

Question -01

```
In [ ]: %matplotlib inline
import matplotlib.pyplot as plt
import numpy as np
import cv2 as cv

img_orig = cv.imread('spider.png', cv.IMREAD_GRAYSCALE)
gamma_list =[0.2, 0.8,1.2,2]
for gamma in gamma_list:

    table = np.array([(i/255)**(gamma)*255 for i in np.arange(0,256)]).astype(np.uint8)
    img_gamma = cv.LUT(img_orig, table)
    cv.namedWindow('image',cv.WINDOW_AUTOSIZE)
    cv.imshow('image', img_orig)
    cv.waitKey(0)
    cv.imshow( 'Image ', img_gamma )
    cv.waitKey (0)
    cv.destroyAllWindows ( )
```

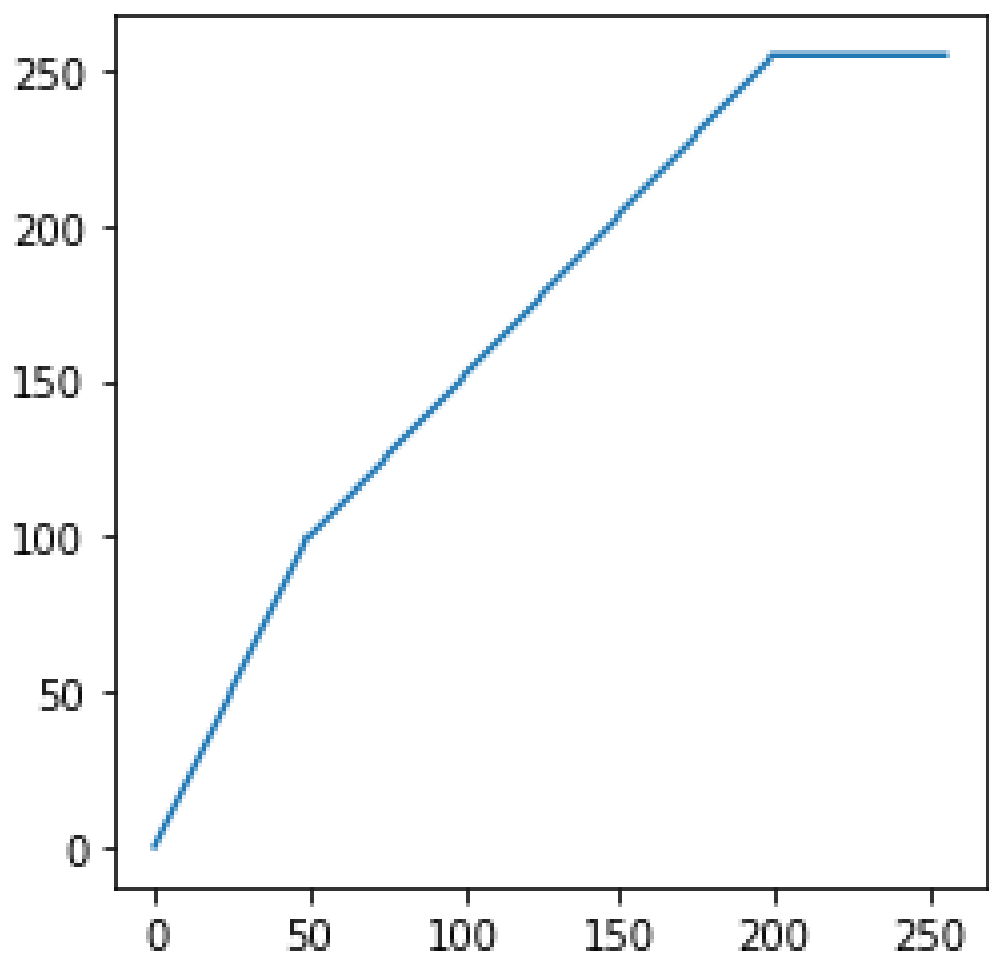
Question -02

```
In [ ]: %matplotlib inline
import matplotlib.pyplot as plt
import numpy as np
import cv2 as cv

img_orig = cv.imread('spider.png', cv.IMREAD_GRAYSCALE)
t1 =np.linspace(0,100,50)
t2 =np.linspace(100,255,150)
t3 =np.linspace(255,255,56)

t =np.concatenate((t1,t2,t3),axis=0).astype(np.uint8)
fig, ax =plt.subplots()
ax.plot(t)
ax.set_aspect('equal')
plt.show()

img_transform = cv.LUT(img_orig, t)
cv.namedWindow('image',cv.WINDOW_AUTOSIZE)
cv.imshow('image', img_orig)
cv.waitKey(0)
cv.imshow( 'Image ',img_transform )
cv.waitKey (0)
cv.destroyAllWindows ( )
```



