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Walchand College Of Engineering

(Government Aided Autonomous Institute)

Vishrambag, Sangli,416415

EXPERIMENT-1

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 19/01/2022

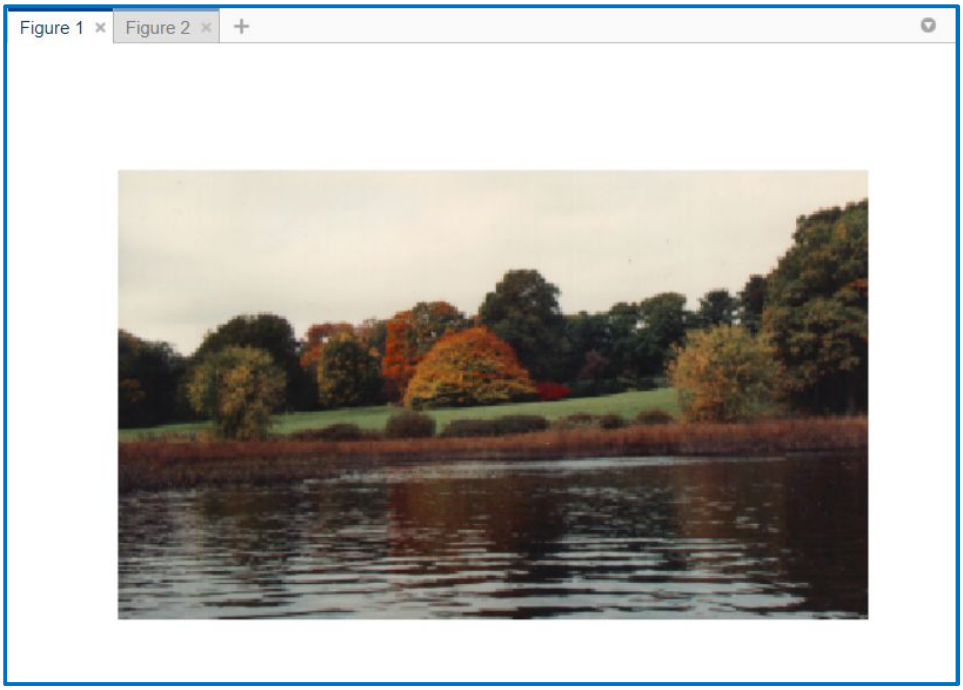
TITLE OF EXPERIMENT: Reading and displaying image using MATLAB.

AIM: To read and display image along with its properties

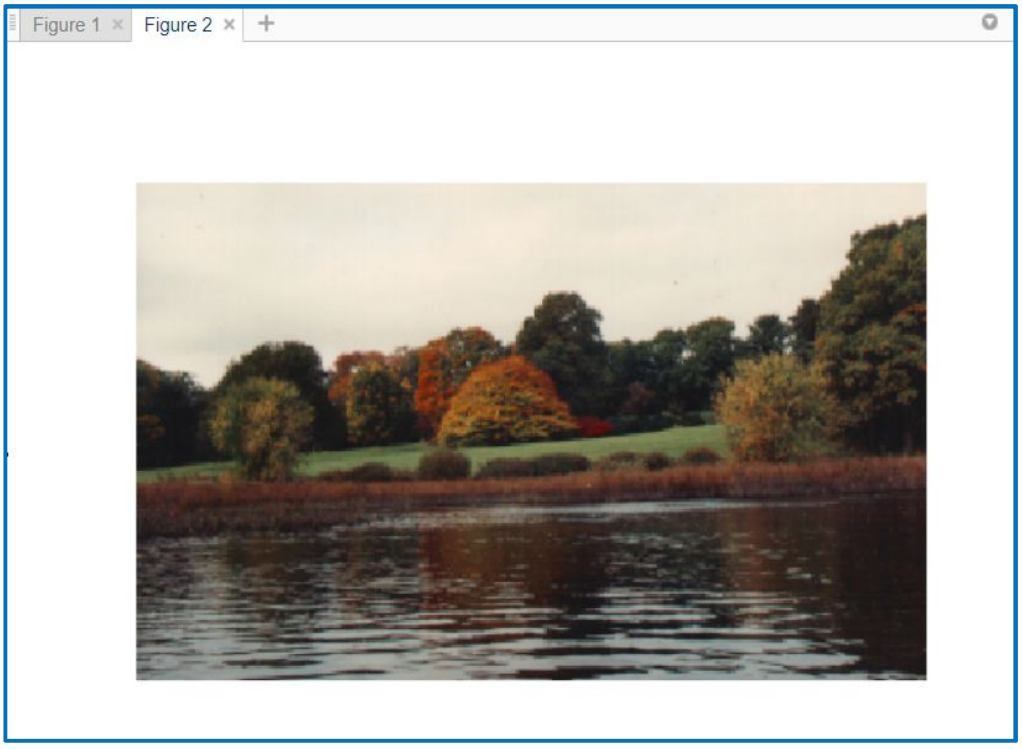
PROGRAM:

```
clear all;
close all;
clc;
a = imread('autumn.tif');
figure,
imshow(a),
imfinfo('autumn.tif')
a(100,200,2)
a(100,200,1:3)
imwrite(a,'ABC.tif')
b = imread('ABC.tif');
figure,
imshow(b),
imfinfo('ABC.tif')
```

INPUT: (Image)



OUTPUT: (Image)



Command Window

```
ans =

  struct with fields:

                    Filename: '/MATLAB Drive/Digital Image Processing/EXP01/autumn.tif'
                FileModDate: '15-Feb-2022 10:11:41'
                    FileSize: 213642
                      Format: 'tif'
               FormatVersion: []
                       Width: 345
                      Height: 206
                    BitDepth: 24
                   ColorType: 'truecolor'
             FormatSignature: [1×4 double]
                   ByteOrder: 'little-endian'
              NewSubFileType: 0
               BitsPerSample: [1×3 double]
                 Compression: 'Uncompressed'
   PhotometricInterpretation: 'RGB'
                StripOffsets: [1×30 double]
             SamplesPerPixel: 3
                RowsPerStrip: 7
             StripByteCounts: [1×30 double]
                 XResolution: 72
                 YResolution: 72
              ResolutionUnit: 'Inch'
                    Colormap: []
         PlanarConfiguration: 'Chunky'
                   TileWidth: []
                  TileLength: []
                 TileOffsets: []
              TileByteCounts: []
                 Orientation: 1
                   FillOrder: 1
           GrayResponseUnit: 0.0100
             MaxSampleValue: [1×3 double]
             MinSampleValue: [1×3 double]
               Thresholding: 1
                     Offset: 213218
```

```
ans =

  uint8

   25


  1×1×3 uint8 array

ans(:,:,1) =

   75


ans(:,:,2) =

   25


ans(:,:,3) =

   30
```

```
ans =

  struct with fields:

                    Filename: '/MATLAB Drive/ABC.tif'
                 FileModDate: '23-Feb-2022 09:32:11'
                    FileSize: 213570
                      Format: 'tif'
               FormatVersion: []
                       Width: 345
                      Height: 206
                    BitDepth: 24
                   ColorType: 'truecolor'
             FormatSignature: [1×4 double]
                   ByteOrder: 'little-endian'
              NewSubFileType: 0
               BitsPerSample: [1×3 double]
                 Compression: 'PackBits'
   PhotometricInterpretation: 'RGB'
               StripOffsets: [1×30 double]
```

```
PhotometricInterpretation: 'RGB'
             StripOffsets: [1×30 double]
          SamplesPerPixel: 3
             RowsPerStrip: 7
          StripByteCounts: [1×30 double]
              XResolution: 72
              YResolution: 72
           ResolutionUnit: 'Inch'
                 Colormap: []
       PlanarConfiguration: 'Chunky'
                TileWidth: []
               TileLength: []
              TileOffsets: []
           TileByteCounts: []
              Orientation: 1
                FillOrder: 1
         GrayResponseUnit: 0.0100
           MaxSampleValue: [1×3 double]
           MinSampleValue: [1×3 double]
             Thresholding: 1
                   Offset: 213134
```

