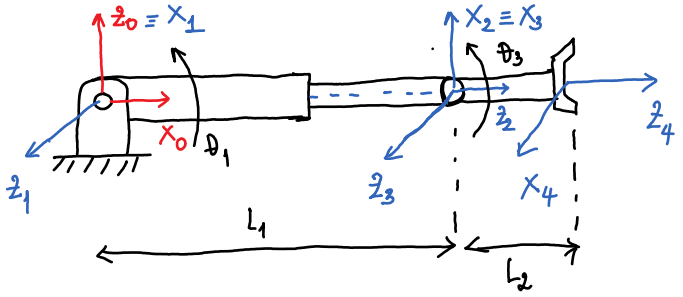
Bài 2 - Đề 2

Chọn 1 vị trí ban đầu của Robot



	α_{i-1}	a_{i-1}	d_i	θ_i
1	90°	0	0	$\theta_1 + 90^\circ$
2	90°	0	$L_1 + d_2$	0
3	-90°	0	0	θ_3
4	90°	0	L_2	90°

- Chọn hệ trục $X_0 Y_0 Z_0$ và $X_4 Y_4 Z_4$ theo quy định
- Gán các trục Z_1, Z_2, Z_3.
- Gán $X_1 \perp Z_1, Z_2$ và đi qua giao điểm Z_1, Z_2. Gán $X_2 \perp Z_2, Z_3$ và đi qua giao Z_2, Z_3. Gán $X_3 \perp Z_3, Z_4$ và đi qua giao Z_3, Z_4.

$$^0_1T = \begin{bmatrix} -S\theta_1 & -C\theta_1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ C\theta_1 & -S\theta_1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \qquad ^1_2T = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & -L_1 - d_2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$^2_3T = \begin{bmatrix} C\theta_3 & -S\theta_3 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ -S\theta_3 & -C\theta_3 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \qquad ^3_4T = \begin{bmatrix} 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & -L_2 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\Rightarrow \quad ^0_4T = \begin{bmatrix} 0 & S(\theta_1+\theta_3) & C(\theta_1+\theta_3) & C\theta_1(L_1+d_2) + L_2 C(\theta_1+\theta_3) \\ -1 & 0 & 0 & 0 \\ 0 & -C(\theta_1+\theta_3) & S(\theta_1+\theta_3) & S\theta_1(L_1+d_2) + L_2 S(\theta_1+\theta_3) \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$J_1 = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & \frac{m_1 L_1^2}{3} & 0 & -\frac{m_1 L_1}{2} \\ 0 & 0 & 0 & 0 \\ 0 & -\frac{m_1 L_1}{2} & 0 & m_1 \end{bmatrix} \qquad J_2 = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{m_2 L_2^2}{3} & -\frac{m_2 L_2}{2} \\ 0 & 0 & -\frac{m_2 L_2}{2} & m_2 \end{bmatrix}$$

$$J_3 = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & \frac{m_3 L_3^2}{3} & 0 & -\frac{m_3 L_3}{2} \\ 0 & 0 & 0 & 0 \\ 0 & -\frac{m_3 L_3}{2} & 0 & m_3 \end{bmatrix}$$