

ASSIGNMENT 4

AIM 1:- Write a program to perform following operation on image by giving options1, 2 and 3.

1.Negative of image 2.Log transformation 3.Power law(gamma) transformation

Code:-

```
x=input('PRESS::1.NEGATIVE.2.LOG TRANSFORMATION.3.GAMMA  
TRANSFORMATION:');  
if x==1  
    a=uigetfile('*.','Select the Image');  
    a=imread(a);  
    [r,c]=size(a);  
    for i=1:r  
        for j=1:c  
            new(i,j)=255-a(i,j);  
        end  
    end  
    subplot(121);  
    title('ORIGINAL IMAGE');  
    imshow(a);  
    subplot(122);  
    title('NEGATIVE IMAGE');  
    imshow(new);  
elseif x==2  
    a=imread(uigetfile('*.','Select the Image'));  
    a1=double(a);  
    sz=size(a1);  
    new=ones(sz(1),sz(2));  
    c1=10;  
    for i=1:sz(1)  
        for j=1:sz(2)  
            p1 = 1+a1(i,j);  
            new(i,j)= c1 * log(p1);  
        end  
    end  
    imshow(mat2gray(new));  
elseif x==3  
    Y =0.6;  
    Y1=0.4;  
    Y2=0.3;  
    c1=1;  
    new=ones(sz(1),sz(2));
```

```

new1=ones(sz(1),sz(2));
new2=ones(sz(1),sz(2));
a=imread(uigetfile('*.','Select the Image'));
a1=im2double(a);
sz=size(a1);
    for i=1:sz(1)
        for j=1:sz(2)
            new(i,j)= c1 .* a1(i,j)^Y;
            new1(i,j)= c1 .* a1(i,j)^Y1;
            new2(i,j)= c1 .* a1(i,j)^Y2;
        end
    end
subplot(221);
title('ORIGINAL IMAGE');
imshow(a);
subplot(222);
title('Y=0.6');
imshow(new);
subplot(223);
title('Y=0.4');
imshow(new1);
subplot(224);
title('Y=0.3');
imshow(new2);

end

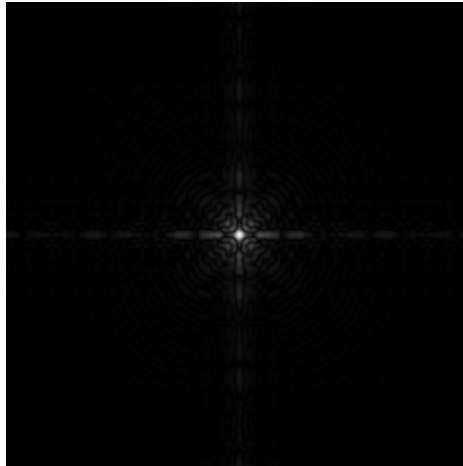
```

Output:-

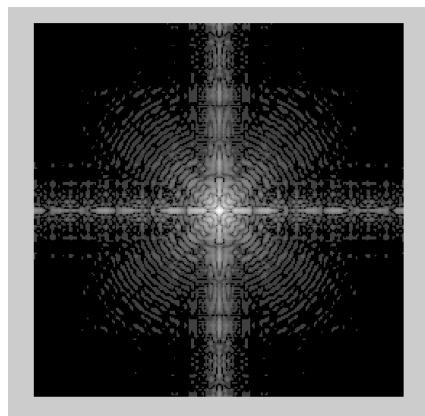
1.Negative Image



2. Logtransformed image



[ORIGINAL IMAGE]

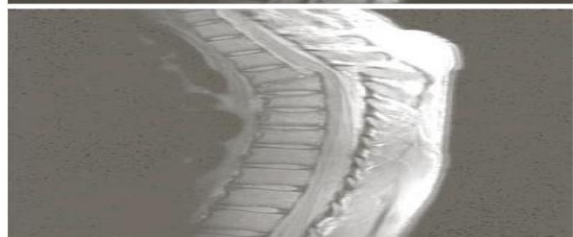
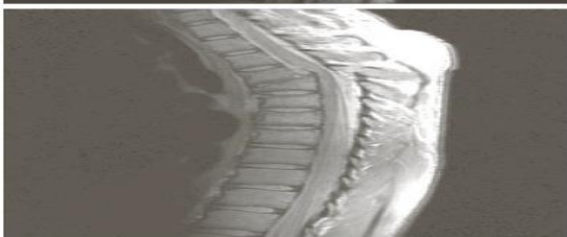