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EXPERIMENT-2

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 19/01/2022

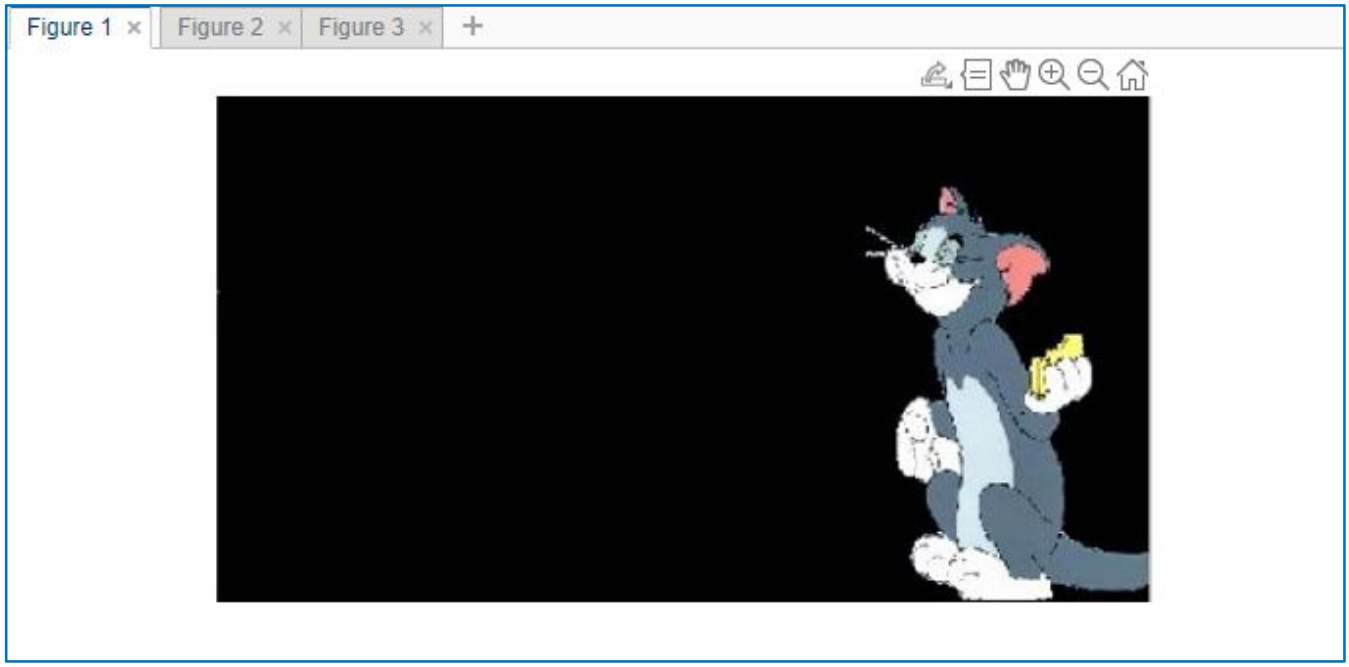
TITLE OF EXPERIMENT: Study of Image Arithmetic using MATLAB.

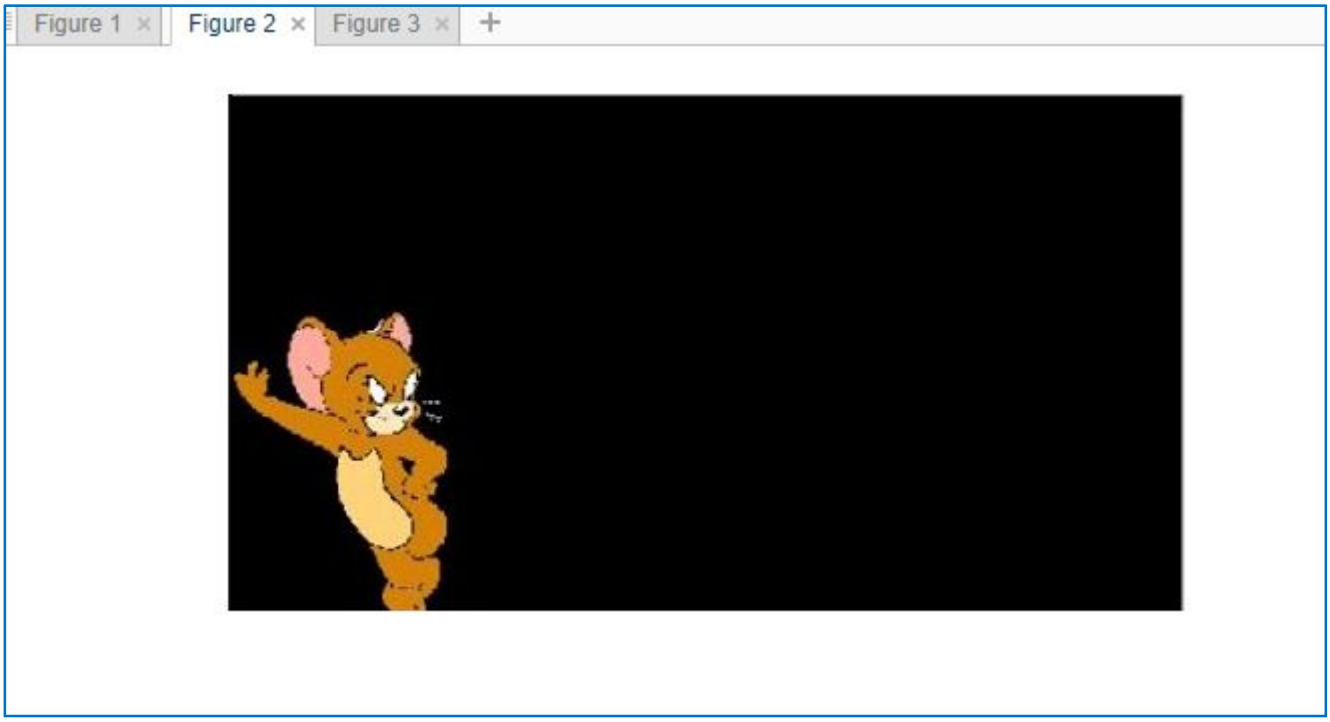
AIM: To add two images of same dimensions using MATLAB.

