

GOA COLLEGE OF ENGINEERING

“Bhausahab Bhandodkar Technical Education Complex”

Experiment No: 4

Date: 12.10.2021

Aim: Write a Python program to read an image from a file system and perform the grayscale slicing of the image and write it back with a different name.

Algorithm:

1. Read the image and store it in a container to perform operations on it.
2. Convert this image into grayscale image
3. Input 2 values for upper limit and lower limit
4. Get the RGB value of the pixel
5. Calculate new RGB value based on : If the value of pixel :
 1. Within limits of upper & lower limits → new RGB value = 255, 255, 255 resp.
 2. Out of limits → new RGB values = 0, 0, 0
6. Save the new RGB value in the pixel
7. Repeat step 4 -6 for each pixel of the image
8. Choose a directory to store the new image
9. Store the sliced image into the selected directory

Program:

Python Code:

```
def show_image(self):
    file_filter = 'Image File (*.jpg *.png)'
    fname = QtWidgets.QFileDialog.getOpenFileName(parent=self.centralwidget,
    caption='Select an Image',
    directory="/run/media/deeprajb/HDD/Important Photos/Wallpapers",
    filter=file_filter)
    self.img = cv2.imread(fname[0], cv2.IMREAD_GRAYSCALE)
    self.img1 = QtGui.QImage(self.img.data, self.img.shape[1], self.img.shape[0], QtGui.QImage.Format_Grayscale8)
    self.imageinput.setPixmap(QtGui.QPixmap.fromImage(self.img1))
    def gray_level_slicing(self):
        (row, col) = self.img.shape[0:2]
        min_range = self.lowerbound.value()
        max_range = self.upperbound.value()
        wbg = self.img.copy()
        wobg = self.img.copy()
        for i in range(0,row-1):
            for j in range(0,col-1):
                if self.img[i,j]>min_range and self.img[i,j]<max_range:
                    wbg[i,j] = 255
                    wobg[i,j] = 255
```

