**Experiment 1**

**Aim:** Gray/ Intensity level resolution

**Code:**

from skimage import data

from skimage import io

from skimage.color import rgb2gray

import matplotlib.pyplot as plt

image = data.astronaut()

#print (image)

#io.imshow(image)

img\_gray = rgb2gray (image)

img\_gray = img\_gray \* 255

img\_reso = img\_gray.copy()

b= 1

num\_levels = 2\*\*b

step\_size = 256//num\_levels

print (step\_size)

sh = img\_reso.shape

print (sh)

for r in range (0,sh[0]):

for c in range (0,sh[1]):

temp = img\_reso[r][c]

for i in range (0,num\_levels):

if temp >= i\*step\_size and temp < (i+1)\*step\_size:

img\_reso [r][c]=i\*step\_size

break

plt.figure()

plt.figure(figsize=(7,7))

plt.subplot (2,1,1)

io.imshow (img\_gray, cmap='gray')

plt.title ('Original Image')

plt.subplot (2,1,2)

io.imshow (img\_reso, cmap='gray')

plt.title ('Low Reso Image')

**Outputs:**

b=1



b=2



b=3



**Conclusion:** Larger the number of bits, better resolution. If only 1 bit is allotted, then we get binary image. Quality improves with increase in number of bits allotted to each pixel.