

Link	Θ_i	d_i	a_i	α_i
1	Θ_1^*	d_1	0	0
2	90°	d_2^*	0	90°
3	0	d_3^*	0	0

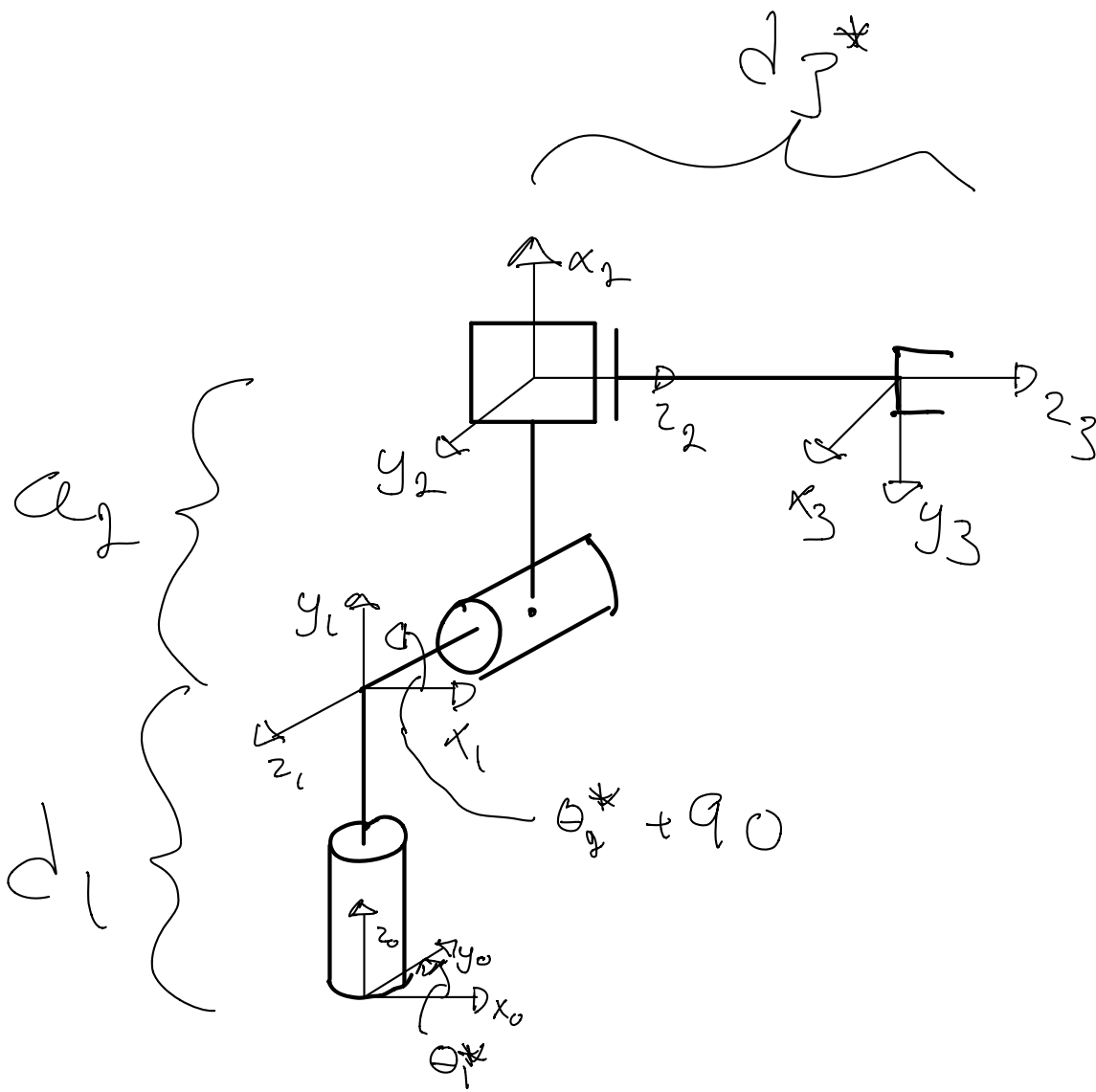
$$\begin{pmatrix} c_1 & -s_1 & 0 & 0 \end{pmatrix}$$

$$A_1 = \begin{bmatrix} s_1 & c_1 & 0 & 0 \\ 0 & 0 & -1 & d_1 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

$$A_2 = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -\frac{d_2}{2} \end{bmatrix}$$

$$\begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -\frac{d_2}{2} \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

$$H = \begin{bmatrix} s_1 & c_1 & 0 & 0 \\ 0 & 0 & -1 & d_1 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} s_1 & c_1 & 0 & 0 \\ 0 & 0 & -1 & d_1 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} s_1 & c_1 & 0 & 0 \\ 0 & 0 & -1 & d_1 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} s_1 & c_1 & 0 & 0 \\ 0 & 0 & -1 & d_1 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$



Link	θ_i	d_i	a_i	α_i
1	θ_1^*	d_1	0	90°
2	$\theta_2^* + 90^\circ$	L_{off}	a_2	90°
3	90°	d_3^*	0	0

Tips:

$$\sin(a \pm b) = \sin a \cos b \pm \cos a \sin b$$
$$\cos(a \pm b) = \cos a \cos b \mp \sin a \sin b$$

$$A_1 = \begin{bmatrix} c_1 & 0 & s_1 & 0 \\ s_1 & 0 & -c_1 & 0 \\ 0 & 1 & 0 & d_1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$A_2 = \begin{bmatrix} -s_2 & 0 & c_2 & -a_2 s_2 \\ c_2 & 0 & s_2 & a_2 c_2 \\ 0 & 1 & 0 & \text{loff} \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\cos(\theta_1 + 90) = c_1 c_0 - s_1 s_0$$

$$= -S_2$$

$$\sin(\theta_2 + 90) = S_2 C_{90} + C_2 S_{90}$$

$$= C_2$$

$$\begin{bmatrix} -S_2 & 0 & C_2 & -a_2 S_2 \\ C_2 & 0 & S_2 & a_2 C_2 \\ 0 & 1 & 0 & L_{off} \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$H_2^0 = \begin{bmatrix} C_1 & 0 & S_1 & 0 \\ S_1 & 0 & -C_1 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} -C_1 S_2 & S_1 & C_1 C_2 & -a_2 C_1 S_2 + L_{off} S_1 \\ -S_1 S_2 & -C_1 & S_1 C_2 & -a_2 S_1 S_2 - L_{off} C_1 \\ C_2 & 0 & S_2 & a_2 C_2 + d_1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$