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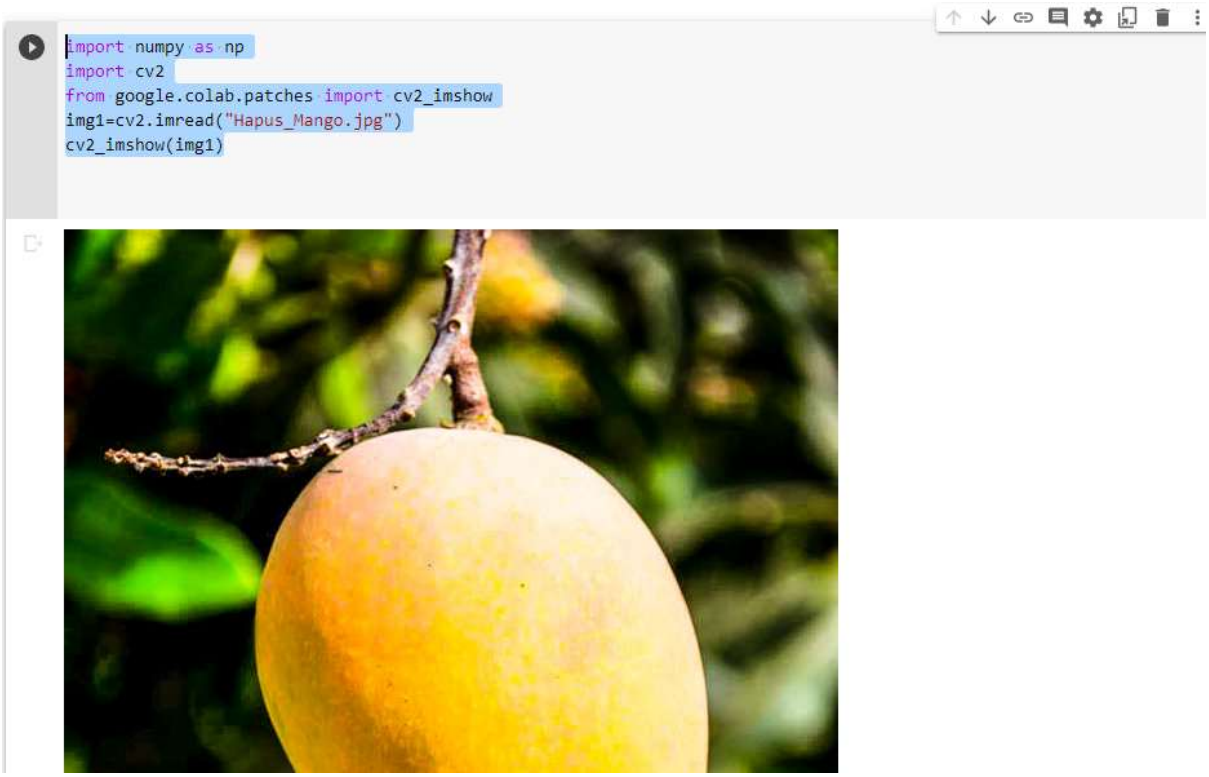
ROLL NO : 02

LAB 2 Exercises

```
import numpy as np
import cv2
from google.colab.patches import cv2_imshow
img1=cv2.imread("Hapus_Mango.jpg")
cv2_imshow(img1)
```




```
red=img1[:,:,0]
cv2_imshow(red)
```

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```
red=img1[:,:,0]
cv2_imshow(red)
```

