

## Praktikum 2 | Pengolahan Citra

### RGB, Bendera, Flip Gambar

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#### Import dependency

```
In [1]: import numpy as np
import imageio
import matplotlib.pyplot as plt
```

#### Membuat Gambar Berwarna Merah

Membuat variabel untuk gambar berukuran 256 pixel x 256 pixel

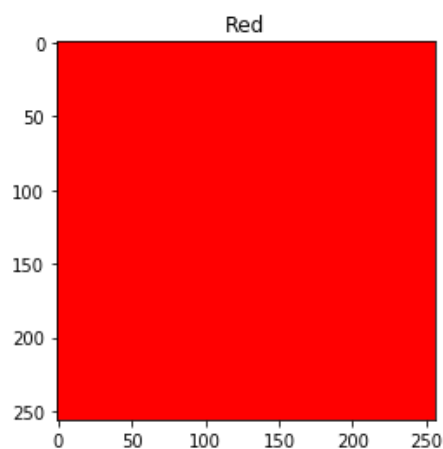
```
In [2]: img_red = np.zeros((256, 256, 3), dtype=np.uint8)
```

Set pixel with [255, 0, 0] or red

```
In [3]: for y in range(0, 256):
        for x in range(0, 256):
            for c in range(0, 3):
                if c == 0:
                    img_red[y][x][c] = 255
                else:
                    img_red[y][x][c] = 0
```

Test image

```
In [4]: plt.imshow(img_red)
plt.title("Red")
plt.show()
```



#### Create green image

Create image variabel (256 pixel x 256 pixel)

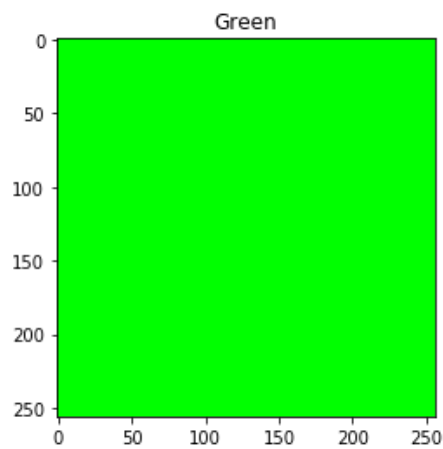
```
In [5]: img_green = np.zeros((256, 256, 3), dtype=np.uint8)
```

Set pixel with [0, 255, 0] or green

```
In [6]: for y in range(0, 256):
        for x in range(0, 256):
            for c in range(0, 3):
                if c == 1:
                    img_red[y][x][c] = 255
                else:
                    img_red[y][x][c] = 0
```

Test image

```
In [7]: plt.imshow(img_red)
plt.title("Green")
plt.show()
```



Create blue image

Create image variabel (256 pixel x 256 pixel)

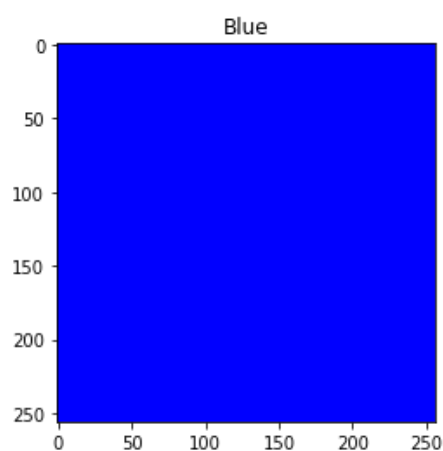
```
In [8]: img_blue = np.zeros((256, 256, 3), dtype=np.uint8)
```

Set pixel with [0, 0, 255] or blue

```
In [9]: for y in range(0, 256):
        for x in range(0, 256):
            for c in range(0, 3):
                if c == 2:
                    img_red[y][x][c] = 255
                else:
                    img_red[y][x][c] = 0
```

Test image

```
In [10]: plt.imshow(img_red)
plt.title("Blue")
plt.show()
```



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Create Indonesian's Flag

Create variabel

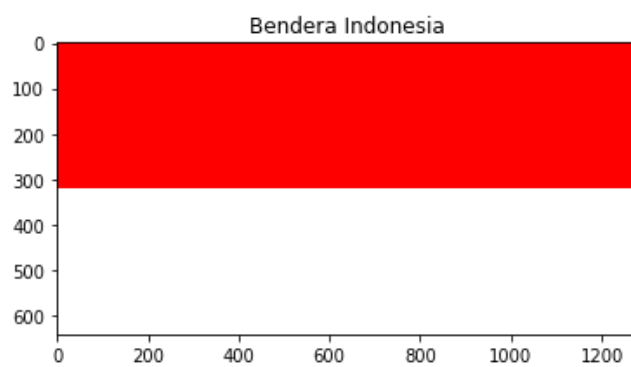
```
In [11]: img_IND_flag = np.zeros((640, 1280, 3), dtype=np.uint8)
```

#### Set the pixel

```
In [12]: for y in range(0, 640):
          for x in range(0, 1280):
              for c in range(0, 3):
                  if y >= 320:
                      img_IND_flag[y][x][c] = 255 # set semua channel menjadi 255 atau putih [255,255,255]
                  else:
                      if c == 0:
                          img_IND_flag[y][x][c] = 255
                      else:
                          img_IND_flag[y][x][c] = 0
```

#### Test image

```
In [13]: plt.imshow(img_IND_flag)
          plt.title("Bendera Indonesia")
          plt.show()
```



## Flip Image

#### Membaca gambar

```
In [14]: img = imageio.imread("woman.jpg")
```

#### Mendapatkan resolusi dan type dari gambar

```
In [15]: img_height = img.shape[0]
          img_width = img.shape[1]
          img_channel = img.shape[2]
          img_type = img.dtype
```

#### Membuat variabel dengan resolusi dan tipe yang sama seperti gambar

```
In [16]: img_flip_horizontal = np.zeros(img.shape, img_type)
          img_flip_vertical = np.zeros(img.shape, img_type)
```

#### Membalik gambar secara horizontal

```
In [17]: for y in range(0, img_height):
          for x in range(0, img_width):
              for c in range(0, img_channel):
                  img_flip_horizontal[y][x][c] = img[y][img_width-1-x][c]
```

#### Membalik gambar secara vertical

```
In [18]: for y in range(0, img_height):
          for x in range(0, img_width):
              for c in range(0, img_channel):
                  img_flip_vertical[y][x][c] = img[img_height-1-y][x][c]
```

#### Menampilkan hasil balik gambar

```
In [19]: plt.imshow(img_flip_horizontal)
plt.title("Flip Horizontal")
plt.show()
plt.imshow(img_flip_vertical)
plt.title("Flip Vertical")
plt.show()
```

