Part 1

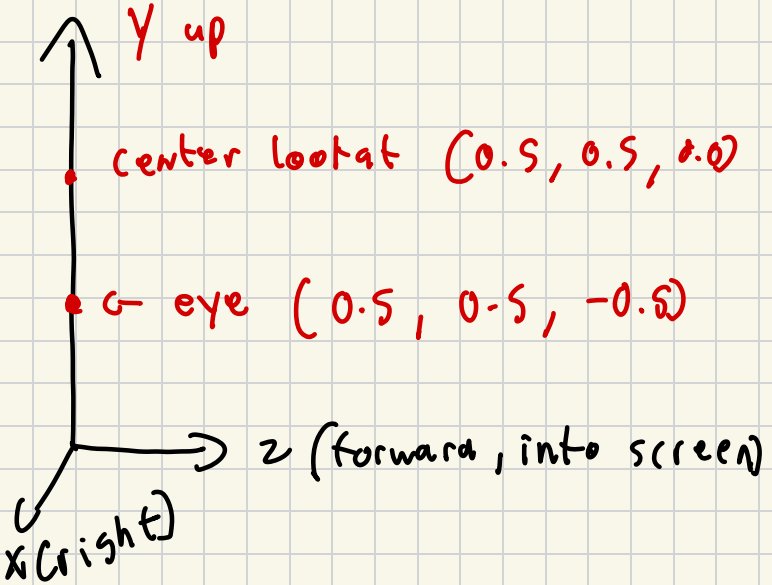
1.1) The vector is calculated by subing in eye position from center point. (normalize it)

center - eye = (0.5, 0.5, 0.0) - (0.5, 0.5, -0.5)

= (0.0, 0.0, 0.5) → normalize

(0.0, 0.0, 1.0)

1.2)



1.3) X camera → comes to the right (1,0,0)

Y camera perpendicular to x and z (0,1,0)

2 camera forward into screen (0, 0, 1)

1.4) $V = \begin{bmatrix} 1 & 0 & 0 & 0.5 \\ 0 & 1 & 0 & -0.5 \\ 0 & 0 & -1 & -0.5 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

→ we rotate with camera
→ and move origin to camera position

only thing we change is the x position/view to the right in this case

$\begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix} \rightarrow \begin{bmatrix} -1 \\ 0 \\ 0 \\ 0 \end{bmatrix}$

2) model = T(position) · T(center) · R · S · T(center)

Part 2) We store it in a model matrix to hold the transformation → if parent we use parent's stored model matrix and * by Child's

With parent = model(parent) · T(pos) · T(center) * T(center) · R

no parent = T(pos) · T(center) · R · T