

Blender Activity #2

Check Point 1) $P_{xy} = R_x \begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos \frac{\pi}{4} & -\sin \frac{\pi}{4} \\ 0 & \sin \frac{\pi}{4} & \cos \frac{\pi}{4} \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ \sqrt{2} \end{bmatrix}$

$$\begin{bmatrix} \cos \frac{\pi}{4} & 0 & \sin \frac{\pi}{4} \\ 0 & 1 & 0 \\ -\sin \frac{\pi}{4} & 0 & \cos \frac{\pi}{4} \end{bmatrix} \begin{bmatrix} 1 \\ 0 \\ \sqrt{2} \end{bmatrix} = \begin{bmatrix} \frac{1+\sqrt{2}}{2} \\ 0 \\ \frac{1-\sqrt{2}}{2} \end{bmatrix}$$

Check Point 2) $P_{xz} = \begin{bmatrix} \cos \frac{\pi}{4} & 0 & \sin \frac{\pi}{4} \\ 0 & 1 & 0 \\ -\sin \frac{\pi}{4} & 0 & \cos \frac{\pi}{4} \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} = \begin{bmatrix} \sqrt{2} \\ 1 \\ 0 \end{bmatrix}$

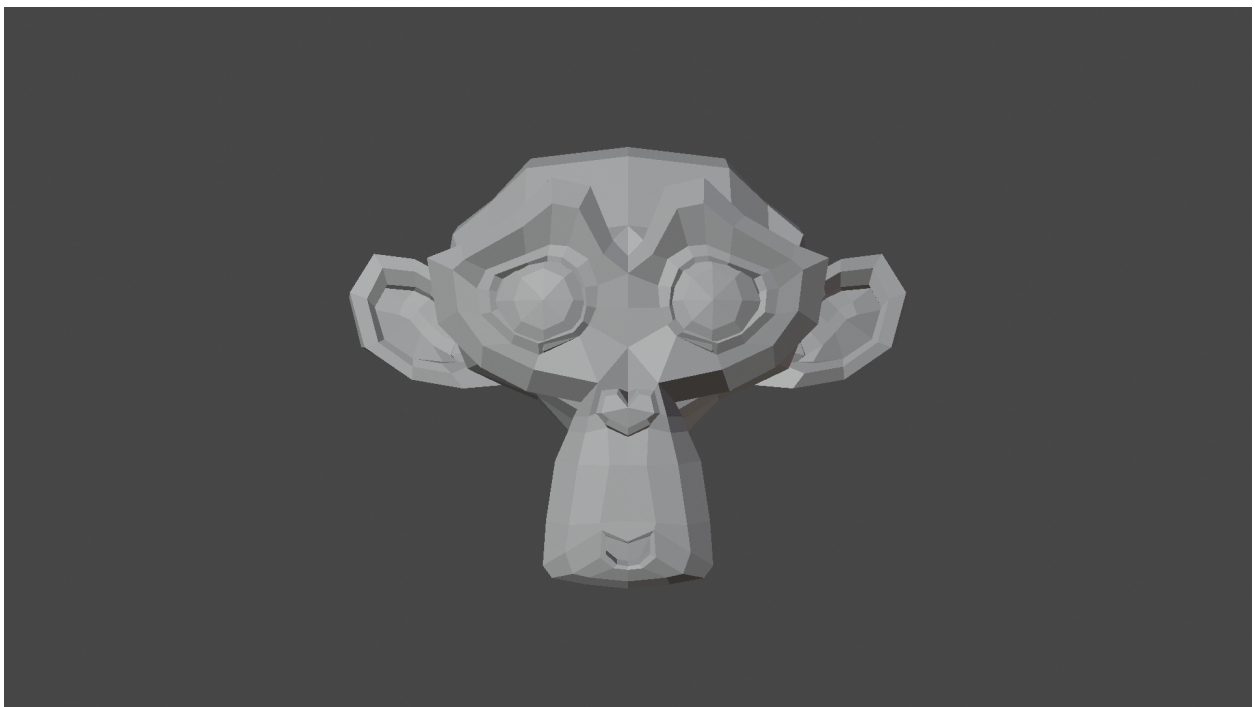
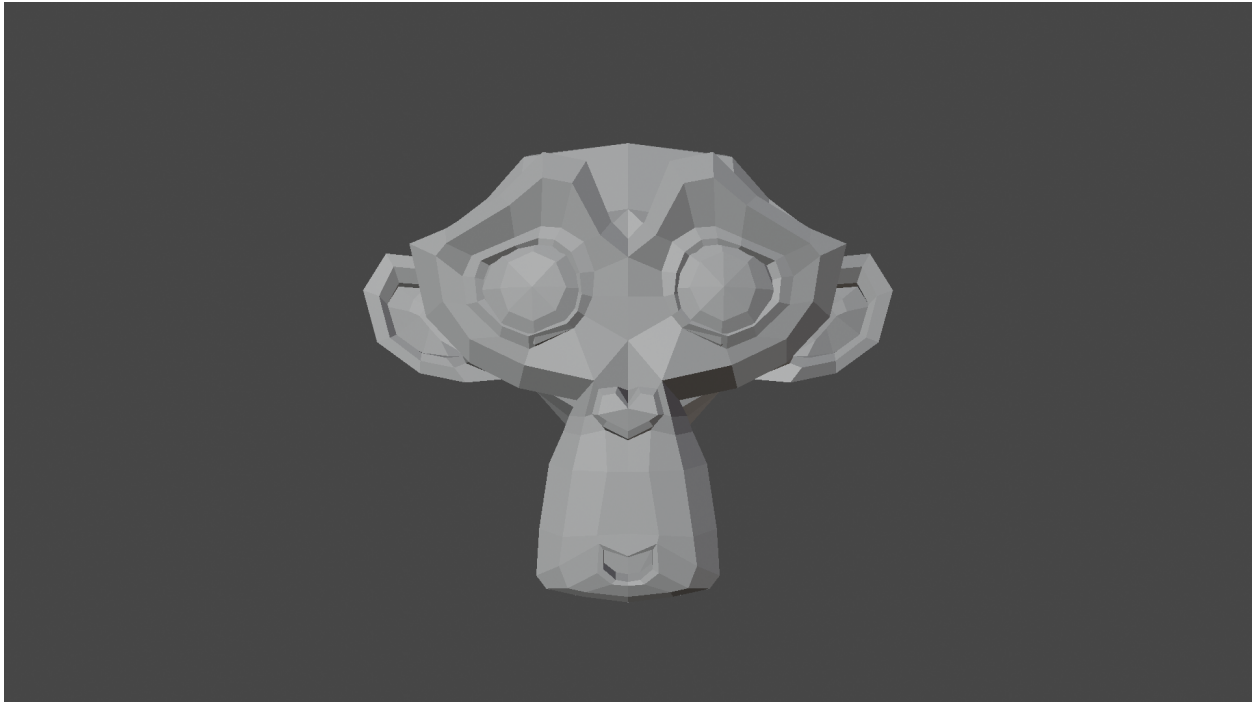
$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos \frac{\pi}{4} & -\sin \frac{\pi}{4} \\ 0 & \sin \frac{\pi}{4} & \cos \frac{\pi}{4} \end{bmatrix} \begin{bmatrix} \sqrt{2} \\ 1 \\ 0 \end{bmatrix} = \begin{bmatrix} \sqrt{2} \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{bmatrix}$$