PROGRAM:

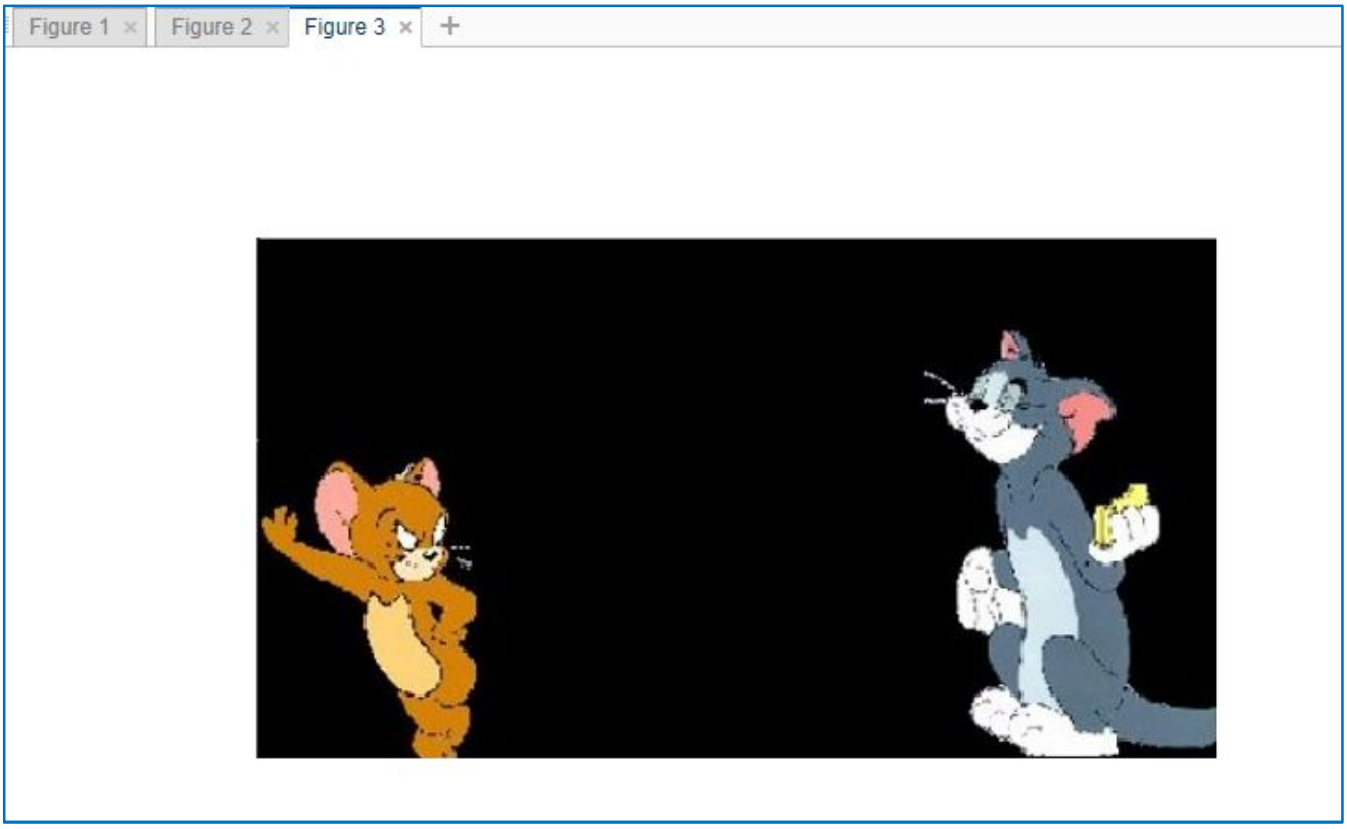
```
clc;
clear all;
close all;

a = imread('tom.JPG')
b = imread('jerry.JPG')

c = double(a)+double(b);

imshow(a),
figure,
imshow(b),
figure,
imshow(uint8(c))
```

INPUT: (Image)





OUTPUT: (Image)



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EXPERIMENT-3

Academic Year: 2021-22

Semester: 6th

Course: Digital Image Processing Lab

Course Code: 5EN374

Name: Durvesh Naresh Patil

Roll No. 2019BTEEN00035

Batch: EN-1

Performed on: 19/01/2022

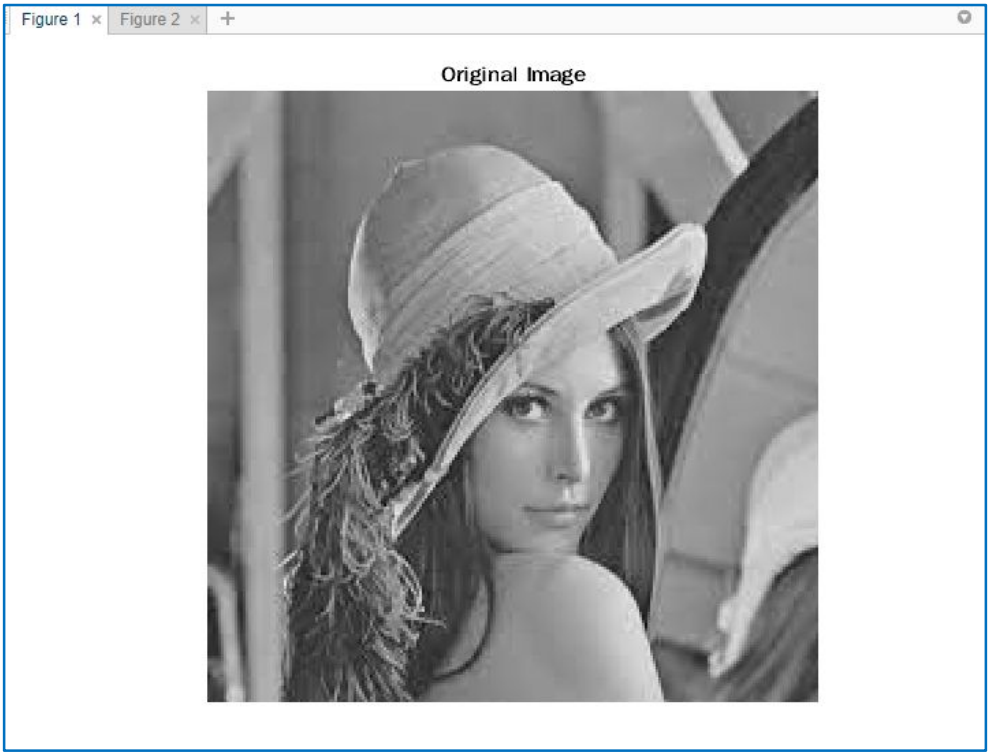
TITLE OF EXPERIMENT: Study of image enhancement using MATLAB.

AIM: To enhance the given image using MATLAB.

