

```
%{Code 1}%  
x=1:10
```

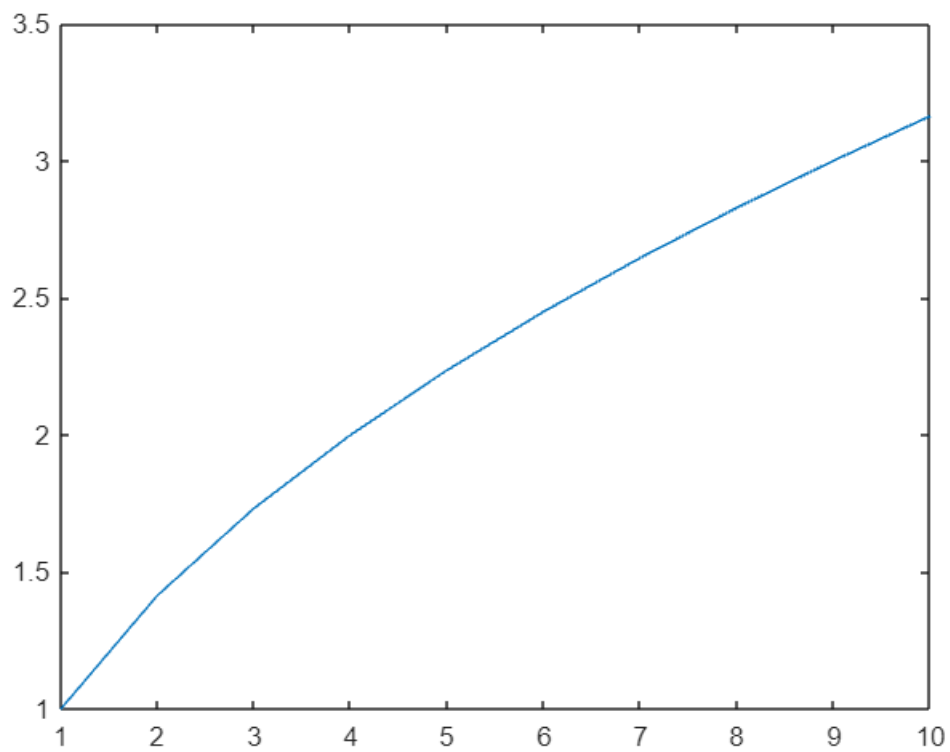
```
x = 1×10  
    1     2     3     4     5     6     7     8     9    10
```

```
%{Code 2}%  
clc
```

```
%{Code 3}%  
y=sqrt(x)
```

```
y = 1×10  
    1.0000    1.4142    1.7321    2.0000    2.2361    2.4495    2.6458    2.8284 ...
```

```
%{Code 4}%  
plot(x,y)
```



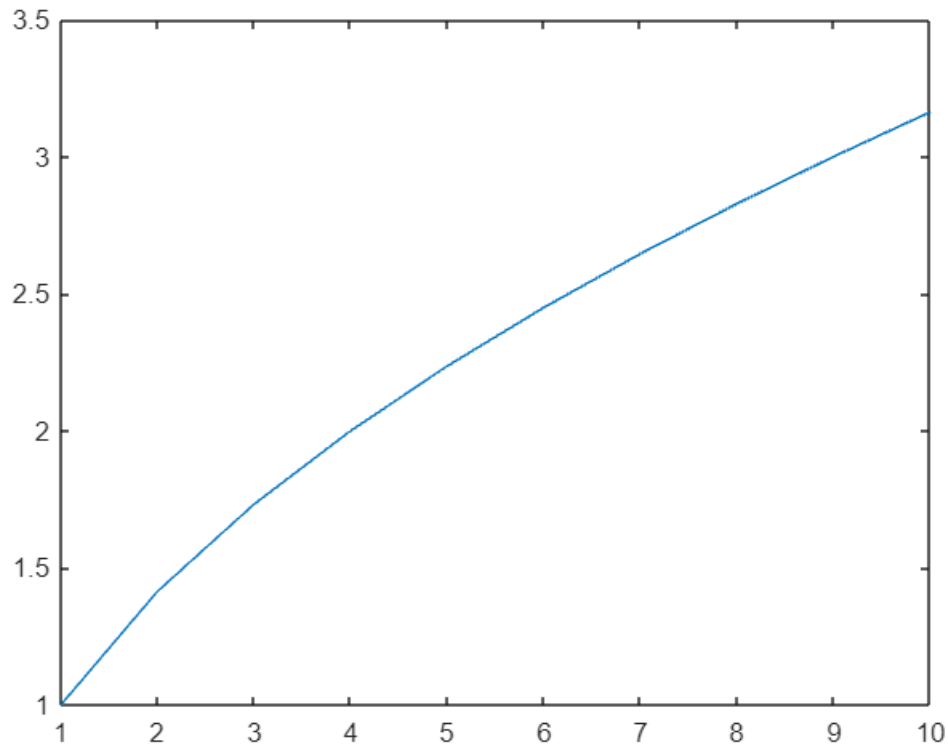
```
%{Code 5}%  
x=1:10
```

```
x = 1×10  
    1     2     3     4     5     6     7     8     9    10
```

```
y=sqrt(x)
```

```
y = 1×10
1.0000    1.4142    1.7321    2.0000    2.2361    2.4495    2.6458    2.8284 ...
```

```
plot(x,y)
```



```
%{This is a comment}%
```

```
%{Code 7}%
```

new

```
x=1:15
```

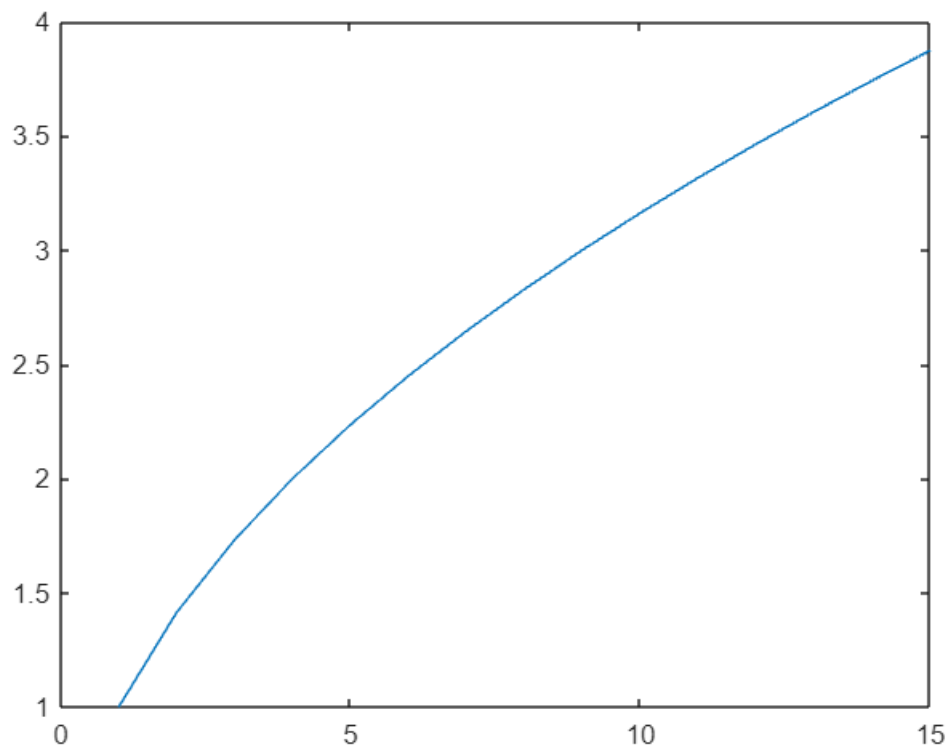
```
x = 1×15
1     2     3     4     5     6     7     8     9    10    11    12    13 ...
```

Second

```
y=sqrt(x)
```

```
y = 1×15
1.0000    1.4142    1.7321    2.0000    2.2361    2.4495    2.6458    2.8284 ...
```

```
plot(x,y)
```



```
%(Code 8)%
a=y(5)
```

```
a = 2.2361
```

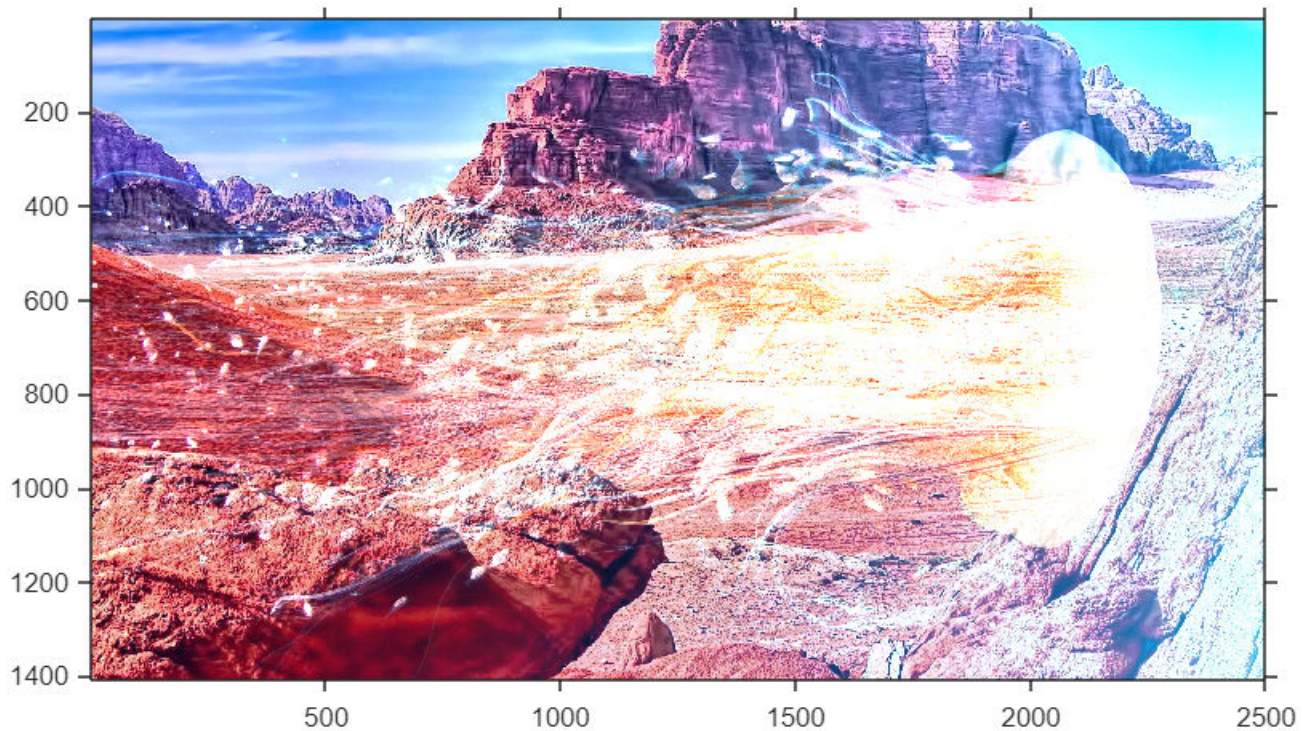
```
%{Code 9}%
a=imread('desert.jpg');
b=imread('jellyfish.jpg');
c=a+b
```

```
c = 1406x2500x3 uint8 array
c(:,:,1) =
```

```

131  131  131  132  131  131  133  133  133  134  134  135  135  136  134  133  139  139  139
131  131  131  131  131  131  133  133  134  135  135  136  136  136  134  135  139  139  139
133  133  133  133  133  133  135  134  135  136  137  137  136  136  137  137  138  138  139
⋮
```

