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Experiment 4: Image Morphing

```
# Display the given color and grayscale image
import cv2
from google.colab.patches import cv2_imshow
import numpy as np
import matplotlib.pyplot as plt
im=cv2.imread('/content/Lenna_(test_image) (1).png')
lane_image = np.copy(im)
gray = cv2.cvtColor(lane_image, cv2.COLOR_RGB2GRAY)

cv2_imshow(im)
cv2_imshow(gray)
```

```
# output image obtained after canny edge detection
canny_img=cv2.Canny(gray,150,200)
cv2_imshow(canny_img)
```

```
# Output image after dilation
kernel=np.ones((3,3),np.uint8)
dilate_img=cv2.dilate(canny_img, kernel, iterations=1 )
print(kernel)
cv2_imshow(dilate_img)
```

```
[[1 1 1]
 [1 1 1]
 [1 1 1]]
```

```
# Output image after erosion
kernel=np.ones((3,3),np.uint8)
erode_img=cv2.erode(dilate_img, kernel, iterations=1 )
print(kernel)
cv2_imshow(erode_img)
```

```
[[1 1 1]
 [1 1 1]
 [1 1 1]]
```

```
# Output image after opening
open_img=cv2.dilate(erode_img,kernel,iterations=1)
cv2_imshow(open_img)
```

```
# Output image after closing
close_img=cv2.erode(dilate_img,kernel,iterations=1)
cv2_imshow(close_img)
```

```
# Output image after boudary extraction
boundary_img= canny_img - erode_img
boundary_img=boundary_img*255
cv2_imshow(boundary_img)
```