

%EXP 1

```
clc;
clear all;
close all;
I=imread('onion.png');
figure
imshow(I);
[row,col] = size(I)
disp('Minimum pixel Value');
imin=min(min(I))
disp('Maximum pixel Value');
imax=max(max(I))
disp('Mean pixel Value');
imean=mean(mean(I))
Idouble=double(I);
disp('Std of Image');
istd=std(std(Idouble))
disp('Var of Image');
ivar=var(var(Idouble))
c=imfinfo('onion.png')
b=im2bw(I);
figure
imshow(b);

rchannel=I(:, :, 1);
gchannel=I(:, :, 2);
bchannel=I(:, :, 3);
allblack=zeros(size(I,1),size(I,2),'uint8');
red=cat(3,rchannel,allblack,allblack);
green=cat(3,allblack,gchannel,allblack);
blue=cat(3,allblack,allblack,bchannel);
figure
imshow(red);
figure
imshow(green);
figure
imshow(blue);
```

---

% EXP 2

```
clc;
clear all;
close all;
I=imread('onion.png');
J=rgb2gray(I);
subplot(2,3,1);
imshow(I);
title('RGB Image')
subplot(2,3,2)
imshow(J);
title('Gray Image')
```

```

a=imread('tire.tif');
b=histeq(a);
subplot(2,3,3)
imshow(a)
title('Original Image');
subplot(2,3,4)
imshow(b)
title('Histogram Equalised Image');

subplot(2,3,5)
imhist(a,64);
title('Histogram of Original Image');
subplot(2,3,6)
imhist(b,32);
title('Histogram of Processed Image');

```

---

% EXP 3

```

clc;
clear all;
close all;
A=imread('cameraman.tif');
subplot(2,5,1);
imshow(A);
title('1st Image')
B=imread('rice.png');
subplot(2,5,2);
imshow(B);
title('2nd Image')

C=imadd(A,B);
subplot(2,5,3);
imshow(C);
title('Addition of 2 Images');

D=imsubtract(A,B);
subplot(2,5,4);
imshow(D);
title('Subtraction of 2 Images');

A16=uint16(A);
E=immultiply(A16,A16);
subplot(2,5,5);
imshow(E);
title('Image Multiplication');

F=imdivide(B,2);
subplot(2,5,6);
imshow(F);
title('Image Division');

```

```
G=bitand(A,B);
subplot(2,5,7);
imshow(G);
title('AND Operation');
```

```
H=bitor(A,B);
subplot(2,5,8);
imshow(H);
title('OR Operation');
```

```
I=bitxor(A,B);
subplot(2,5,9);
imshow(I);
title('EXOR Operation');
```

```
J=bitcmp(A);
subplot(2,5,10);
imshow(J);
title('Compliment Operation');
```

---

% EXP 4

```
clc;
clear all;
close all;
I=imread('cameraman.tif');
subplot(1,4,1);
imshow(I);
title('Original Image');
```

```
J=imnoise(I,'salt & pepper',0.02);
subplot(1,4,2);
imshow(J);
title('Noisy Image');
```

```
H=fspecial('Average',[3,3]);
K=imfilter(I,H);
subplot(1,4,3);
imshow(K);
title('Average Filter');
```

```
H1=fspecial('unsharp');
K1=imfilter(I,H1);
subplot(1,4,4);
imshow(K1);
title('Unsharp Filter');
```

---

% EXP 5  
%Local Thresholding

```

clc;
clear all;
close all;
I=imread('cameraman.tif');
[m,n]=size(I);
t=[max(I(:))+min(I(:))]/2;

for i = 1:m
    for j = 1:m;
        if I(i,j)<t
            J(i,j) = 0;
        else
            J(i,j) = 255;
        end
    end
end

subplot(1,2,1);
imshow(I);
title('Original Image');
subplot(1,2,2);
imshow(J);
title('Thresholded Image');
xlabel(['The thresholding value is = ',num2str(t)]);