[LOGTRANSFORMED IMAGE]

3. Gamma transformation

[ORIGINAL IMAGE]

[$\gamma=0.6$]



[$\gamma=0.4$]

[$\gamma=0.3$]

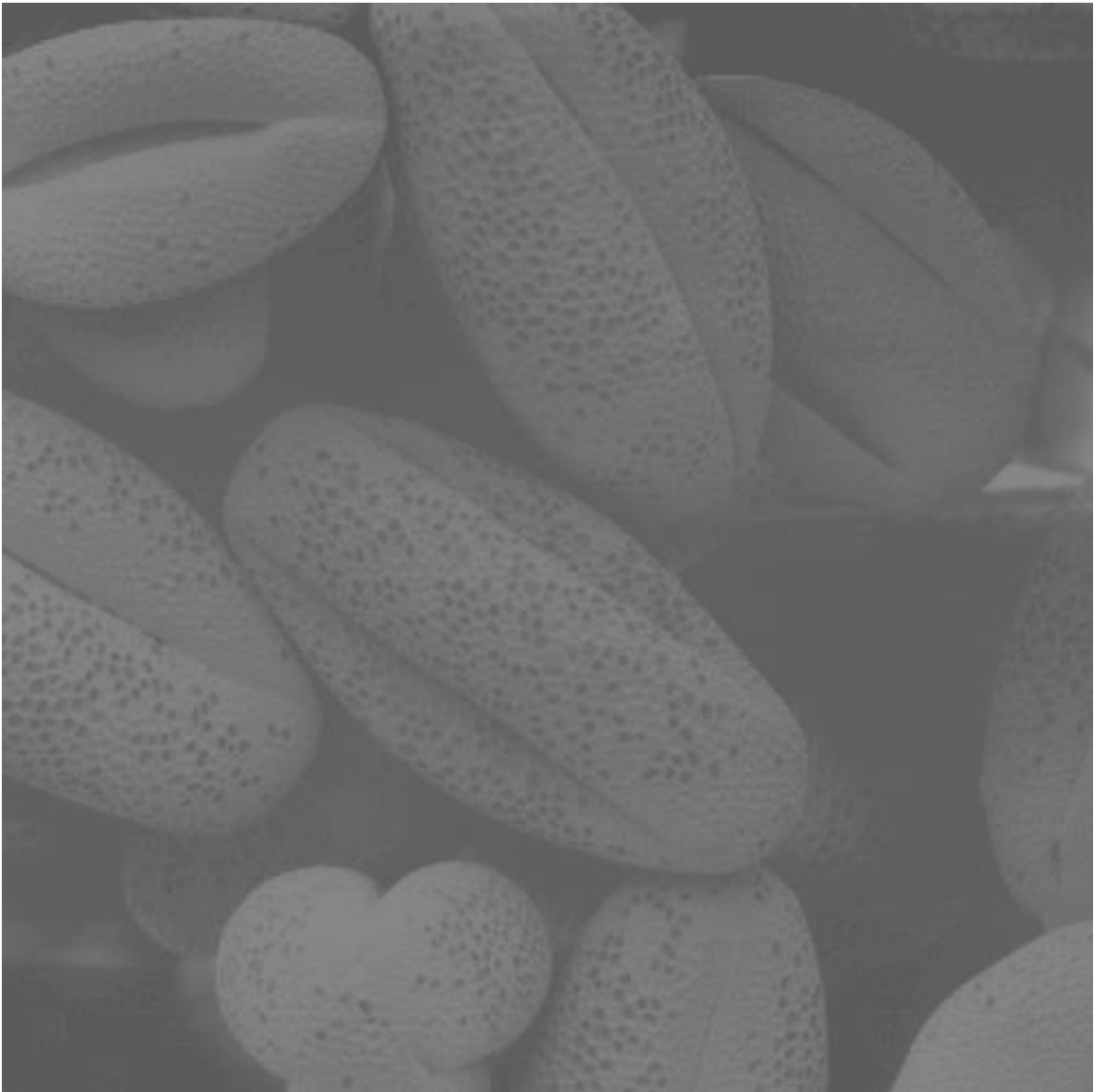
AIM 2:-Write a program which demonstrate the use of contrast stretching transformation.

