Exercise 1
Due: Friday, April 27, 2018

Note:
- Submit your exercises by pushing them to your Github account/repositories
- Use Python
- Use PyCharm or Jupyter Notebook as your choice
- Use OpenCV or Scikit-image as your choice
- Send me an email if you have any difficulty in completing the exercise

1. Download any color image file with PNG format from Internet (for those who have no idea about PNG file, please see the link: https://en.wikipedia.org/wiki/Portable_Network_Graphics)

2. Write program to do the following works:
    - Load the color image file downloaded in Step 1
    - Display the color image
    - Convert the color image to a gray image, save to a file
    - Reload the file with gray image and display
    - Make sure your saved files can be opened and displayed by other programs, e.g., ImageViewer, Photoshop etc

3. Take a break

4. Write the program to do the following works:
    - Reload the color image file downloaded in Step 1
    - Resize the image to the size of 256 (pixels) x 256 (pixels)
    - Display the image
    - Save to a file
    - Reload the gray image file converted in Step 2
    - Resize the gray image to the size of 256 (pixels) x 256 (pixels)
    - Display the image
    - Save to a file

5. Write the program to do the following works:
    - Apply Gaussian filter with different kernel sizes and sigma
    - Explain the differences

6. Use the perspective projection equations to explain why, in a picture of a face taken frontally and from a very small distance, the nose appears much larger than the rest of the face. Can this effect be reduced by acting on the focal length?