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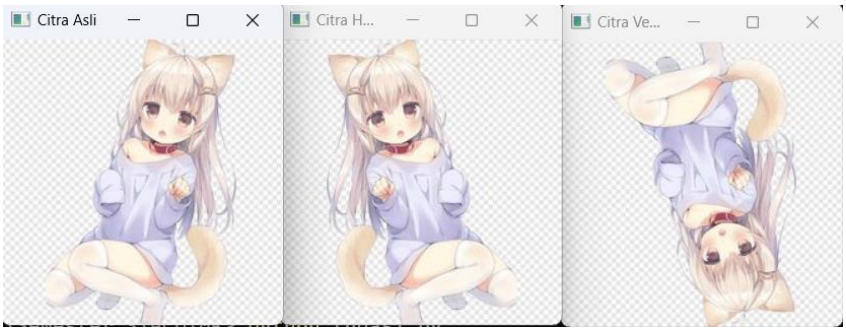
Kelas: B

Source code Pencerminan (*Flipping*)

```
import cv2
image = cv2.imread('ucing.png')
cv2.imshow('Citra Asli', image)
image_horizontal = cv2.flip(image, 1)
image_vertical = cv2.flip(image, 0)
cv2.imshow('Citra Horizontal', image_horizontal)
cv2.imshow('Citra Vertical', image_vertical)
point = (50, 50)
pixel_value = image[point[1], point[0]]
print(f'Pixel value at {point} in the original image: {pixel_value}')
pixel_value_horizontal = image_horizontal[point[1], point[0]]
pixel_value_vertical = image_vertical[point[1], point[0]]
print(f'Pixel value at {point} in the horizontal image:
{pixel_value_horizontal}')
print(f'Pixel value at {point} in the vertical image:
{pixel_value_vertical}')
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Tampilan Gambar



Gambar 1.1 Tampilan Hasil Citra

Tampilan Pixelnya

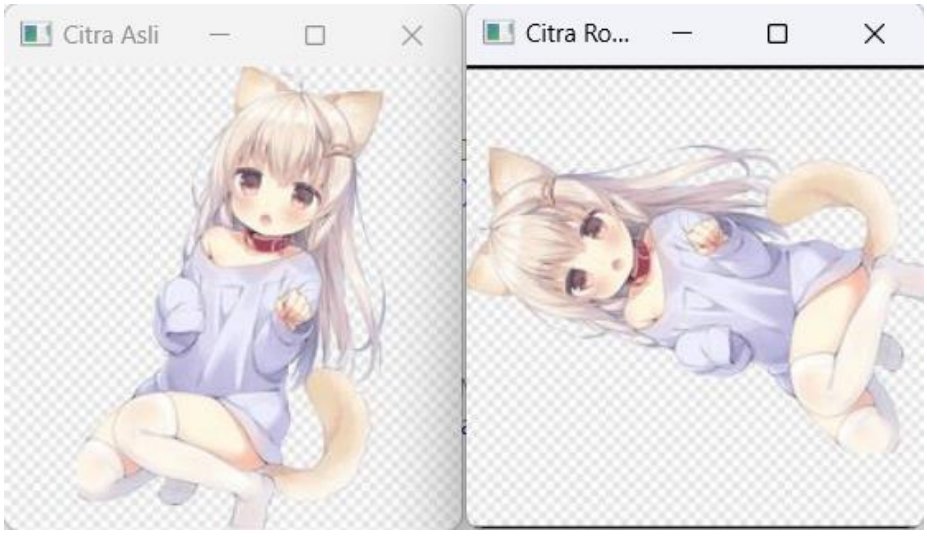
```
Pixel value at (50, 50) in the original image: [238 238 238]
Pixel value at (50, 50) in the horizontal image: [214 203 211]
Pixel value at (50, 50) in the vertical image: [230 246 253]
```

Gambar 1.2 Tampilan Hasil Pixel

Source code 2

```
import cv2
image = cv2.imread('ucing.png')
cv2.imshow('Citra Asli', image)
height, width = image.shape[:2]
center = (width // 2, height // 2)
angle = 90
scale = 1.0
rotation_matrix = cv2.getRotationMatrix2D(center, angle, scale)
rotated_image = cv2.warpAffine(image, rotation_matrix, (width, height))
cv2.imshow('Citra Rotasi 90 Derajat', rotated_image)
point = (100, 100)
if 0 <= point[0] < width and 0 <= point[1] < height:
    original_pixel = image[point[1], point[0]]
    rotated_pixel = rotated_image[point[1], point[0]]
    print(f'Pixel value at {point} in the original image: {original_pixel}')
    print(f'Pixel value at {point} in the rotated image: {rotated_pixel}')
else:
    print(f'The point {point} is out of bounds for the image dimensions.')
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Tampilan Gambar



Gambar 1.3 Tampilan Hasil Citra

Tampilan Pixelnya

```
Pixel value at (100, 100) in the original image: [243 222 231]
Pixel value at (100, 100) in the rotated image: [227 211 222]
```

Gambar 1.4 Tampilan Hasil Pixel