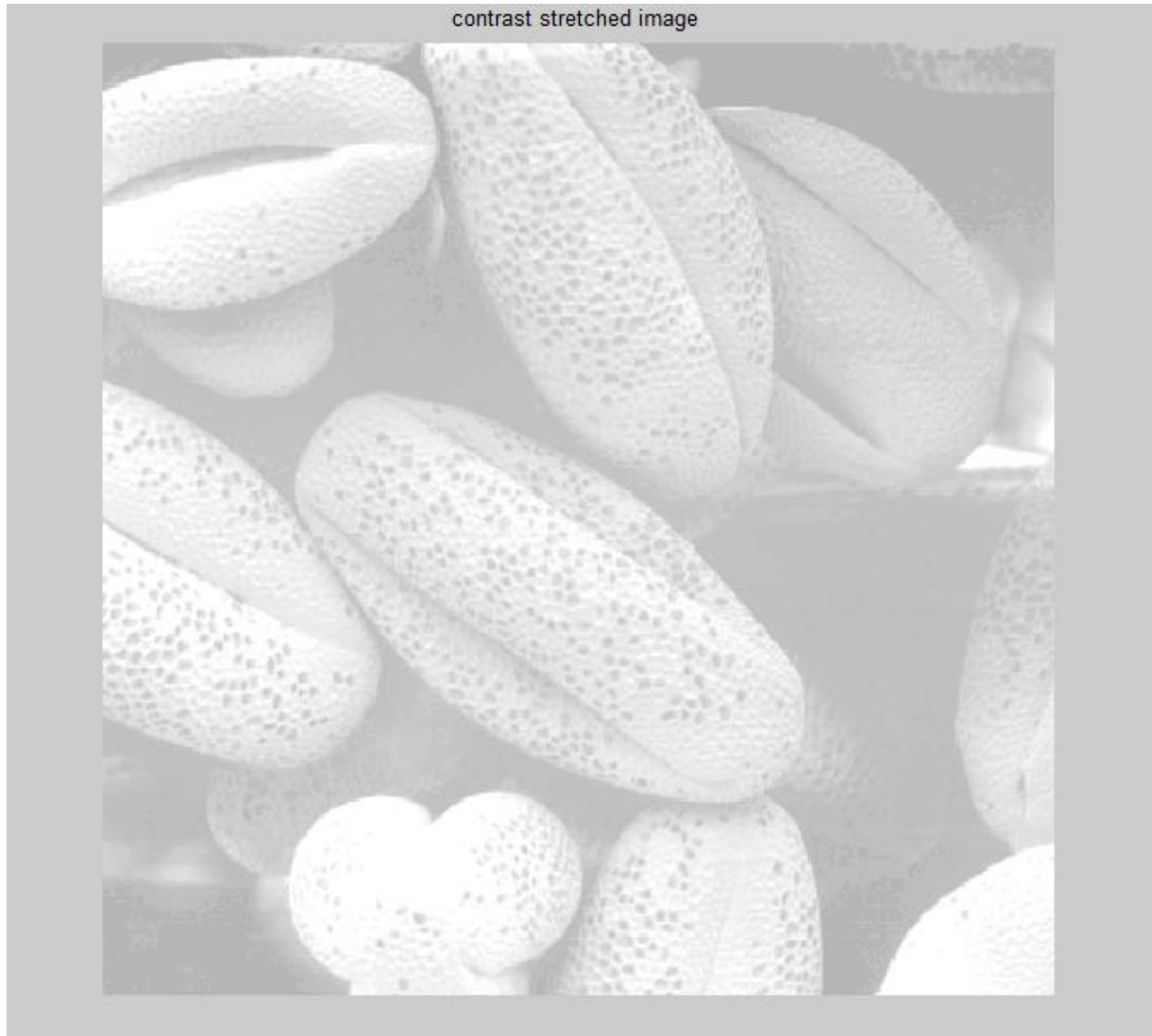
Code:-

```
clear all
close all
clc
y=imread('rice.tif');

imshow(y);
[m n]=size(y);
%%%%%%%%%Contrast Stretching%%%%%%%%%
a=input('Enter the value of input graylevel r1 for contrast
stretching:');
b=input('Enter the value of input graylevel r2 for contrast
stretching:');
for i=1:m
    for j=1:n
        if y(i,j)<=a
            zz(i,j)=0.5*y(i,j);
        else if y(i,j)<=b
            zz(i,j)=2*(y(i,j)-a)+0.5*a;
        else
            zz(i,j)=0.5*(y(i,j)-b)+0.5*a+2*(b-a);
        end
    end
end
end
figure
imshow(zz)
title('contrast stretched image')
```

Output:-





AIM3:- Implement program of Intensity level slicing.

