**Department of Computing**

**Digital Image Processing**

**Class: BSCS-9ABC**

**Lab 11**

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**BSCS 9B**

**CODE:**

| import numpy as np  import cv2  from skimage.morphology import disk  def closing(img,kernel):  dilation=cv2.dilate(img,kernel,iterations=1)  closing=cv2.erode(dilation,kernel,iterations=1)  return closing  image=cv2.imread('image\_lab11.png')  img\_gray = cv2.cvtColor(image, cv2.COLOR\_BGR2GRAY)  x=img\_gray.shape[0]  y=img\_gray.shape[1]  ret2,th2 = cv2.threshold(img\_gray,0,255,cv2.THRESH\_BINARY+cv2.THRESH\_OTSU)  kernel=np.ones((21,21),np.uint8)  kernel2=np.ones((1,1),np.uint8)  kernel3=np.ones((3,3),np.uint8)  dilation=cv2.dilate(th2,disk(5),iterations=1)  closingimg=closing(dilation,disk(9))  erosion=cv2.erode(closingimg,disk(7),iterations=1)  final=cv2.erode(erosion,kernel3,iterations=1)  cv2.imwrite("closing.png",final)  num\_labels, labels = cv2.connectedComponents(final)  print(num\_labels)  blue = np.zeros\_like(labels)  red = np.zeros\_like(labels)  green = np.zeros\_like(labels)  print(x,y)  for j in range(x):  for k in range(y):  if labels[j][k]==0:  blue[j][k]=0  red[j][k]=0  green[j][k]=0  if labels[j][k]==1:  blue[j][k]=0  red[j][k]=0  green[j][k]=255  if labels[j][k]==2:  blue[j][k]=255  red[j][k]=0  green[j][k]=0  labeled\_img = cv2.merge([red, green, blue])    cv2.imwrite('labeled.png', labeled\_img)  print("Which color do you want to pick:")  print("1.green")  print("2.red")  choose=input()  if(choose=='1'):  for j in range(x):  for k in range(y):  if labels[j][k]==0:  blue[j][k]=0  red[j][k]=0  green[j][k]=0  if labels[j][k]==1:  blue[j][k]=0  red[j][k]=0  green[j][k]=255  if labels[j][k]==2:  blue[j][k]=0  red[j][k]=0  green[j][k]=0  if(choose=='2'):  for j in range(x):  for k in range(y):  if labels[j][k]==0:  blue[j][k]=0  red[j][k]=0  green[j][k]=0  if labels[j][k]==1:  blue[j][k]=0  red[j][k]=0  green[j][k]=0  if labels[j][k]==2:  blue[j][k]=0  red[j][k]=255  green[j][k]=0  labeled\_img = cv2.merge([red, green, blue])  cv2.imwrite('labeled\_input2.png', labeled\_img) |
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**OUTPUT:**

**After applying the morphological operations:**

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**After coloring the labelled components:**

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**After giving 1 as input**

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**After giving 2 as input**

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