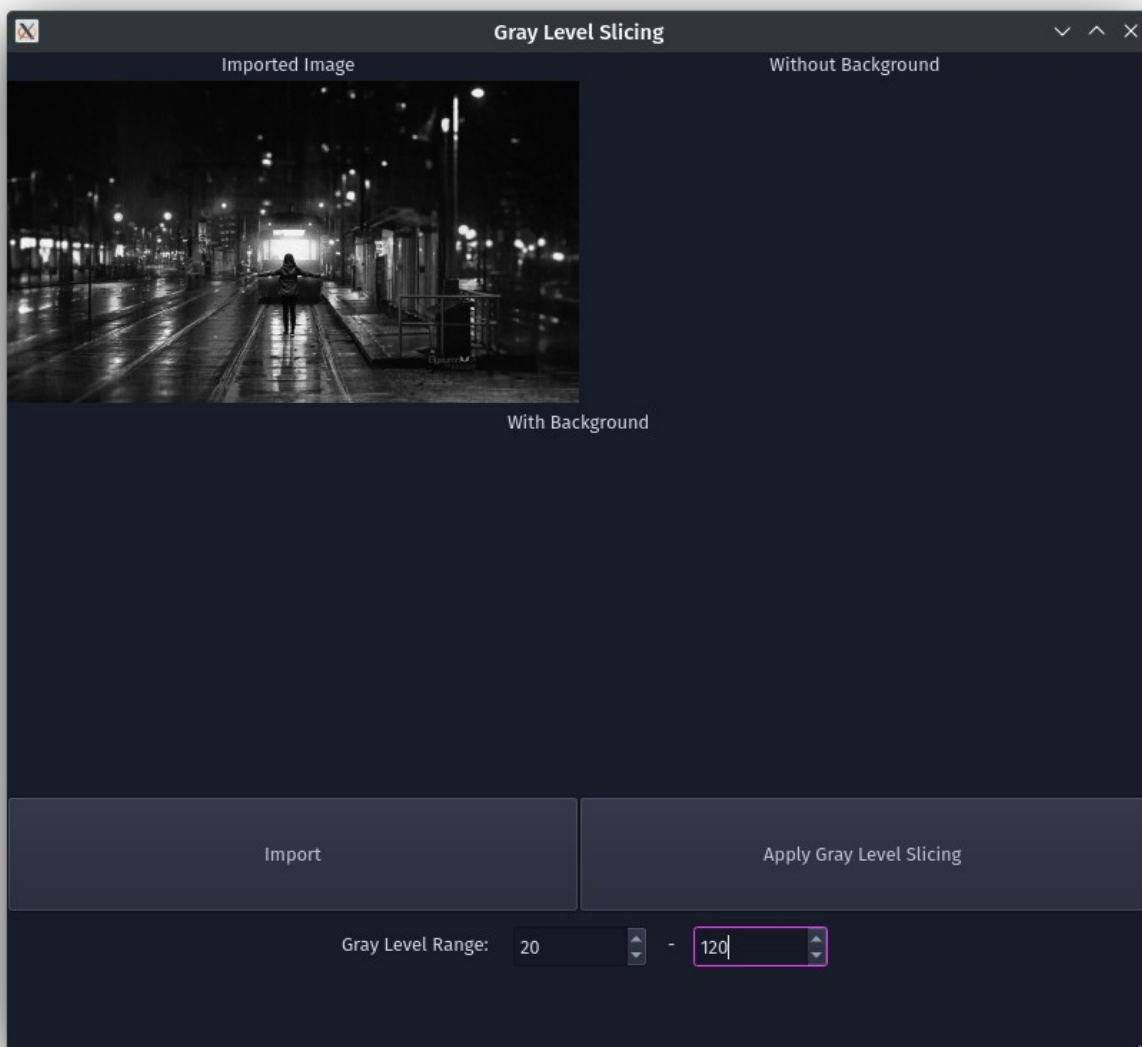
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```
else:  
    wbg[i,j] = self.img[i,j]  
    wobg[i,j] = 0  
cv2.imwrite('gls_withbg_output.jpg',wbg)  
cv2.imwrite('gls_withoutbg_output.jpg',wobg)  
self.imageoutput_2.setPixmap(QtGui.QPixmap("gls_withbg_output.jpg"))  
self.imageoutput.setPixmap(QtGui.QPixmap("gls_withoutbg_output.jpg"))
```

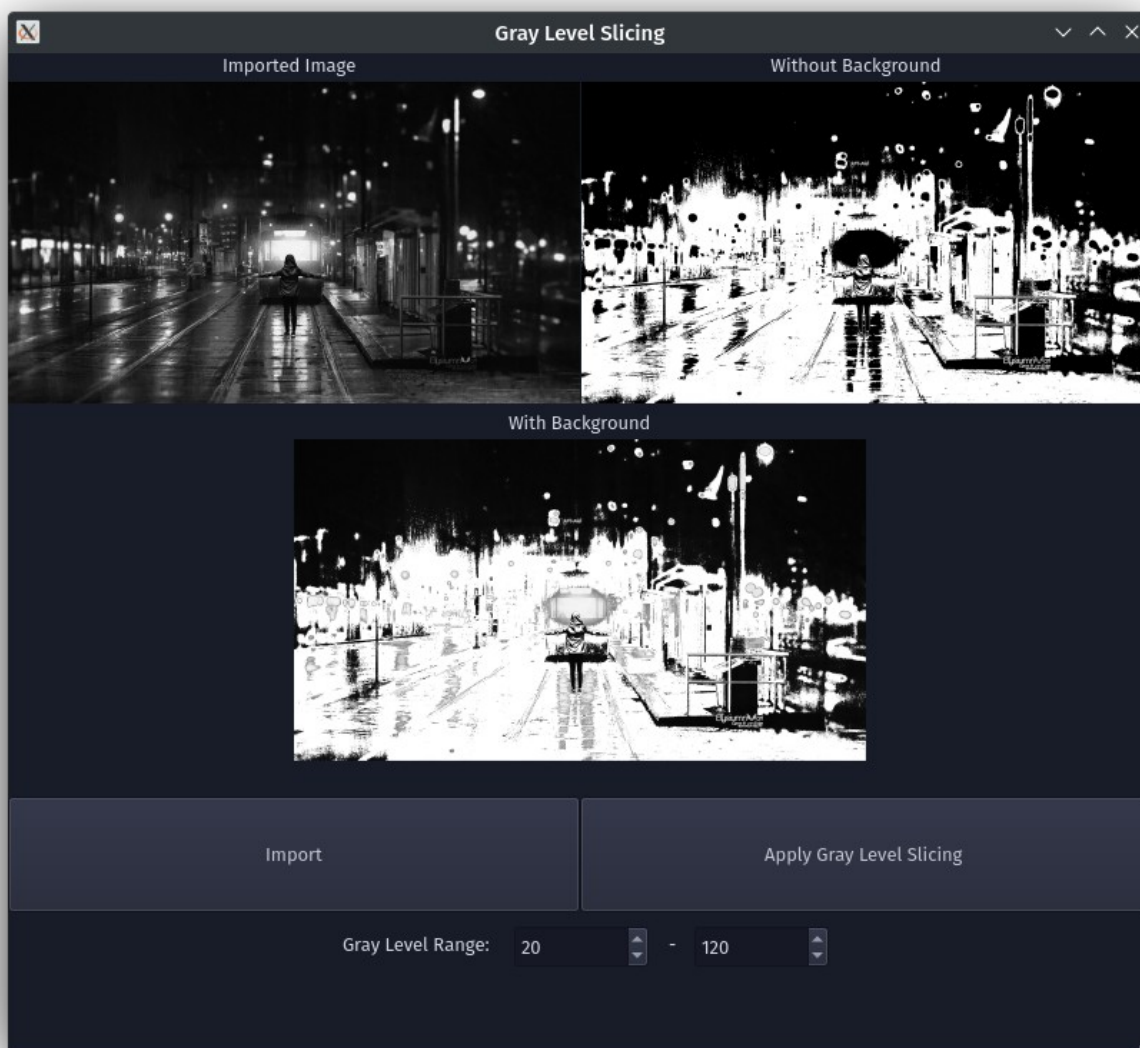
Output:

Python GUI Output:



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Conclusion: Program to read an image and perform grayscale slicing was written and executed successfully.