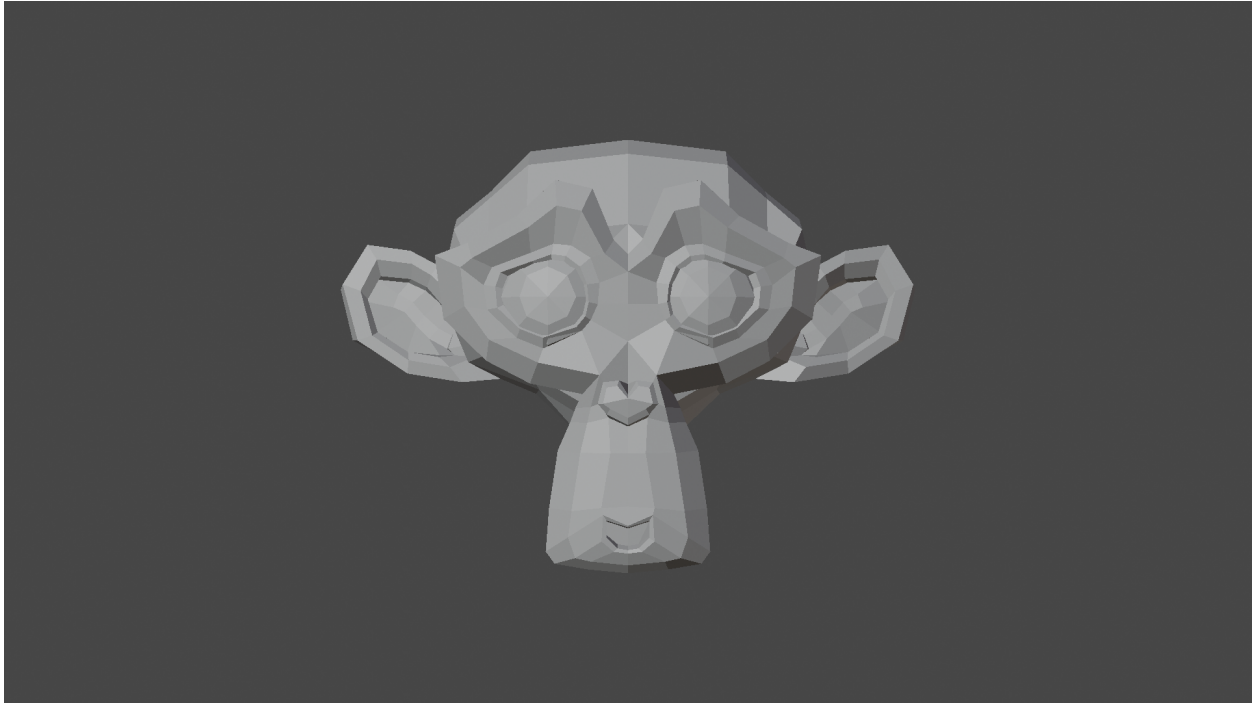
Check Point 3) $\begin{pmatrix} 2 \\ -1 \\ 1 \end{pmatrix} + \begin{pmatrix} 1 \\ 2 \\ 2 \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \\ 3 \end{pmatrix}$

Check Point 4) $T_6 = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} & 1 \\ 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 2 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

$$= \begin{bmatrix} 1 & 0 & 0 & 3 \\ 0 & \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} & 0 \\ 0 & \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} & 2 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Check point #5





Check point 6

the object didn't change but the perspective of the camera made an illusion that the object size changed because of the length that was set and its location

CheckPoint 7

