Practical 8

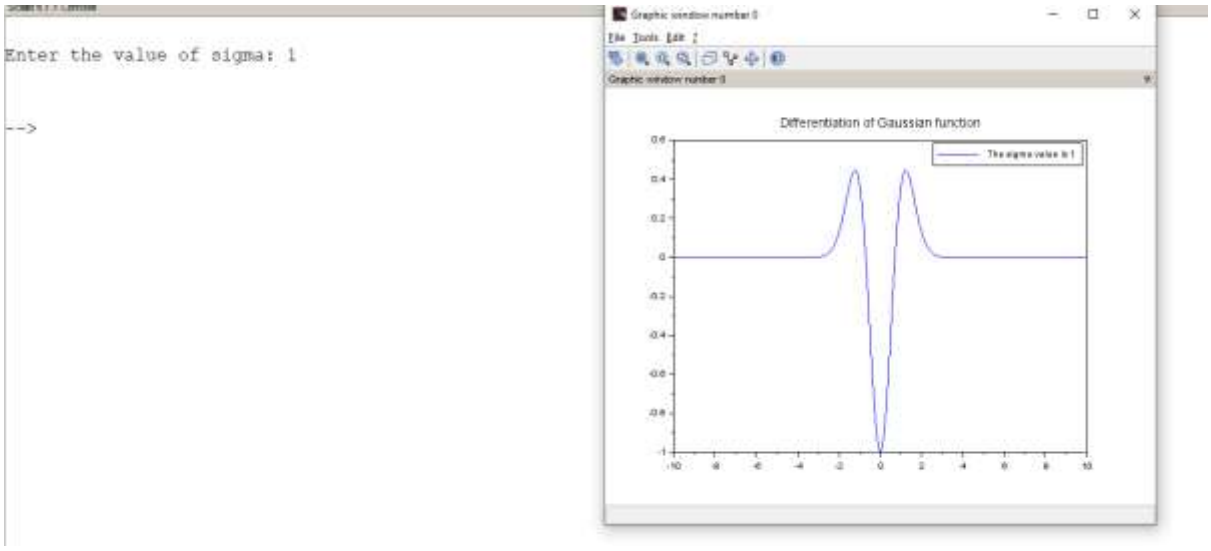
Aim: Image Segmentation

a.Differentiation of Gaussian Function

Code:

```
clc;
close;
sigma=input("Enter the value of sigma: ")
i = -10:.1:10;
j = -10:.1:10;
r = sqrt(i.*i+j.*j);
y=(1/(sigma^2))*(((r.*r)/sigma^2)-1).*exp(-r.*r/2*sigma^2);
plot(i,y)
legend(sprintf("The sigma value is %g",sigma));
xtitle("Differentiation of Gaussian function")
```

Output:



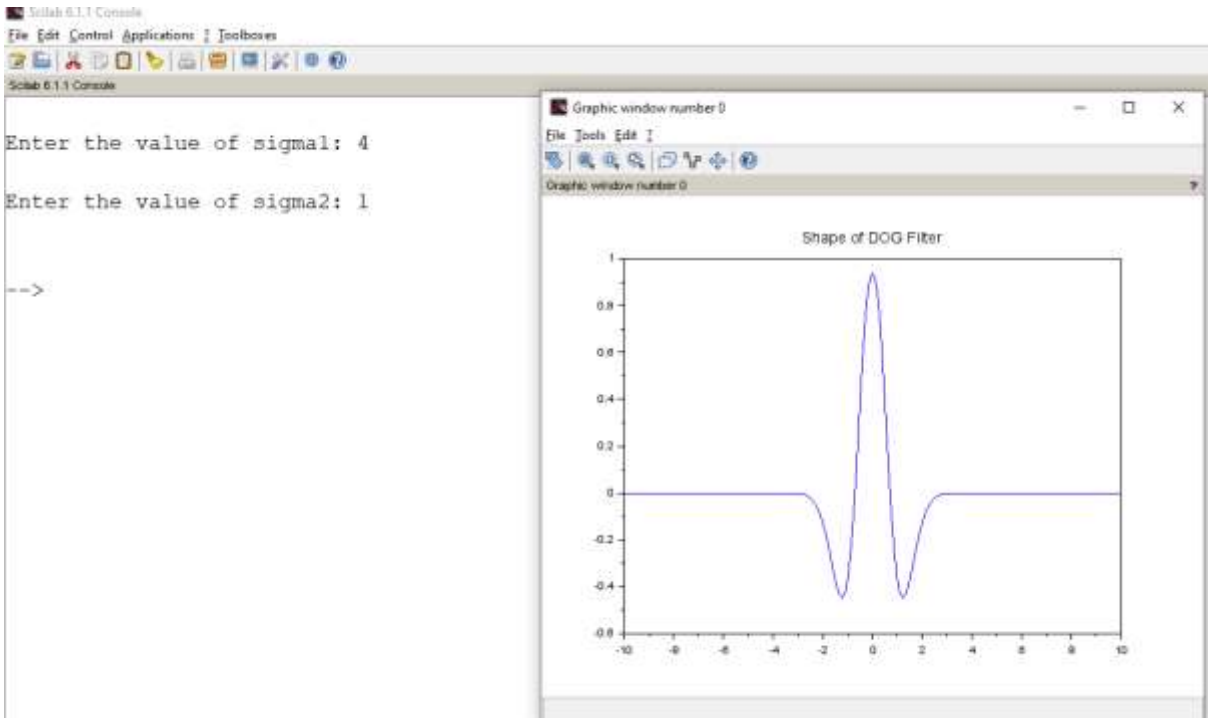
b. Differentiation of Gaussian Filter Function