```
green=img1[:,:,1]
cv2_imshow(green)
```

```
green=img1[:,:,1]
cv2_imshow(green)
```

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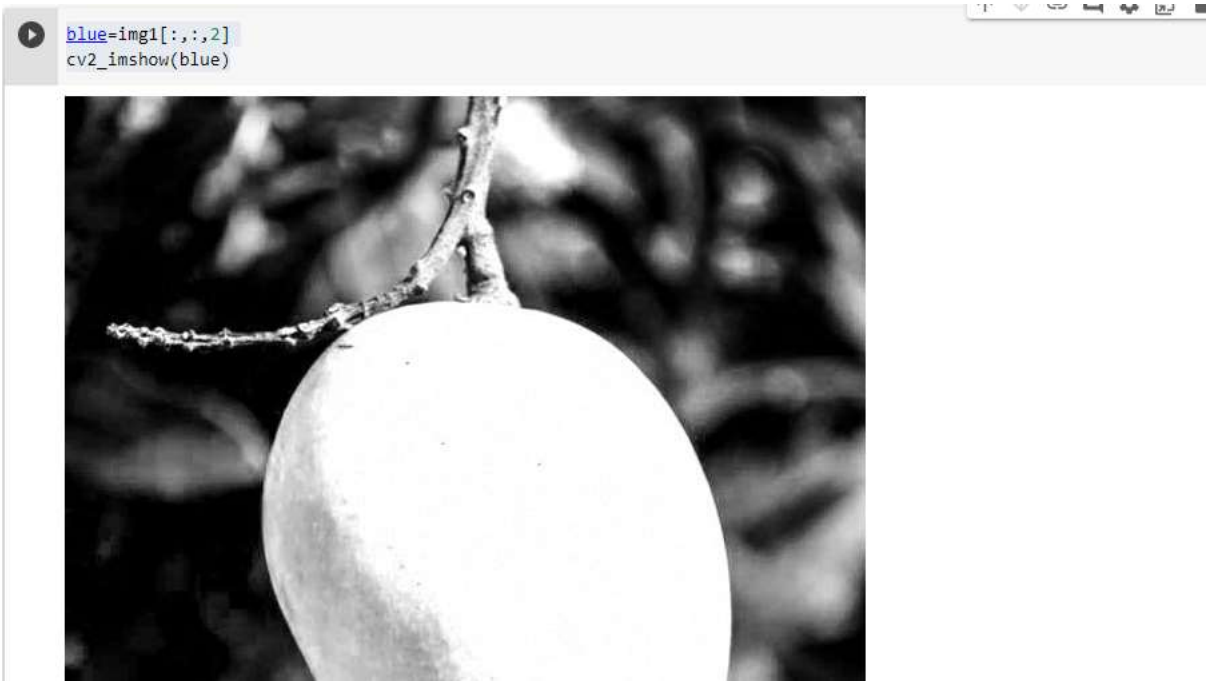
```
blue=img1[:,:,2]
cv2_imshow(blue)
```




```
plt.subplot(141)
plt.title("Original Image")
plt.xticks([]),plt.yticks([])
plt.imshow(img1)


plt.subplot(142)
plt.title("red")
plt.xticks([]),plt.yticks([])
plt.imshow(red)
```

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```
plt.subplot(141)
plt.title("Original Image")
plt.xticks([]),plt.yticks([])
plt.imshow(img1)
```

```
<matplotlib.image.AxesImage at 0x7f526a738590>
```


```
[9] plt.subplot(142)
    plt.title("red")
    plt.xticks([]),plt.yticks([])
    plt.imshow(red)
```

```
<matplotlib.image.AxesImage at 0x7f526a717e10>
```


```
plt.subplot(143)
plt.title("green")
plt.xticks([]),plt.yticks([])
plt.imshow(green)


plt.subplot(144)
plt.title("blue")
plt.xticks([]),plt.yticks([])
plt.imshow(blue)
```

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```
[10] plt.subplot(143)
     plt.title("green")
     plt.xticks([]),plt.yticks([])
     plt.imshow(green)
```

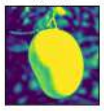
```
<matplotlib.image.AxesImage at 0x7f526a295cd0>
```

green

```
plt.subplot(144)
plt.title("blue")
plt.xticks([]),plt.yticks([])
plt.imshow(blue)
```

```
<matplotlib.image.AxesImage at 0x7f526a827590>
```

blue



```
import cv2
from google.colab.patches import cv2_imshow
img2 =cv2.imread("Hapus_Mango.jpg")
rgb_image=cv2.cvtColor(img2,cv2.COLOR_BGR2RGB)
cv2_imshow(rgb_image)
```


