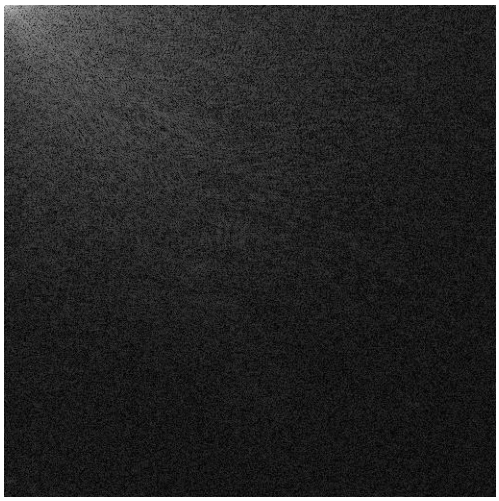
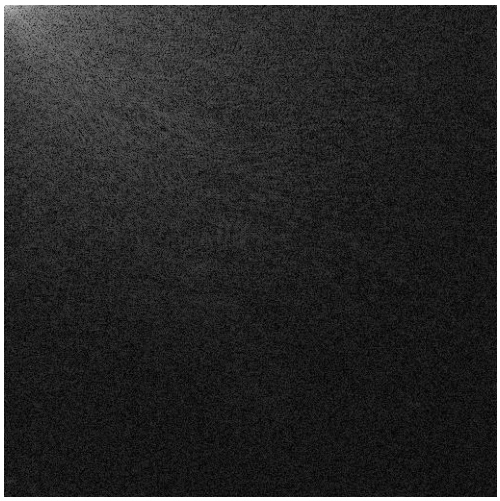
VC HW2

1. Introduction

- 2D-DCT
  - Implement 2D-DCT to transform "lena.png" to DCT coefficients (visualize in log domain).
    - Convert the input image to grayscale first.
    - Visualize the coefficients in the log domain. Feel free to scale and clip the coefficients for visualization.
  - Implement 2D-IDCT to reconstruct the image.
  - Evaluate the PSNR.
- Two 1D-DCT
  - Implement a fast algorithm by two 1D-DCT to transform "lena.png" to DCT coefficients.
- Compare the runtime between 2D-DCT and two 1D-DCT.
- Do **not** use any functions for DCT and IDCT, e.g., cv2.dct
  - Although, you can still use these functions to validate your output.

2. Experimental results

2D-DCT	**Two 1D-DCT**
DCT coefficients	DCT coefficients
	
reconstruct the image	reconstruct the image
	

PSNR	PSNR
2D-DCT PSNR: 28.23551822469692 dB	two 1D-DCT PSNR: 28.306088166357576 dB
runtime	runtime
2D-DCT Runtime: 854.4250733852386 seconds	two 1D-DCT Runtime: 8.428208351135254 seconds