CS 4420/5420	**Digital Image Processing**	Test 1
Name:	Fall 2022	Max Pts: 64

Important: This is an open book test. You can use any books, notes, or paper, but not exchange anything with other students, or any other person via the internet.

1. [6 pt] Briefly describe angiography.
2. [6 pt] It seems logical to represent an image as a 2D array. Yet, in most of the software packages, we see images represented as a 1D array where we access the pixel at a certain (x, y) location by a function or macro. Why don't the software packages represent the images natively as 2D arrays?
3. [6 pt] What is the difference between segmentation and feature extraction in image processing?
4. [6 pt] What component of human eye reacts to bright lights and color? What component reacts to low light? What is the ratio of the number of color sensors to the number of low light sensors in an average human eye?
5. [6 pt] What is the significance of a plenoptic function?
6. [6 pt] How many bits are needed to represent a 256×256 pixel image with 8 gray shades?
7. [6 pt] What is an isothetic move? How do you represent Euclidean distance as a function of isothetic moves and some other moves?
8. [10 pt] The probability distribution of pixel intensities in a 3-bit image is given as

   0.12, 0.00, 0.00, 0.00, 0.39, 0.21, 0.25, 0.03

   Create a lookup table to equalize this histogram.
9. [6 pt] What is the purpose of gamma correction?
10. [6 pt] We can reduce noise by using an averaging filter or a median filter. Under what circumstances will you prefer to use one over the other?