

10/4/20

Blender Activity #2

Objects & Camera

1.) Write down P_{xy} .

$$P = \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} \cdot \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos \frac{\pi}{4} & -\sin \frac{\pi}{4} \\ 0 & \sin \frac{\pi}{4} & \cos \frac{\pi}{4} \end{pmatrix} \cdot \begin{pmatrix} \cos \frac{\pi}{4} & 0 & \sin \frac{\pi}{4} \\ 0 & 1 & 0 \\ -\sin \frac{\pi}{4} & 0 & \cos \frac{\pi}{4} \end{pmatrix}$$

2.) Write down P_{yx} .

$$P = \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} \cdot \begin{pmatrix} \cos \frac{\pi}{4} & 0 & \sin \frac{\pi}{4} \\ 0 & 1 & 0 \\ -\sin \frac{\pi}{4} & 0 & \cos \frac{\pi}{4} \end{pmatrix} \cdot \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos \frac{\pi}{4} & -\sin \frac{\pi}{4} \\ 0 & \sin \frac{\pi}{4} & \cos \frac{\pi}{4} \end{pmatrix}$$

3) Write down t_1 World Cube.

$$\begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix} + \begin{pmatrix} 2 \\ -1 \\ 1 \end{pmatrix} = \begin{pmatrix} 3 \\ 0 \\ 3 \end{pmatrix} = t_1 \text{ World Cube location}$$

4) Write down t_2 World Cube

$$\begin{pmatrix} 2 \\ -1 \\ 1 \\ 1 \end{pmatrix} \begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} & 1 \\ 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

6.) All views shows vs the monkey head with the same dimension. In other words, all views show vs the same exact view. This is because we are increasing the focal length as much as we are decreasing the camera's X value.