Introduction

There are many engineering programs, especially CAD (computer aided design) software like SoldWorks, that allow you to translate (pan), rotate, or scale (zoom) the object that you are working on. You can also do this in a Matlab figure using the Menubar/Toolbar buttons. This is your chance to see that this type of graphics manipulation with user interface is something that you can do. This project is to make your own function that allows you to Pan, Rotate, and Zoom the object that is given to you: My_Figure(Pts)

Project

1) First you will make a function that gets the Pixel postion of your pointer on the current figure (i.e. get(gcf,’currentpoint’) and calculates the X,Y position. You need this code to go on to the next parts!!! You will need to use the function get(gca,’position’).

GCF-get current figure, this is the handle for the current figure
GCA-get current axis, this is the handle for the current axis
2) MAIN FUNCTION: Takes in a set of points (3 rows of x, y, and 1’s) that will plot an object (i.e. Kite, also assume that the initially the point [0,0] is the rotation center of your object) and brings up a figure as shown above (with out the Menubar/Toolbar).
   a. If you press the X Key, the figure will close
   b. If you press the T Key, the pointer will change to the ‘fleunt’ pointer and will allow the user to use the mouse (and clicking) to translate the object. A reference (i.e. red line) should be drawn for a moment (i.e. pause(1)) so that the user can see how much the object will move. Than the object should be redrawn in its new position without the reference. (this will be demonstrated in lecture)
   c. If you press the R Key, the pointer will change to a pointer (make your own) that represents rotation. And then will allow the user to use the mouse (and clicking) to rotate the object (about it’s rotation center that was initially at [0,0] but may not be after translation). A reference (i.e. red V, as shown in the figure) should be drawn for a moment so that the user can see how much the object will rotate. Then the object should be redrawn in its new position without the reference.
   d. If you press the Z Key, the pointer will change to a pointer (choose one, or make one) that represents zoom. This should not scale the object! It should zoom in and out (i.e. the X and Y axes should increase or decrease). Some reference should be drawn to represent the zooming before actual zooming occurs.
   e. If any other Key is pressed, it should go back to the starting pointer(either arrow or your own starting pointer)

3) EXTRA: When you have finished Parts 1 and 2, then you can move on to express yourself with this program. You should think of an idea to make this program better. When I say better, this could mean that the graphics are better (i.e. the reference on just simple lines, the pointers are really cool) or this could mean that you add new functionality to your figure (i.e. press another specific Key and you can do something else)

I STRESS THAT YOU SHOULD GET THROUGH PARTS 1 AND 2 FIRST!

This will not be a one day project, so if you want to get to the EXTRA part, than you will have to work hard to get the first 2 parts finished.