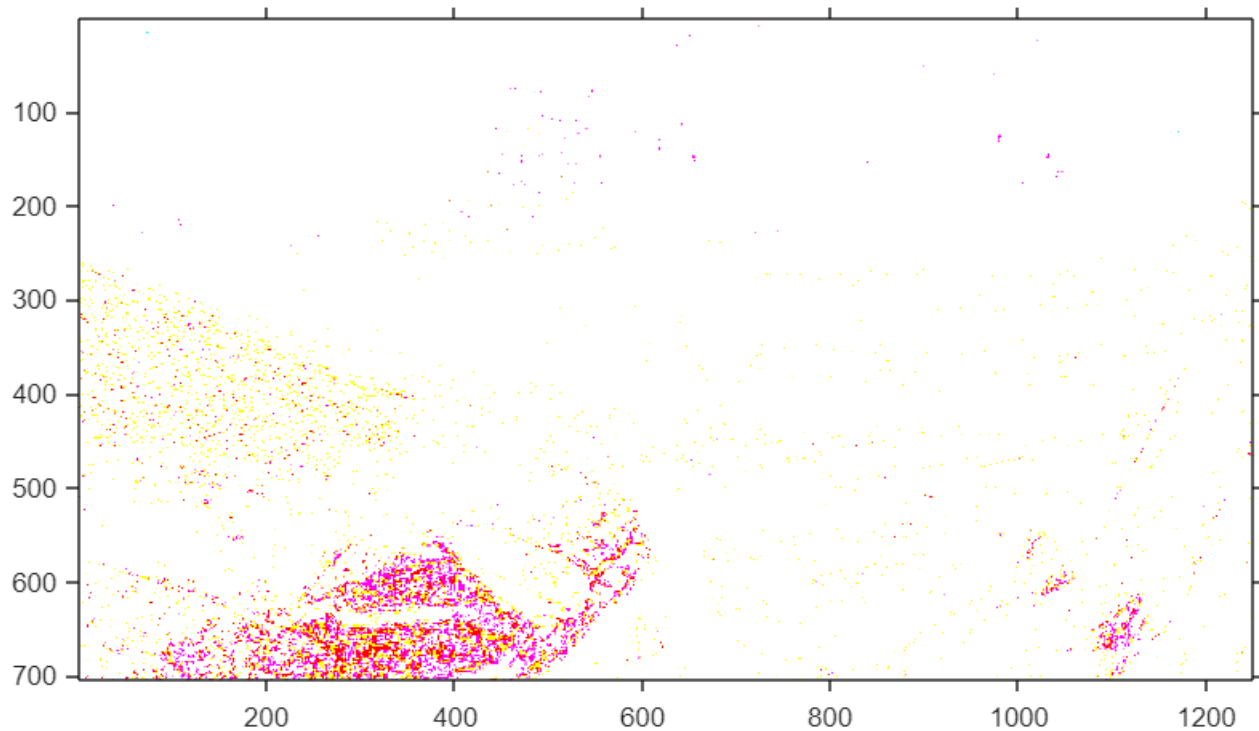
```
imshow(c)
```



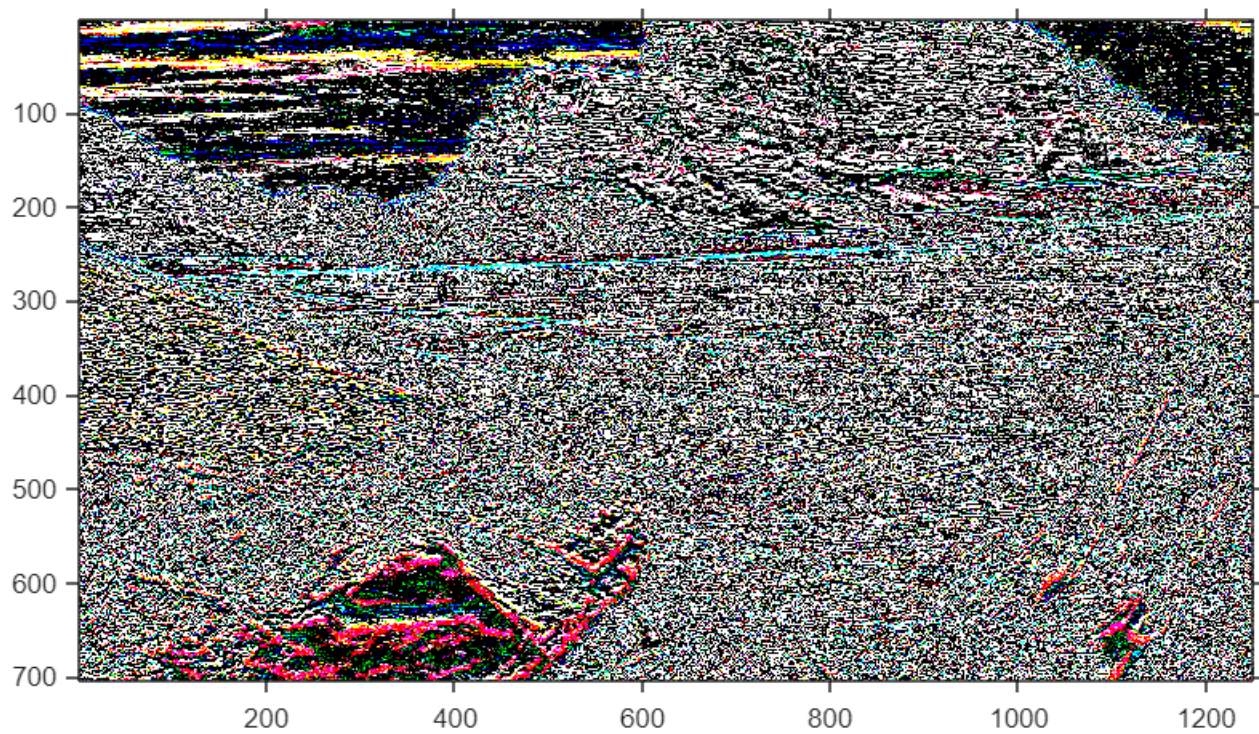
```
%{Code 10}%
a=imread('desert.jpg');
[m,n]=size(a);
[l1,lh,h1,hh]=dwt2(a, 'haar')
```

```
l1 =
l1(:,:,1) =
    262.0000    262.5000    262.0000    262.0000    265.0000    265.5000    267.5000    268.0000    274.0000    273.5000    273.0000    272.5000
    ⋮
lh =
lh(:,:,1) =
    -0.0000     0.5000    -0.0000    -0.0000    -1.0000    -1.5000    -0.5000    -1.0000     0.0000    -0.5000    -1.0000    -0.5000
    ⋮
h1 =
h1(:,:,1) =
    -0.0000    -0.5000    -0.0000    -0.0000     0.0000    -0.5000    -0.5000     0.0000     0.0000     0.5000     0.0000     0.0000
    ⋮
hh =
hh(:,:,1) =
    -0.0000    -0.5000    -0.0000    -0.0000     0.0000     0.5000    -0.5000     1.0000    -0.0000     0.5000    -0.0000    -0.5000
    ⋮
```

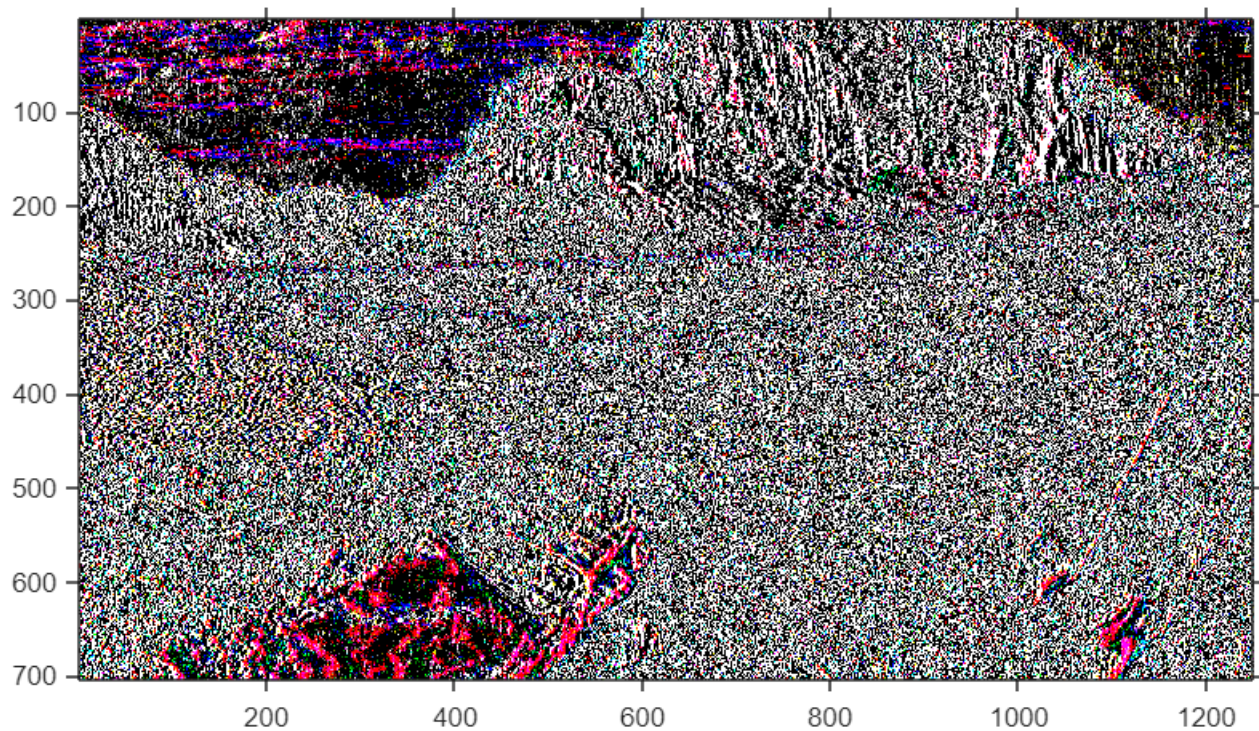
```
figure, imshow(l1);
```



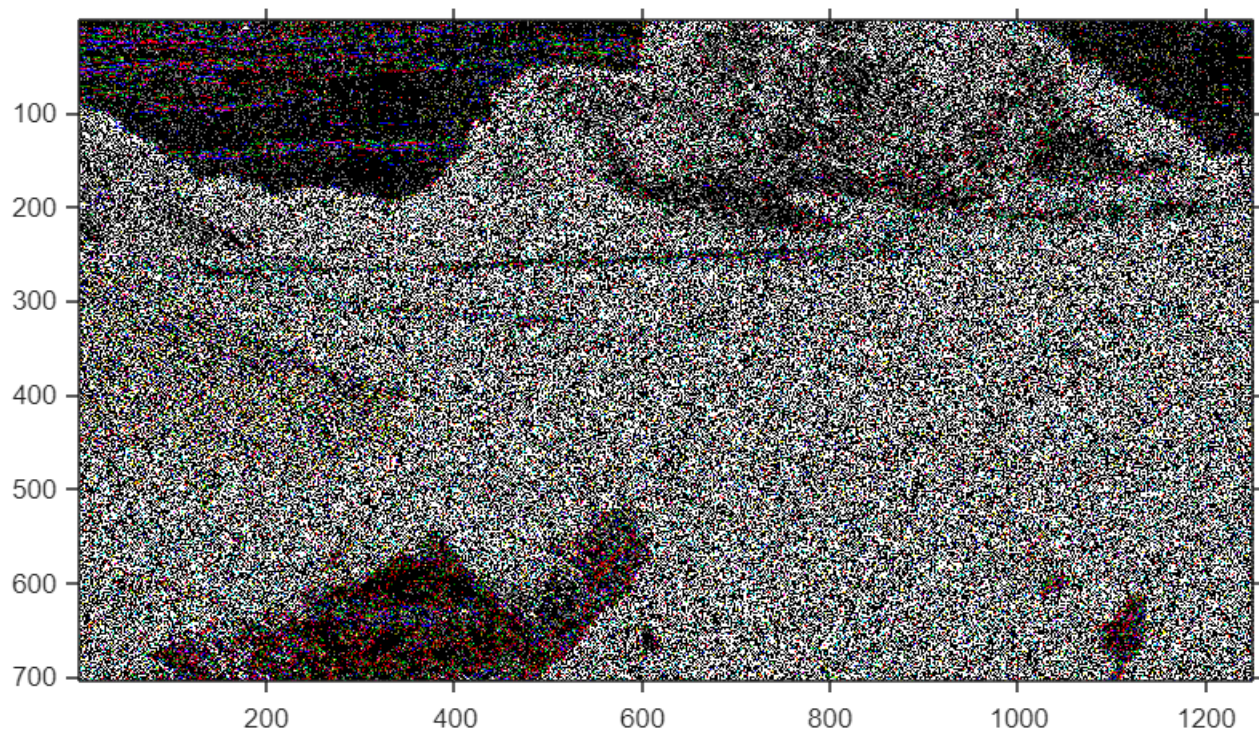
```
figure, imshow(lh);
```



```
figure, imshow(hl);
```