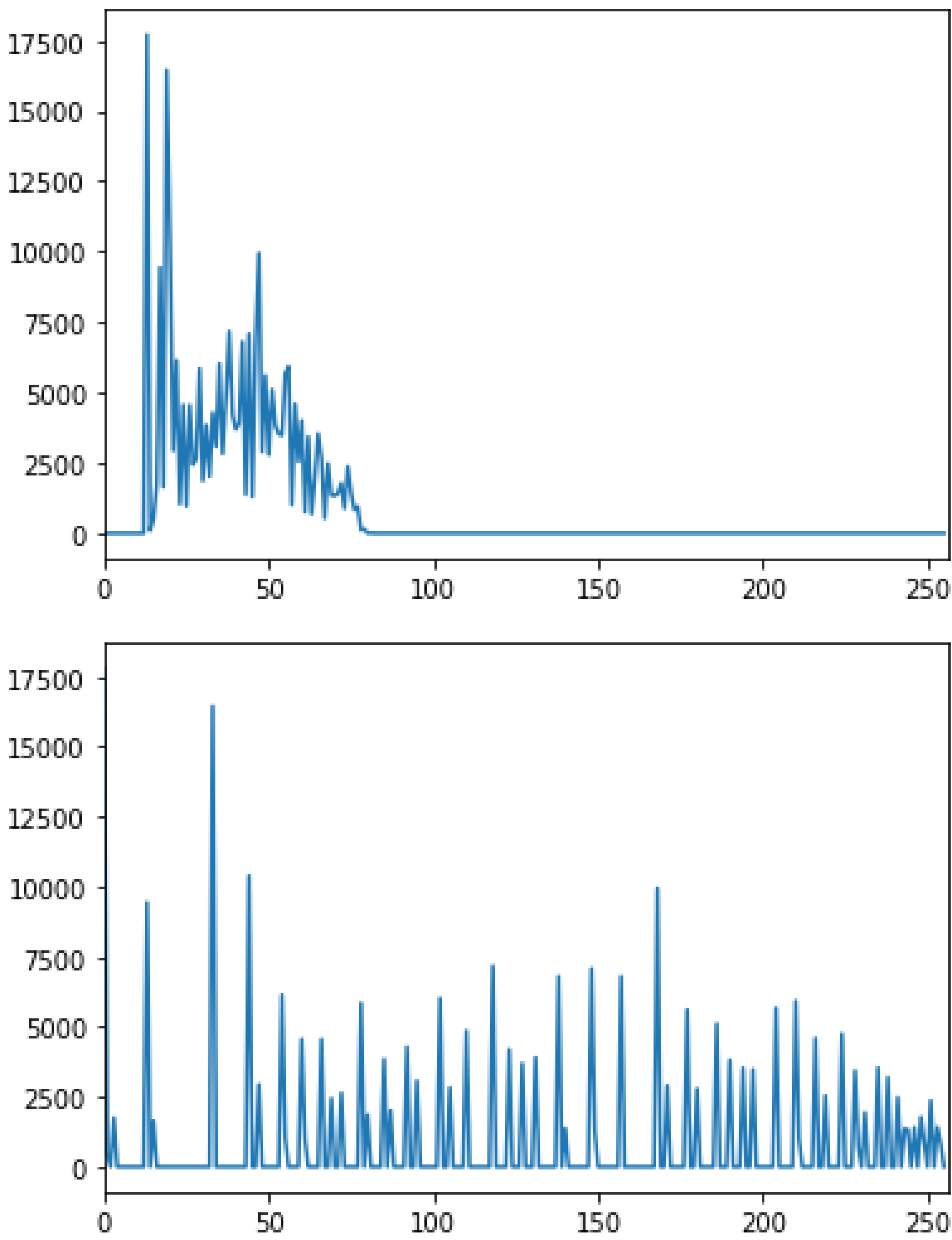
Question -03

```
In [ ]: %matplotlib inline
import matplotlib.pyplot as plt
import numpy as np
import cv2 as cv

img = cv.imread('shells.tif', cv.IMREAD_GRAYSCALE)
hist = cv.calcHist([img],[0],None,[256],[0,255])
plt.plot(hist)
plt.xlim([0,256])
plt.show()

g = cv.equalizeHist(img)
hist_g=cv.calcHist([g],[0],None,[256],[0,255])
plt.plot(hist_g)
plt.xlim([0,256])
plt.show()

cv.namedWindow('image',cv.WINDOW_AUTOSIZE)
cv.imshow('image', img)
cv.waitKey(0)
cv.imshow( 'Image ',g)
cv.waitKey (0)
cv.destroyAllWindows ( )
```



Question -04

```
In [ ]: %matplotlib inline
import matplotlib.pyplot as plt
import numpy as np
import cv2 as cv

img = cv.imread('zion_pass.jpg', cv.IMREAD_COLOR)

hsv = cv.cvtColor(img, cv.COLOR_BGR2HSV)
greenMask = cv.inRange(hsv, (26, 10, 30), (97, 100, 255))
hsv[:, :,1] = greenMask
img_sat = cv.cvtColor(hsv, cv.COLOR_HSV2BGR)

cv.imshow('Image', img_sat)
cv.waitKey(0)
cv.destroyAllWindows()
```