Print this page

2D Transformations

For this tutorial, you can continue to use the project you were working on in tutorial 1. If you haven't completed tutorial 1, you should at least get the drawDDALine method working before continuing.

Getting Started

1. Start by modifying your code to draw a polygon in the centre of the screen using either of your line drawing methods.
2. Also modify your line drawing code so that it checks to make sure pixels are within the draw area before plotting them (just skip pixels
3. Move the polygon drawing code from the init method to the update method and un-comment or add the following line at the beginning `drawArea->clear(Colour(255,255,255,255));`
4. Create some **member** variables for the vertices of your polygon and initialise them in the constructor.
5. Store these in an array of `Vector3`'s (the `Vector3` class is already part of T3D) using homogeneous coordinates.
6. Modify the drawing code so that it uses a `for` loop with the new member variables.

Translation

1. Test that animation is working by adding a small offset to each x and y coordinate before drawing the lines.
2. Now create a `Matrix3x3` member variable (`Matrix3x3` is also a T3D class) and initialise it in the constructor with values that will ac
3. Test your matrix by using it to transform the coordinates using the `Matrix3x3` '`*`' operator (**make sure you get the order right**) inst

Scale

1. Change your translation matrix to a scale matrix (or create a new matrix) and confirm that the code still works as expected.
2. Try a few different scale matrices to make sure that it works, and maybe try a few random matrices just to confirm that it doesn't work

Rotation

1. Change to a rotation matrix and test your code (use a small angle). Notice that the polygon rotates around the origin.
2. Perform two translations (using separate matrices) before and after the rotation, to get the polygon to rotate around the centre of the s
3. Now manually calculate the product of the three matrices and use the calculated matrices to replace the three previous multiplications
4. Finally, use the '`*`' operator for matrices to *concatenate* your original translate (again, make sure the order is correct), rotate and trans

UNIVERSITY *of* TASMANIA

College of Sciences and Engineering