Part 1.

- I use python (PIL) to do this work.
- In line 12-14, I declare three Image to handle output image.
- In line 16-21, I use a nested for loop to vertically/ horizontally/ diagonally flip the image.
- In line 19, the pixel in row i should go to row (image_height-i-1).
- In line 20, the pixel in column j should go to column (image_width-j-1).
- In line 21, the pixel with position (i, j) should go to position (j, i).

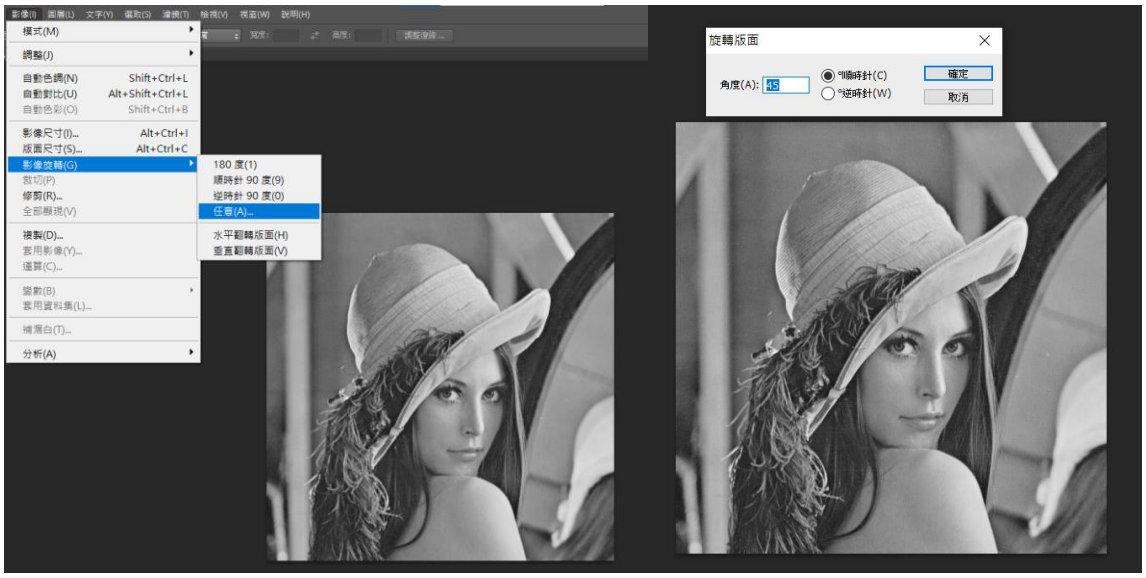
Code

hw1.py

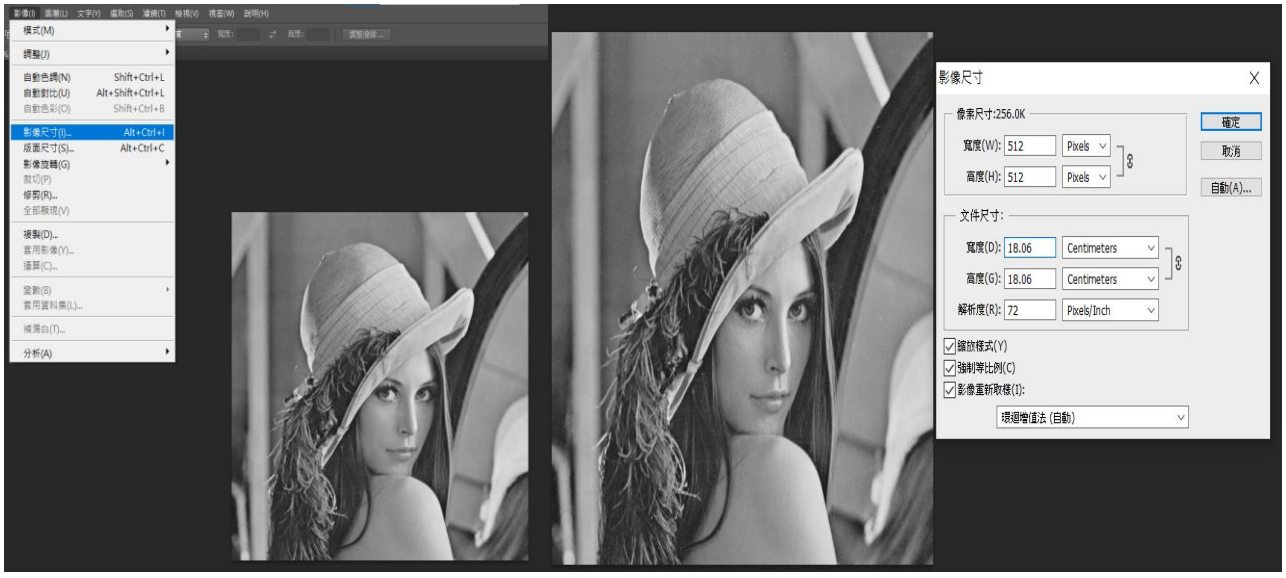
```
1   from PIL import Image
2
3
4
5   path = '../lena.bmp'
6
7
8   if __name__ == '__main__':
9       #bmp_image.save("testBMP.bmp")
10      bmp_image = Image.open(path)
11      rgb_img = bmp_image.convert('RGB')
12      upside_down_img = Image.new("RGB", (bmp_image.height, bmp_image.width))