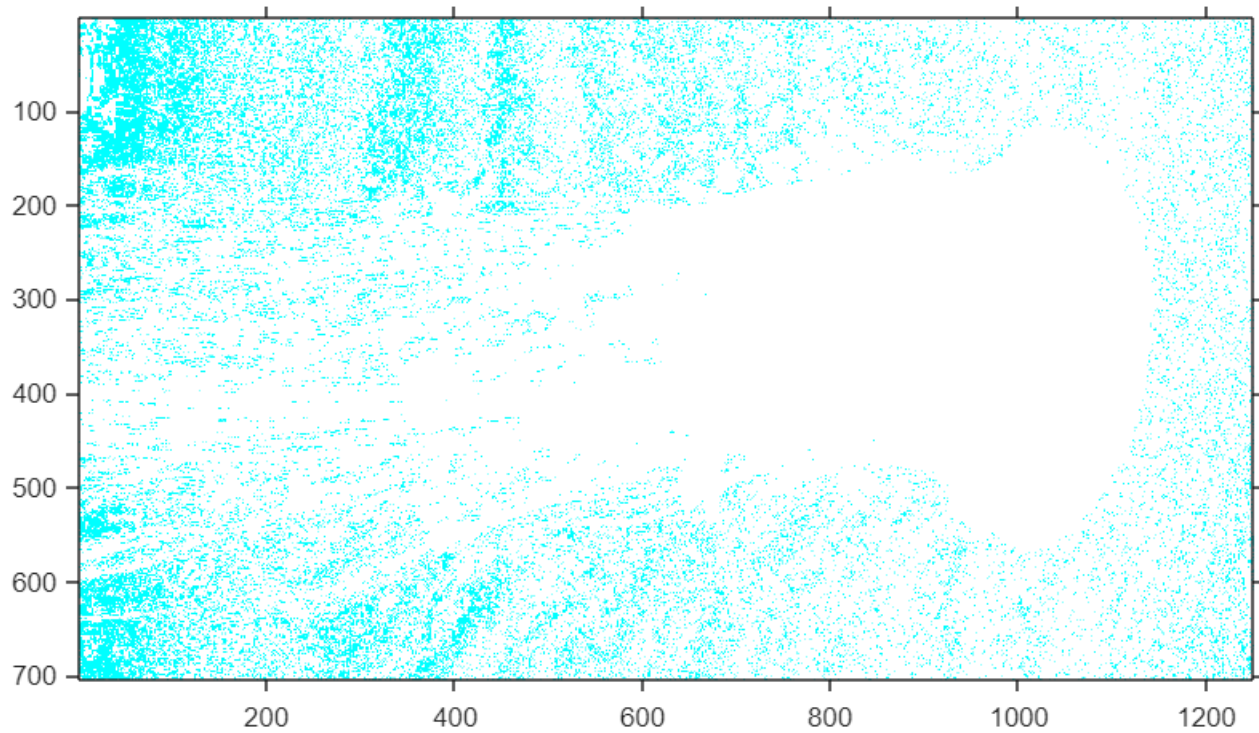
```
figure, imshow(hh);
```



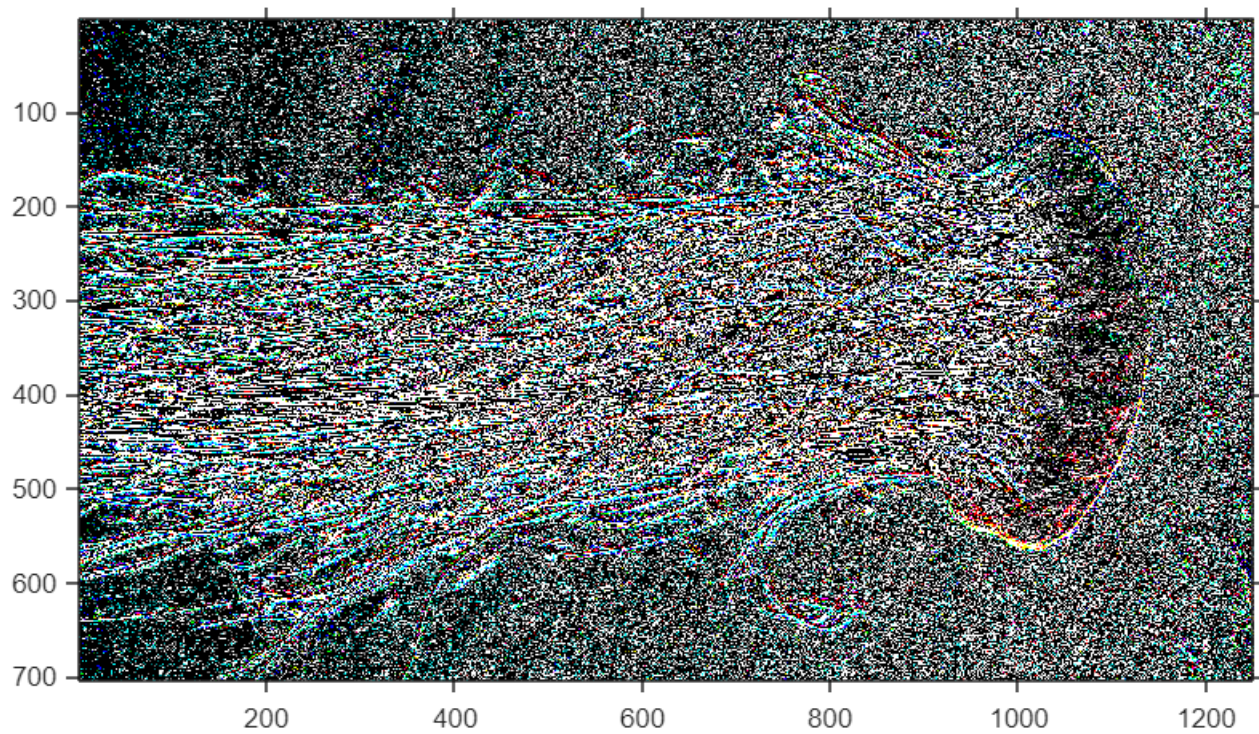
```
%(Code 11)%  
a=imread('jellyfish.jpg');  
[m,n]=size(a);  
w=size(a);
```



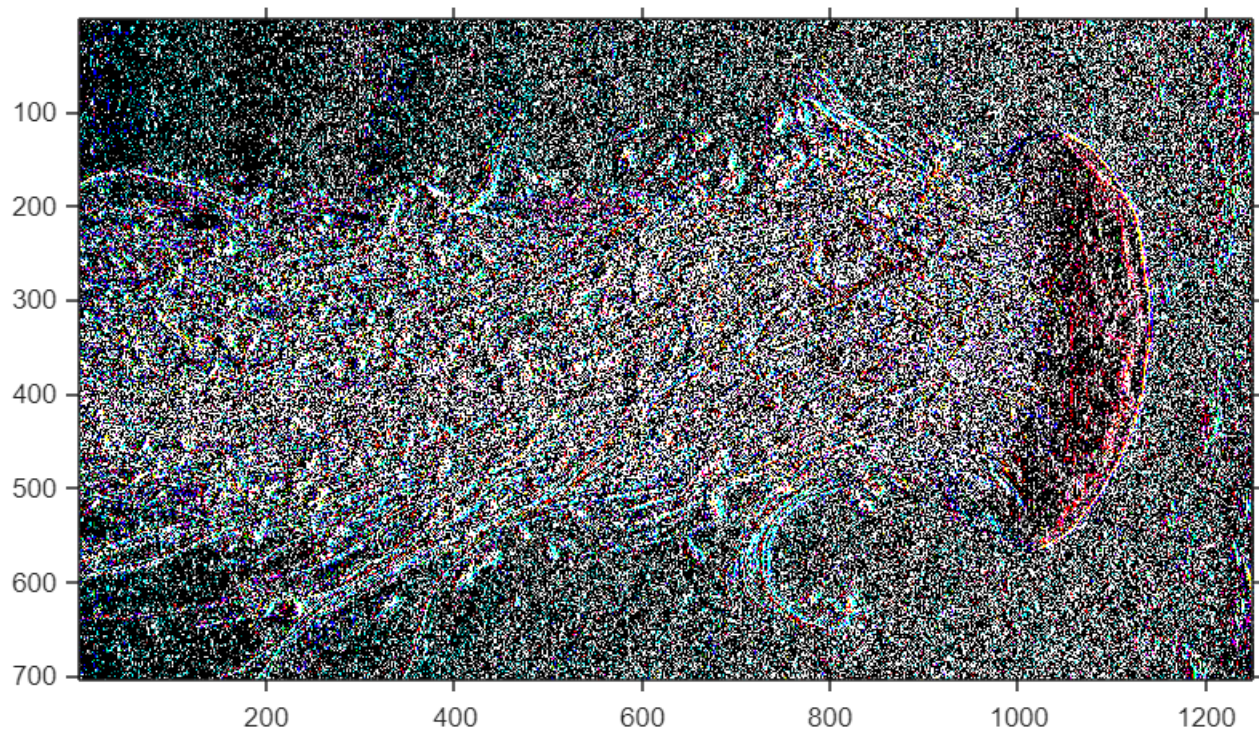
```
[l1,lh,h1,hh]=dwt2(a,'haar');  
figure, imshow(l1,[]);
```



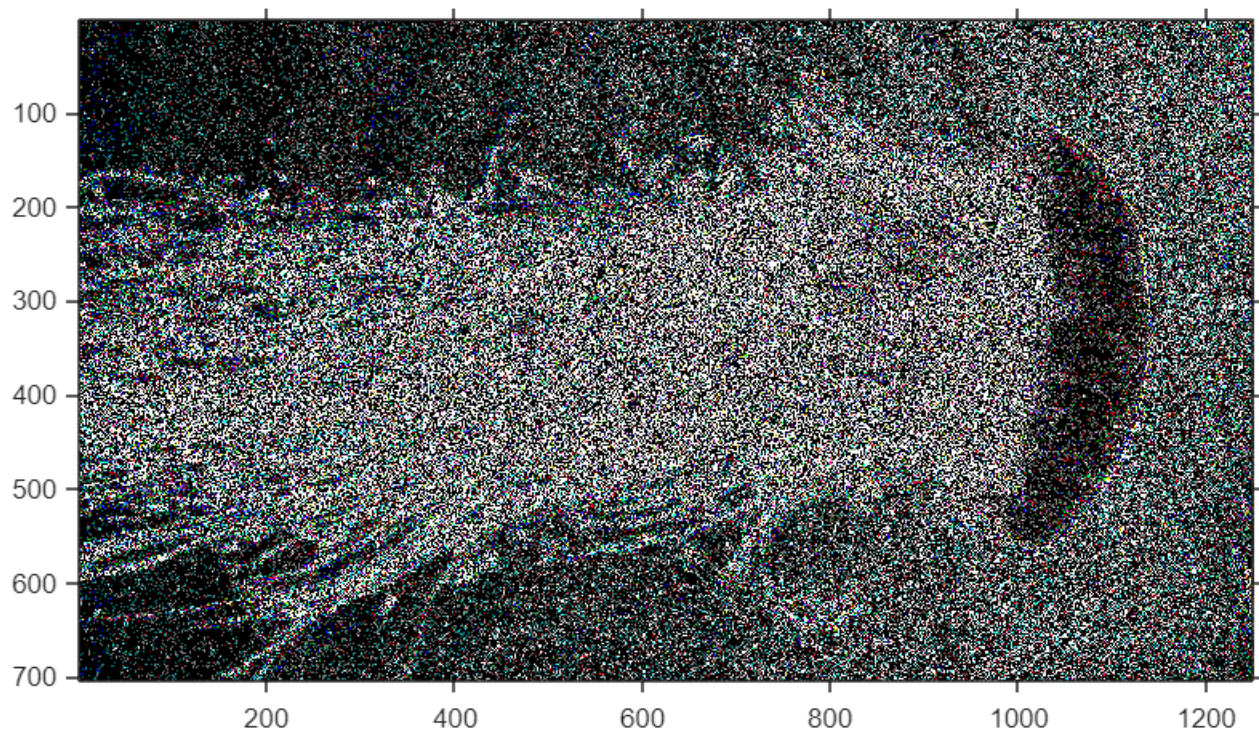
```
figure, imshow(lh,[]);
```



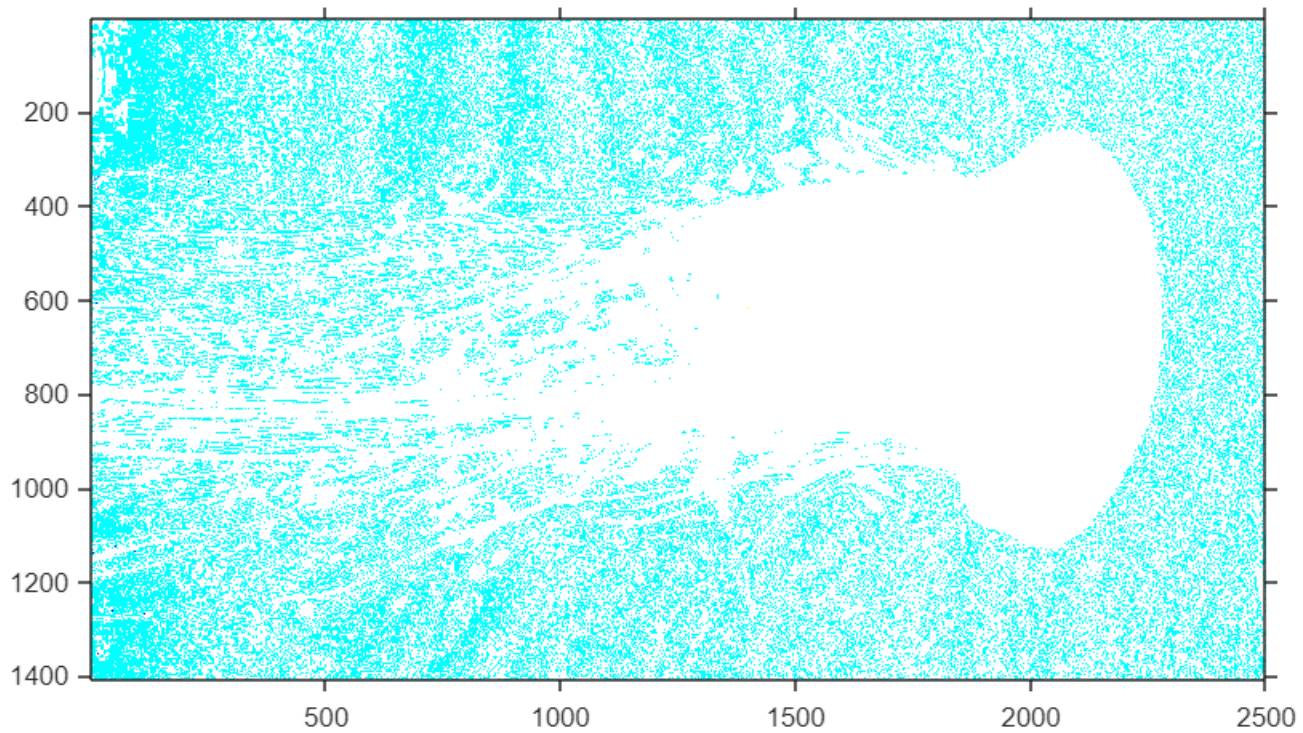
```
figure, imshow(h1,[]);
```

```
figure, imshow(hh,[]);
```



```
x=idwt2(l1,lh,h1,hh,'haar',w);  
figure, imshow(x,[])
```

```
%(Code 12)%
1:20
```

```
ans = 1x20
     1     2     3     4     5     6     7     8     9    10    11    12    13 ...
```

```
1:1:20
```

```
ans = 1x20
     1     2     3     4     5     6     7     8     9    10    11    12    13 ...
```

```
1:2:20
```

```
ans = 1x10
     1     3     5     7     9    11    13    15    17    19
```

```
1:3:20
```

```
ans = 1x7
     1     4     7    10    13    16    19
```

```
1:4:20
```

```
ans = 1x5
     1     5     9    13    17
```

```
1:5:20
```

```
ans = 1x4
     1     6    11    16
```

```
1:6:20
```

$$\text{ans} = \frac{1 \times 4}{1 \quad 7 \quad 13 \quad 19}$$

1:7:20

$$\text{ans} = \frac{1 \times 3}{1 \quad 8 \quad 15}$$

1:8:20

$$\text{ans} = \frac{1 \times 3}{1 \quad 9 \quad 17}$$

1:9:20

$$\text{ans} = \frac{1 \times 3}{1 \quad 10 \quad 19}$$

1:10:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 11}$$

1:11:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 12}$$

1:12:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 13}$$

1:13:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 14}$$

1:14:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 15}$$

1:15:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 16}$$

1:16:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 17}$$

1:17:20

$$\text{ans} = \frac{1 \times 2}{1 \quad 18}$$

1:18:20


```
ans = 1×2
      1    19
```

```
1:19:20
```

```
ans = 1×2
      1    20
```

```
1:20:20
```

```
ans = 1
```

```
%(Code 12)%
x=1:3
```

```
x = 1×3
      1    2    3
```

```
y=1:3
```

```
y = 1×3
      1    2    3
```

```
z=x+y
```

```
z = 1×3
      2    4    6
```

```
%(Code 13)%
z=x.*y
```

```
z = 1×3
      1    4    9
```

```
a=[123;456;789]
```

```
a = 3×1
     123
     456
     789
```

```
%(Code 14)%
a=[123;456;789]
```

```
a = 3×1
     123
     456
     789
```

```
b=[123;456;789]
```

```
b = 3×1
     123
     456
     789
```

c=a+b

c = 3×1
246
912
1578

a=[1 2 3]

a = 1×3
1 2 3

b=[1 2 3]

b = 1×3
1 2 3

c=a+b

c = 1×3
2 4 6

a=[1 2 3;4 5 6;7 8 9]

a = 3×3
1 2 3
4 5 6
7 8 9

b=[4 5 6;7 8 9;1 2 3]

b = 3×3
4 5 6
7 8 9
1 2 3

c=a+b

c = 3×3
5 7 9
11 13 15
8 10 12

c=a.*b

c = 3×3
4 10 18
28 40 54
7 16 27

c=a-b

c = 3×3
-3 -3 -3
-3 -3 -3
6 6 6

c=a./b

c = 3×3

0.2500	0.4000	0.5000
0.5714	0.6250	0.6667
7.0000	4.0000	3.0000

```
%(Code 15)%  
size(a)
```

```
ans = 1×2  
      3      3
```

