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Image Processing Practicals

Instructions:-

Install Scilab

In Scilab Console

Application menu-> Module Manager- ATOMS

Select Image Processing

Select Image Processing and Computer Vision Toolbox

Click on Install

Practical 1:- Program to calculate number of samples required for an image

Program:-

```
clc;
clear;
m=4;
n=6;
N=400;
N2=2*N;
Fs=m*N2*n*N2;
disp('Number of samples required to preserve the information in the image = ',Fs);
```

Output:-

Number of samples required to preserve the information in the

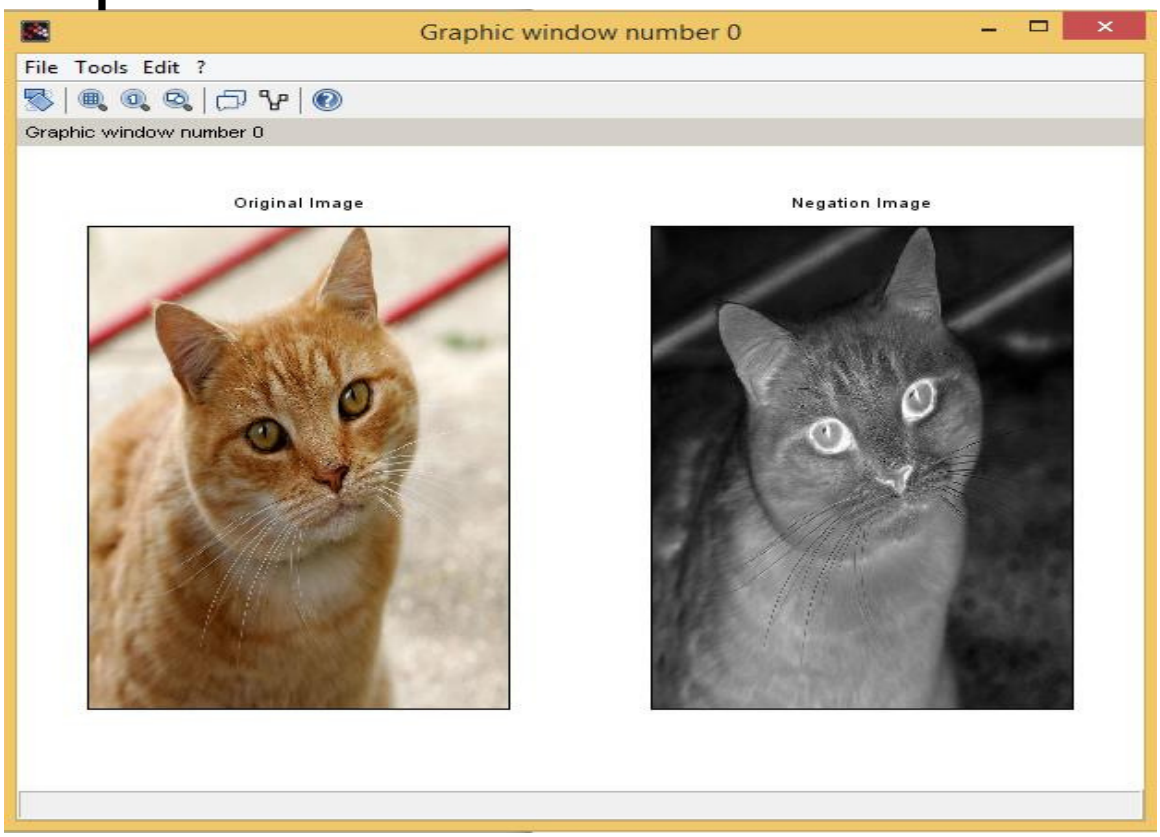
image
=15360000.