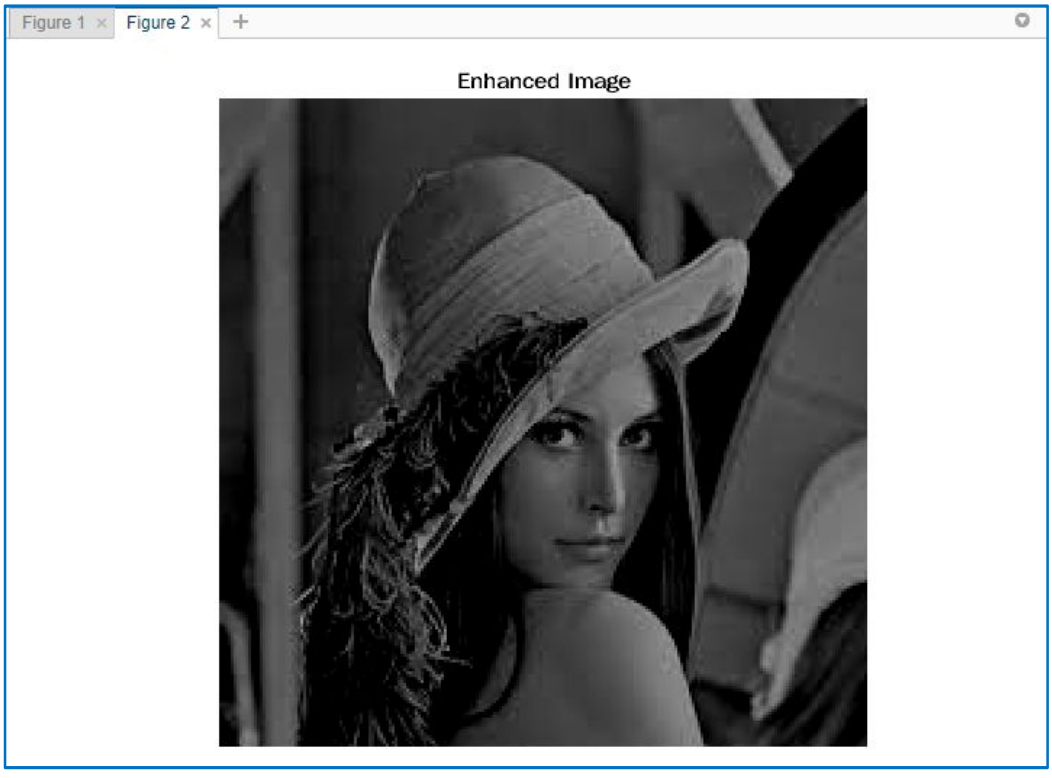
PROGRAM:

```
clc;
clear all;
close all;

a = imread("lena.jpg");
b = a-80;

figure,
imshow(a),title('Original Image')
figure,
imshow(b),title('Enhanced Image');

imfinfo('lena.gif')
```

INPUT: (Image)



OUTPUT: (Image)



Command Window

```
ans =

  struct with fields:

          Filename: '/MATLAB Drive/Digital Image Processing/EXP03/lena.gif'
       FileModDate: '15-Feb-2022 11:37:27'
          FileSize: 264598
            Format: 'GIF'
     FormatVersion: '87a'
              Left: 1
               Top: 1
             Width: 512
            Height: 512
          BitDepth: 8
         ColorType: 'indexed'
   FormatSignature: 'GIF87a'
   BackgroundColor: 1
       AspectRatio: 0
        ColorTable: [256×3 double]
        Interlaced: 'no'
```

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EXPERIMENT-5

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 02/02/2022

TITLE OF EXPERIMENT: Study of contrast enhancement of image using MATLAB.

AIM: To study contrast enhancement of image using MATLAB.

PROGRAM:

```
X = imread('kid.JPG');
figure(1);
imshow(X);
title('Original Image')

a = min(X(:));
b = max(X(:));
x = (X-a).*(255/(b-a));

figure(2);
imshow(x);
title('Contrast Streched Image')
```

INPUT: (Image)

OUTPUT: (Image)

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EXPERIMENT-6

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 02/02/2022

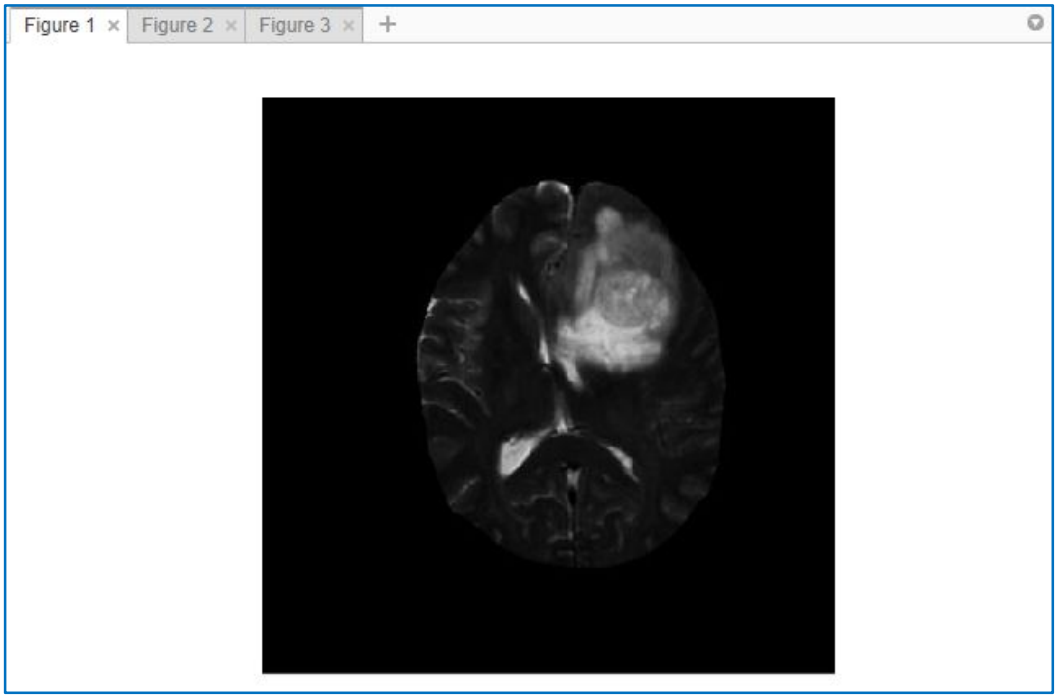
TITLE OF EXPERIMENT: Study of intensity transition of image using MATLAB.

AIM: To study intensity transition of image using MATLAB.

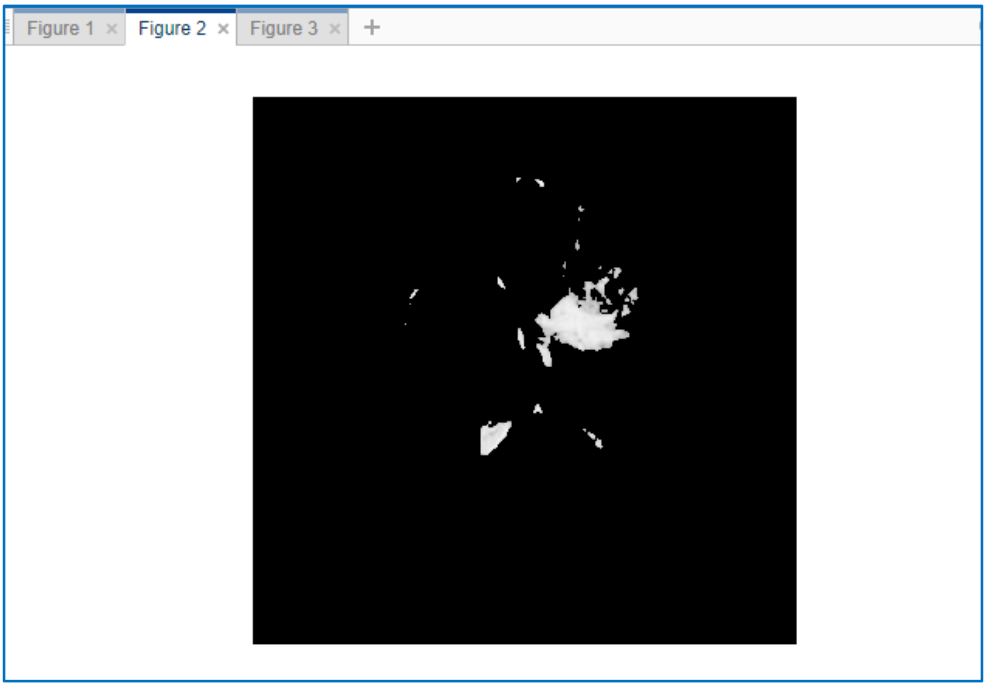
PROGRAM:

```
clear all;
close all;
clc;

gamma = 0.1;
f = imread('brain.JPG');
figure(1)
imshow(f)

g = imadjust(f,[0.5,1],[0,1],gamma);
figure(2)
imshow(g)

g1 = imadjust(f,[],[],2);
figure(3)
imshow(g1)
```