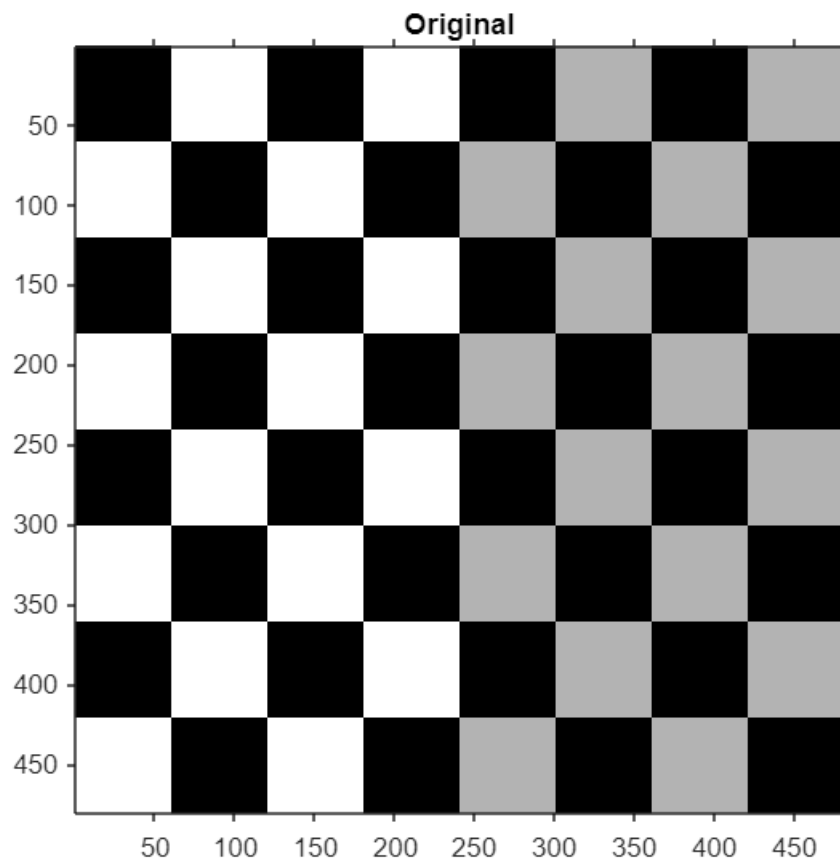
```
size(b)
```

```
ans = 1×2  
      3      3
```

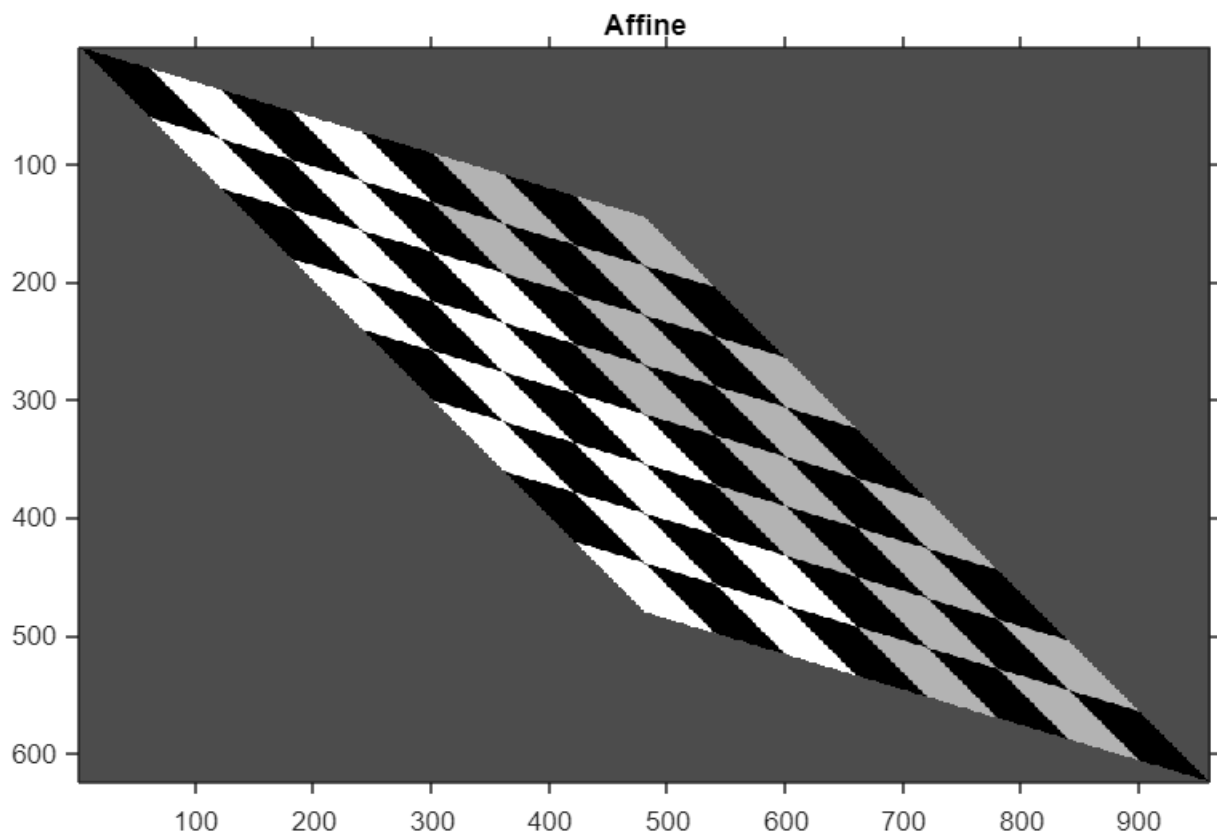
```
sum(b)
```

```
ans = 1×3  
      12      15      18
```

```
%(Code 16)%  
sqsize=60;  
i = checkerboard(sqsize,4,4);  
nrows=size(i,1);  
ncols=size(i,1);  
fill=0.3;  
imshow(i)  
title('Original')
```



```
%(Code 17)%
T=[1 0.3 0;
    1 1 0;
    0 0 1];
t_aff=affine2d(T);
i_affine=imwarp(i,t_aff,'FillValues',fill);
imshow(i_affine)
title('Affine')
```

```
%(Code 18)%
```

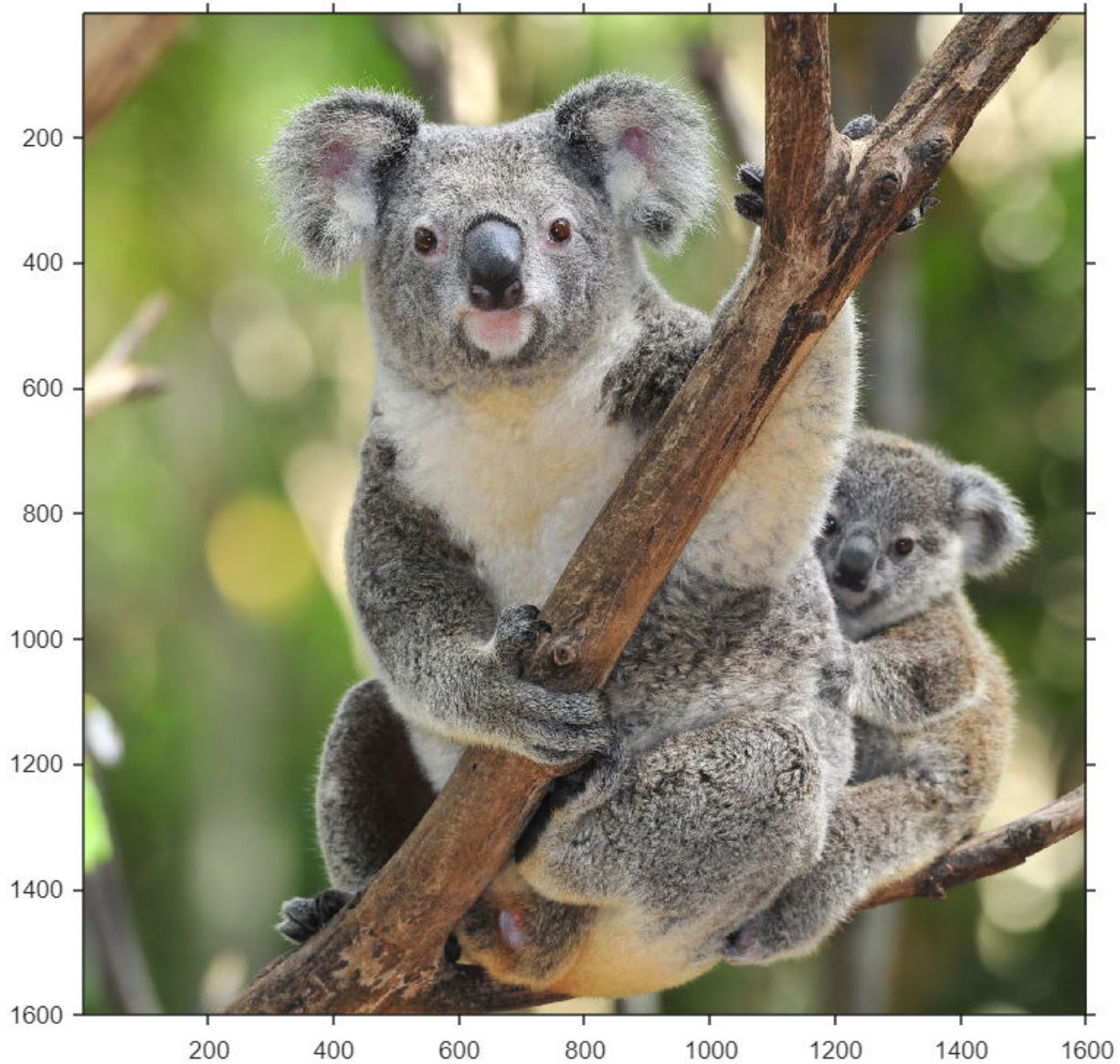
```
i=imread('koala.jpg')
```

```
i = 1600x1600x3 uint8 array
```

```
i(:,:,1) =
```

```
158 158 159 160 162 163 164 165 164 164 165 165 165 166 166 166 169 169 169
⋮
```

```
imshow(i)
```



```
tform=affine2d([1 0 0;.2 1 0;0 0 1])
```

```
tform =  
  affine2d with properties:  
      T: [3x3 double]  
  Dimensionality: 2
```

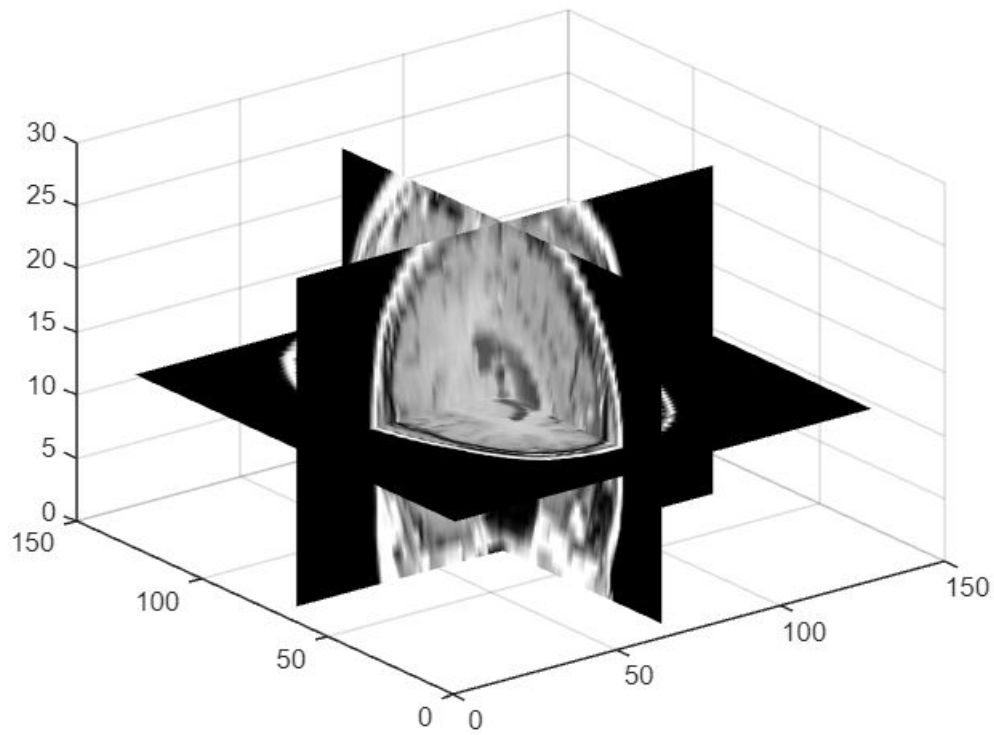
```
j=imwarp(i,tform);  
figure  
imshow(j)
```



```
%(CODE 19)%
s=load('mri')
```

```
s = struct with fields:
    D: [128x128x1x27 uint8]
    map: [89x3 double]
    siz: [128 128 27]
```

```
mriVolume=squeeze(s.D);
szln=size(mriVolume);
hFigOriginal=figure;
hAxOriginal=axes;
slice(double(mriVolume),szln(2)/2,szln(1)/2,szln(3)/2);
grid on, shading interp, colormap gray
```

```
%(Code 20)%
```

```
a=imread('koala.jpg')
```