Code:-

```
i=imread('lena.jpg');  
[row col byt]=size(j) ;  
T1=input('enter the Lowest threshold value:') ;  
T2=input('enter the Highest threshold value:')  
for x=1:1:row  
    for y=1:1:col  
        if((j(x,y)>T1) && (j(x,y)<T2))  
            j(x,y)=255;  
        else  
            j(x,y)=i(x,y);  
        end  
    end  
end  
figure; imshow(i); % original image  
figure; imshow(uint8(j)) % gray level slicing with background
```

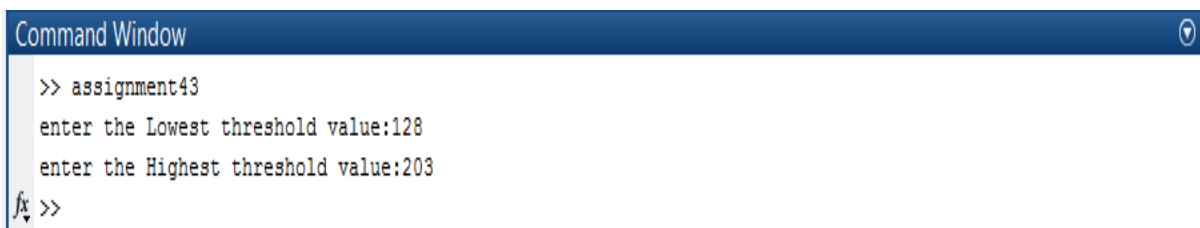
Output:-



[Original Image]



[Resultant Image]



AIM 4:-Implement program of Bit plane slicing.

Code:-

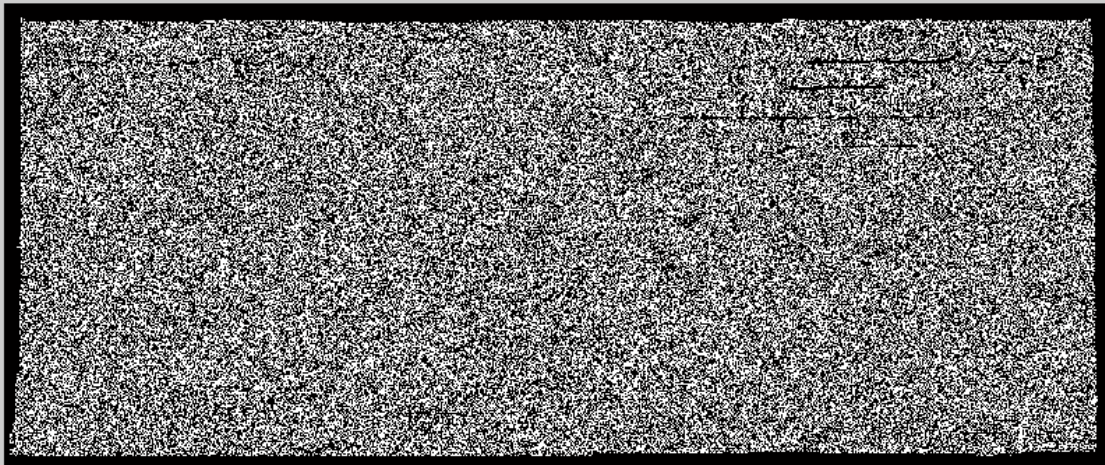
```
im=imread('note.tif');

bit1=bitget(im,1);
bit2=bitget(im,2);
bit3=bitget(im,3);
bit4=bitget(im,4);
bit5=bitget(im,5);
bit6=bitget(im,6);
bit7=bitget(im,7);
bit8=bitget(im,8);

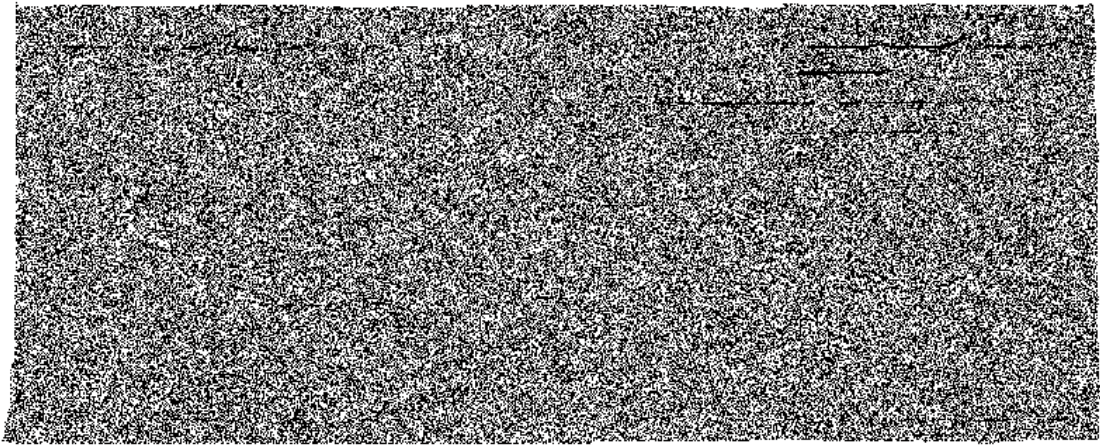
figure,imshow(bit1,[]);
figure,imshow(bit2,[]);
figure,imshow(bit3,[]);
figure,imshow(bit4,[]);
figure,imshow(bit5,[]);
figure,imshow(bit6,[]);
figure,imshow(bit7,[]);
figure,imshow(bit8,[]);
```

