**Reg: 173627**

**Name: Ali Hassaan Mughal**

**Task 1:**

from PIL import Image

import matplotlib.pyplot as plt

img1 = Image.open("lenacolor.jpg")

width,height = img1.size

L = 256;

pixels = img1.load()

print(pixels[0,0])

for x in range(0,width):

for y in range(0,height):

pixelxy = list(pixels[x,y])

#Used range and len to use the reference

for i in range(0,len(pixelxy)):

pixelxy[i] = abs(L-1-pixelxy[i])

pixels[x,y] = tuple(pixelxy)

img1.show()

img1.save("lenacolornegative.jpg");

**Task 2:**

from PIL import Image

import matplotlib.pyplot as plt

img1 = Image.open("lenacolor.jpg").convert("L")

width,height = img1.size

L = 256;

pixels = img1.load()

for x in range(0,width-1):

for y in range(0,height):

pixels[x,y] = abs(pixels[x+1,y] - pixels[x,y])

img1.show()

img1.save("lenagradient.jpg")

**Task 3:**

from PIL import Image

import matplotlib.pyplot as plt

image = Image.open("dollor.jpg").convert("L")

width,height = image.size

L = 256;

pixels = image.load()

planevalue = 1;

for j in range(0,8):

for x in range(0,width):

for y in range(0,height):

if pixels[x,y] & planevalue == 0:

pixels[x,y] = 0;

else:

pixels[x,y] = 255;

image.save("dollarplane"+str(j)+".jpg")

image.show()

image = Image.open("dollor.jpg").convert("L")

pixels = image.load()

planevalue\*=2;

**Output**