Multimedia Assignment -E1

Muhammad R. Pourbaba

40214160280404

Mazandaran University

9MAY,2024

Professor: Dr. Bastam

Topic: JPEG encoding

1.RGBtoYIQ: A simple color space conversion on a small 8x8 block of Uncompressed portable pixel map(PPM) Gives us YCbCr matrix which is depicted in Figure 1:

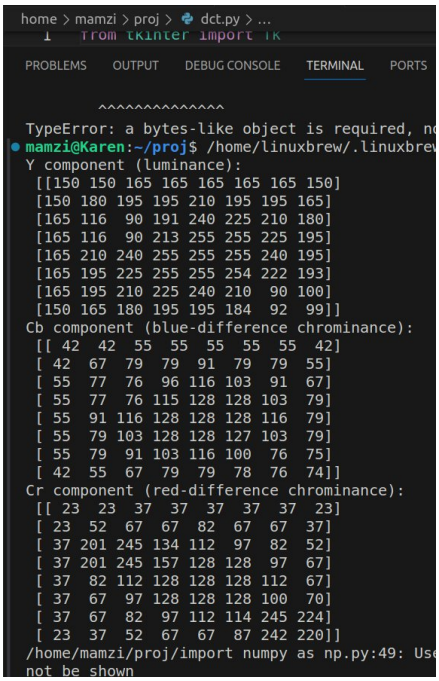

Figure 1

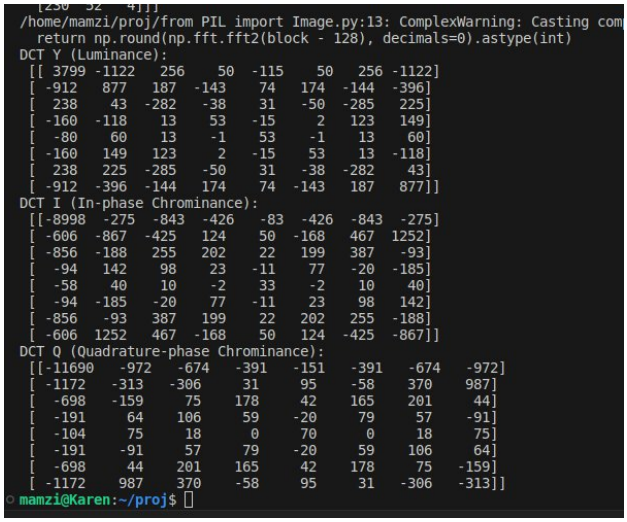

Figure 2

2.DCT: After color space conversion i've done the Discrete Cosine Transform(DCT) on the same image YIQ matrix Figure 2 , Figure 3:

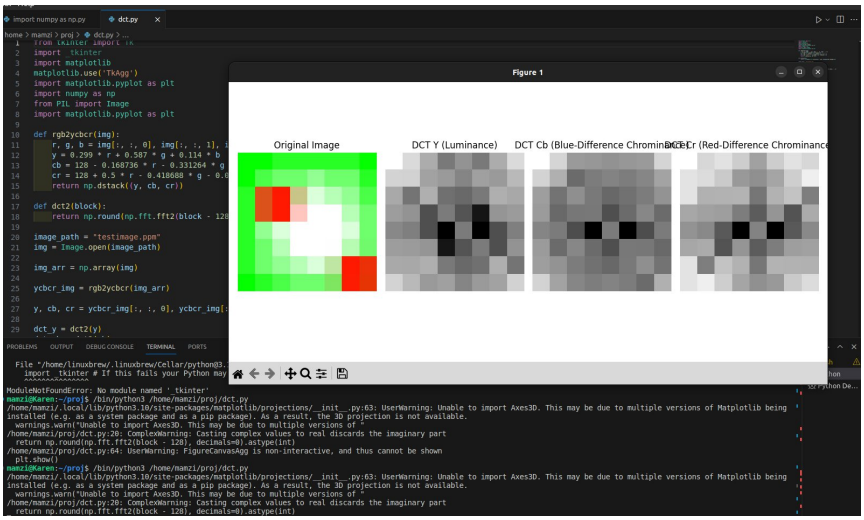

Figure 3

3.Quantization: now we can divide values of arrays to the arbitrary quantization rate (Figure 4)