Output:-

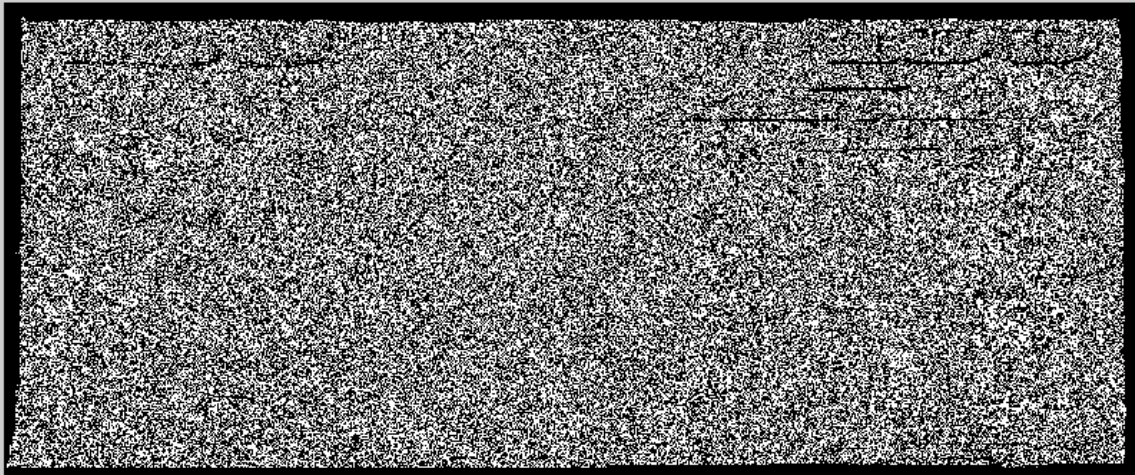
Bit plane 1:-



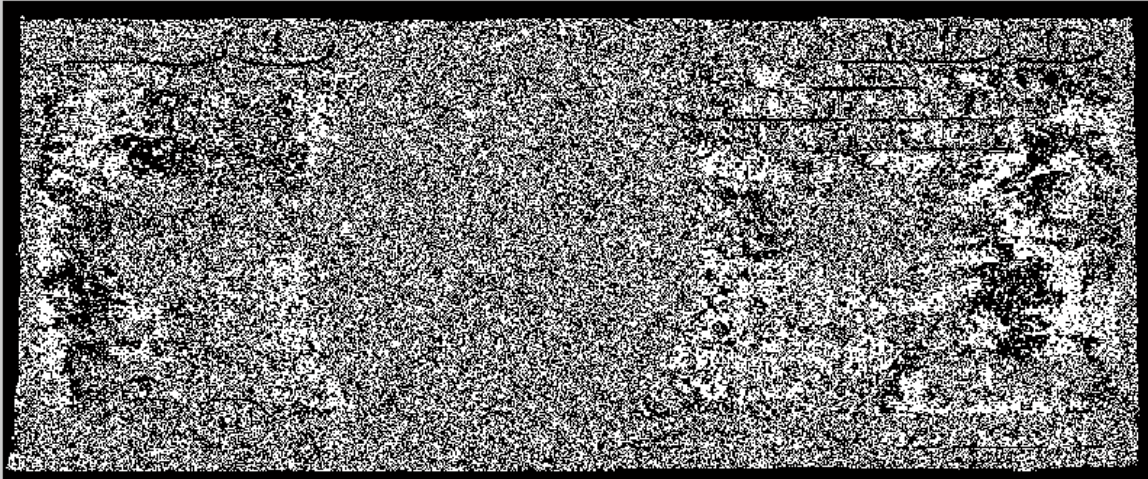
Bit plane 2:-



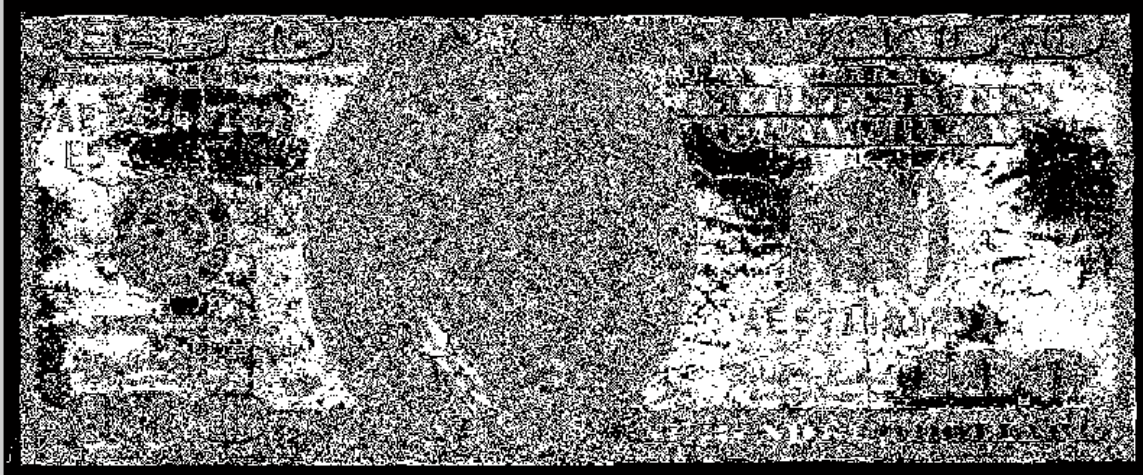
Bit plane 3:-



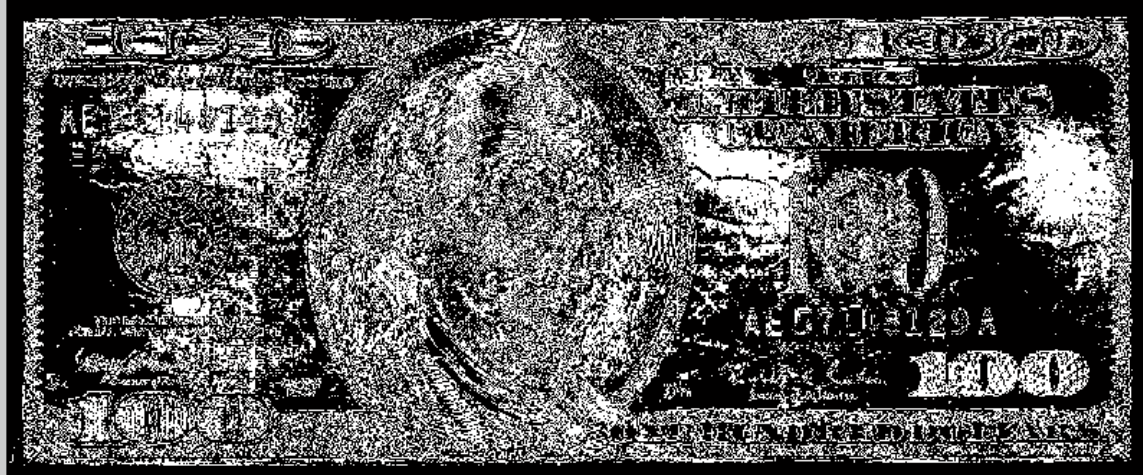
Bit plane 4:-



Bit plane 5:-



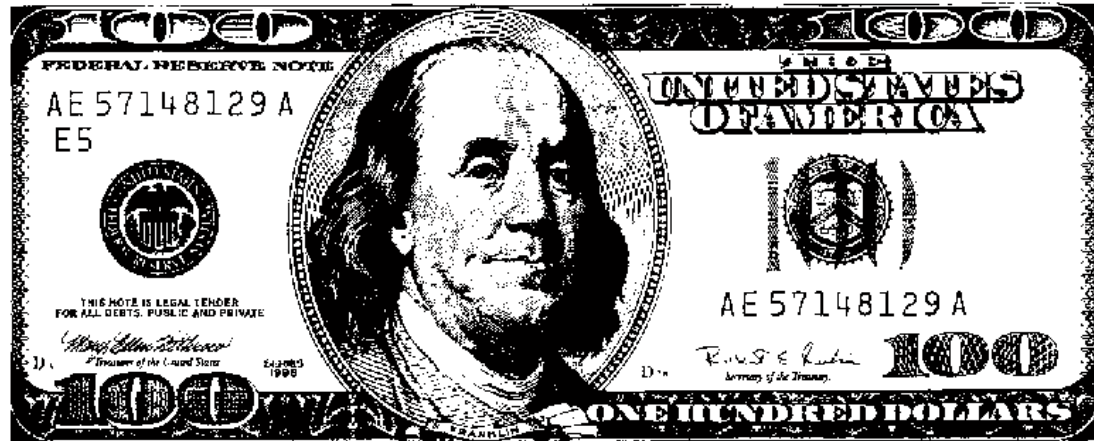
Bit plane 6:-



Bit plane 7:-



Bit plane 8:-



AIM 5:-How to reduce gap between two sub image of subplot.

Discuss with Matlab program.

Code:-

```
clc
clear all
close all
clc
figure,
    for ii = 1:6;
        subplot(3,2,ii);
        plot(randn(10,ii));
    end
figure,
ha = tight_subplot(3,2,[.01 .03],[.1 .01],[.01 .01])
for ii = 1:6;
    axes(ha(ii));
    plot(randn(10,ii));
end
set(ha(1:4),'XTickLabel','');
set(ha,'YTickLabel','')
```

