2022년 IoT기반 스마트 솔루션 개발자 양성과정

Programming : Python

12-Drawing

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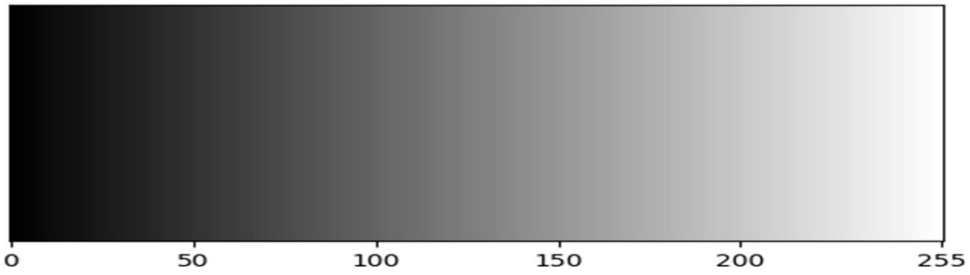
Image 좌표계

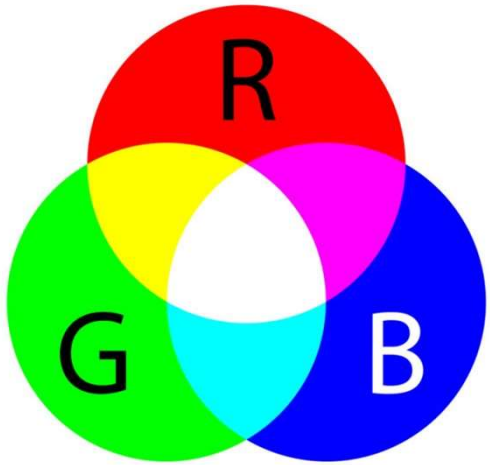
origin

0,0	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0
0,1	1,1								
0,2		2,2							
0,3			3,3						
0,4				4,4					
0,5					5,5				
0,6						6,6			
0,7							7,7		
0,8								8,8	
0,9									9,9

RGB 색상 모델

	B(8bit)	G(8bit)	R(8bit)	alpha(8bit)
Red	0(0x0)	0(0x0)	255(0xff)	0(0x0)
Green	0(0x0)	255(0xff)	0(0x0)	0(0x0)
Blue	255(0xff)	0(0x0)	0(0x0)	0(0x0)

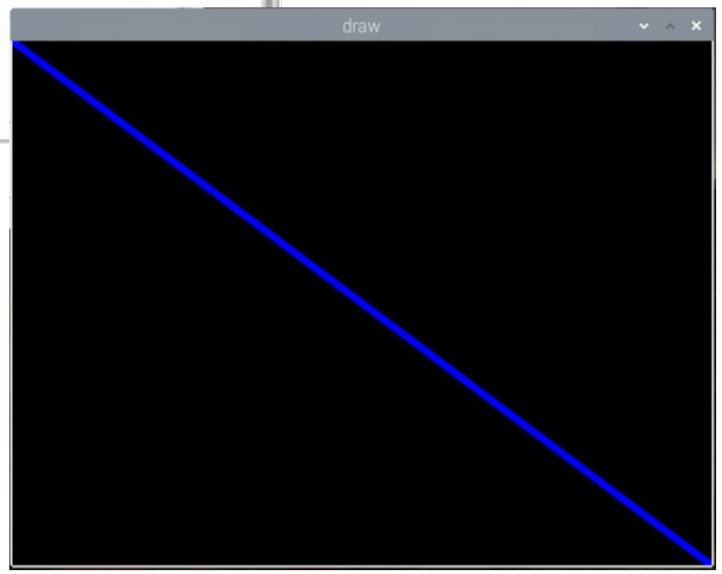




cv2.line( )

cv2-Draw-line.py

```
1  import cv2
2  import numpy as np
3
4  img=np.zeros((480,640,3),np.uint8)
5  img=cv2.line(img,(0,0),(639,479),(255,0,0),5)
6
7  cv2.imshow('draw',img)
8  cv2.waitKey(0)
9  cv2.destroyAllWindows()
```

