Lab 3: Generate Grayscale and mirrored (flipped) image

Experiment No.6 Generate Grayscale Images

Aim:

To display the Grayscale images.

Converting RGB Image into gray scale image & extracting the color Spaces

Code:

```
clc; # clear command window
clear all; # clear workspace
close all; # close all figures

# Read the image
image=imread('tree.jpg');
subplot(2,3,1),imshow(image)
title('Original image')

# Convert image into grayscale using built-in function
image_gray=rgb2gray (image);
subplot(2,3,2),imshow(image_gray)
title('Bulit-in grayscale')

# Extracting the color Spaces
[r c d]=size (image);
z=zeros(r,c); # Create array of all zeros

tempr=image;
tempr(:,:,2)=z; % Fill green channel with zeros
```

```
tempr(:,:,3)=z; % Fill blue channel with zeros
subplot(2,3,4),imshow(tempr)
title('Red channel')

tempg=image;
tempg(:,:,1)=z; % Fill red channel with zeros
tempg(:,:,3)=z; % Fill blue channel with zeros
subplot(2,3,5),imshow(tempg)
title('Green channel')

tempb=image;
tempb(:,:,1)=z; % Fill red channel with zeros
tempb(:,:,2)=z; % Fill green channel with zeros
subplot(2,3,6),imshow(tempb)
title('Blue channel')
```

Task:

- Combine the three channels to generate a grayscale image
- Display the generated image in position 3
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Futher Information:

subplot(m,n,p) divides the current figure into an m-by-n grid and creates axes in the position specified by p. MATLAB® numbers subplot positions by row. The first subplot is the first column of the first row, the second subplot is the second column of the first row, and so on. If axes exist in the specified position, then this command makes the axes the current axes.

Link: https://www.mathworks.com/help/matlab/ref/subplot.html/

Experiment No.7 Mirror Image Generation

In MATLAB, Images are stored in matrices, in which each element of the matrix corresponds to a single discrete pixel of the image. We can get the mirror image of the given image if we reverse the order of the pixels (elements of the matrix) in each row.

Code:

```
clc; # clear command window
clear all; # clear workspace
close all; # close all figures
a=imread('tree.jpg');
[r,c]=size(a);
for i=1:1:r
    k=1;
    for j=c:-1:1
        temp=a(i,k);
        result(i,k)=a(i,j);
        result(i,j)=temp;
        k=k+1;
    end
end
subplot(1,2,1),imshow(a),title('Original image')
subplot(1,2,2),imshow(result),title('Flipped (Mirrored) image')
```

Task:

This code works for grayscale images, modify it to work with RGB images also.