Assignment 2

1. Clarify the following terms:

- Dynamic range
- Affine transformation
- Histogram
- Image transformation
- Image translation
- Logarithmic transformation

2. State the enhancement technique and its transformation function for each of the following cases:

a. Obtain negative of an image with gray levels in the range [0, 255]
b. Highlight gray range of interest to a viewer.
c. Decrease image brightness.
d. Enhance low contrast dark or washed out images.

3. A 4-bit 75x40 image has the following intensities; Find out the equalized histogram gray levels for the image and Comment on the result.

Gray level	count
12	148
9	420
10	1180
11	732
8	520

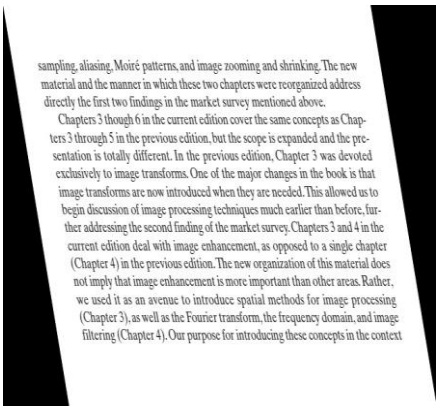
4. For the following 3x3 image intensities find out its bit planes, which bit plane contain most of the significant visual information?

1	2	3
4	5	0
7	2	6

5. Write a program to enhance the image shown, by one of the image enhancement techniques. Explain why? Show the results of running the program and Comment on the result.

a)

b)



sampling, aliasing, Moiré patterns, and image zooming and shrinking. The new material and the manner in which these two chapters were reorganized address directly the first two findings in the market survey mentioned above.

Chapters 3 though 6 in the current edition cover the same concepts as Chapters 3 through 5 in the previous edition, but the scope is expanded and the presentation is totally different. In the previous edition, Chapter 3 was devoted exclusively to image transforms. One of the major changes in the book is that image transforms are now introduced when they are needed. This allowed us to begin discussion of image processing techniques much earlier than before, further addressing the second finding of the market survey. Chapters 3 and 4 in the current edition deal with image enhancement, as opposed to a single chapter (Chapter 4) in the previous edition. The new organization of this material does not imply that image enhancement is more important than other areas. Rather, we used it as an avenue to introduce spatial methods for image processing (Chapter 3), as well as the Fourier transform, the frequency domain, and image filtering (Chapter 4). Our purpose for introducing these concepts in the context

c)

d)

e)