

- 1) Write a Matlab program that takes in as an input up to 4 polygon vertices in Cartesian coordinates (x,y) . It should also take as an input a matrix that can describe any of the following 2D transformations in homogeneous coordinates: translation, Euclidian, similarity, affine or projective. Note that all the transformations must be performed in homogeneous coordinates.
 - a. Input Cartesian coordinates for an equilateral triangle
 - b. Select appropriate matrices for each type of 2D transformation. Perform all the above-mentioned transformations on the triangle. Plot the original triangle and transformed triangles for each transformation.
 - c. Input Cartesian coordinates for a square
 - d. Perform the same transformations on the square using the same matrices as in b). Plot the original square and transformed squares for each transformation.
- 2) Modify the program in part 1) so that it reads in as input a black and white image, scans through all its pixels starting with the top left corner and then scanning row by row from left to right. It still also takes as an input a matrix that describes the 2D transformation. Apply each of the above transformations using the same matrices as in part 1) to each of the pixels. Plot the original image and transformed images for each transformation.