13      right_side_left_img = Image.new("RGB", (bmp_image.height, bmp_image.width))
14      diagonally_flip_img = Image.new("RGB", (bmp_image.height, bmp_image.width))
15
16      for x in range(bmp_image.height):
17          for y in range(bmp_image.width):
18              (r, g, b) = rgb_img.getpixel((x, y))
19              upside_down_img.putpixel((x, bmp_image.height-y-1), (r, g, b))
20              right_side_left_img.putpixel((bmp_image.width-x-1, y), (r, g, b))
21              diagonally_flip_img.putpixel((y, x), (r, g, b))
22
23      upside_down_img.save('upside_down_lena.bmp')
24      right_side_left_img.save('right_side_left_lena.bmp')
25      diagonally_flip_img.save('diagonally_flip_lena.bmp')
```

Part 2. Use Photoshop and Word

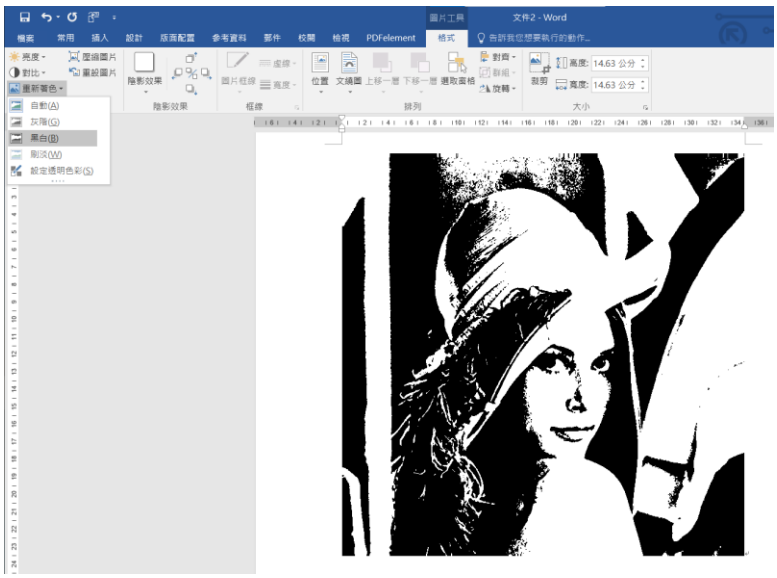
d



e. change the height/ width to 9.03



f



Result

a

b

c

d

e

f