Practical 2:- Program to perform image

negation Program:-

```
//Practical 2 - Program to perform image negation
clc;
clear all;
a=imread('G:\RAFATKHAN\Data\MScIT\ImageProcessing\Practical\Practicals
\cat.jpg');
subplot(1,2,1);
imshow(a);
title('Original Image');
[m,n]=size(a);
for i=1:m
for j=1:n
c(i,j)=255-a(i,j)
end
end
subplot(1,2,2);
imshow(c);
title('Negation Image');
```

Output:-

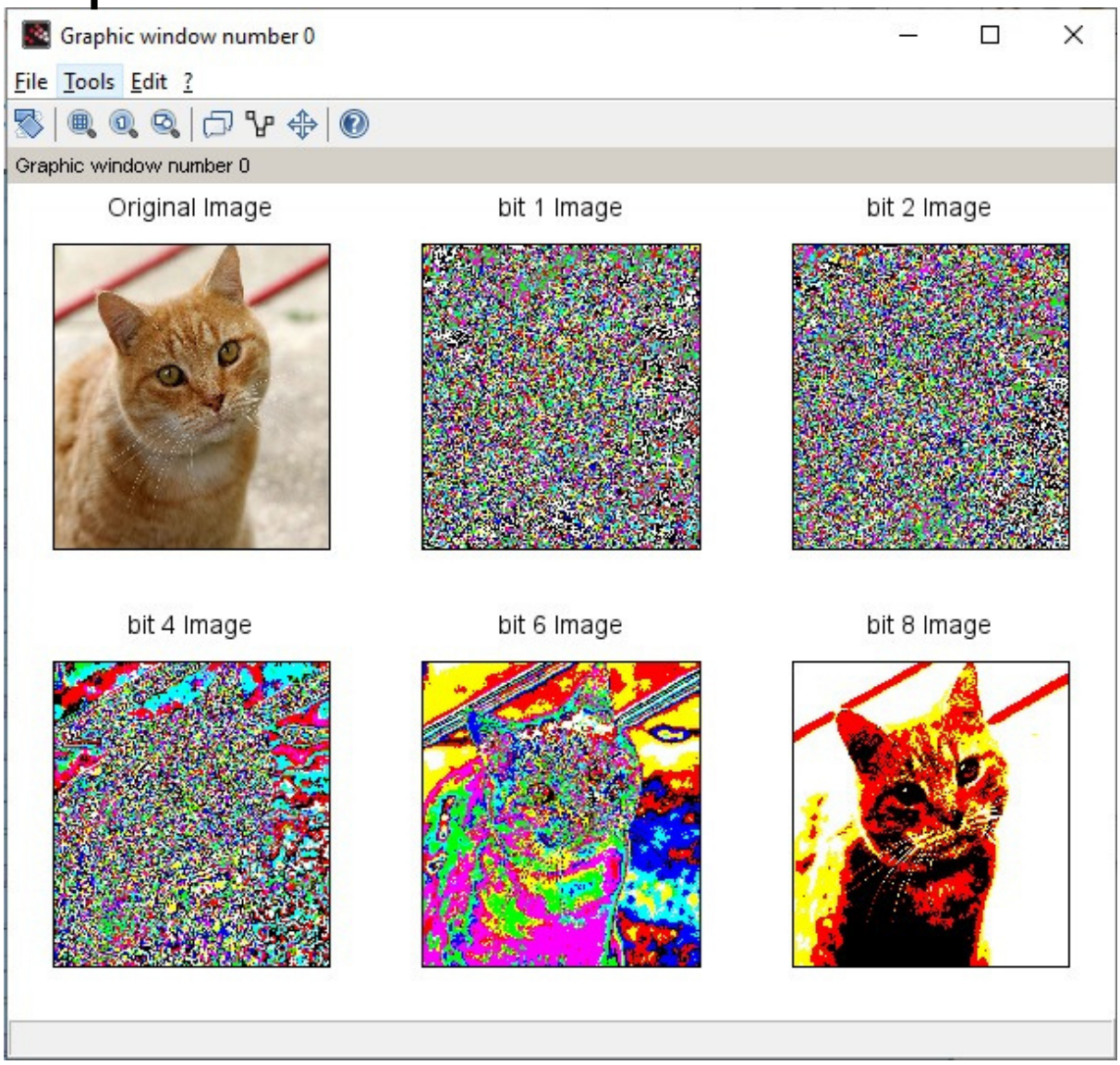


Practical 3:- Program to perform Piecewise Linear Transformations- Bit Plane Slicing

