



ELE 492: Image Processing  
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## HW-2

**Submission Details:** Upload your report as a single .pdf file to the system. Include your code in the appendix of the report. Name it as HW3\_yourID\_yourName.pdf.

**Late Penalty:** If you submit late, you will lose 20pts for each day.

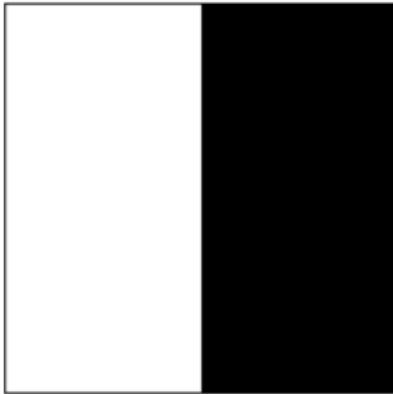
\* All of the code should be written in Python and should be submitted with the HW.

\* Please remember that you might be chosen randomly to present your work. Be ready to display working code when asked to do so, and be able to describe all your work.

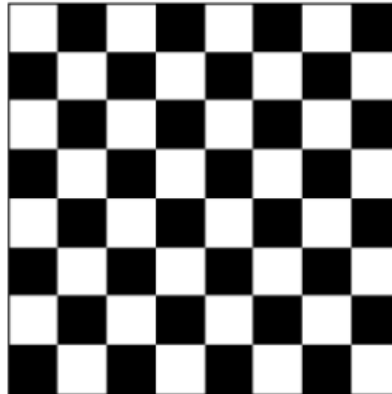
1- **At the top of the HW, please sign this pledge:**

I pledge that I have not received or given any aid in this homework. All the work presented below is my own work. (Name, lastname, ID, signature).

2- Write a Python code that generates images as shown below. Image size can be 200x200.



a



b

- 3- Show the histogram of the two images.
- 4- Use a Gaussian smoothing filter and filter these two images in the spatial domain. Comment on the various sizes and parameters of the filter.
- 5- Show the histograms of the resulting smoothed images.
- 6- Take the DFT and show the frequency content in both images.
- 7- Use an ideal lowpass filter to filter these images and show your results. Comment on the effects of the parameters. (Work this question out in the frequency domain).