```
from google.colab import drive
drive.mount('/content/drive')
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mou
```

```
import cv2 as cv
import numpy as np
import matplotlib.pyplot as plt
from google.colab.patches import cv2_imshow
from skimage.draw import disk
from skimage.morphology import (erosion, dilation, opening, closing, area_closing, area_openi
```

```
img = cv.imread('/content/drive/MyDrive/Colab Notebooks/images/nature1.jpg',0)
cv2_imshow(img)
img.shape
```

```
(410, 728)
```

```
np.mean(img)
```

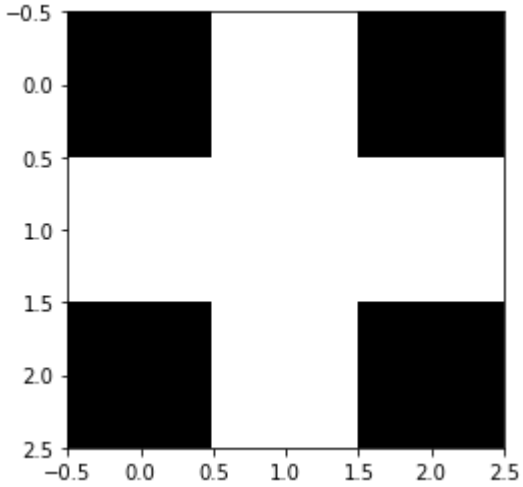
```
115.47419257571697
```

```
ret,thresh1 = cv.threshold(img,np.mean(img),255,cv.THRESH_BINARY_INV)
cv2_imshow(thresh1)
```

Mask Create

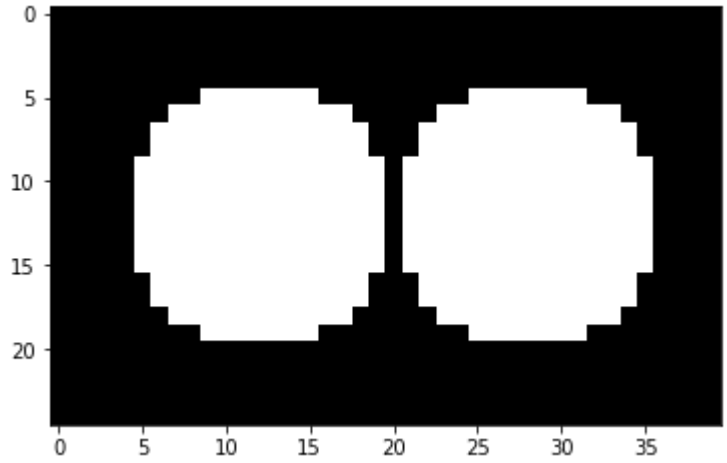
```
elements = np.array([[0,1,0],[1,1,1],[0,1,0]])
plt.imshow(elements, cmap='gray')
```

```
<matplotlib.image.AxesImage at 0x7f7811b10810>
```



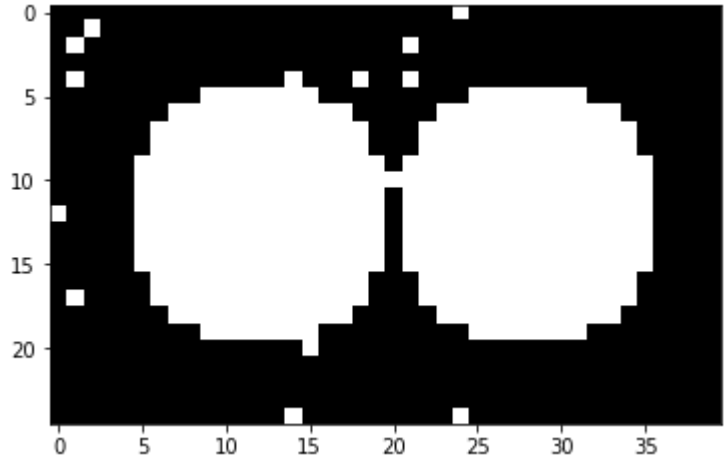

```
circle_image = np.zeros((25, 40))
circle_image[disk((12, 12), 8)] = 1
circle_image[disk((12, 28), 8)] = 1
plt.imshow(circle_image,cmap="gray")
```

```
<matplotlib.image.AxesImage at 0x7f7811a7c350>
```