tight_subplot.m:-

```
function ha = tight_subplot(Nh, Nw, gap, marg_h, marg_w)

% tight_subplot creates "subplot" axes with adjustable gaps and
% margins
%
% ha = tight_subplot(Nh, Nw, gap, marg_h, marg_w)
%
% in:  Nh      number of axes in height (vertical direction)
%      Nw      number of axes in width (horizontal direction)
%      gap     gaps between the axes in normalized units (0...1)
%             or [gap_h gap_w] for different gaps in height
% and width
%      marg_h  margins in height in normalized units (0...1)
%             or [lower upper] for different lower and upper
% margins
%      marg_w  margins in width in normalized units (0...1)
%             or [left right] for different left and right
% margins
%
% out: ha      array of handles of the axes objects
%             starting from upper left corner, going row-wise
% as in
%             going row-wise as in
%
% Example: ha = tight_subplot(3,2,[.01 .03],[.1 .01],[.01 .01])
```

```

%           for ii = 1:6; axes(ha(ii)); plot(randn(10,ii)); end
%           set(ha(1:4),'XTickLabel',''); set(ha,'YTickLabel','')

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if nargin<3; gap = .02; end
if nargin<4 || isempty(marg_h); marg_h = .05; end
if nargin<5; marg_w = .05; end

if numel(gap)==1;
    gap = [gap gap];
end
if numel(marg_w)==1;
    marg_w = [marg_w marg_w];
end
if numel(marg_h)==1;
    marg_h = [marg_h marg_h];
end

axh = (1-sum(marg_h)-(Nh-1)*gap(1))/Nh;
axw = (1-sum(marg_w)-(Nw-1)*gap(2))/Nw;

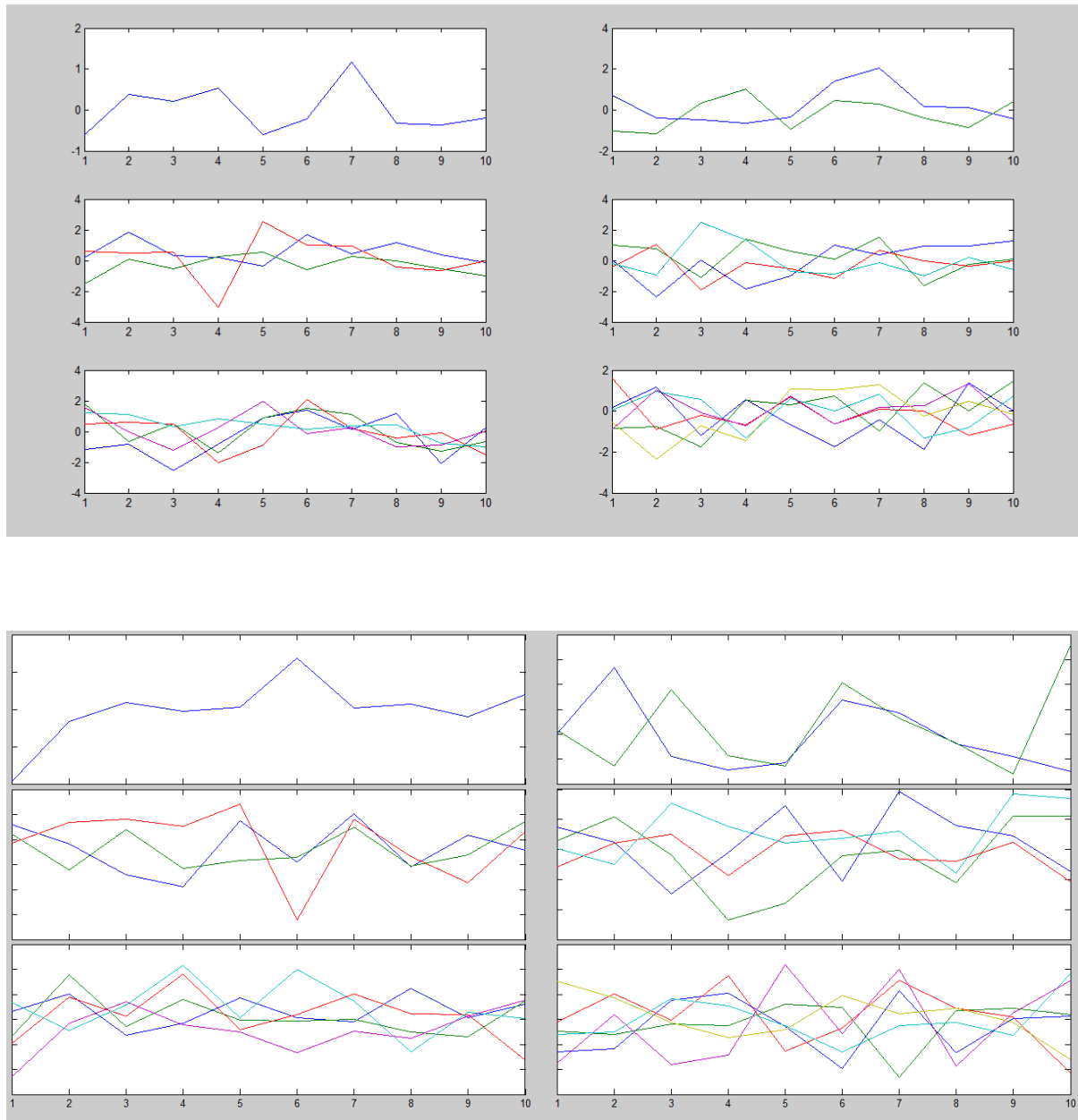
py = 1-marg_h(2)-axh;

ha = zeros(Nh*Nw,1);
ii = 0;
for ih = 1:Nh
    px = marg_w(1);

    for ix = 1:Nw
        ii = ii+1;
        ha(ii) = axes('Units','normalized', ...
            'Position',[px py axw axh], ...
            'XTickLabel','', ...
            'YTickLabel','');
        px = px+axw+gap(2);
    end
    py = py-axh-gap(1);
end
end

```

Output:-



AIM 6:- Write a program which demonstrate the use thresholding technique of for an image.

Code:-

```
clc;  
close all;  
clear all;  
thr=input('Give the threshold');  
I = imread('lena.jpg');
```

```
I=I>thr;  
figure,imshow(I);
```

Output:-



[ORIGINAL IMAGE]



[THRESHOLDED IMAGE]