```

```

%Global Thresholding
T=graythresh(I);
bw=im2bw(I,T);
figure
imshowpair(I,bw,'montage');
title('Global Thresholding using Otsu Method');

```

% Global Thresholding

```

clc;
clear all;
close all;
f=imread('cameraman.tif');
subplot(1,2,1);imshow(f);title('Original Image');
[m,n]=size(f);
count =0;
done=false;
T=mean2(f);

```

```

while ~done
    count = count+1;
    g=f > T;
    Tnext = 0.5*(mean(f(g)) + mean(f(~g)));
    done = abs(T - Tnext)<0.5;
    T=Tnext;
end

```

```
g = im2bw(f,T/255);
subplot(1,2,2);imshow(g);title('Thresholded Image');
subplot(1,2,3);imhist(g);title('Histogram of Thresholded');
xlabel(['Thresolding value = ',num2str(T)]);
```

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```
% EXP 6
% High Pass Filtering
```

```
clc;
clear all;
close all;
A=imread('cameraman.tif');
[m,n]=size(A);
H = ones(m,n);
for i=101:156
    for j=101:156
        H(i,j)=0;
    end
end
```

```
H_f=fftshift(H);
A_f=fft2(A);
B=A_f.*H_f;
C=abs(ifft2(B));
```

```
subplot(2,2,1);
imshow(A);
title('Orignal Image');
```

```
subplot(2,2,2);
imshow(H);
title('2D view of H');
```

```
subplot(2,2,3);
surf(H);
title('3D view of H');
```

```
subplot(2,2,4);
imshow(uint8(C));
title('Image After Aplying Frequency Domain HPF');
```

```
% Low Pass Filtering
```

```
clc;
close all;
clear all;
A=imread('cameraman.tif');
[m,n]=size(A);
H=zeros(m,n);
```

```

for i=101:156
    for j=101:156
        H(i,j)=1;
    end
end

H_f=fftshift(H);
A_f=fft2(A);
B=A_f.*H_f;
C=abs(ifft2(B));

subplot(2,2,1);
imshow(A);
title('Original Image');

subplot(2,2,2);
imshow(H);
title('2D view of H');

subplot(2,2,3);
surf(H);
title('3D view of H');

subplot(2,2,4);
imshow(uint8(C));
title('Image After Aplying Frequency Domain LPF');

```

---

% EXP 7

```

clc;
clear all;
close all;
A=imread('cameraman.tif');
B=edge(A,'sobel');
C=edge(A,'canny');
D=edge(A,'prewitt');

subplot(2,3,1);
imshow(A);
title('Original Image');
subplot(2,3,2);
imshow(B);
title('Edge Detection Using Sobel Method');
subplot(2,3,3);
imshow(C);
title('Edge Detection Using Canny Method');
subplot(2,3,4);
imshow(D);
title('Edge Detection Using Prewitt Method');

```

```
H=fspecial('laplacian');
E=imfilter(A,H);
subplot(2,3,5);
imshow(E);
title('Edge Detection Using Laplacian Method');
```

---

% EXP 8

```
clc;
clear all;
close all;
A=imread('coins.png');
subplot(2,3,1);
imshow(A);
title('Original Image');
```

```
H=strel('disk',15);
```

```
B=imdilate(A,H);
subplot(2,3,2);
imshow(B);
title('Dilated Image');
```

```
C=imerode(A,H);
subplot(2,3,3);
imshow(C);
title('Eroded Image');
```

```
D=imopen(A,H);
subplot(2,3,4);
imshow(D);
title('Opened Image');
```

```
E=imclose(A,H);
subplot(2,3,5);
imshow(E);
title('Closed Image');
```

---

% EXP 9

```
clc;
clear all;
close all;
a=VideoReader('earth.mp4');
nf=a.NumberOfFrames;
for img = 1:nf
    filename = strcat('Frame',num2str(img),'.jpg');
    b=read(a,img);
```

```
    imwrite(b,filename);  
end
```

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