INPUT: (Image)



OUTPUT: (Image)



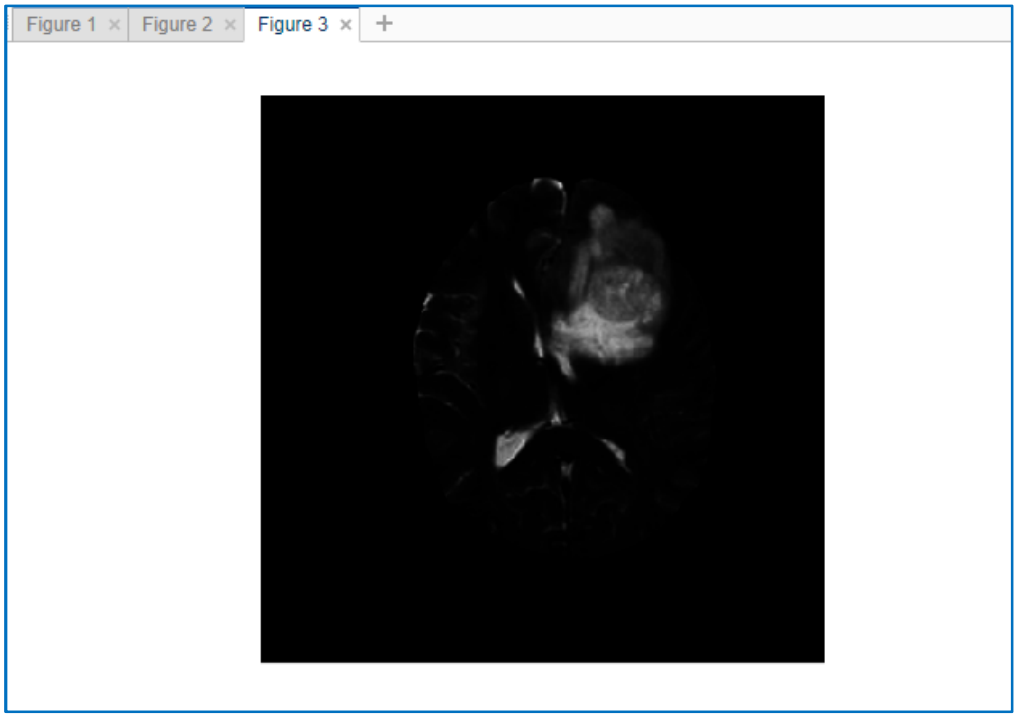


Figure 1
Figure 2
Figure 3

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EXPERIMENT-7

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 02/02/2022

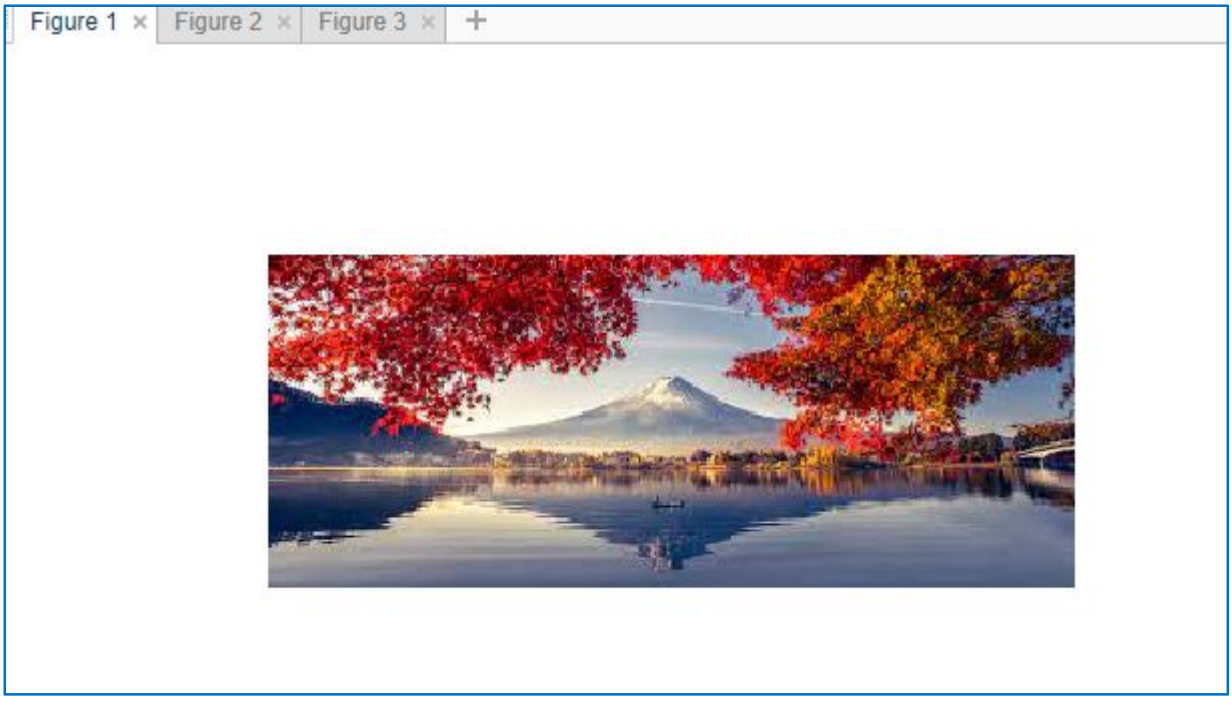
TITLE OF EXPERIMENT: Study of histogram of image using MATLAB.

AIM: To study histogram of image using MATLAB.

