MODUL 1

PENGOLAHAN CITRA DIGITAL
PENGENALAN OPENCV

D3/D4 TEKNIK INFORMATIKA
JURUSAN TEKNIK KOMPUTER DAN INFORMATIKA
POLITEKNIK NEGERI BANDUNG

NAUFAL 016 | PENGOLAHAN CITRA DIGITAL |
21 AGUSTUS 2023

TASK PRAKTIKUM

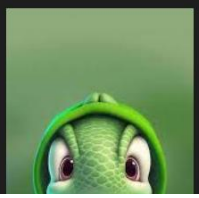
TASK 0: HAI RGB

1. **Lakukan semua langkah di tutorial dan ganti nama variable piljtk atau pil_mandrilljtk menjadi pil_nim(3digit terakhir) misal pil_001, ganti citra mandrill menjadi citra pilihan anda, pastikan citra pilihan anda berbeda dengan mahasiswa lainnya.**

JAWABAN:

```
from PIL import Image
import cv2
from IPython.display import display

img = cv2.imread('kadal.jpeg')
display(Image.fromarray(img))
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
display (Image.fromarray(img))
```

[2] ✓ 0.9s Python



```
r , g, b = img [0, 0]
print ("RED:", r)
print("GREEN:", g)
print("BLUE:", b)
```

[4] ✓ 0.0s Python

```
RED: 143
GREEN: 171
BLUE: 123
```

```
r , g, b = cv2.split(img)
print ("RED:", r)
print("GREEN:", g)
print("BLUE:", b)
```

[5] ✓ 0.0s Python

```
RED: [[143 143 143 ... 143 143 143]
 [143 143 143 ... 143 143 143]
 [143 143 143 ... 143 143 143]
 ...
 [ 22  22  22 ...  55  56  56]
 [ 22  22  22 ...  55  56  56]
 [ 20  20  22 ...  55  56  56]]
GREEN: [[171 171 171 ... 171 171 171]
 [171 171 171 ... 171 171 171]
 [171 171 171 ... 171 171 171]
 ...
 [ 81  81  81 ...  92  93  93]
 [ 81  81  81 ...  92  93  93]
 [ 81  81  81 ...  92  93  93]]
BLUE: [[123 123 123 ... 123 123 123]
 [123 123 123 ... 123 123 123]
 [123 123 123 ... 123 123 123]
 ...
 [ 63  63  63 ...  48  49  49]
```

```
pil_016 = Image.fromarray(r)
display(pil_016)
```

[6] ✓ 0.0s Python

```
pil_016 = Image.fromarray(g)
display(pil_016)
```

[7] ✓ 0.0s Python

```
pil_016 = Image.fromarray(b)
display(pil_016)
```

[8] ✓ 0.0s Python

```
merged = cv2.merge ([b,g,r])
pil_016 = Image.fromarray (merged)
display (pil_016)
```

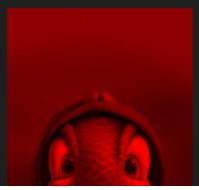
[9] ✓ 0.0s Python

```
merged = cv2.merge ([r,g,b])
pil_016 = Image.fromarray (merged)
display (pil_016)
```

[10] ✓ 0.0s Python

```
import numpy as np
import copy

dup = copy.deepcopy(r)
dup[:]=0
merged = cv2.merge([r,dup,dup])
pil_016 = Image.fromarray(merged)
display(pil_016, "ketika seluruh nilai channel g dan b menjadi 0")

merged = cv2.merge([dup,g,dup])
pil_016 = Image.fromarray(merged)
display(pil_016, "ketika seluruh nilai channel r dan b menjadi 0")

merged = cv2.merge([dup,dup,b])
pil_016 = Image.fromarray(merged)
display(pil_016, "ketika seluruh nilai channel r dan g menjadi 0")

merged = cv2.merge([dup,dup,dup])
pil_016 = Image.fromarray(merged)
display(pil_016, "ketika seluruh nilai channel r,g dan b menjadi 0")
```