Program:-

```
clc;
clear all;
a=imread('G:\RAFATKHAN\Data\MScIT\ImageProcessing\Practical\Practicals
\cat.jpg');
b=double(a);
subplot(2,3,1);
imshow(a);
title('Original Image');
f1=bitget(b,1);
subplot(2,3,2);
imshow(f1);
title('bit 1 Image');
f2=bitget(b,2);
subplot(2,3,3);
imshow(f2);
title('bit 2 Image');
f3=bitget(b,4);
subplot(2,3,4);
imshow(f3);
title('bit 4 Image');
f4=bitget(b,6);
subplot(2,3,5);
imshow(f4);
title('bit 6 Image');
f5=bitget(b,8);
subplot(2,3,6);
imshow(f5);
title('bit 8 Image');
```

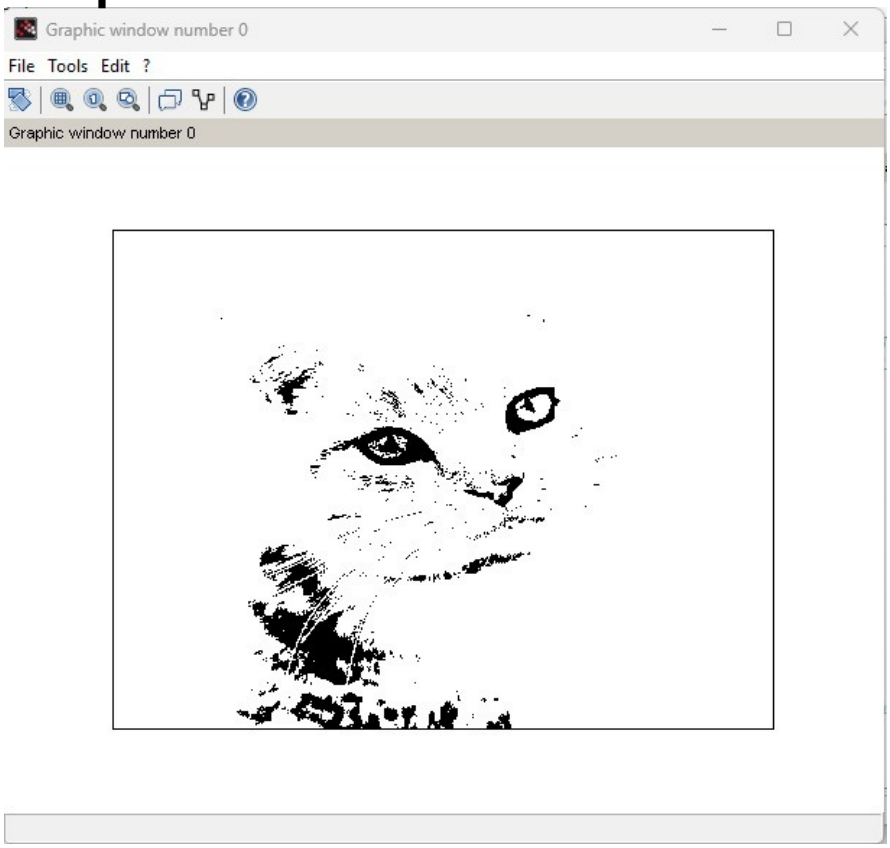
Output:-


Graphic window number 0
File Tools Edit ?
Graphic window number 0
Original Image
bit 1 Image
bit 2 Image
bit 4 Image
bit 6 Image
bit 8 Image

