

# **Pengolahan Citra Digital**

Tugas Ke-1



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**PROGRAM STUDI PENDIDIKAN TEKNIK ELEKTRO**

**JURUSAN TEKNIK ELEKTRO FAKULTAS TEKNIK**

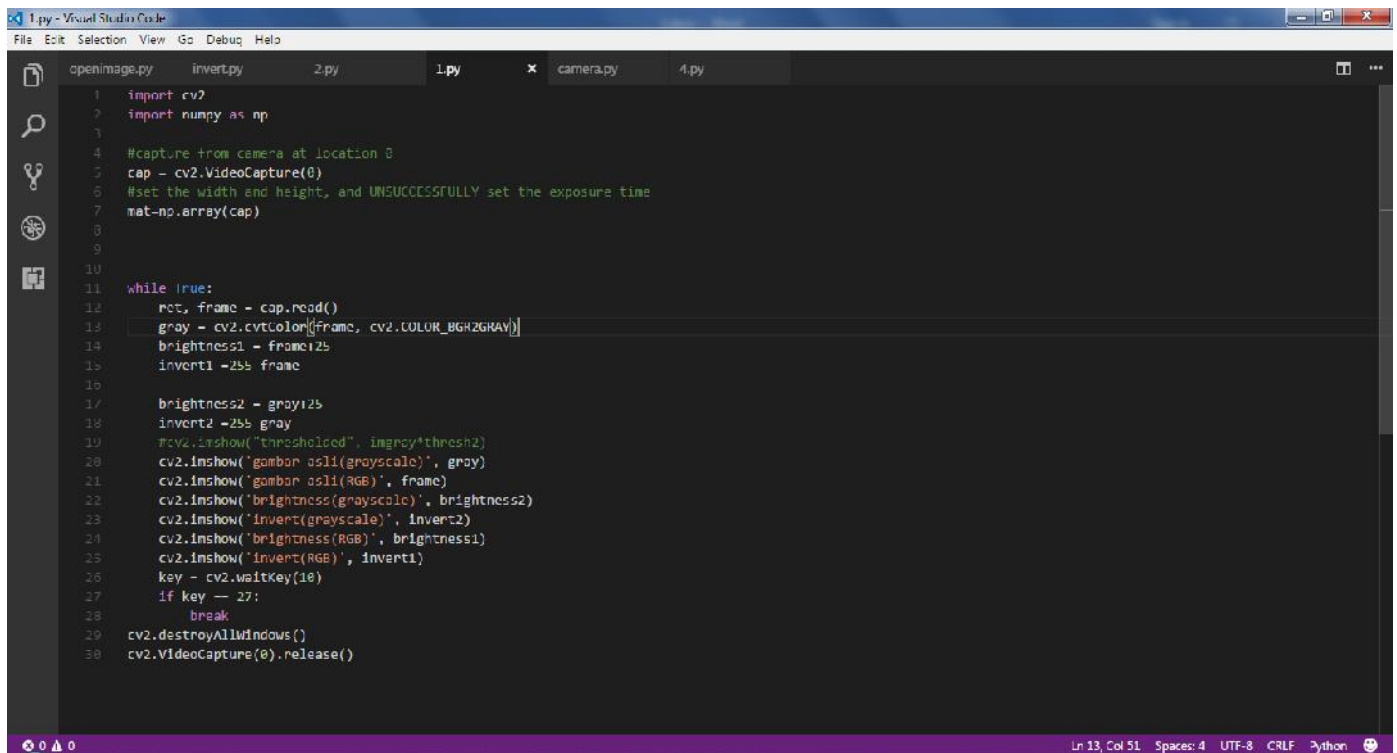
**UNIVERSITAS NEGERI SEMARANG**

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## SOAL

1. Akses webcam dengan python
2. Jadikan hasil citra menjadi grayscale
3. Tingkatkan kecerahan(brightness) citra webcam pada RGB & grayscale
4. Balik (invert) citra webcam pada RGB & grayscale

