CS663: Digital Image Processing
Assignment 05: DFT & Image Restoration

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1 Problem #04

1.1 Ideal Low Pass Filter

- **D = 40:**
  - Ringing is present in the final filtered image.
  - The image is blurred due to absence of significant higher frequency components from the image.
- **D = 80:**
  - Ringing is present in the final filtered image but it is much less as compared to the D=40 case.
  - The image is much less blurred as the significant higher frequency components absent in D=40 case are now preserved in the image.

[1]

1.2 Gaussian Low Pass Filter

- **$\sigma = 40$:**
  - Ringing can not be seen in the filtered image.
  - The image is blurred but the necessary frequency components have been preserved so the amount of blurring is apt.
- **$\sigma = 80$:**
  - Ringing can not be seen in the filtered image.
  - The image appears to be much sharper than the $\sigma = 40$ case as more higher frequency components are preserved.

[1] There is a separate MATLAB report containing images and code.