Assignment 1

COMP 4290 Due: September 8, 2023

All RGB components start in the range [0, 255] and must be kept in that range.

- One problem with rotating an image is that our image storage formats are usually rectangular. Given an image that is 800 pixels wide and 600 pixels tall, what is the smallest new image size needed to store the entire image if it were rotated 23° clockwise?
- 2. Brighten the color given by the RGB triple (208, 196, 102) by a factor of 1.2, using the method given in the notes. Give the answer as an RGB triple, rounded to the nearest integers.
- 3. Change the contrast of the color given by the RGB triple (152, 84, 203) by a factor of 0.5, using the method given in the notes. Give the answer as an RGB triple, rounded to the nearest integers.
- 4. Convert the RGB triple (163, 224, 33) to its grayscale equivalent, using the method for computing luminance given in the notes. Give the answer as an RGB triple, rounded to the nearest integers.
- 5. Convert the RGB triple (216, 141, 174) to the HSV color space, using the method given in the notes. Give the answer as an HSV triple where H is an angle in the range [0°, 360°) and S and V are in the range [0, 1].
- 6. Convert the color given by $H = 104^{\circ}$, S = 0.4, V = .82 from the HSV color space to an RGB triple, rounded to the nearest integers, using the method given in the notes.
- 7. Use bilinear interpolation to compute the RGB triple, rounded to the nearest integers, for the pixel at row 7.2 and column 5.9. Here are the RGB values for the surrounding pixels:

	Column	
Row	5	6
7	(151, 163, 240)	(75, 5, 48)
8	(169, 198, 242)	(234, 74, 156)