## JAWAB

A screenshot of a Visual Studio Code editor window. The title bar says '1.py - Visual Studio Code'. The menu bar includes 'File', 'Edit', 'Selection', 'View', 'Go', 'Debug', and 'Help'. The file explorer on the left shows a project with files named 'openimage.py', 'invert.py', '2.py', '1.py', 'camera.py', and '4.py'. The '1.py' file is open in the editor. The code is a Python script that uses OpenCV to capture video from a webcam, convert it to grayscale, adjust brightness, and invert the image. The script includes comments and uses cv2.imshow() to display the results. The status bar at the bottom indicates 'Ln 13, Col 51', 'Spaces: 4', 'UTF-8', 'CRLF', and 'Python'.

```
1 import cv2
2 import numpy as np
3
4 #capture from camera at location 0
5 cap = cv2.VideoCapture(0)
6 #set the width and height, and UNSUCCESSFULLY set the exposure time
7 mat=np.array(cap)
8
9
10
11 while True:
12     ret, frame = cap.read()
13     gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
14     brightness1 = frame*25
15     invert1 =255 - frame
16
17     brightness2 = gray*25
18     invert2 =255 - gray
19     cv2.imshow("thresholded", image*thresh2)
20     cv2.imshow('gambar asli(gray)', gray)
21     cv2.imshow('gambar asli(RGB)', frame)
22     cv2.imshow('brightness(gray)', brightness2)
23     cv2.imshow('invert(gray)', invert2)
24     cv2.imshow('brightness(GB)', brightness1)
25     cv2.imshow('invert(GB)', invert1)
26     key = cv2.waitKey(10)
27     if key == 27:
28         break
29 cv2.destroyAllWindows()
30 cv2.VideoCapture(0).release()
```

Screenshot source code

Source code:

```
import cv2
import numpy as np

#capture from camera at location 0
cap = cv2.VideoCapture(0)
#set the width and height, and UNSUCCESSFULLY set the exposure time
mat=np.array(cap)

while True:
    ret, frame = cap.read()
    gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
    brightness1 = frame+25
    invert1 =255-frame

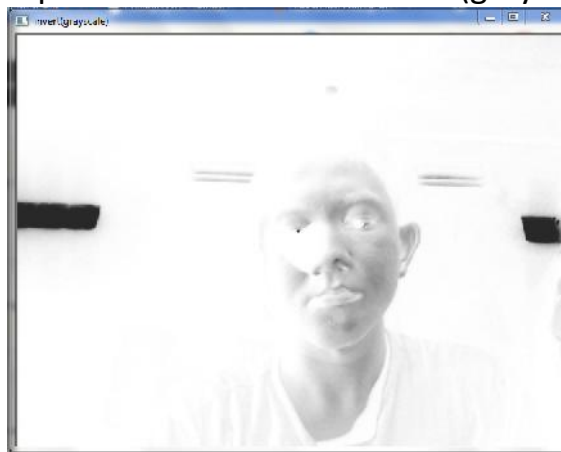
    brightness2 = gray+25
    invert2 =255-gray
    #cv2.imshow("thresholded", imgray*thresh2)
    cv2.imshow('gambar asli(grayscale)', gray)
    cv2.imshow('gambar asli(RGB)', frame)
    cv2.imshow('brightness(grayscale)', brightness2)
    cv2.imshow('invert(grayscale)', invert2)
    cv2.imshow('brightness(RGB)', brightness1)
    cv2.imshow('invert(RGB)', invert1)
    key = cv2.waitKey(10)
    if key == 27:
        break
cv2.destroyAllWindows()
cv2.VideoCapture(0).release()
```



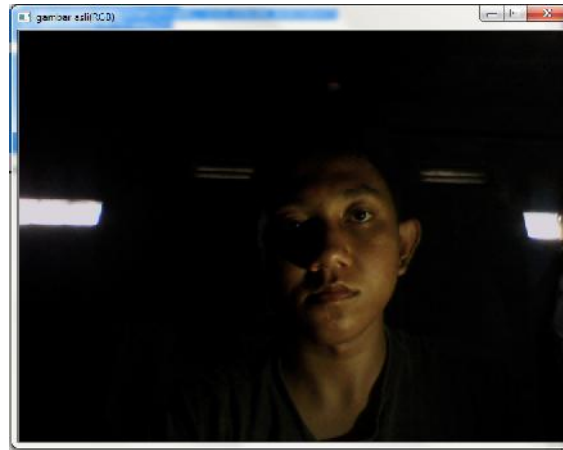
Citra asli(grayscale)



Citra penambahan kecerahan 25 (grayscale)



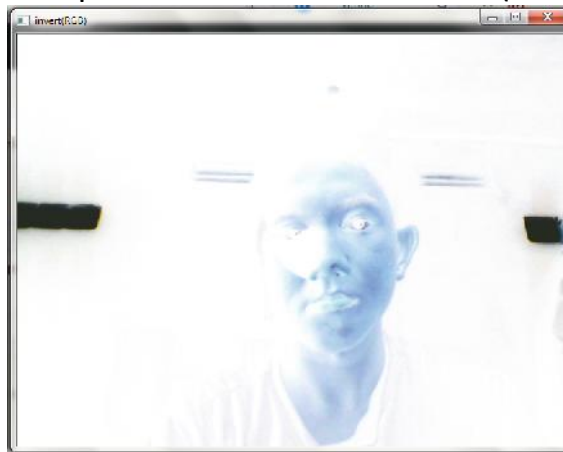
Citra dibalik(invert)



Citra asli(RGB)



Citra penambahan kecerahan 25 (RGB)



Citra dibalik(invert)