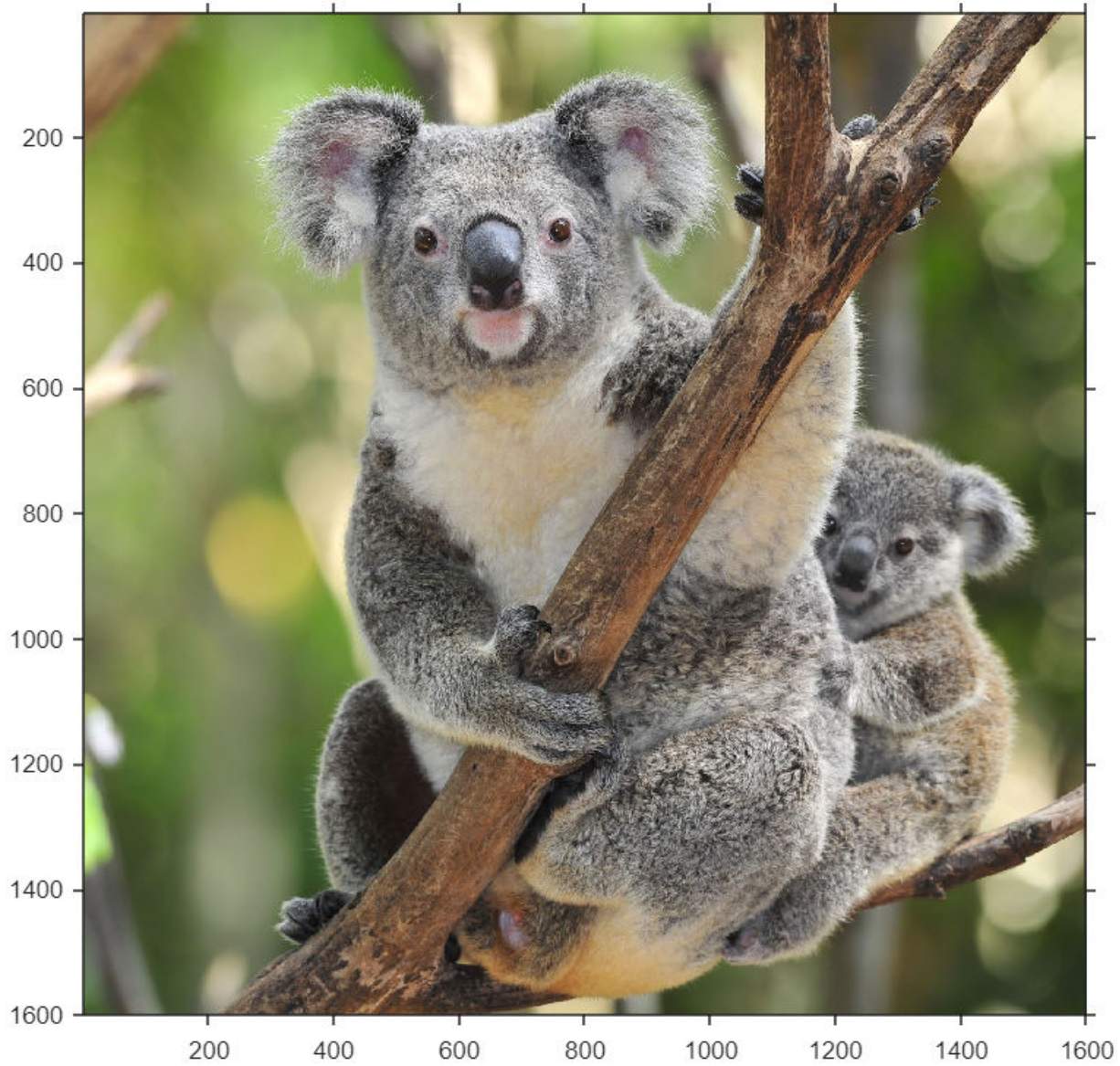
```
a = 1600x1600x3 uint8 array
```

```
a(:,:,1) =
```

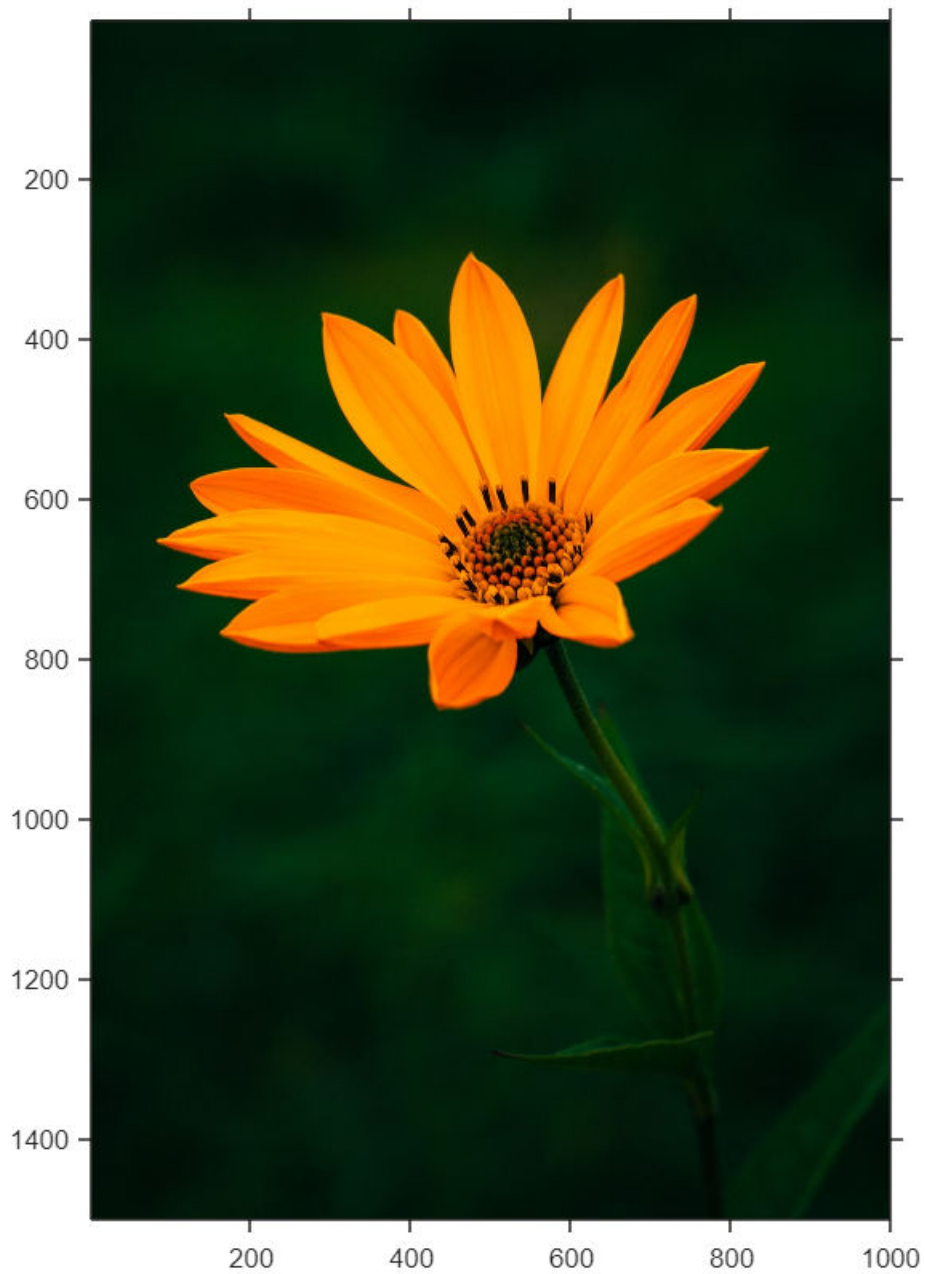
```
158 158 159 160 162 163 164 165 164 164 165 165 165 166 166 166 169 169 169
⋮
```

```
iptsetpref('imshowAxesVisible','on')
```

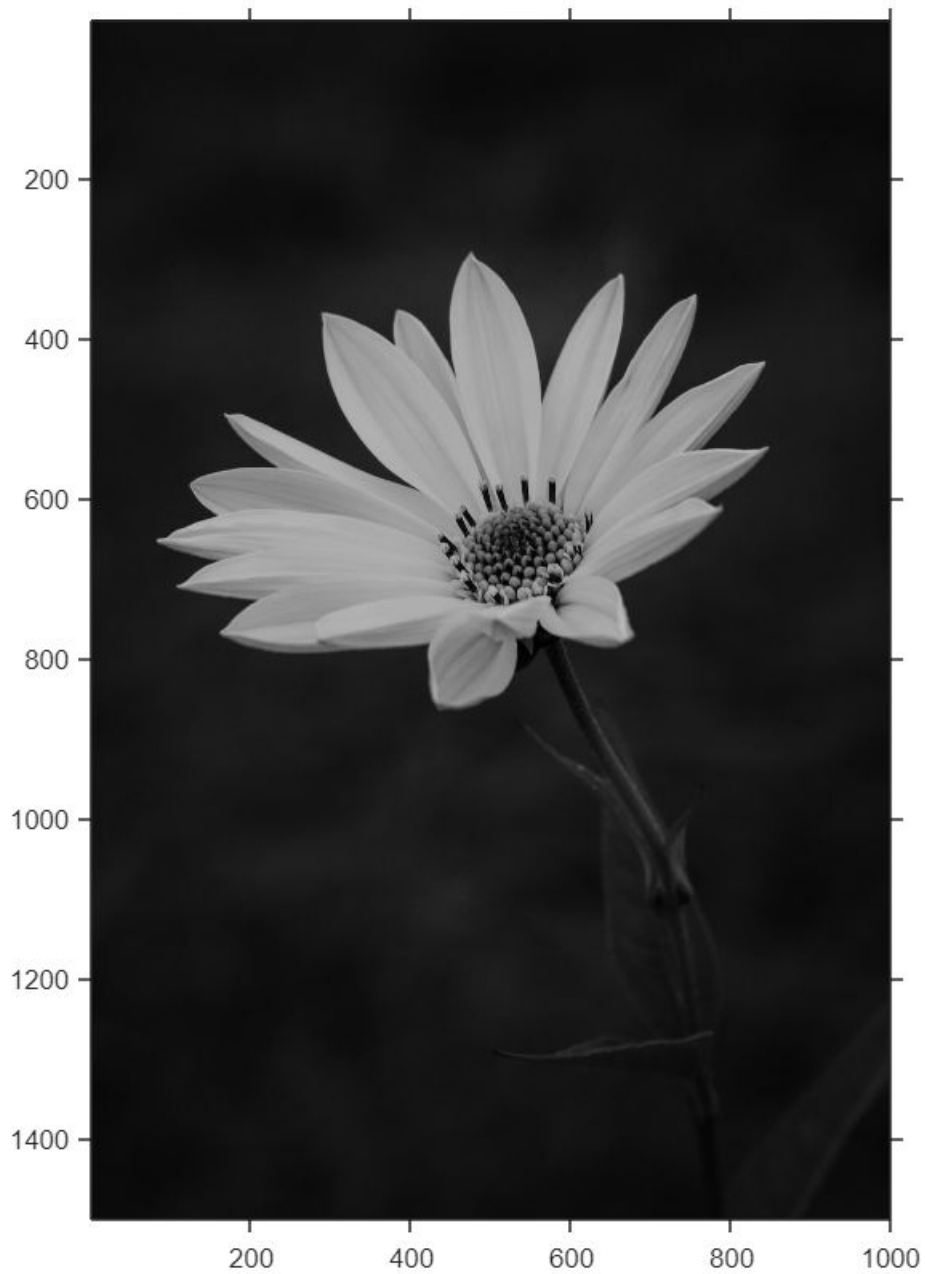
```
imshow(a)
```



```
%practical 21%  
RGB = imread('flower.jpg');  
imshow(RGB)
```

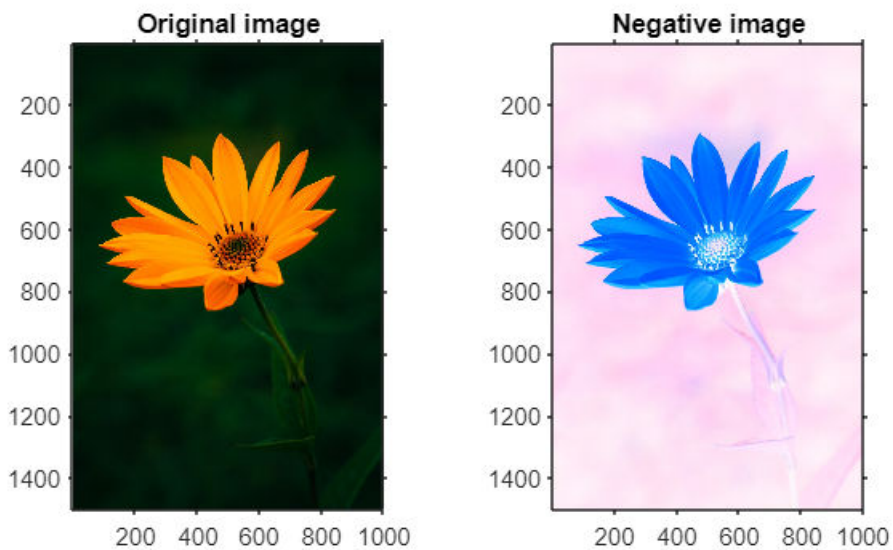


```
I = rgb2gray(RGB);  
figure  
imshow(I)
```

```
%practical 22 a%
clear all;
a= imread('flower.jpg');
a=im2double(a);
b=1-a;
subplot(2,2,1);
imshow(a);
title('Original image');
subplot(2,2,2);
imshow(b);
```

```
title('Negative image');
```



