Question 1

Medial Axis Transform

1. Load ”cvSmall.png” and **implement** the medial axis transform algorithm to calculate the skeleton image. You are allowed to load, write and threshold images, and convert RGB image to grayscale image by OpenCV functions.
2. **Submission**: Submit your code and the skeleton image
3. **Hint1**: You have to convert the image into grayscale first, convert the grayscale image to binary image (thresholding), then run your media axis transform algorithm.
4. **Hint2**: Tutorial of OpenCV thresholding function - https://www.learnopencv.com/opencv-threshold-python-cpp/

(a) Raw image (b) Skeleton example

Figure 1

Question 2

Average Filtering

1. Implement the average filtering. Load the attached image (lenna.png) to test your average filtering. You are allowed to load and write images, and convert RGB image to grayscale image by OpenCV functions.

2. **Submission**: Submit your code and images which are produced by $3*3$, $5*5$, $7*7$, $9*9$, $11*11$ averaging masks.

3. **Hint1**: You have to convert the image into grayscale first, then pass the grayscale image to your averaging filtering program.

4. **Bonus (Separability of filter)**: If you implement the averaging filtering by two 1-D masks, instead of one 2D mask, You will receive extra 20% credit of this question.