Lecture 5a

1.Translation ¶

Translation matrix:

$$T = \begin{bmatrix} 1 & 0 & T_x \\ 0 & 1 & Ty \\ 0 & 0 & 1 \end{bmatrix}$$

In [2]:
```
import cv2
import numpy as np
#gmb = cv2.imread('./gambar/Uddin.jpeg')
gmb = cv2.imread('./gambar/gambar03.jpg')
cv2.imshow('Ini foto saya', gmb)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

In [12]:
```
h,w =  gmb.shape[:2]
print(h,w)
```

```
457 771
```

In [13]:
```
Tx = w/4
Ty = h/4
T = np.float32([[1,0,Tx],[0,1,Ty]])
gmb_trans = cv2.warpAffine(gmb,T,(w,h))
cv2.imshow('Translation',gmb_trans)
cv2.waitKey()
cv2.destroyAllWindows()
```

2. Rotation

Rotation matrix:

$$R = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$$

In [14]:
```
pusat_rotasi = (w/2,h/2)
theta = 90   # sudut rotasi dalam derajat
skala = 0.5
rm = cv2.getRotationMatrix2D(pusat_rotasi,theta,skala)
rot_gmb =cv2.warpAffine(gmb, rm, (w,h))
cv2.imshow('Rotate Image', rot_gmb)
cv2.waitKey()
cv2.destroyAllWindows()
```

3. Transpose

In [15]:
```
gmb_T = cv2.transpose(gmb)
cv2.imshow('Transpose image', gmb_T)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [3]:
```
img01 = np.zeros((200,350,3), np.uint8)
#Segitiga pertama
cv2.line(img01, (50,50), (50,150), [157,244,65], 1)
cv2.line(img01, (50,50), (150,150), [157,244,65], 1)
cv2.line(img01, (50,150), (150,150), [157,244,65], 1)
cv2.imshow('Original image', img01)
cv2.waitKey()
#cv2.destroyAllWindows()

img01_T = cv2.transpose(img01)
cv2.imshow('Transpose image', img01_T)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [24]:
```
img02 = np.zeros((200,350,3), np.uint8)
img03 = np.zeros((200,350,3), np.uint8)
pts1 = np.array([[50,10],[50,100],[150,100]], np.int32)
pts2 = np.array([[250,10],[250,100],[350,100]], np.int32)
#pts2T= np.transpose(np.array([[250,10],[250,100],[350,100]], np.int32))
#pts1 = pts.reshape((-1,1,2))
cv2.polylines(img02,[pts2],True,(0,255,255))
cv2.imshow('Original image', img02)
cv2.waitKey()
cv2.destroyAllWindows()
```