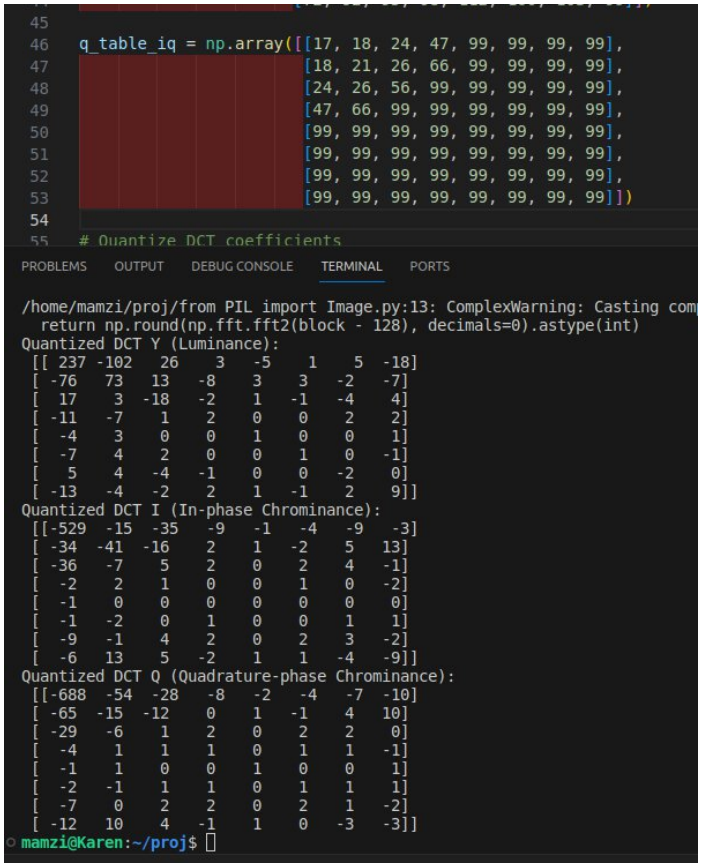

Figure 4

4.Calculating Huffman table: by making the Huffman tree we are able to generate the Huffman table

5.Run-Length Encoding (RLE): with encoding the arrays using Huffman Table we are actually generating the coefficients which can be send over network(Figure 5).

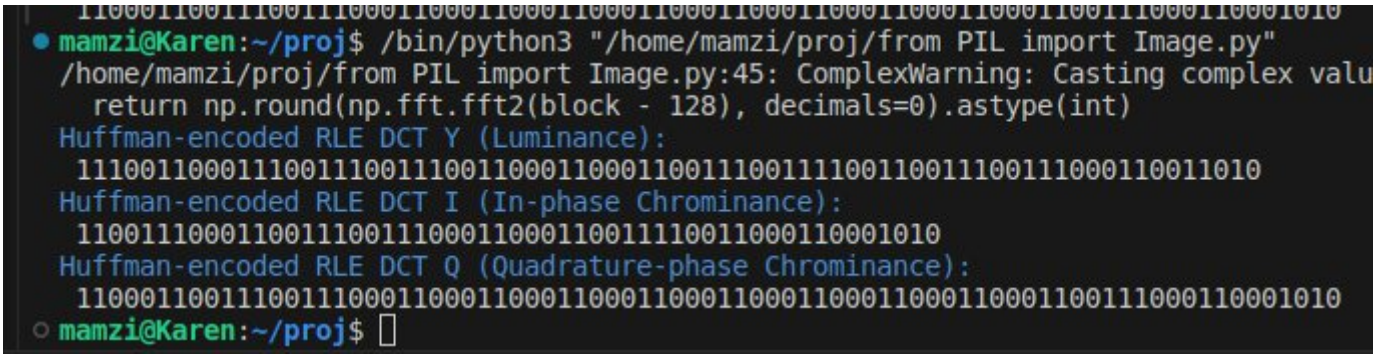

Figure 5

6.sending over network: so i did setup a virtual machine act as a server to receive the code and decode it . The final comparison between the Original image versus the Processed image is shown in Figure 6.

Figure 6

Since the JPEG is a lossy-image-compression algorithm the result of the jpeg process on the image is sensible on the sharpness of the encoded image. It is obvious that the encoded image is less sharper and a bit different from the Original image.

Project files: https://github.com/mopoa/jpeg_compression.git