```
import cv2
from google.colab.patches import cv2_imshow
img2 =cv2.imread("Hapus_Mango.jpg")
rgb_image=cv2.cvtColor(img2,cv2.COLOR_BGR2RGB)
cv2_imshow(rgb_image)
```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```
import cv2
import numpy as np
img2= cv2.imread("Hapus_Mango.jpg")
img2.shape
cropped = img2[10:100,10:150]
cv2_imshow(cropped)
```


```
import numpy as np
from google.colab.patches import cv2_imshow
img2=cv2.imread("Hapus_Mango.jpg")
cv2_imshow(img2)
img2=img2+100
cv2_imshow(img2)
```

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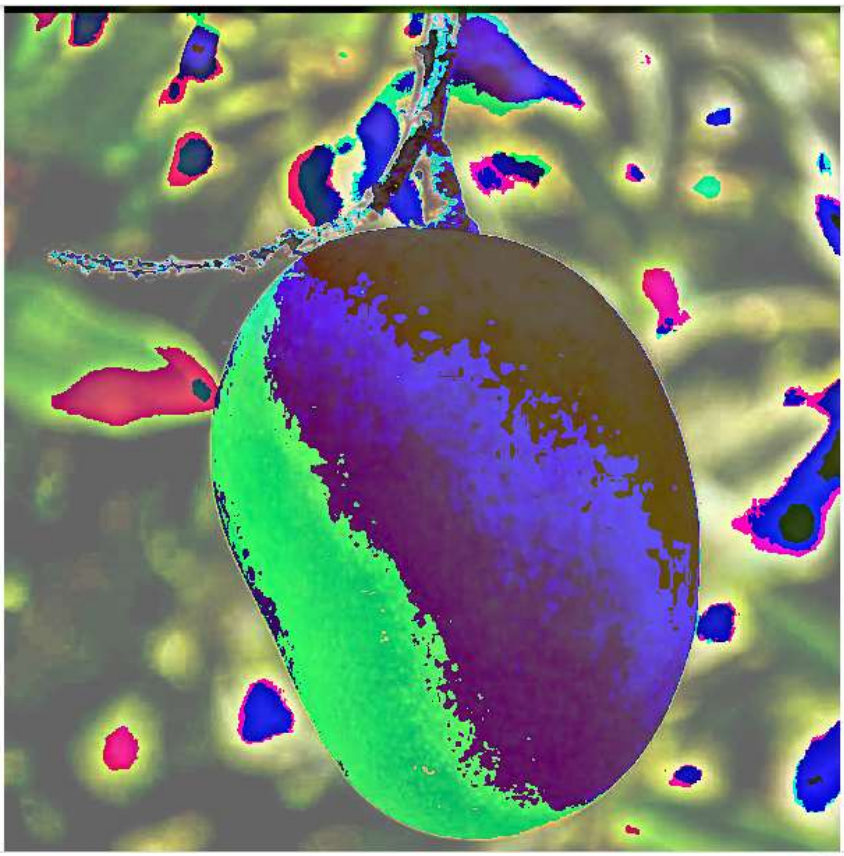
+ Code + Text

```
import numpy as np
from google.colab.patches import cv2_imshow
img2=cv2.imread("Hapus_Mango.jpg")
cv2_imshow(img2)
img2=img2+100
cv2_imshow(img2)
```

+ Code + Text



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```
import numpy as np
import cv2
from google.colab.patches import cv2_imshow
img1=cv2.imread("blackandwhite.jpg")
cv2_imshow(img1)
neg=255-img1
cv2_imshow(neg)
```

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```
import numpy as np
import cv2
from google.colab.patches import cv2_imshow
img=cv2.imread("blackandwhite.jpg")
cv2_imshow(img)

c=255/(np.log(1+np.max(img)))
img_log=c*np.log(1+img)

img_log=np.array(img_log,dtype=np.uint8)

cv2_imshow(img_log)
```