Practical 4 – Program to perform threshold of an image Program:-

```
a=uigetfile('*.*','Select the Image:-'); a=imread(a);
T=100; //threshold value
[r,c]=size(a);
for i=1:r
for j=1:c
if (a(i,j)<=T)
x(i,j)=0;
else
x(i,j)=255;
end
end
end
x=uint8(x);
imshow(x);
```

Output:-

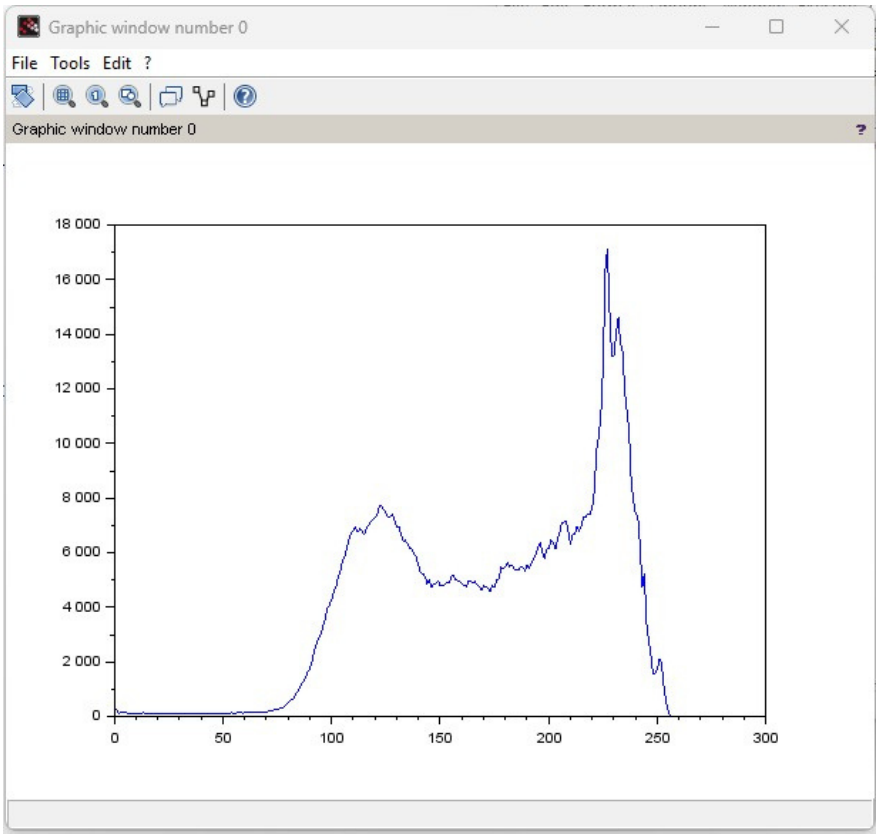


Practical 5- Program to plot the histogram of an image and categorise

Program:-

```
a=uigetfile('*.*','Select the Image:-'); a=imread(a);
r=size(a,1);
c=size(a,2);
h=zeros(1,256);
for i=1:r
for j=1:c
if (a(i,j)==0)
a(i,j)=1;
end
k=a(i,j);
h(k)=h(k)+1;
end
end
plot(h);
```

Output:-



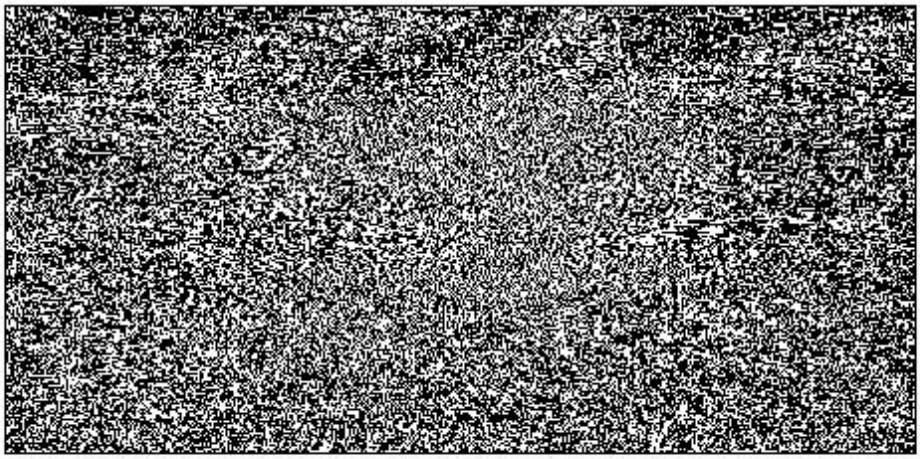
Practical 6- Program to apply Laplacian filter in frequency domain