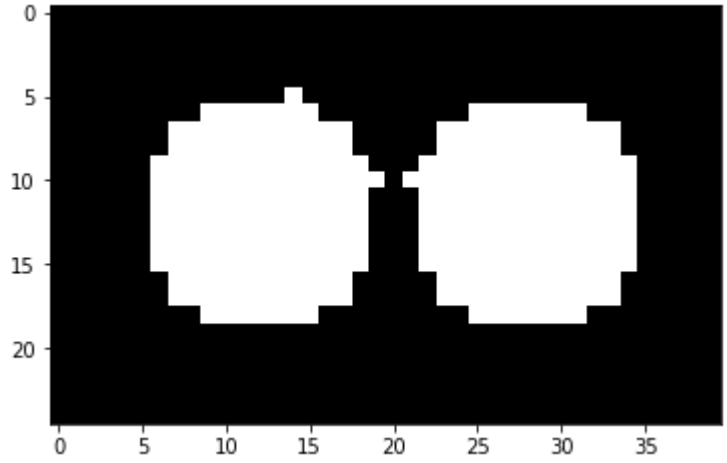
```
for x in range(20):
  circle_image[np.random.randint(25),np.random.randint(25)]=1
plt.imshow(circle_image,cmap="gray")
```

```
<matplotlib.image.AxesImage at 0x7f78119dab50>
```



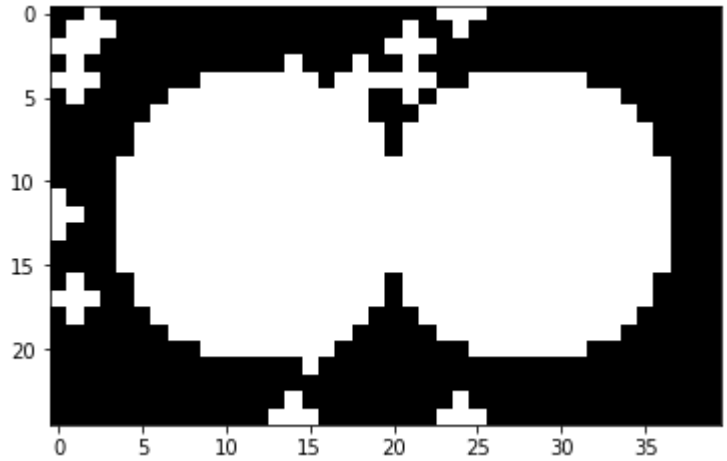
```
ero_img = erosion(circle_image, elements)
plt.imshow(ero_img, cmap='gray')
```

```
<matplotlib.image.AxesImage at 0x7f7802bd0e10>
```



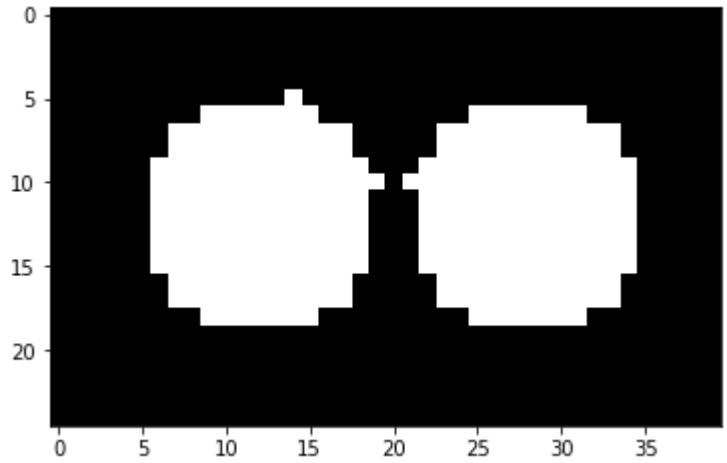
```
dila_img = dilation(circle_image, elements)
plt.imshow(dila_img, cmap='gray')
```

```
<matplotlib.image.AxesImage at 0x7f781afcb550>
```



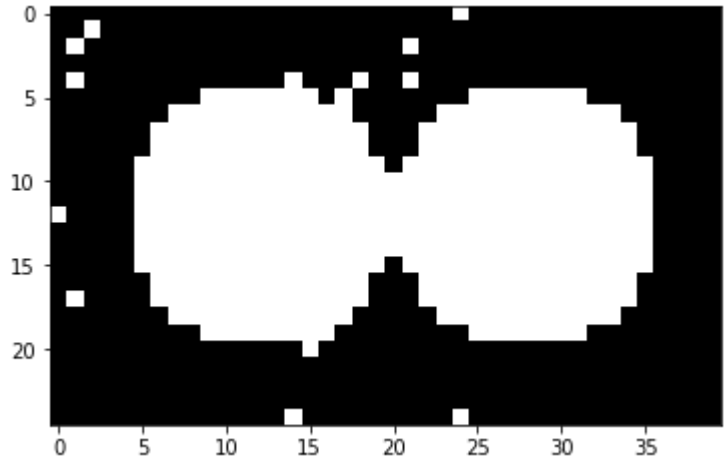

```
c
```

```
<matplotlib.image.AxesImage at 0x7f7802b5c310>
```




```
close_img = closing(circle_image, elements)
plt.imshow(close_img, cmap='gray')
```

```
<matplotlib.image.AxesImage at 0x7f7802aca1d0>
```



✓ 0s completed at 5:19 PM

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