Code:

```
clc;
close;
sigma1=input("Enter the value of sigma1: ")
```

```
sigma2=input("Enter the value of sigma2: ")
i = -10:.1:10;
j = -10:.1:10;
r = sqrt(i.*i+j.*j);
y1=(1/(sigma1^2))*(((r.*r)/sigma1^2)-1).*exp(-r.*r/2*sigma1^2);
y2=(1/(sigma2^2))*(((r.*r)/sigma2^2)-1).*exp(-r.*r/2*sigma2^2);
y=y1-y2
plot(i,y)
xtitle("Shape of DOG Filter")
```

Output:



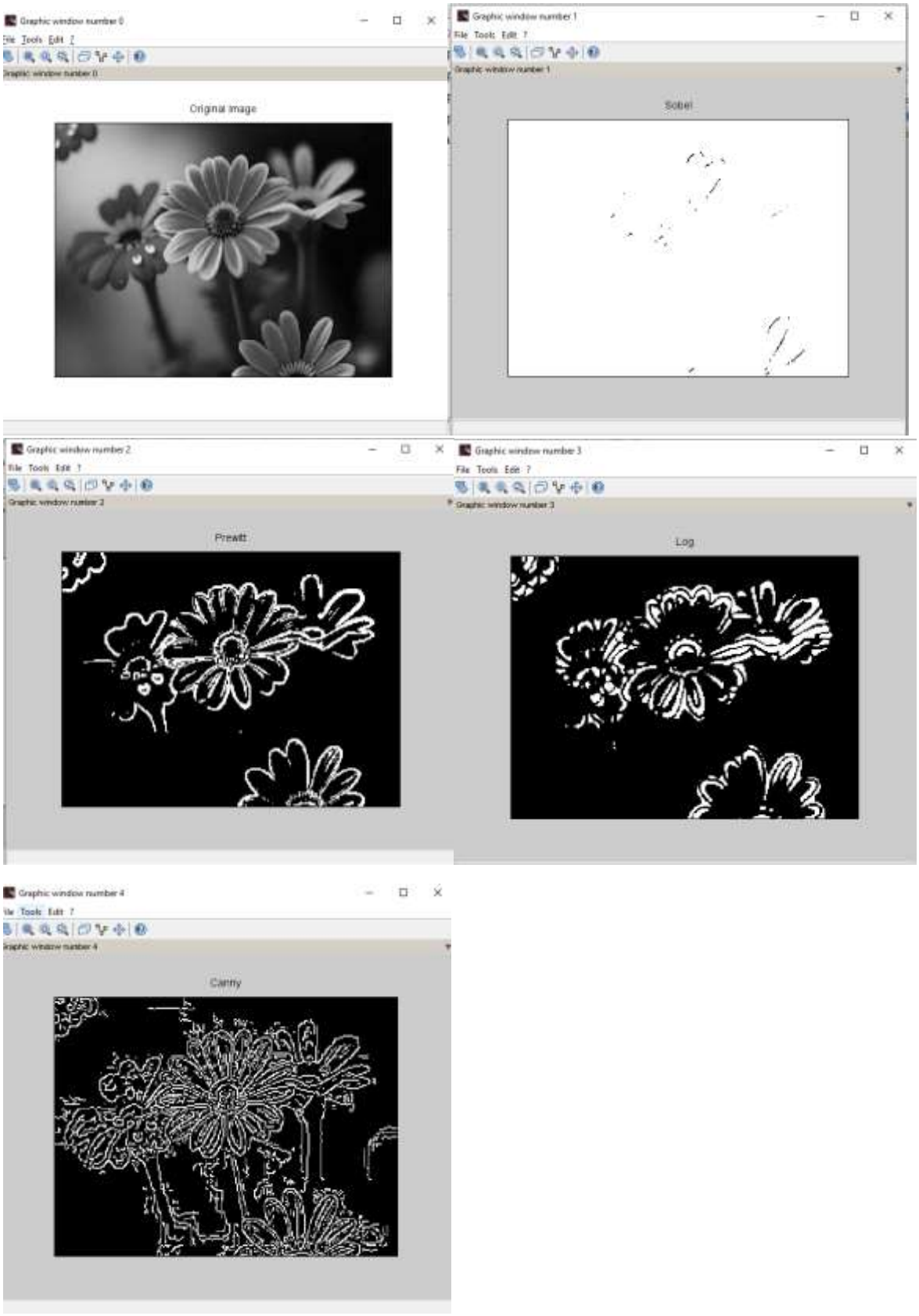
c. Edge detection using different edge detectors

Code:

```
clc;
close;
a = imread("C:\Users\admin\Desktop\f1.jpg");
a_gray = rgb2gray(a);
```

```
c = edge(a_gray, 'sobel');
d = edge(a_gray, 'prewitt');
e = edge(a_gray, 'log');
f = edge(a_gray, 'canny');
imshow(a_gray);
title("Original Image");
figure;
imshow(c);
title("Sobel");
figure;
imshow(d);
title("Prewitt");
figure;
imshow(e);
title("Log");
figure;
imshow(f);
title("Canny");
```

Output:


Graphic window number 0
Original Image
Graphic window number 1
Sobel
Graphic window number 2
Prewitt
Graphic window number 3
Log
Graphic window number 4
Canny