Program:-

```
// Program to apply Laplacian filter in frequency domain
a=uigetfile('*.*','Select the Image:-');
I=imread(a);
Ir = double(I);
mask_laplaciano = [0 -1 0; -1 4 -1; 0 -1 0];
Irl = conv2(mask_laplaciano, Ir);
subplot(221);
subplot(211);
imshow(I);
subplot(212);
imshow(Irl);
```

Output:-


Graphic window number 0
File Tools Edit ?
Graphic window number 0

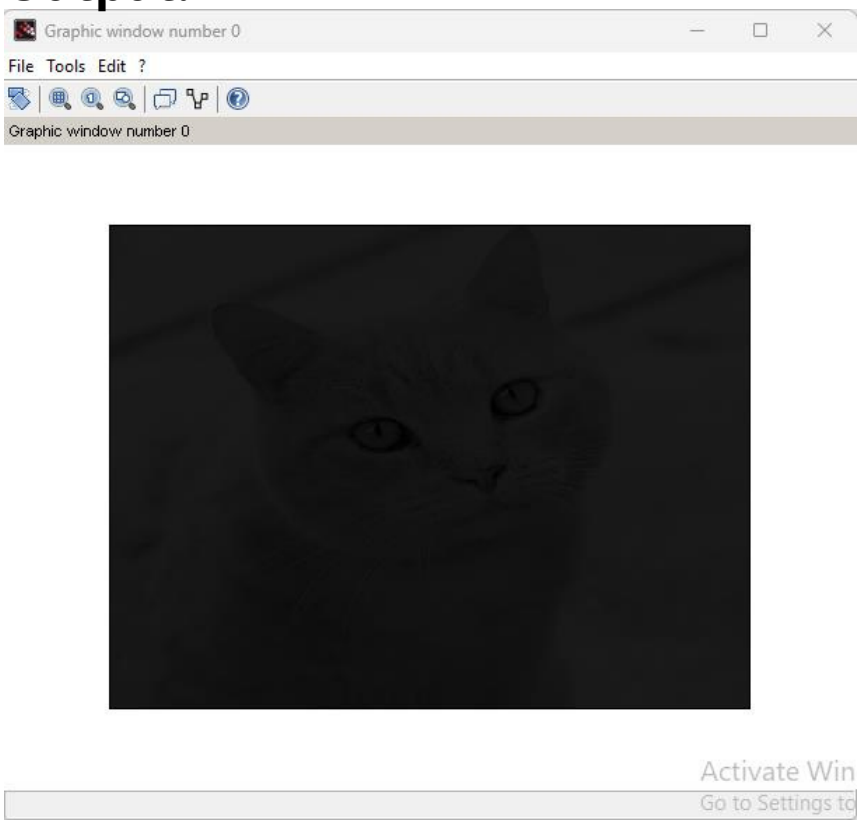


Practical 7- Program to perform Power Law Transformation

Program:-

```
//Power Low Transformation
a=uigetfile('*.*','Select the Image:-');
a=imread(a);
r=size(a,1);
c=size(a,2);
G=0.6;
//G=input('Enter the value of Gamma:-');
for i=1:r
for j=1:c
b=double(a(i,j));
x(i,j)=b.^G;
end
end
new=x;
new1=uint8(new);
imshow(new1);
```