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```
import numpy as np
import cv2
from google.colab.patches import cv2_imshow
img1=cv2.imread("blackandwhite.jpg")
cv2_imshow(img1)


im1=np.array(255*(img1/255) **0.6,dtype='uint8')

cv2_imshow(im1)
```

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```
import numpy as np
import cv2
from google.colab.patches import cv2_imshow
img1=cv2.imread("blackandwhite.jpg")
cv2_imshow(img1)


im1=np.array(255*(img1/255) **0.6,dtype='uint8')

cv2_imshow(im1)
```

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```
height, width,_=img2.shape
for i in range(0,height-1):
  for j in range(0,width-1):
    pixel=img2[i,j]
    #Negate each channel by subtrating it from 255
    #1st index contains red pixel
    pixel[0]=255-pixel[0]
    #2nd index contains green pixel
    pixel[1]=255-pixel[1]
    #3rd index contains blue pixel
    pixel[2]=255-pixel[2]
    #store new values in the pixel
    img2[i,j]=pixel
```

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```
#Display the negative transformed image
plt.imshow(img2)
plt.show()
```


```
import cv2
from google.colab.patches import cv2_imshow
img=cv2.imread("card.jpg",0)
retval,threshold=cv2.threshold(img,62,255,cv2.THRESH_BINARY)
cv2_imshow( img)
cv2_imshow(threshold)
```

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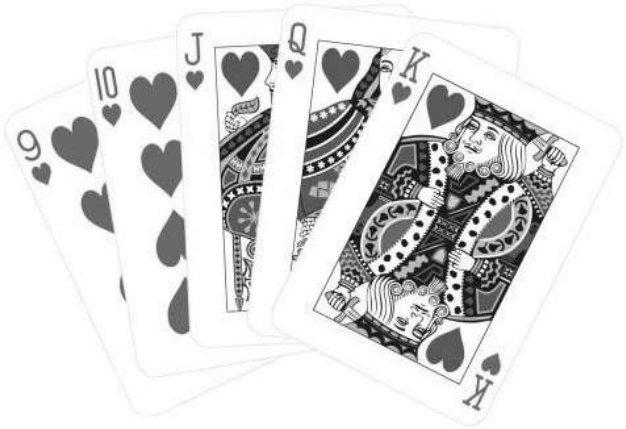
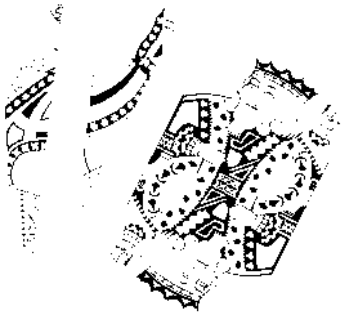
```
import cv2
from google.colab.patches import cv2_imshow
img=cv2.imread("card.jpg",0)
retval,threshold=cv2.threshold(img,62,255,cv2.THRESH_BINARY)
cv2_imshow( img)
cv2_imshow(threshold)
```





```
thresh=127
maxValue=255
th,dst=cv2.threshold(img,thresh,maxValue,cv2.THRESH_TRUNC);
plt.imshow(dst,cmap='gray')
plt.axis('off')
plt.show()
```