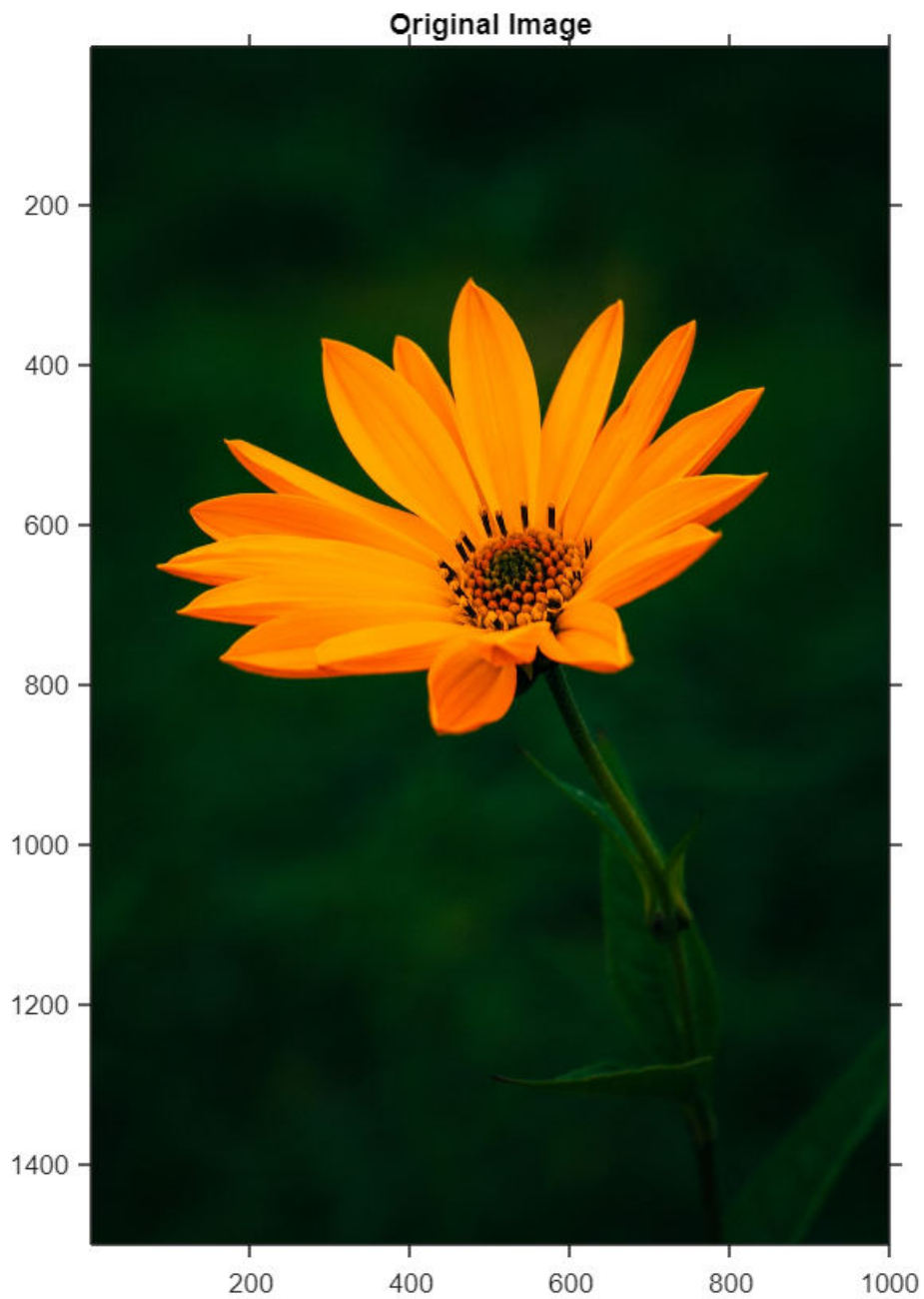
```
%practical 22 b%  
clear all;  
a= imread('greyscale.jpg');  
a=im2double(a);  
b=1-a;  
subplot(2,2,1);  
imshow(a);  
title('Original image');  
subplot(2,2,2);
```

```
imshow(b);
title('Negative image');
```

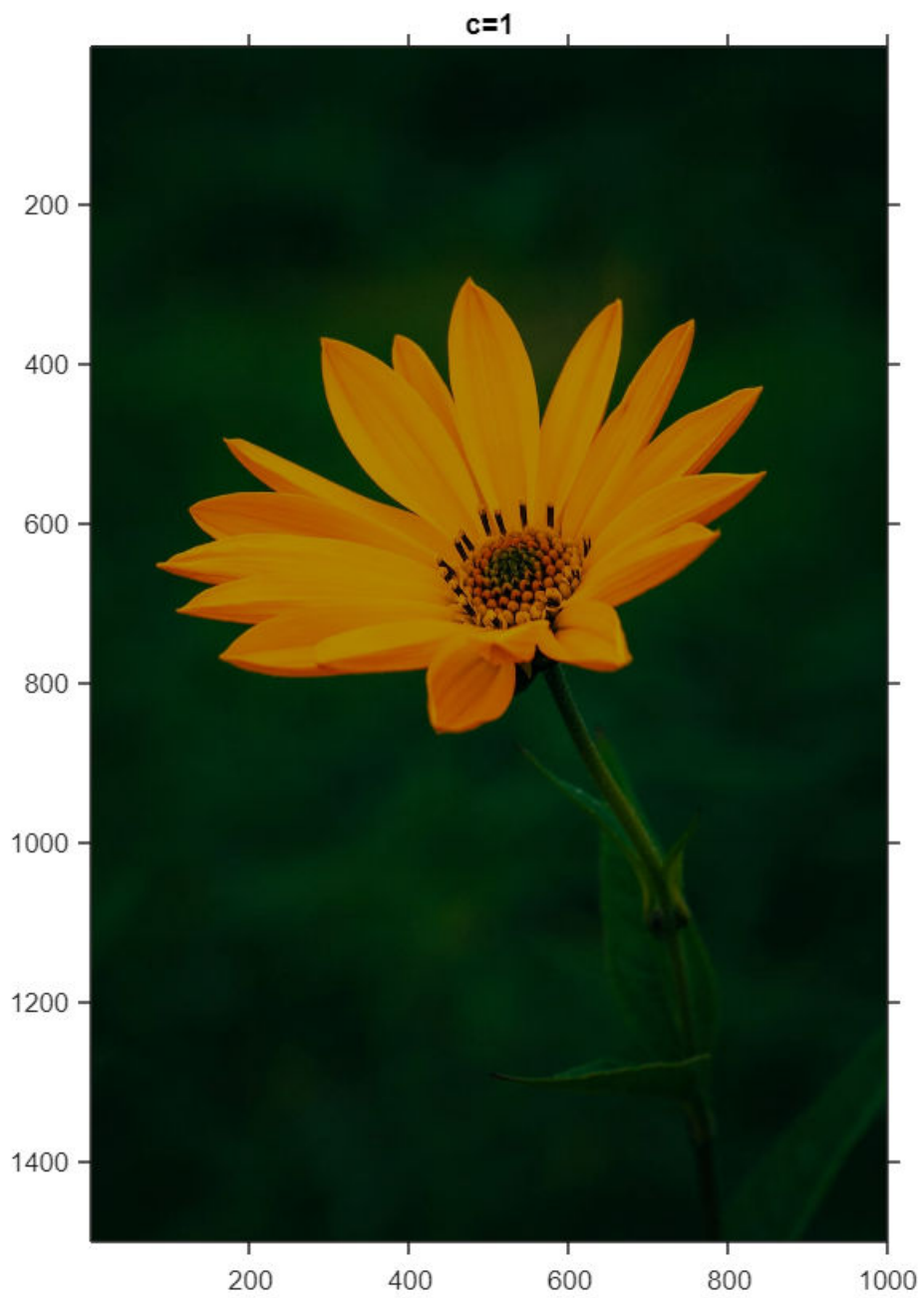


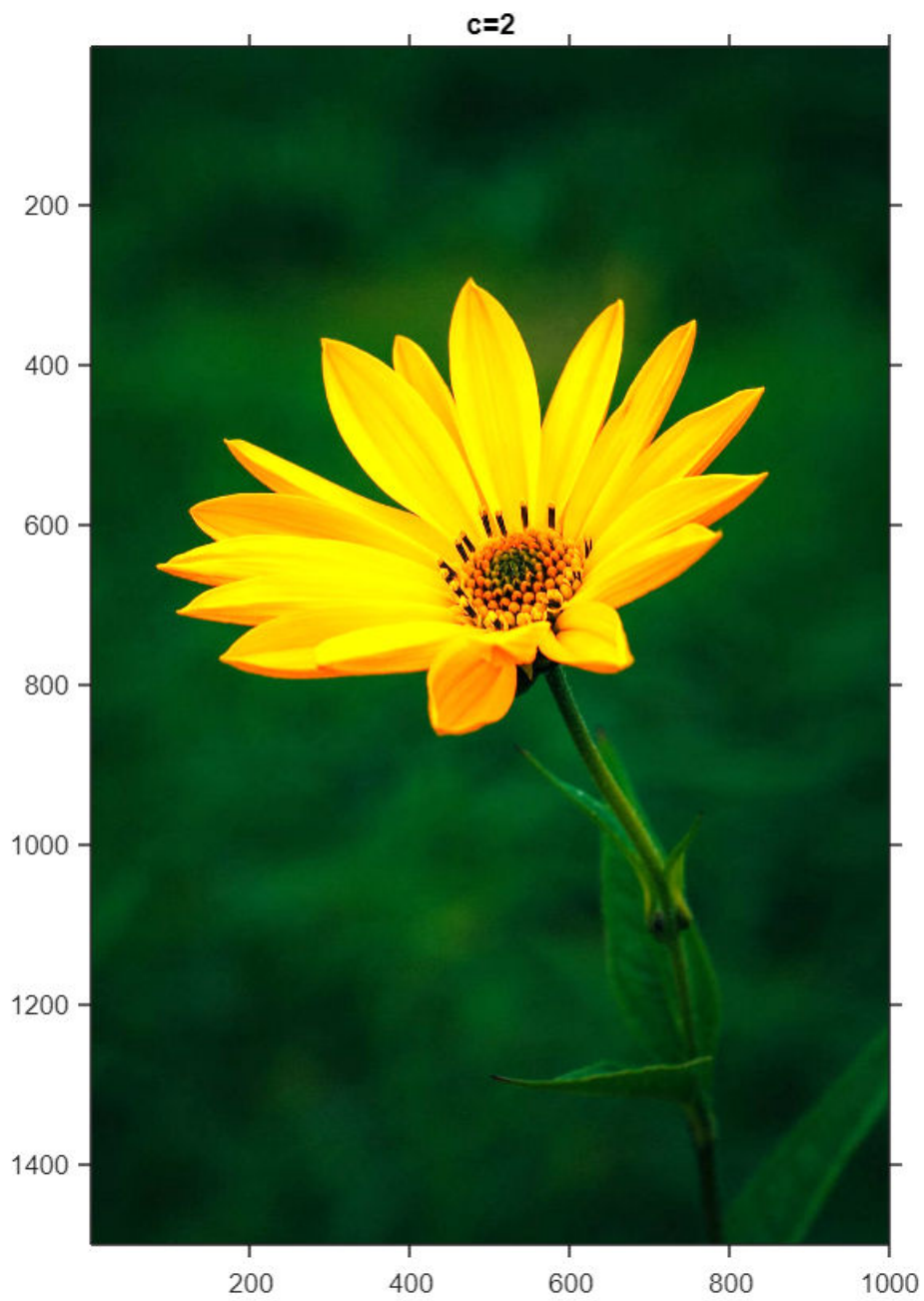
```
%practical 23%
I = imread('flower.jpg');
[J,rect] = imcrop(I);
```

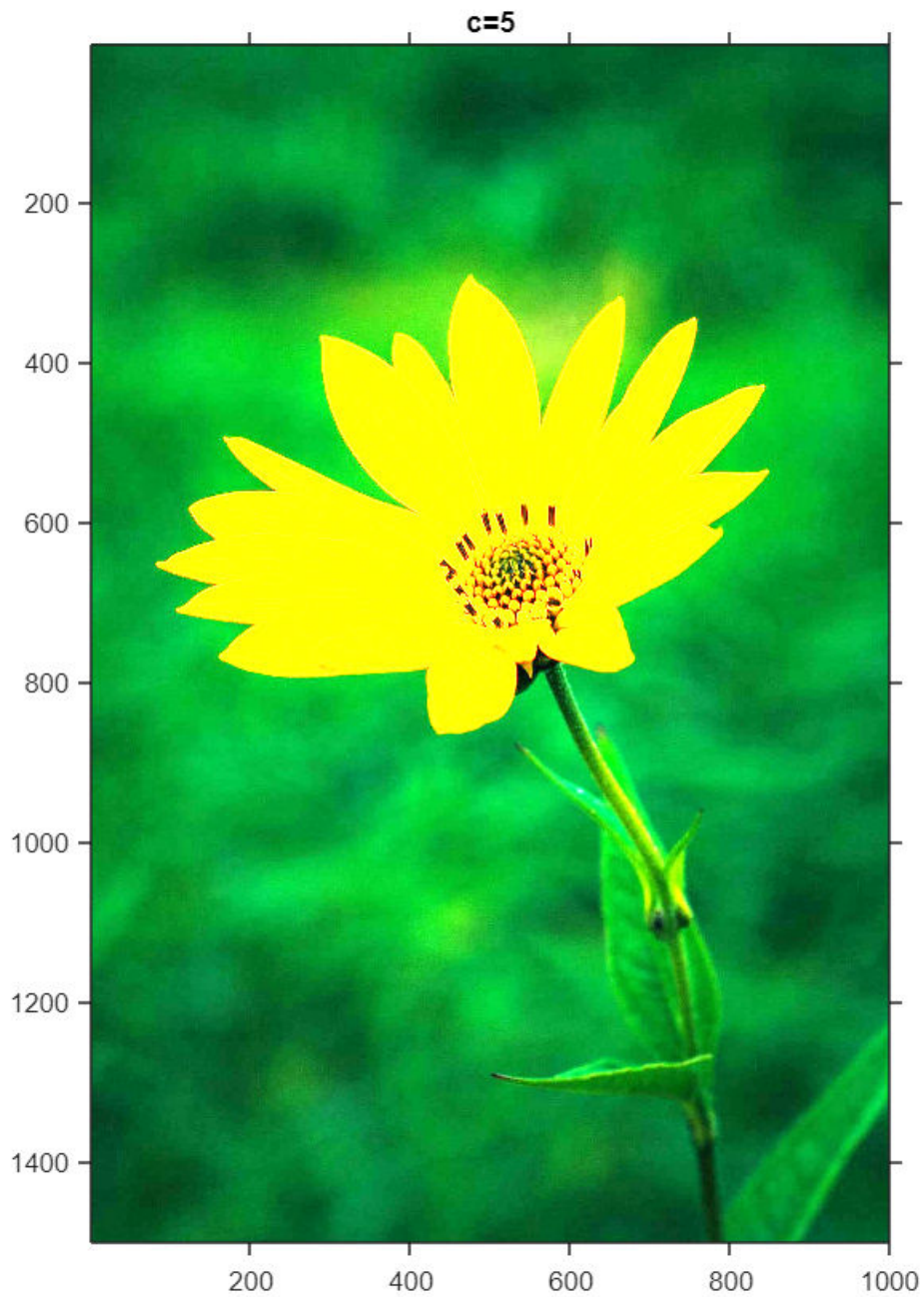
```
%practical 24%
I=imread('flower.jpg'); imshow(I); title('Original Image'); I2=im2double(I);
```

```
J=1*log(1+I2);  
J2=2*log(1+I2);  
J3=5*log(1+I2);  
figure, imshow(J);title('c=1'); figure, imshow(J2);title('c=2'); figure,  
imshow(J3);title('c=5');
```