Output:-

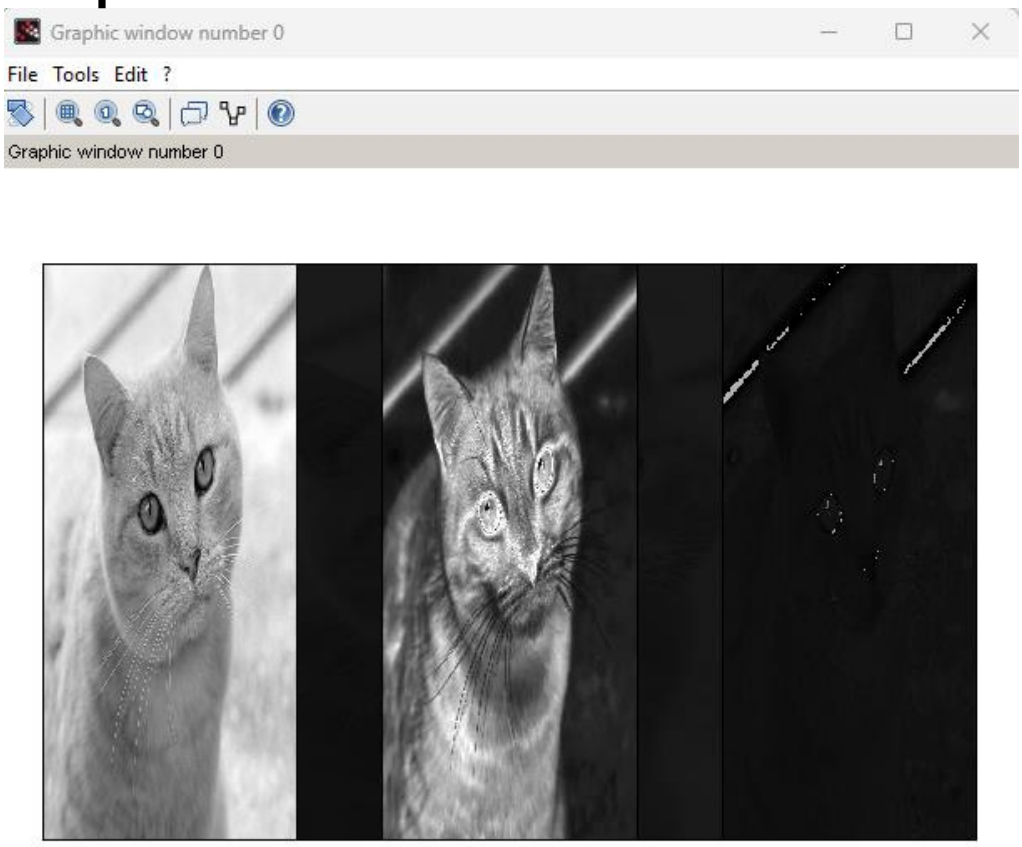


Practical 8:- Program for converting from one color model to another model

Program:-

```
a=uigetfile('*.*','Select the Image:-
'); I=imread(a);
HSV = rgb2hsv(I);
hue = HSV(:,:,1);
sat = HSV(:,:,2);
value = HSV(:,:,3);
subplot(131);
imshow(hue);
subplot(132);
imshow(sat);
subplot(133);
imshow(value);
```

