Computer and Robot Vision Homework 1

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PART 1
使用語言：**Python**

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1. upside-down

針對每行，讓第j列與倒數第j列互換。

```
im2 = org_im.copy()
for i in range(im.shape[1]):
    for j in range(im.shape[0]//2):
        tmp = im2[j][i].copy()
        im2[j][i] = im2[-j][i]
        im2[-j][i] = tmp.copy()

cv2.imwrite('lena_updown.jpg',im2)
```

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2. right-side-left

針對每列，讓第j行與倒數第j行互換。

```
im = org_im.copy()
for i in range(im.shape[0]):
    for j in range(im.shape[1]//2):
        tmp = im[i][j].copy()
        im[i][j] = im[i][-j]
        im[i][-j] = tmp.copy()

cv2.imwrite('lena_rightleft.jpg',im)
```

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3. diagonally mirror

讓第i列、第j行的值與第j列、第i行互換

```
im3 = org_im.copy()
for i in range(im.shape[0]):
    for j in range(i+1,im.shape[1]):
        tmp = im3[i][j].copy()
        im3[i][j] = im3[j][i]
        im3[j][i] = tmp.copy()

cv2.imwrite('lena_diagonal.jpg',im3)
```

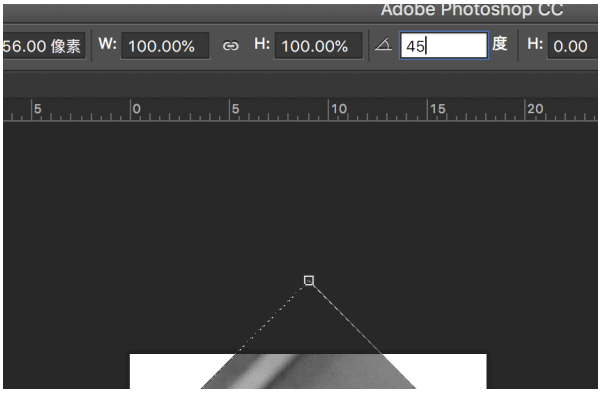
PART 2
使用軟體：**PhotoShop**

1.rotate 45 degree

用“矩形選取工具”選取整張圖片

右鍵選取”任意變形“

在角度的地方設定45

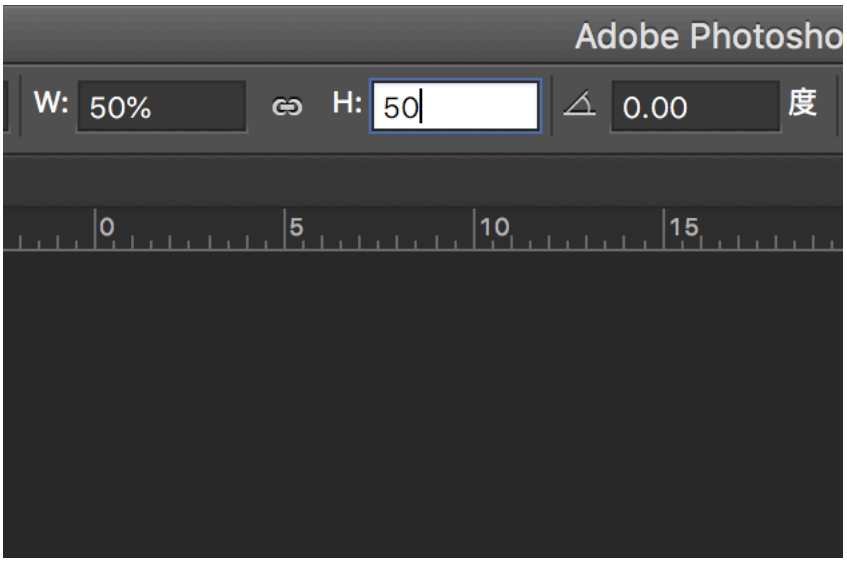


2. Shrink

用“矩形選取工具”選取整張圖片

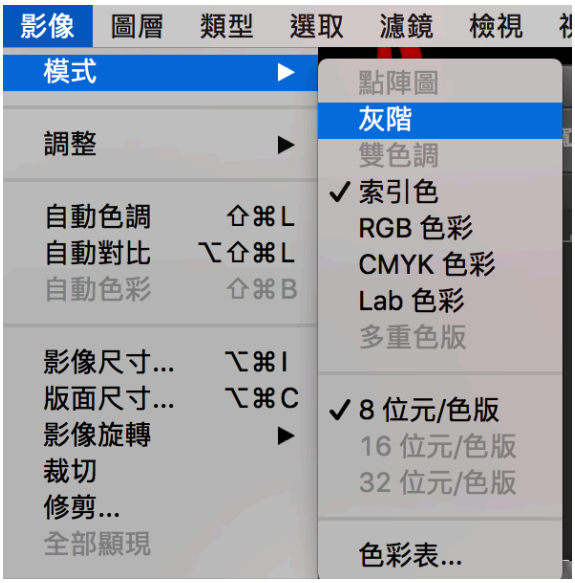
右鍵選取”任意變形“

在W及H皆設為50%

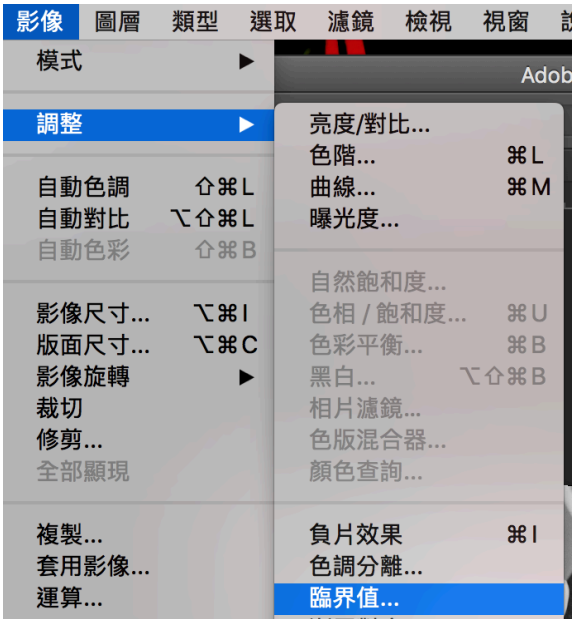


3. Binarize

在“影像”->“模式”選取”灰階“



在“影像”->“調整”選取”臨界值“



設定臨界值為128