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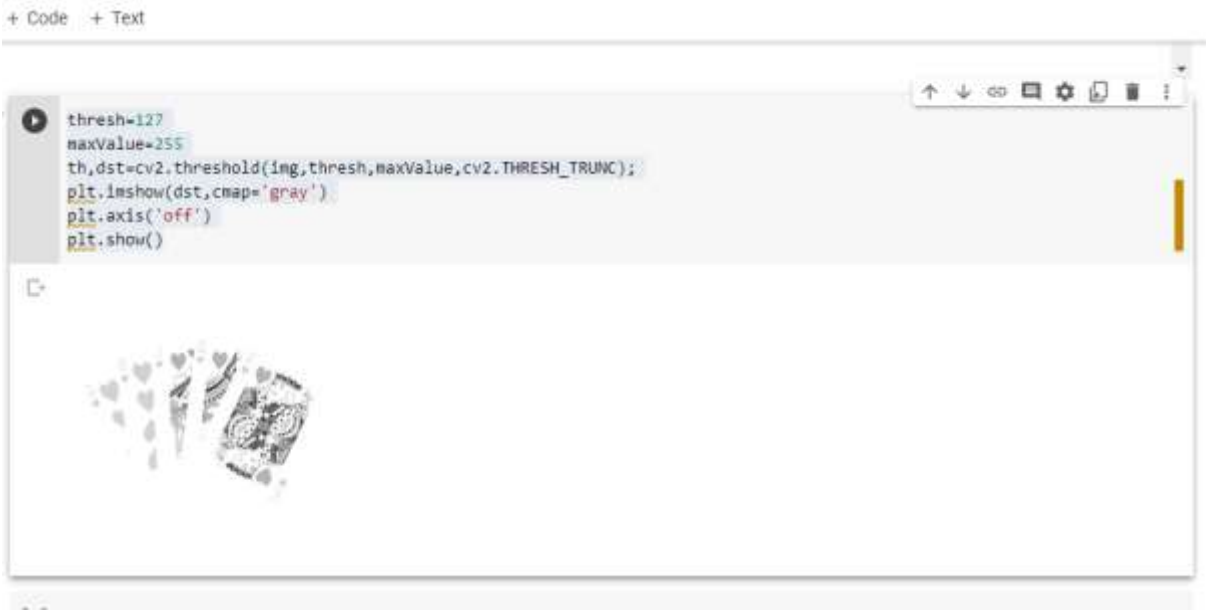


```
image=cv2.imread("light.jfif")
#to convert the image in greyscale
img=cv2.cvtColor(image,cv2.COLOR_BGR2GRAY)
ret,th1=cv2.threshold(img,160,255,cv2.THRESH_BINARY)
th2=cv2.adaptiveThreshold(img,255,cv2.ADAPTIVE_THRESH_MEAN_C,cv2.THRESH
_BINARY,11,2)
th3=cv2.adaptiveThreshold(img,255,cv2.ADAPTIVE_THRESH_GAUSSIAN_C,cv2.TH
RESH_BINARY,11,2)
plt.subplot(141)
plt.title("Original Image")
plt.xticks([]),plt.yticks([])
plt.imshow(img,cmap='gray')
plt.subplot(142)
plt.title("binary")
plt.xticks([]),plt.yticks([])
plt.imshow(th1,cmap='gray')
plt.subplot(143)
plt.title("Mean Image")
plt.xticks([]),plt.yticks([])
plt.imshow(th2,cmap='gray')
plt.subplot(144)
plt.title("Gaussian Image")
plt.xticks([]),plt.yticks([])
plt.imshow(th3,cmap='gray')
```

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```
image=cv2.imread("light.jfif")
#to convert the image in greyscale
img=cv2.cvtColor(image,cv2.COLOR_BGR2GRAY)
ret,th1=cv2.threshold(img,100,255,cv2.THRESH_BINARY)
th2=cv2.adaptiveThreshold(img,255,cv2.ADAPTIVE_THRESH_MEAN_C,cv2.THRESH_BINARY,11,2)
th3=cv2.adaptiveThreshold(img,255,cv2.ADAPTIVE_THRESH_GAUSSIAN_C,cv2.THRESH_BINARY,11,2)
plt.subplot(141)
plt.title("Original Image")
plt.xticks([]),plt.yticks([])
plt.imshow(img,cmap='gray')
plt.subplot(142)
plt.title("binary")
plt.xticks([]),plt.yticks([])
plt.imshow(th1,cmap='gray')
plt.subplot(143)
plt.title("Mean Image")
plt.xticks([]),plt.yticks([])
plt.imshow(th2,cmap='gray')
plt.subplot(144)
plt.title("Gaussian Image")
plt.xticks([]),plt.yticks([])
plt.imshow(th3,cmap='gray')
```

```
<matplotlib.image.AxesImage at 0x7f52699815d0>
```

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