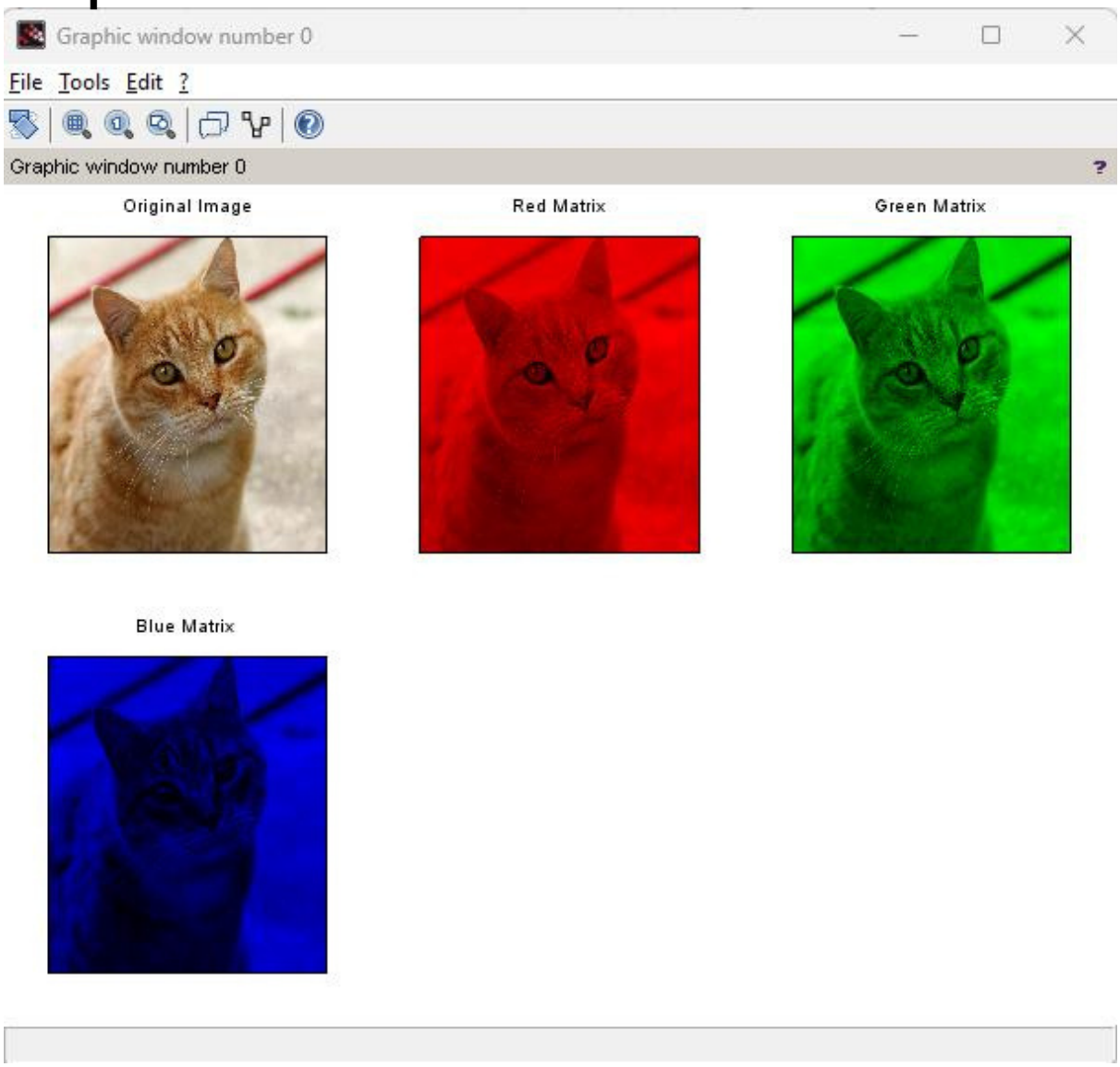
Output:-



Practical 9:- Program to demonstrate color separations Program:-

```
a=uigetfile('*.*','Select the Image:-
'); I=imread(a);
subplot(2,3,1);
imshow(I);
title('Original Image');
R=I
R(:, :, [2 3])=0;
subplot(2,3,2);
imshow(R);
title('Red Matrix');
G=I
G(:, :, [1 3])=0;
subplot(2,3,3);
imshow(G);
title('Green Matrix');
B=I
B(:, :, [1 2])=0;
subplot(2,3,4);
imshow(B);
title('Blue Matrix');
```

Output:-


Graphic window number 0
File Tools Edit ?
Graphic window number 0
Original Image
Red Matrix
Green Matrix
Blue Matrix