

In [1]:



```
import numpy as np
import cv2
```

In [2]:



```
width, height = 512, 512
x, y, R = 256, 256, 50

left = 2
right = 0
down = 1
up = 3

direction = right
```

In [4]:



```
while True:
    key = cv2.waitKeyEx(30)
    if key == 0x1B: #ESC
        break;
    # 방향키 방향전환
    elif key == 0x270000: # right
        direction = right
    elif key == 0x280000: # down
        direction = down
    elif key == 0x250000: # left
        direction = left
    elif key == 0x260000: # up
        direction = up

    # 방향으로 이동
    if direction == right: # right
        x += 10
    elif direction == down: # down
        y += 10
    elif direction == left: # left
        x -= 10
    else: # 3, up
        y -= 10

    # 경계확인
    if x < R:
        x = R
        direction = right
    if x > width - R:
        x = width - R
        direction = left
    if y < R:
        y = R
        direction = down
    if y > height - R:
        y = height - R
        direction = up

    # 지우고, 그리기
    img = np.zeros((width, height, 3), np.uint8) + 255 # 지우기
    cv2.circle(img, (x, y), R, (0, 0, 255), -1)
    cv2.imshow('img', img)

cv2.destroyAllWindows()
```

In []:

