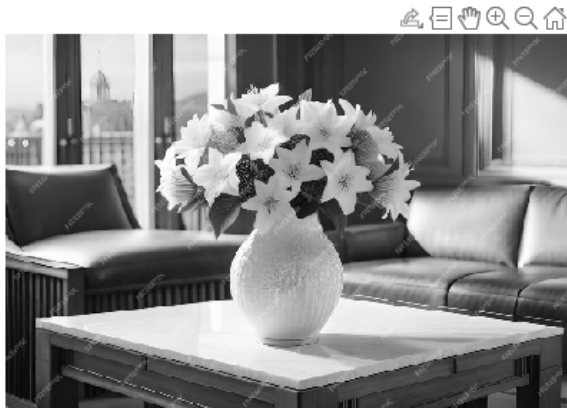


```
vase_image=imread("Digital Image Processing/Assignment 2/vase.jpg");
gray_vase_image=rgb2gray(vase_image);
roi_mask=roipoly(gray_vase_image); %creates binary mask
```



```
roi_image = gray_vase_image .* uint8(roi_mask); % Apply binary mask to
grayscale image
figure, imshow(roi_image); % Displaying the masked region
title('ROI Mask Applied');
```



```
%Gaussian Filtering (Low Pass)
```

```
gaussian_filter = fspecial('gaussian',[11 11], 11); %creating 11x11 gaussian
filter with sigma 11
%applying 2 times just for my understanding
```

```

gaussian_filtered_image = roifilt2(gaussian_filter,
gray_vase_image,roi_mask); %applying filter to the ROI in gray image
gaussian_filtered_image2 = roifilt2(gaussian_filter, roi_image,roi_mask);
%applying filter to the ROI applied image
imshow(gaussian_filtered_image);
title('Gaussian Filtered Image')

```

**Gaussian Filtered Image**



```

imshow(gaussian_filtered_image2);
title('Gaussian Filtered Image2')

```

**Gaussian Filtered Image2**



```

%Average Filtering (Low Pass)

```

```

average_filter = fspecial ('average', 20);
average_filtered_image = roifilt2(average_filter, roi_image, roi_mask);
imshow(average_filtered_image);
title('Average Filtered Image');

```

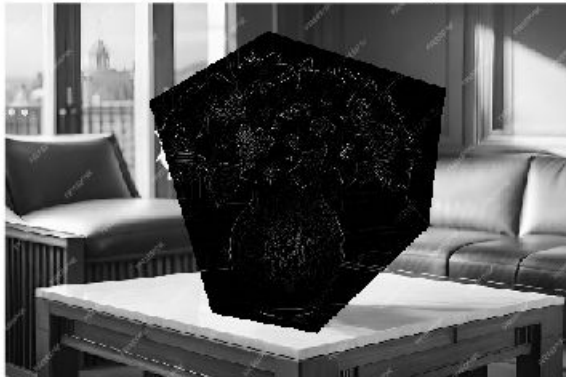
**Average Filtered Image**



```
%Laplacian Filtering (High Pass)
```

```
laplacian_filter = fspecial('Laplacian');  
laplacian_filtered_image = roifilt2(laplacian_filter,  
gray_vase_image,roi_mask);  
imshow(laplacian_filtered_image);  
title('Laplacian Filtered Image');
```

**Laplacian Filtered Image**



```
%Prewitt Filter (Hig Pass)
```

```
prewitt_filter = fspecial('prewitt');  
prewitt_filtered_image = roifilt2(prewitt_filter, gray_vase_image, roi_mask);  
imshow(prewitt_filtered_image);  
title('Prewitt Filtered Image');
```

**Prewitt Filtered Image**



```
export('Digital Image Processing/Assignment 2/question1.mlx')
```