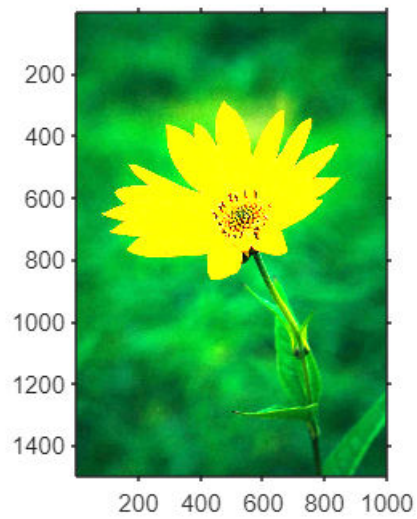
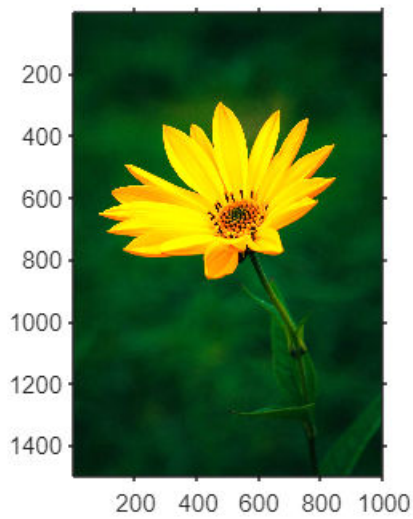
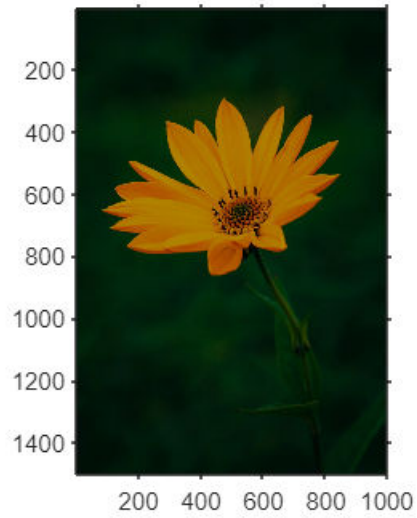
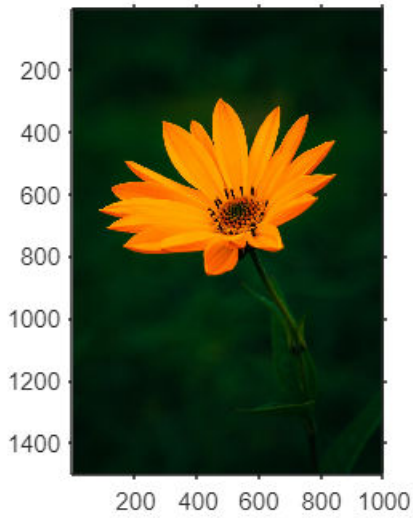




19

ans = 19

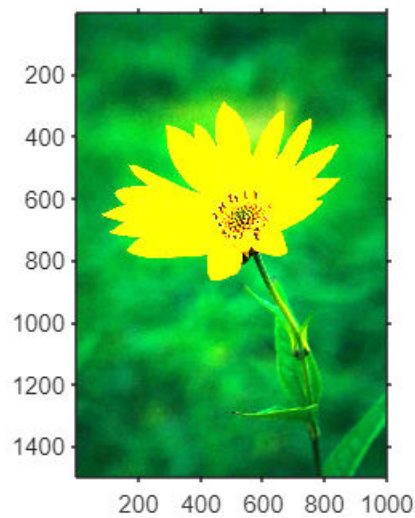
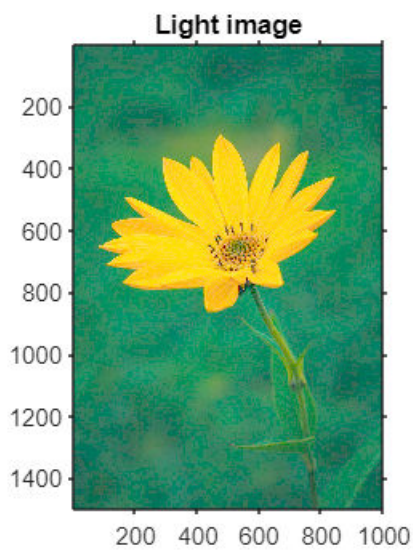
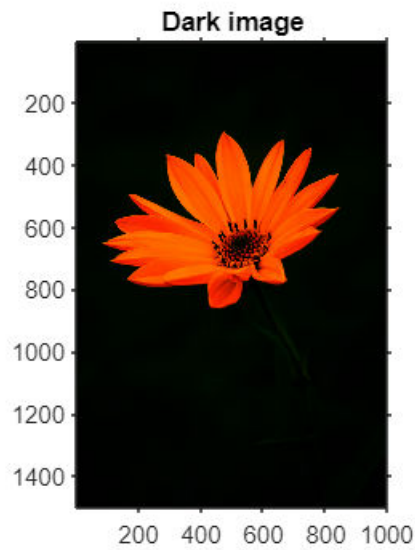
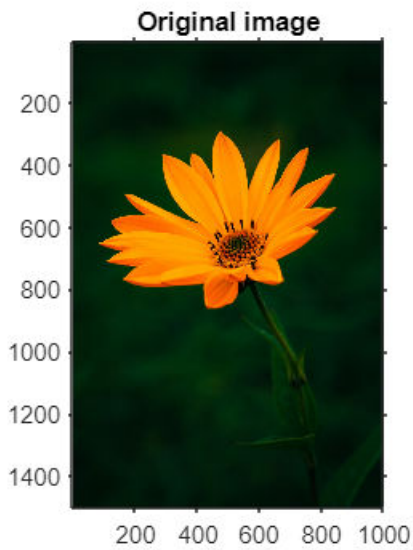
```
subplot(2,2,1);title('OriginalImage');imshow(I);  
subplot(2,2,2);title('c=1');imshow(J);  
subplot(2,2,3);title('c=2');imshow(J2);  
subplot(2,2,4);title('c=5');imshow(J3);
```



%Pracrical 25%

```
x=imread('flower.jpg');
y=imadjust(x,[],[],2);
z=imadjust(x,[],[],0.3);
subplot(2,2,1);imshow(x);
title('Original image');
subplot(2,2,2);
imshow(y);title('Dark image');
subplot(2,2,3);
imshow(z);
```

```
title('Light image');
```

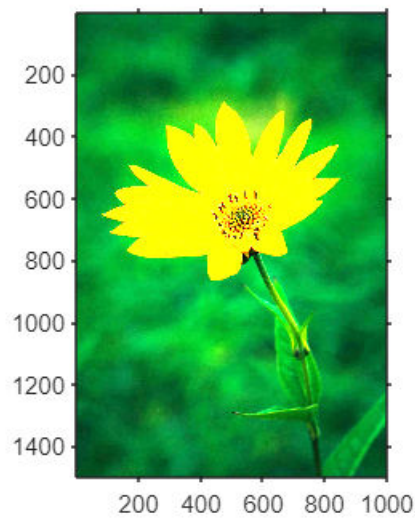
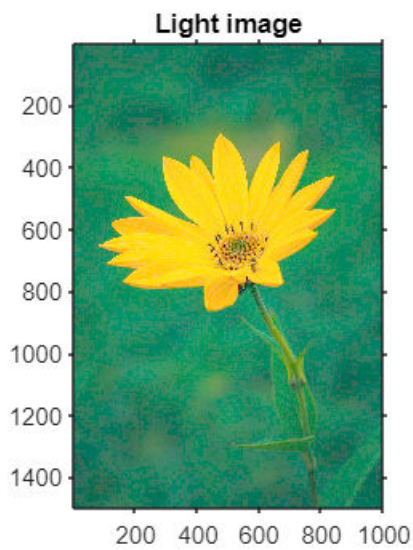
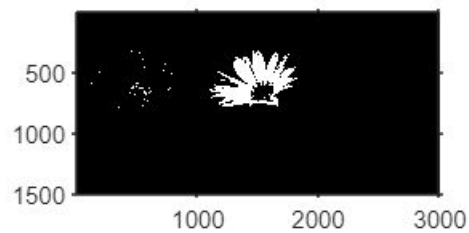
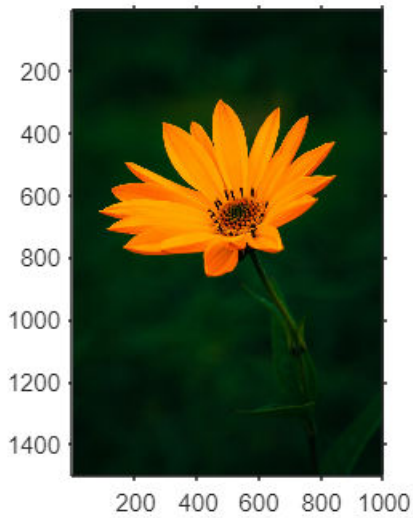


```
%practical 26%  
p=imread('flower.jpg');  
[m,n]=size(p);  
for (i=1:m)  
for (j=1:n)  
if p(i,j)>=125 && p(i,j)<=175  
p1(i,j)=255;  
else  
p1(i,j)=0;
```

```

end
end
end
subplot(2,2,1);
imshow(p);
subplot(2,2,2);
imshow(p1);

```



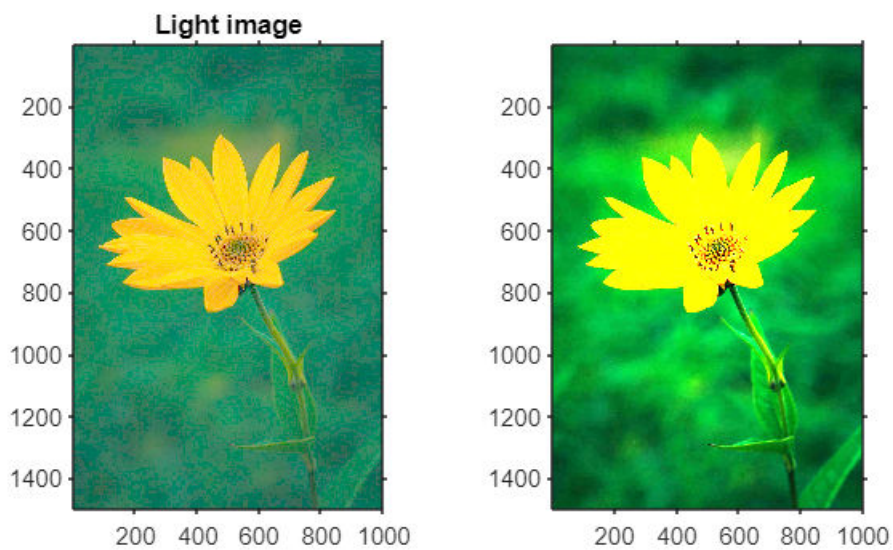
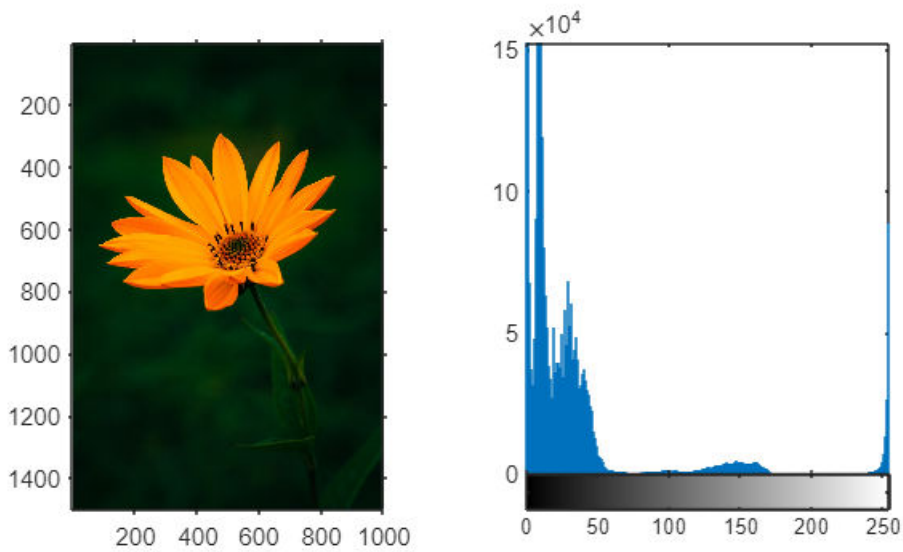
```

%practical 27%
x=imread('flower.jpg');
y=im2bw(x);

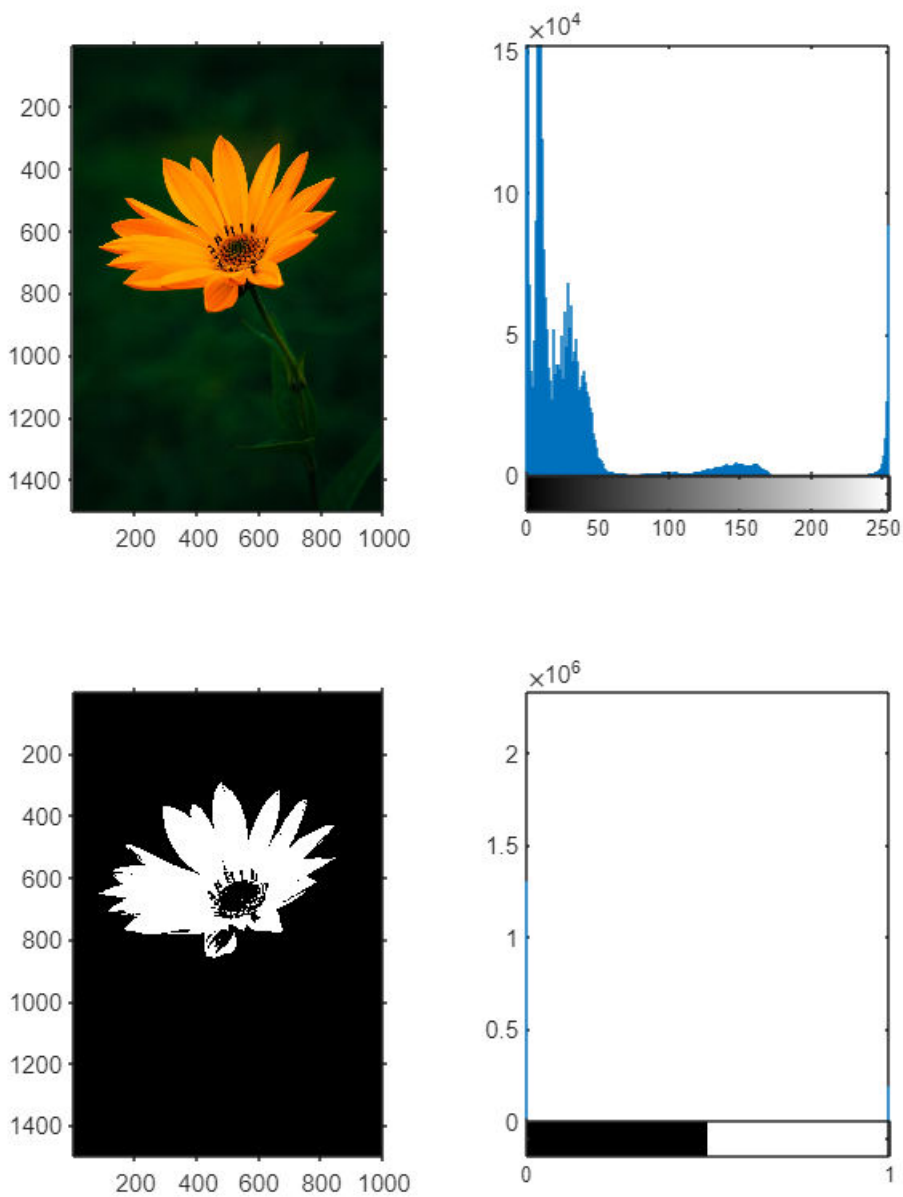
```