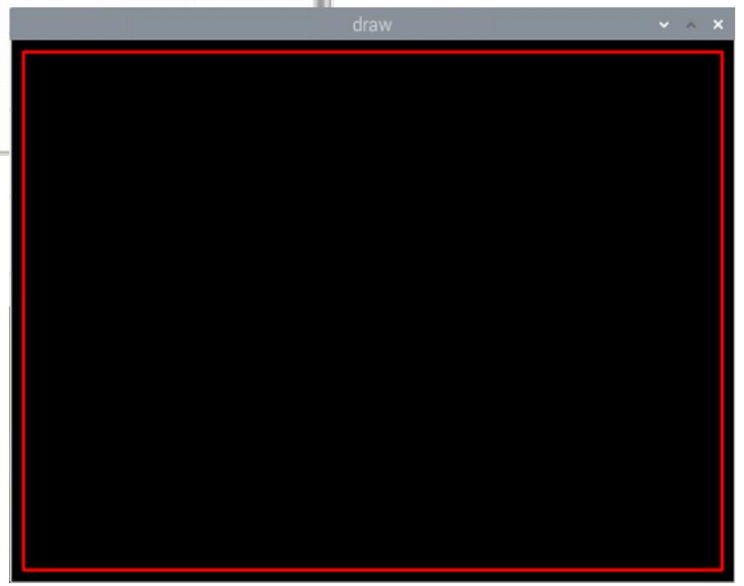


cv2.line(img,start,end,color,thickness)

cv2.rectangle( )

cv2-Draw-line.py | cv2-Draw-rectangle.py

```
1  import cv2
2  import numpy as np
3
4  img=np.zeros((480,640,3),np.uint8)
5  img=cv2.rectangle(img,(10,10),(629,469),(0,0,255),2)
6
7  cv2.imshow('draw',img)
8  cv2.waitKey(0)
9  cv2.destroyAllWindows()
```



cv2.rectangle(img,start,end,color,thickness)

: thickness : -1-> 채움

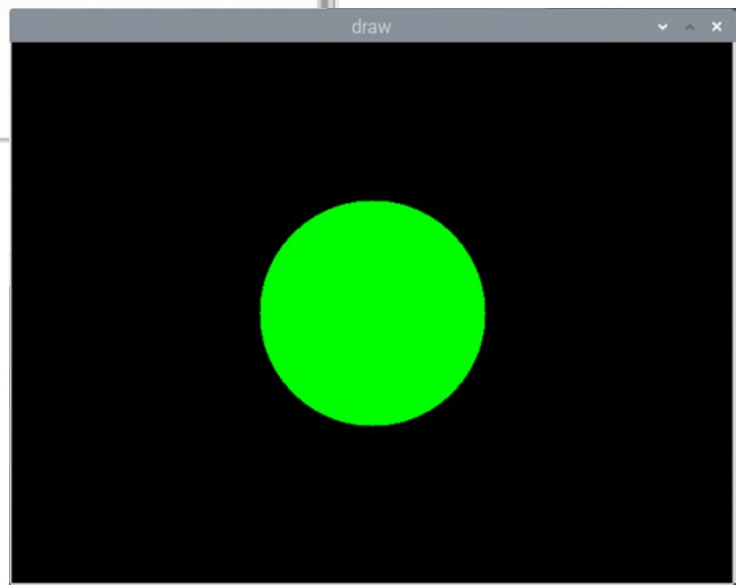
cv2.circle( )