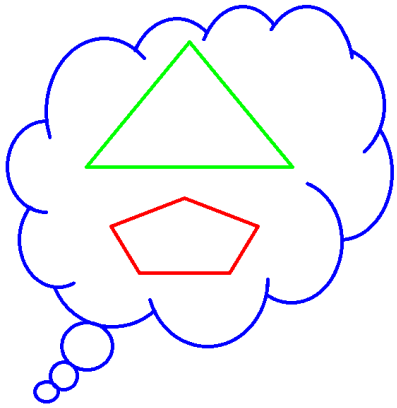
[11] ✓ 0.0s Python



'ketika seluruh nilai channel g dan b menjadi 0'

'ketika seluruh nilai channel r dan b menjadi 0'

TASK 1: AHLI MODIFIKASI PIXEL



Cek nilai piksel citra diatas, kemudian:

Ubah Warna SegiLima menjadi RGB(255,255,0) #FFFF00

Ubah Warna Segitiga menjadi RGB(0,255,255) #00FFFF

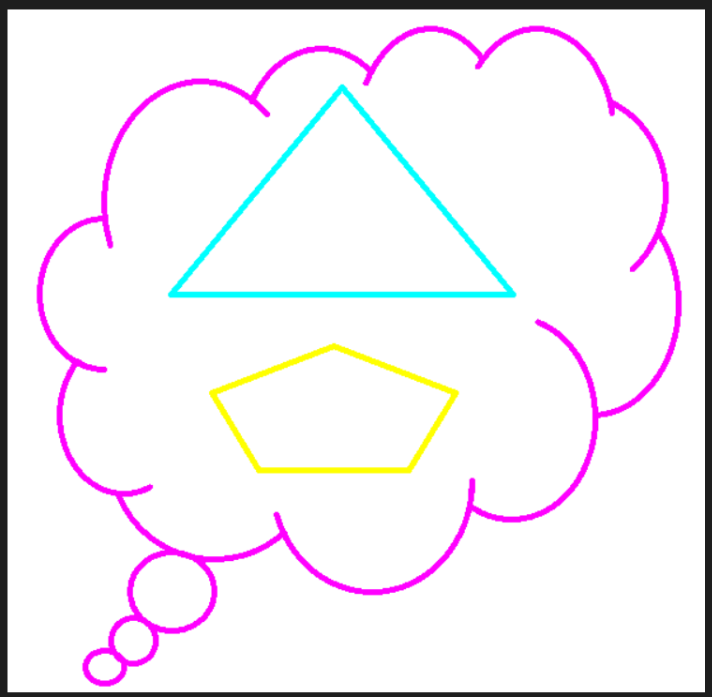
Ubah Warna Awan menjadi RGB(255,0,255) #FF00FF

Link unduh citra https://drive.google.com/file/d/1-7qfpQWzzMVsSpQbgUXkJjnptj_euOV0/view

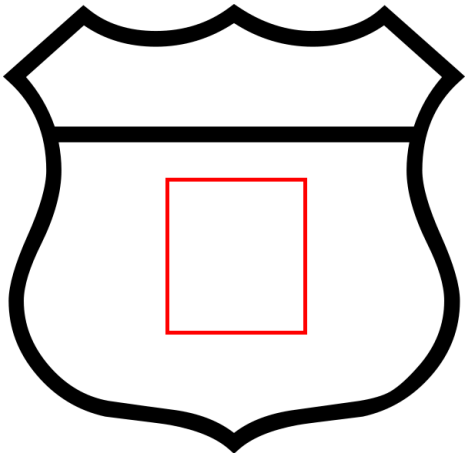
JAWABAN:

```python
import numpy as np
import copy

lower_red = np.array([255, 0, 0])
upper_red = np.array([255, 0, 0])
red_mask = cv2.inRange(img, lower_red, upper_red)

img[red_mask > 0] = [255, 255, 0]

lower_green = np.array([0, 255, 0])
upper_green = np.array([0, 255, 0])
green_mask = cv2.inRange(img, lower_green, upper_green)

img[green_mask > 0] = [0, 255, 255]

lower_blue = np.array([0, 0, 255])
upper_blue = np.array([0, 0, 255])
blue_mask = cv2.inRange(img, lower_blue, upper_blue)

img[blue_mask > 0] = [255, 0, 255]

display(Image.fromarray(img))
```

[72] ✓ 0.0s Python



TASK 2: AHLI MODIFIKASI PIXEL



Pada citra badge diatas, terdapat Segiempat dengan RGB (255,0,0).