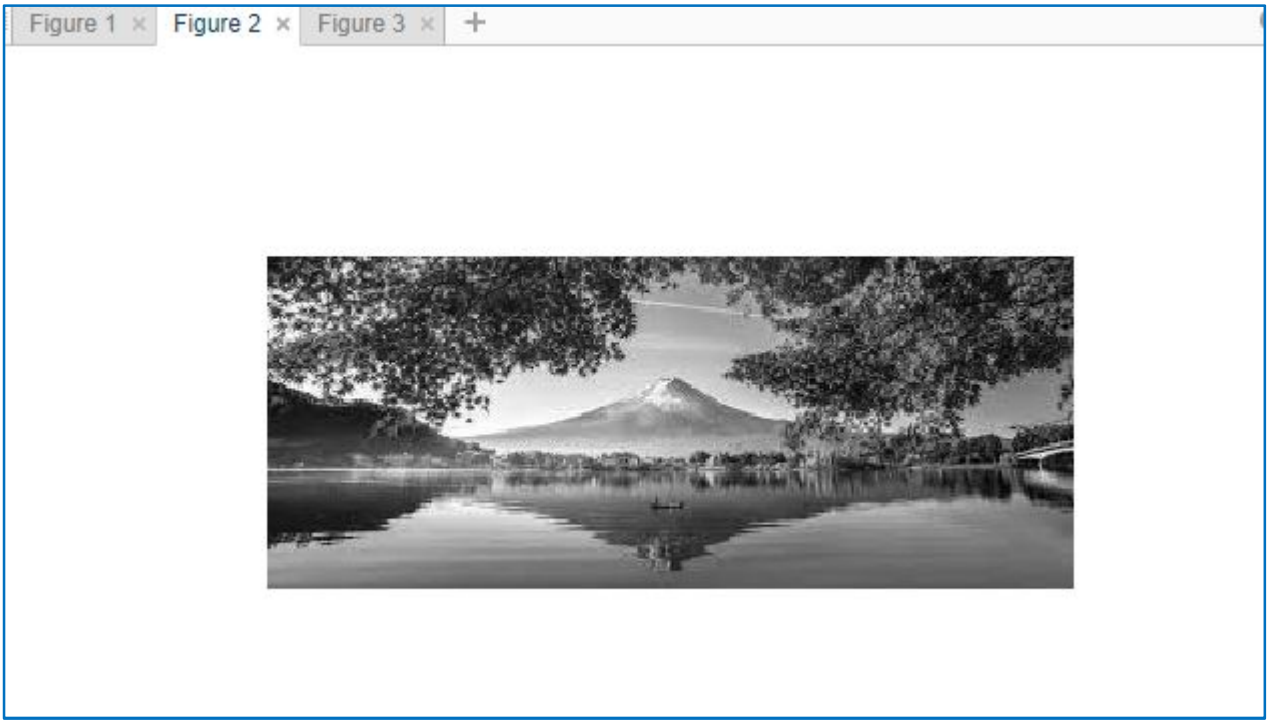
PROGRAM:

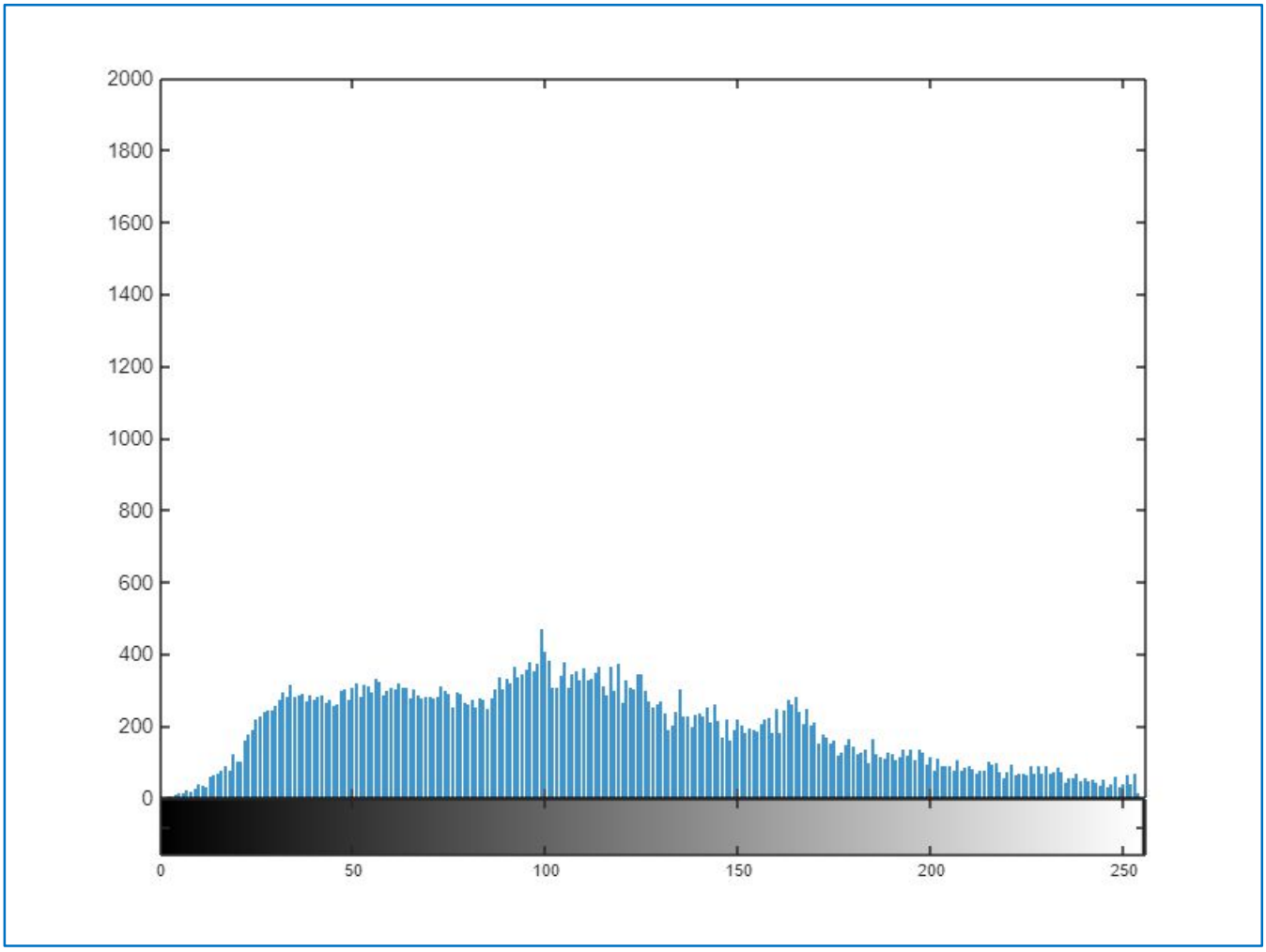
```
clc;
clear all;
close all;

I = imread('nature.jpg');
figure,
imshow(I)
z=rgb2gray(I)
figure,imshow(z)
figure,imhist(z)
axis([0 256 0 2000]);
```

INPUT: (Image)



OUTPUT: (Image)




2000
1800
1600
1400
1200
1000
800
600
400
200
0
0
50
100
150
200
250

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EXPERIMENT-8

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 09/02/2022

TITLE OF EXPERIMENT: Study of histogram equalization of an image using MATLAB.

AIM: To study histogram equalization of an image using MATLAB.

