Running Median Filter Exercise [Help]

Help: The following tips will help you complete this exercise:

- The .py files located in the 'Noise_Functions' folder, contain one single function each, that you can use to corrupt an image with noise, by importing them to your .py file. Make sure that they are located in the same directory. You will not run these files.
- Make sure that the algorithm works for both odd and even-sized filters. This can be achieved with a modulo operation.
- When choosing the median, make sure that the pixel values of the current window have been sorted.
- The median of an even-sized array is the average of the two middle elements.
- Every time you move up/down the histogram bins, reduce/increase the count of pixels whose gray levels are less than that of the median by the histogram of the median.
- If the number of pixels whose gray levels are less than that of the median is not greater than $(n^2 + 1)/2$, move up the histogram bins only when the sum of that number and the histogram of the median is not greater than $(n^2 + 1)/2$.
- To display two images as one, you can use the NumPy.hstack() or NumPy.vstack() functions.
- When displaying the image, if it is entirely white or black, try specifying its data type using the .astype() function.