Cetak luas segiempat(rgb(255,0,0) tersebut (dalam piksel).
Cetak atribut citra tersebut (

print("Filename: ", image.filename)

print("Format: ", image.format)

print("Mode: ", image.mode)

print("Size: ", image.size)

print("Width: ", image.width)

print("Height: ", image.height)

Hapus SegiEmpat RGB(255,0,0) tersebut, kemudian pindahkan segiempat merah tersebut menjadi bingkai citra.

https://opencv24-python-tutorials.readthedocs.io/en/latest/py_tutorials/py_core/py_basic_ops/py_basic_ops.html

Link Unduh citra https://drive.google.com/file/d/1dzi0_tCBKS9aUUQsDenuaCXnL2acR4on/view?usp=sharing

JAWABAN:

```
[21] ✓ 0.0s Python

from PIL import Image
import cv2
from IPython.display import display
import numpy as np
import copy

[22] ✓ 0.0s Python

img = cv2.imread('R.png')
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
display (Image.fromarray(img))
```

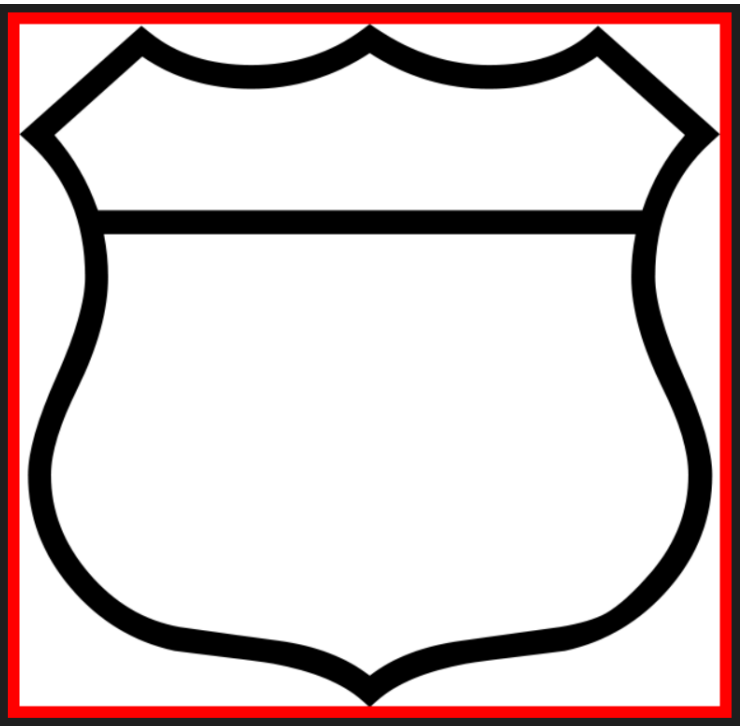
```python
lower_red = np.array([255,0,0])
upper_red = np.array([255,0,0])

mask = cv2.inRange(img, lower_red, upper_red)

keliling = np.sum(mask==255)
sisi = keliling/4
luas = sisi*sisi

logo = Image.open('R.png')
print("Keliling pixel segiempat merah:", keliling)
print("Luas pixel segiempat merah:", luas)
print("Filename:", logo.filename)
print("Format:", logo.format)
print("Mode:", logo.mode)
print("Size:", logo.size)
print("Widht:", logo.width)
print("Height:", logo.height)
```

[25] ✓ 0.0s Python

```
Keliling pixel segiempat merah: 3780
Luas pixel segiempat merah: 893025.0
Filename: R.png
Format: PNG
Mode: RGBA
Size: (600, 584)
Widht: 600
Height: 584
```

```python
img[mask > 0] = [255,255,255]

border_color = (255, 0 , 0)

border_width = 10

borderer_image = cv2.copyMakeBorder(img,border_width, border_width, border_width,
                                    border_width, cv2.BORDER_CONSTANT, value=border_color)

display (Image.fromarray(borderer_image))
```

[7] ✓ 0.0s Python



TASK 3: LESSON LEARNT

1. **Tulis Lesson Learnt dari praktikum ini, Lesson learnt ditulis tangan.**

JAWABAN:

3DigitTerakhir_PCDSATU_Nama

099_PCDSATU_GOKU

Jadikan .pdf, kumpulkan hanya .pdf