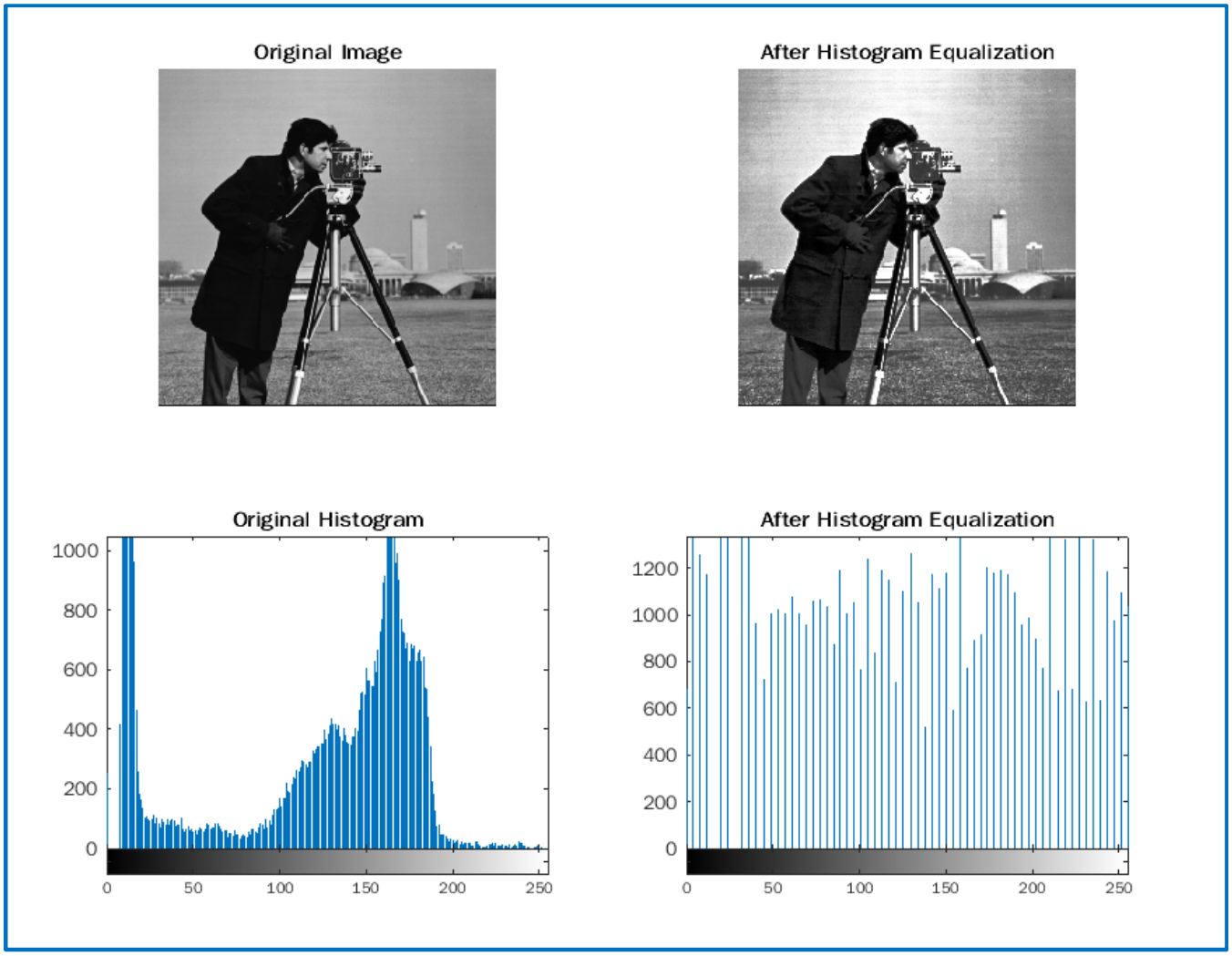
PROGRAM:

```
clc
clear all
close all
a = imread('caman.tif');

%Perform histogram equalization

b = histeq(a);
subplot(2,2,1),imshow(a),
title('Original Image'),
subplot(2,2,2),imshow(b),
title('After Histogram Equalization'),
subplot(2,2,3),imhist(a),
title('Original Histogram'),
subplot(2,2,4),imhist(b),
title('After Histogram Equalization'),
```

OUTPUT: (Image)



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EXPERIMENT-8

Academic Year: 2021-22

Semester: 6th

Course: Digital Image Processing Lab

Course Code: 5EN374

Name: Durvesh Naresh Patil

Roll No. 2019BTEEN00035

Batch: EN-1

Performed on: 09/02/2022

TITLE OF EXPERIMENT: Study of negative of an image using MATLAB.

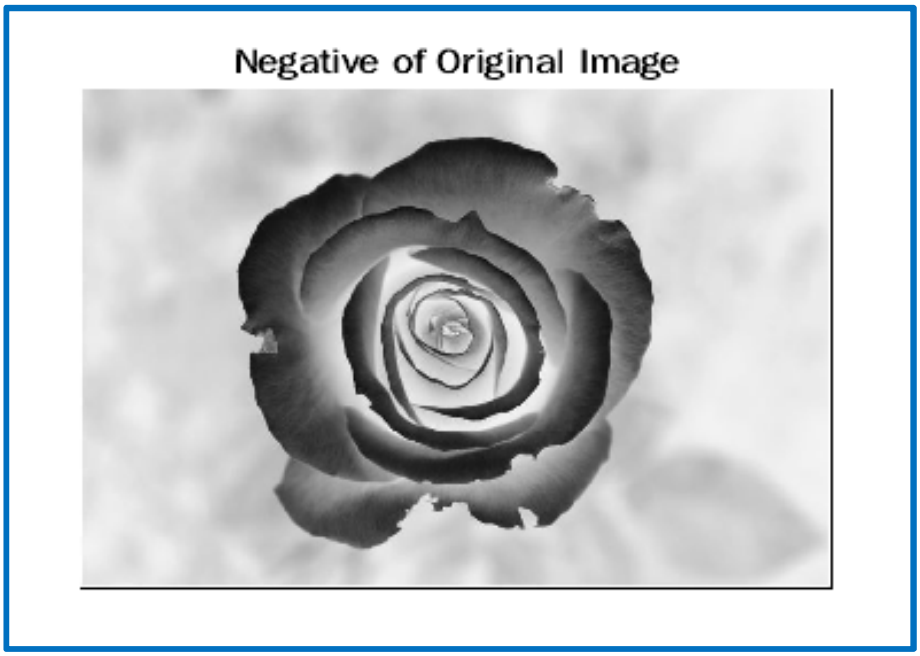
AIM: To study negative of an image using MATLAB.

PROGRAM:

```
clear all;
close all;
a = imread('flower.JPG');
b=255-a;
subplot(2,1,1),
imshow(a),title('Original Image');
subplot(2,1,2),
imshow(b),title('Negative of Original
Image');
```

INPUT: (Image)

OUTPUT: (Image)



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Vishrambag, Sangli,416415

EXPERIMENT- 09

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 09/02/2022

TITLE OF EXPERIMENT: Study of thresholding of an image using MATLAB.

AIM: To study thresholding of an image using MATLAB.

