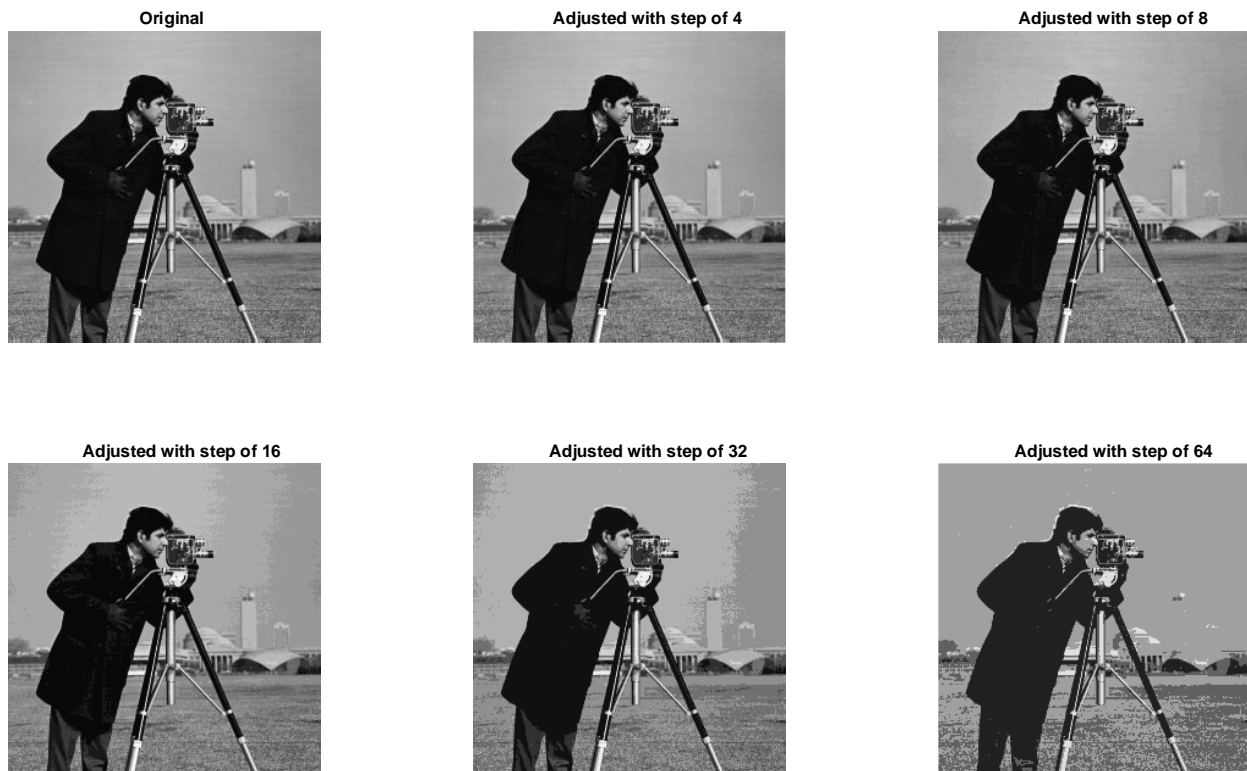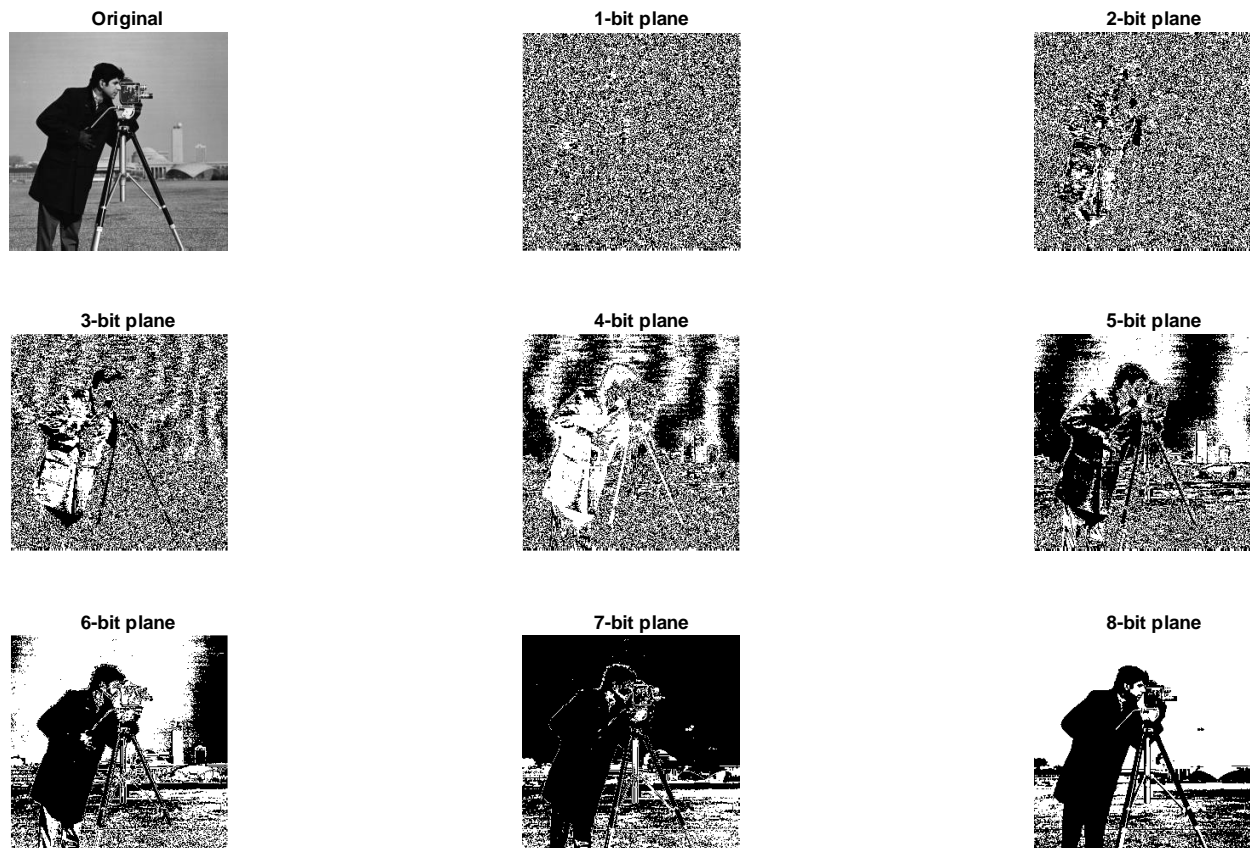**Write MATLAB scripts that change the image intensities according to the following:**