cv2-Draw-line.py | cv2-Draw-rectangle.py | cv2-draw-circle.py

```python
import cv2
import numpy as np

img=np.zeros((480,640,3),np.uint8)
img=cv2.circle(img,(320,240),100,(0,255,0),-1)

cv2.imshow('draw',img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```



cv2.circle(img,center,radian,color,thickness)

: thickness : -1-> 채움

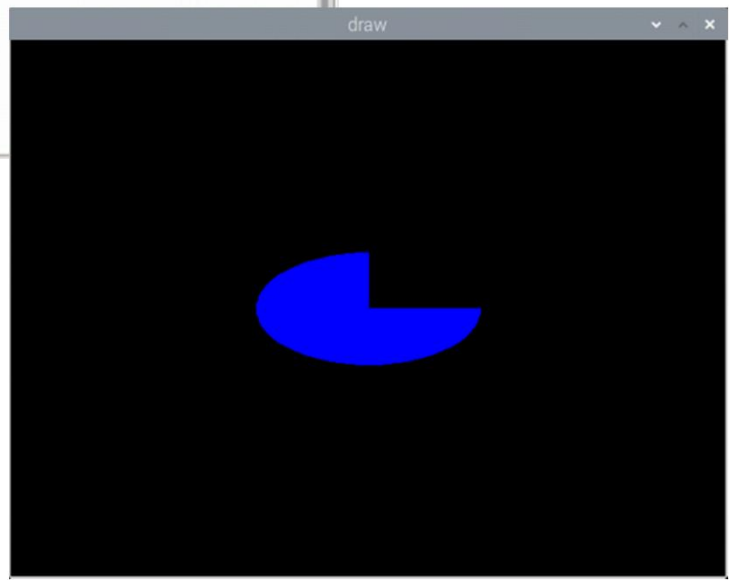
cv2.ellipse( )

cv2-Draw-line.py | cv2-Draw-rectangle.py | cv2-draw-circle.py | cv2-Draw-ellipse.py

```python
import cv2
import numpy as np

img=np.zeros((480,640,3),np.uint8)
img=cv2.ellipse(img,(320,240),(100,50),0,0,270,255,-1)

cv2.imshow('draw',img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```



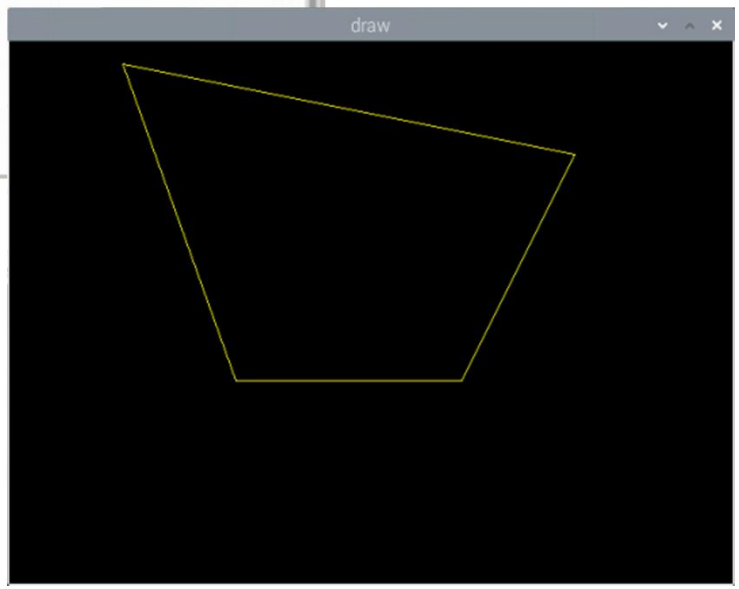
cv2.ellipse(img,center,axes,start angle,end angle, color,thickness)

: thickness : -1-> 채움

cv2.polylines( )

cv2-Draw-line.py | cv2-Draw-rectangle.py | cv2-draw-circle.py | cv2-Draw-ellipse.py | cv2-Draw-polylines.py *

```
1  import cv2
2  import numpy as np
3
4  img=np.zeros((480,640,3),np.uint8)
5  pts=np.array([[100,20],[200,300],[400,300],[500,100]],np.int32)
6  pts=pts.reshape((-1,1,2))
7  img=cv2.polylines(img,[pts],True,(0,255,255))
8
9  cv2.imshow('draw',img)
10 cv2.waitKey(0)
11 cv2.destroyAllWindows()
12
```



cv2.polylines(img,pts,isClosed,color,thickness)

reshape(array, 차원) : 차원 변경

cv2.putText( )

cv2-Draw-line.py | cv2-Draw-rectangle.py | cv2-draw-circle.py | cv2-Draw-ellipse.py | cv2-Draw-polylines.py * | cv2-Draw-putText.py

```
1  import cv2
2  import numpy as np
3
4  img=np.zeros((480,640,3),np.uint8)
5  img=cv2.putText(img,"OpenCV",(80,300),cv2.FONT_HERSHEY_SIMPLEX,4,(255,255,255),10)
6
7  cv2.imshow('draw',img)
8  cv2.waitKey(0)
9  cv2.destroyAllWindows()
```

cv2.putText(img,text,org,font,fontScale,color, thickness)