PROGRAM:

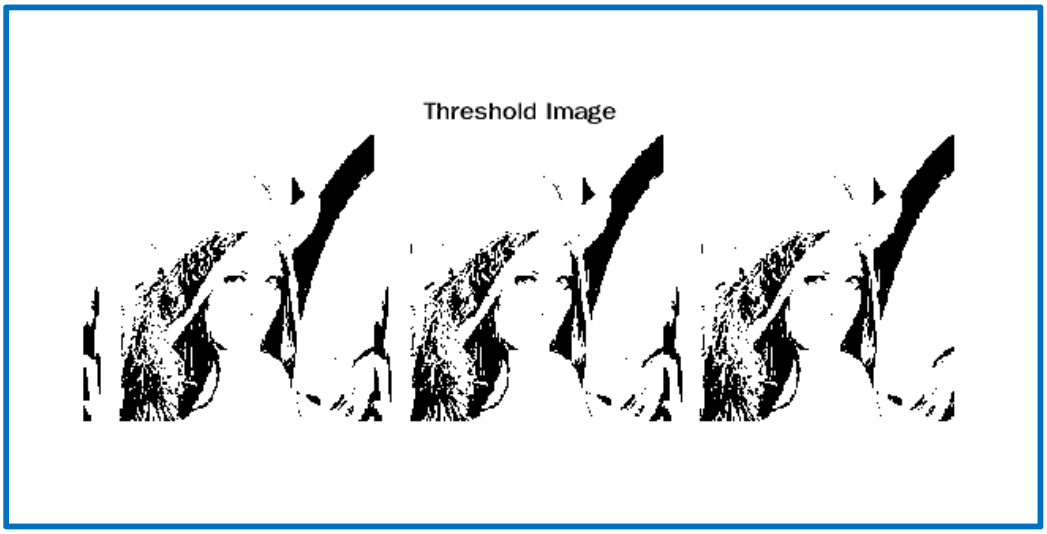
```
clc;
clear all;
close all;
w=imread('lena.jpg');

[m,n] = size(w);
t=input('Enter Threshold parameter:');
for i=1:m
    for j=1:n
        if w(i,j)<t
            b(i,j)=0;
        else
            b(i,j)=255;
        end
    end
end

figure,imshow(w),title('Original Image'),
figure,imshow(b),title('Threshold Image'),
```

INPUT: (Image)

OUTPUT: (Image)



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EXPERIMENT- 10

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 23/02/2022

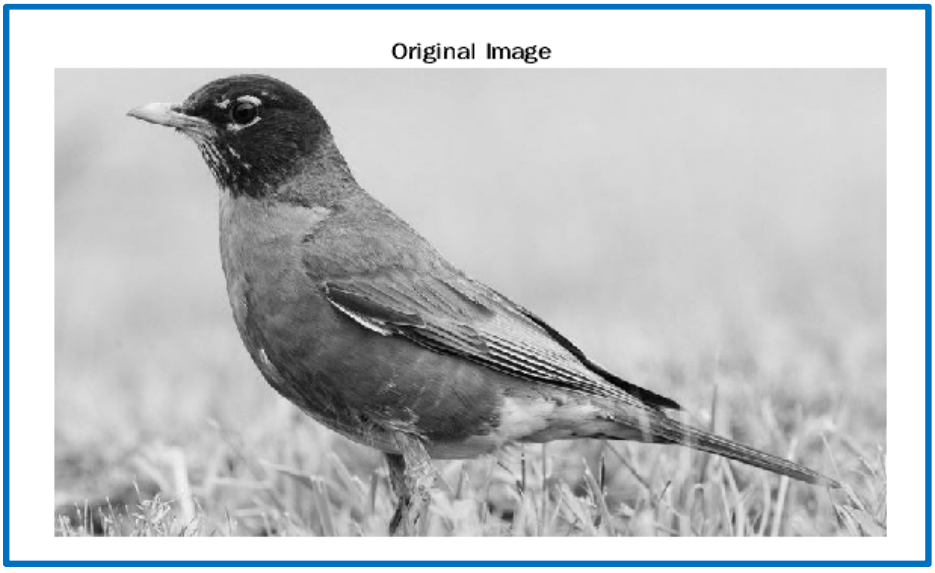
TITLE OF EXPERIMENT: Study of logarithmic transform of an image using MATLAB.

AIM: To study logarithmic transform of an image using MATLAB.

PROGRAM:

```
%This code performs Logarithmic
Transformation
clc;
clear all;
close all;
a=imread('sparrow.jpg');
L=255;
c=L/log10(1+L);
d=c*log10(1+double(a));
figure,
imshow(a),title('Original Image')
figure,imshow(uint8(d)),title('Log
Transformation Image')
```

INPUT: (Image)



OUTPUT: (Image)

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Vishrambag, Sangli,416415

EXPERIMENT- 11

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 23/02/2022

TITLE OF EXPERIMENT: Study of power law transformation of an image using MATLAB.

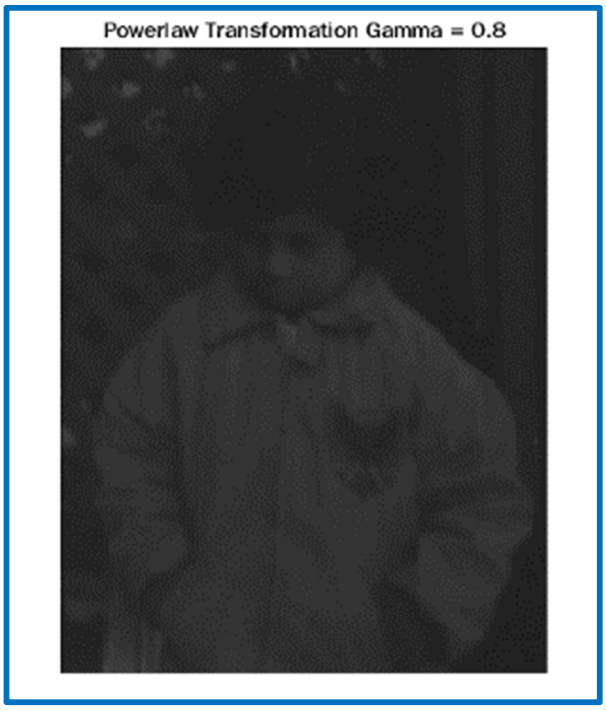
AIM: To study power-law transformation of an image using MATLAB.

PROGRAM:

```
clc
clear all
close all
a=imread('kid.JPG');
a=rgb2gray(a);
gamma=1;
d=double(a).^gamma;
imshow(a),
title('Original Image')
figure,imshow(uint8(d)),
title('Powerlaw Transformation Gamma = 1')
gamma1=0.8;
d1=double(a).^gamma1;
figure,imshow(uint8(d1)),
title('Powerlaw Transformation Gamma =
0.8')
```

INPUT: (Image)

OUTPUT: (Image)



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EXPERIMENT- 12

Academic Year: 2021-22 **Semester:** 6th

Course: Digital Image Processing Lab **Course Code**: 5EN374

Name: Durvesh Naresh Patil **Roll No**. 2019BTEEN00035

Batch: EN-1 **Performed on:** 23/02/2022

TITLE OF EXPERIMENT: Study of Bit-plane slicing of an image using MATLAB.

AIM: To study bit-plane slicing of an image using MATLAB.

PROGRAM:

```
clc;
clear all;
close all;
c=imread('caman.tif');
cd=double(c);
c0=mod(cd,2);
figure;
imshow(c0);
c1=mod(floor(cd/2),2);
figure;imshow(c1);
c2=mod(floor(cd/4),2);
figure;imshow(c2);
c3=mod(floor(cd/8),2);
figure;imshow(c3);
c4=mod(floor(cd/16),2);
figure;imshow(c4);
c5=mod(floor(cd/32),2);
figure;imshow(c5);
c6=mod(floor(cd/64),2);
figure;imshow(c6);
c7=mod(floor(cd/128),2);
figure;imshow(c7);
```

INPUT: (Image)

OUTPUT: (Image)