1. Change the intensity of the 8-bit scale [0, 255] to be used as [4, 8, 16, 32, 64] intensity step instead of 1-intensity step. For instance, normally the intensities are [0,1, 2, 3, …., 255], but with 4-step intensity values [2, 6, 10, 14, …., 254] and the intensities between 0 and 4 are assigned to 2 and the intensities between 5 and 8 are assigned to 6 and etc. The results should be similar to Figure 1.

Figure 1 original image with different intensity steps

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2. Bit plane concept: is a set of bits corresponding to a given bit position in each of the binary numbers representing the image. Use MATLAB function bitget(f, position). Display the 8 bit-plane images of the image. The Results should be like Figure 2.

Figure 2 bit plane images

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3. Display the image as 8 incremental images. In each step consider the intensity rage covers only 1-bit number (0 or 1), then, in the second step, consider the intensity range covers 2-bit number (from 0 to 3) and etc. for instance consider the intensity of 130. The binary representation of the 130 is [10000010]. In the first step, consider the bit [0] (least significant bit) and it equals to 0 in decimal. In the second step, consider the bits [10] and it equals to 2 in decimal. In the final step, consider the bits [10000010] (all bits) and it equals to 130 in decimal. The results should be similar to Figure 3. Hint [use dec2binvec to convert decimal number to a binary vector and use binaryVectorToDecimal to do the opposite.]. *It may take some time to execute*.

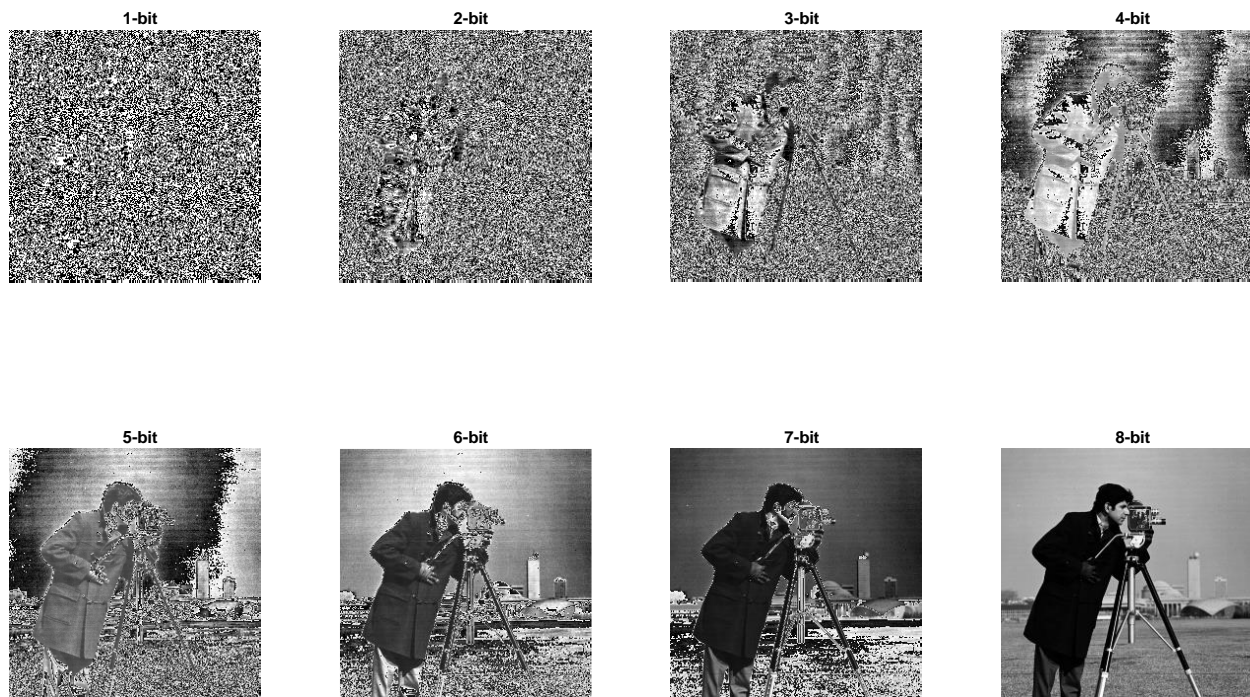1-bit   2-bit   3-bit   4-bit

5-bit   6-bit   7-bit   8-bit

Figure 3 incremental increase of bit level images