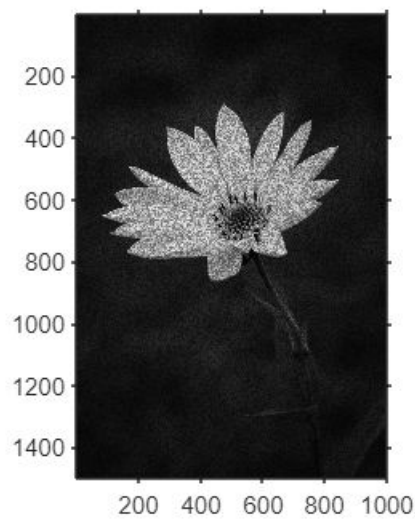
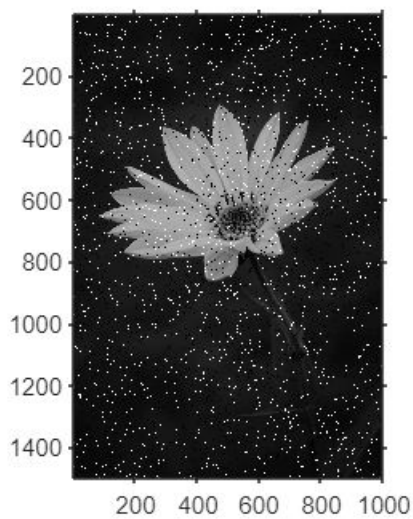
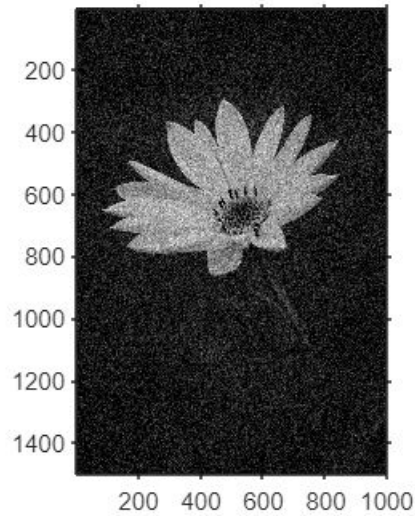
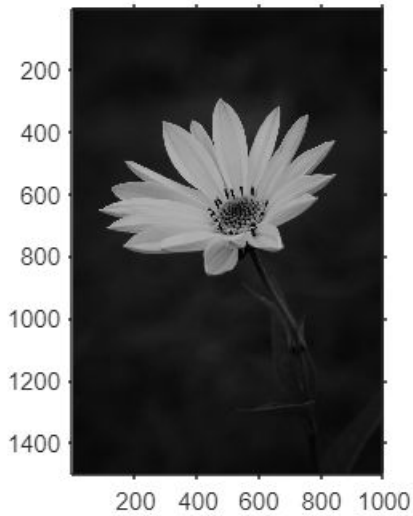
```
imhist(x); subplot(2,2,1);imshow(x);
```



```
subplot(2,2,2);imhist(x);  
subplot(2,2,3);imshow(y);  
subplot(2,2,4); imhist(y);
```



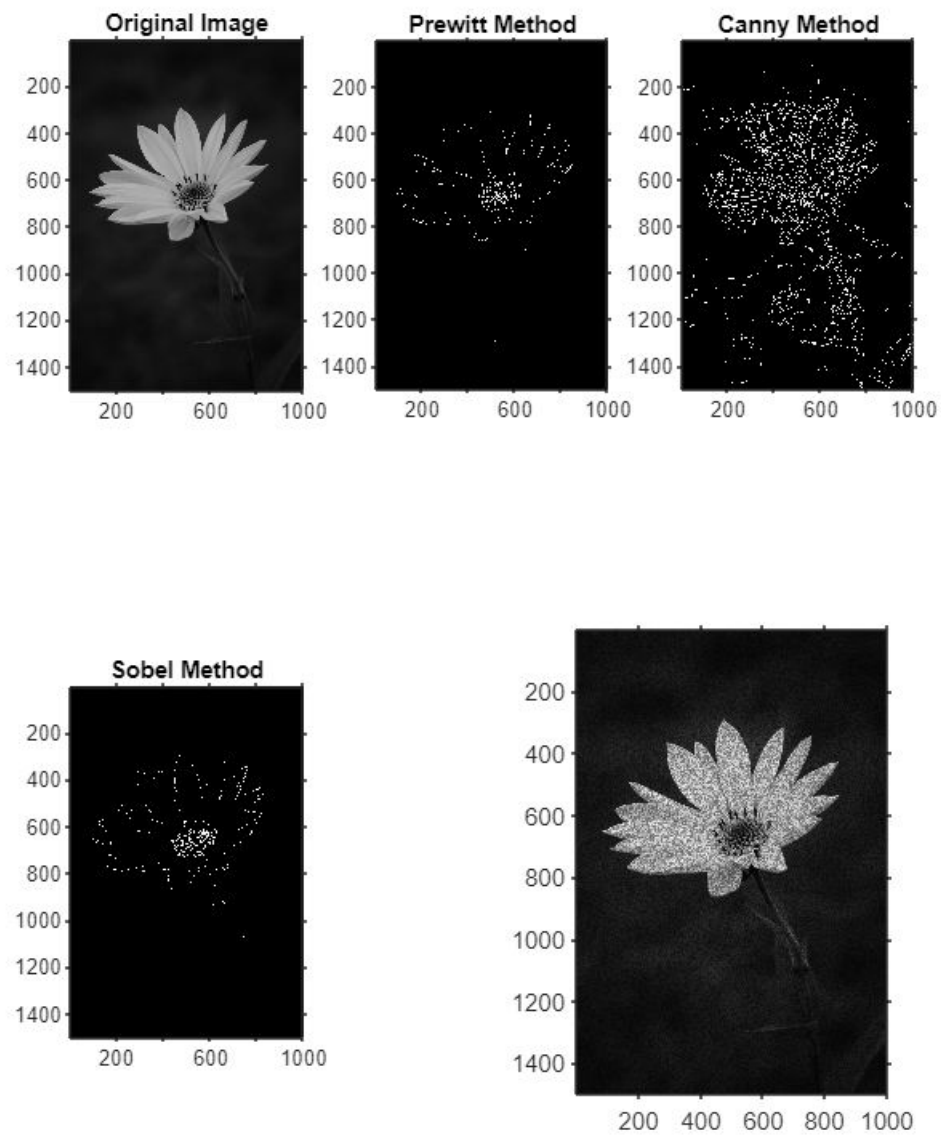
```
%practical 28%
a=imread(['flower.jpg']);
a=rgb2gray(a);
b=imnoise(a,'gaussian');
c=imnoise(a,'salt & pepper');
d= imnoise(a,'speckle');
subplot(2,2,1);title("OriginalImage");imshow(a);
subplot(2,2,2);title('Gaussian');imshow(b); subplot(2,2,3);title('Salt and
Pepper');imshow(c); subplot(2,2,4);title('Speckle');imshow(d);
```



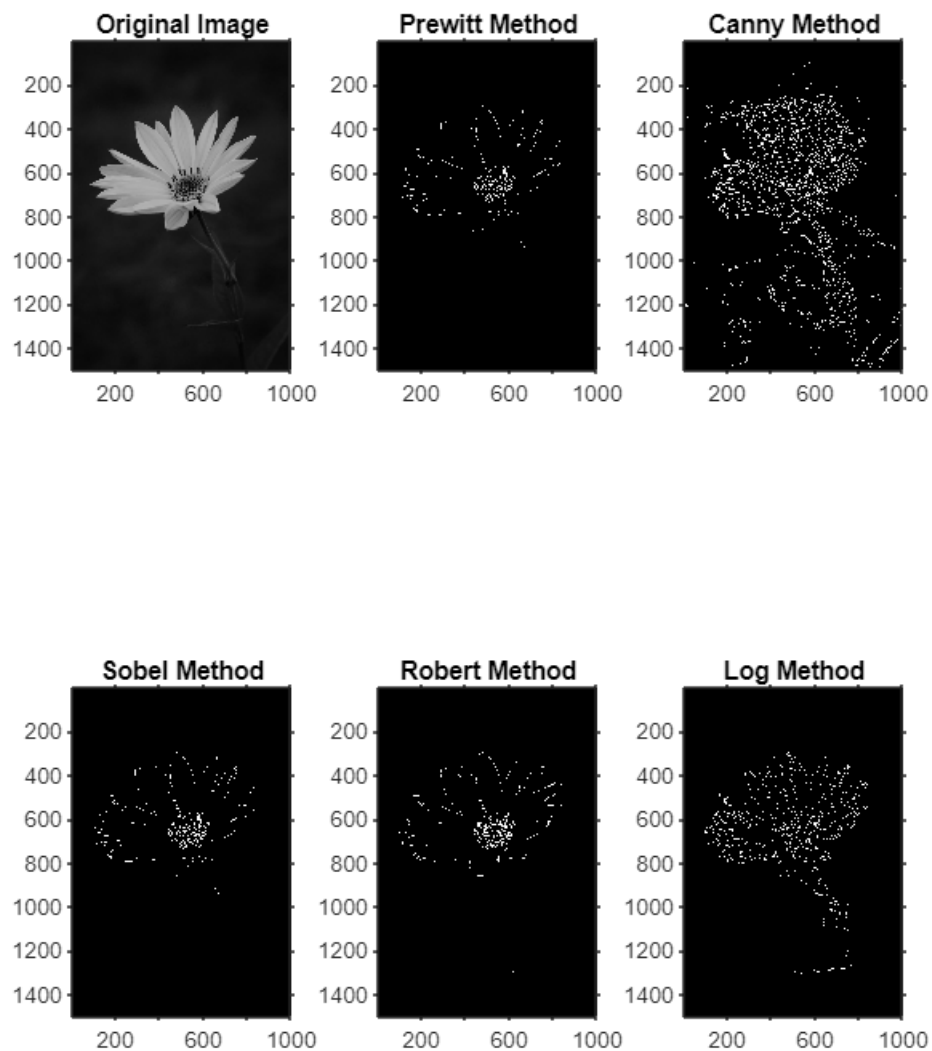
%practical 29%

```
I=imread('flower.jpg');
I=rgb2gray(I);
BW1 = edge(I,'Prewitt');
BW2 = edge(I,'Canny');
BW3 = edge(I,'sobel');
BW4 = edge(I,'Roberts');
BW5 = edge(I,'log');
subplot(2,3,1); imshow(I); title('Original Image'); subplot(2,3,2); imshow(BW1);
title('Prewitt Method'); subplot(2,3,3); imshow(BW2); title('Canny Method');
subplot(2,3,4); imshow(BW3);
```

```
title('Sobel Method');subplot(2,3,5);
```



```
imshow(BW4);
title('Robert Method');subplot(2,3,6); imshow(BW5);
title('Log Method');
```

```
%practical 30%
a=imread('flower.jpg'); b = rgb2gray(a); [M, N] = size(b);
FT_img = fft2(double(b));
D0 = 30;
n=10;
u = 0:(M-1);
idx = find(u>M/2); u(idx) = u(idx)-M;
v = 0:(N-1);
idy = find(v>N/2); v(idy) = v(idy)-N;
[V, U] = meshgrid(v, u);
D = sqrt(U.^2+V.^2);
```

```

H1= double(D <= D0);
H2= 1./(1 + (D./D0).^(2*n));
G1= H1.*FT_img;
G2 =H2.*FT_img;
mask = fspecial("gaussian",30, 3);
M = fft2(mask, size(FT_img,1),size(FT_img,2)); Filtered = M.*FT_img;
output_image1 = real(ifft2(double(G1))); output_image2 = real(ifft2(double(G2)));
output_image3 = real(ifft2(double(Filtered)));
subplot(2, 2, 1), imshow(b), title("Original");
subplot(2, 2, 2), imshow(output_image1, [ ]); title("Ideal Low Pass Filter")
subplot(2, 2, 3), imshow(output_image2, [ ]); title("Butterworth Low Pass Filter")
subplot(2, 2, 4), imshow(output_image3, [ ]); title("Gaussian Low Pass Filter")

```

