2-D data in image file

```
%Write given 2-D data in image file
clear

img = zeros(200);
imwrite(img,"output\output2.png");
```