Anthony Bartholomew
Professor Chen
CSE 5542
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CSE 5542 HW1

① Scale Matrix

$$S_1 = \begin{bmatrix} 4.5 & 0 & 0 & 0 \\ 0 & 4 & 0 & 0 \\ 0 & 0 & 4.5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Translation Matrix needed after scale is applied.

$$T_1 = \begin{bmatrix} 1 & 0 & 0 & 2.25 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 2.25 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

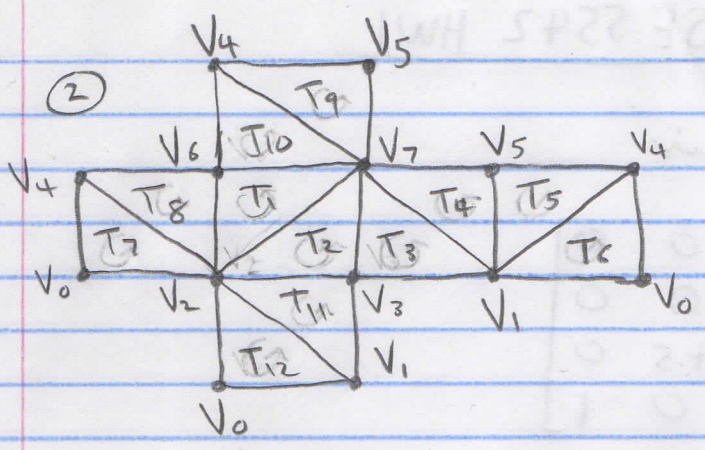
Complete Transformation Matrix

$T = T_1 \cdot S_1$

$$T = \begin{bmatrix} 1 & 0 & 0 & 2.25 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 2.25 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 4.5 & 0 & 0 & 0 \\ 0 & 4 & 0 & 0 \\ 0 & 0 & 4.5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 4.5 & 0 & 0 & 2.25 \\ 0 & 4 & 0 & 2 \\ 0 & 0 & 4.5 & 2.25 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

(2)



$T_1 = (V_6, V_2, V_7)$
$T_2 = (V_3, V_7, V_2)$
$T_3 = (V_3, V_1, V_7)$
$T_4 = (V_5, V_7, V_1)$
$T_5 = (V_5, V_1, V_4)$
$T_6 = (V_0, V_4, V_1)$
$T_7 = (V_0, V_2, V_4)$
$T_8 = (V_6, V_4, V_2)$
$T_9 = (V_5, V_4, V_7)$
$T_{10} = (V_6, V_7, V_4)$
$T_{11} = (V_3, V_2, V_1)$
$T_{12} = (V_0, V_1, V_2)$

Note: All triangles above were constructed using counter-clock-wise order using the diagram above.