ASSIGNMENT 4

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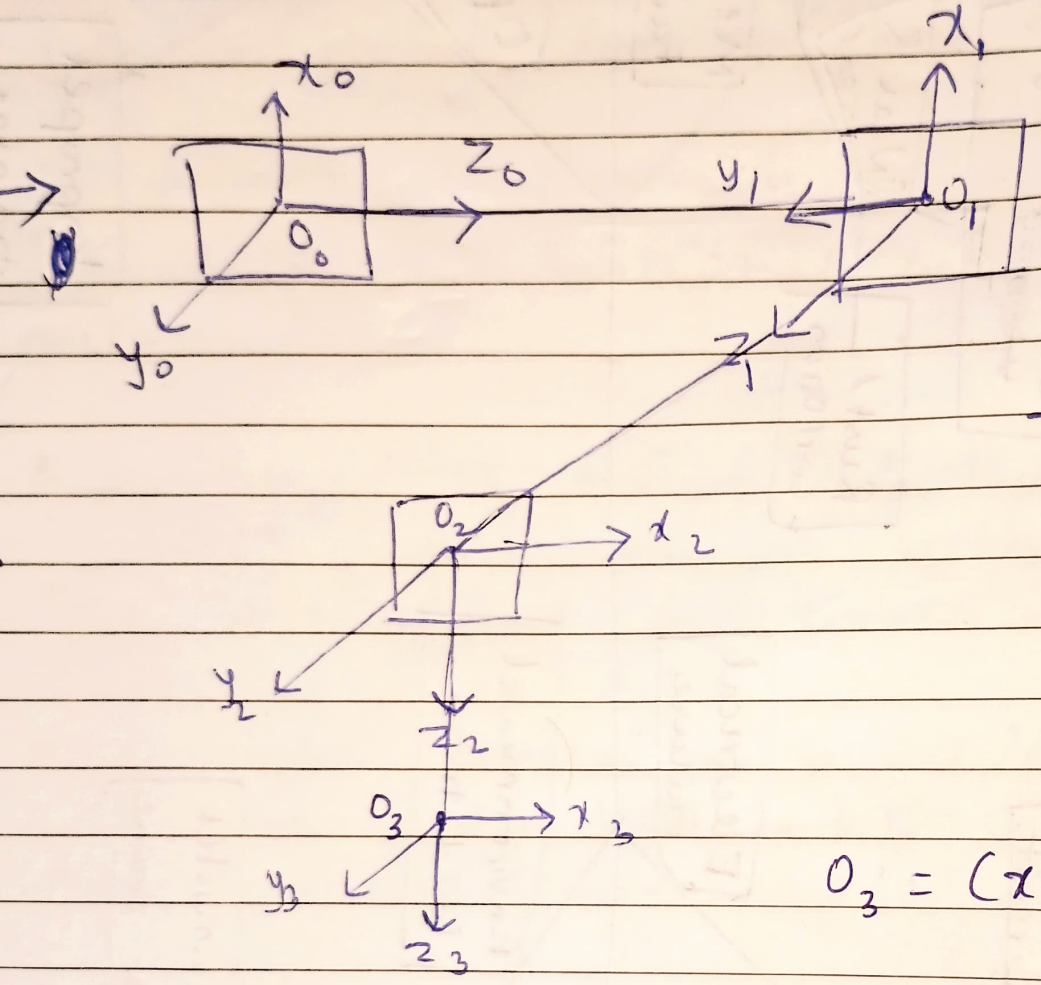
Task 7



$O_3 = (x, y, z)$

Link	a_i	α_i	d_i	θ_i
1	0	-90	d_1	0
2	0	90	d_2	-90
3	0	0	d_3	0

Task 8

Since all the three prismatic joints in a 3D printer move in directions perpendicular to the other two, each movement is independent of the others. Thus, the inverse kinematics of this problem is very straight-forward:

$$\left.\begin{aligned} d_1 &= z \\ d_2 &= y \\ d_3 &= -x \end{aligned}\right\} - (1)$$

Thus, given (x, y, z), we can find the joint variables (d_1, d_2, d_3) using eqn (1).

The axes are taken as shown in Task 7. ($o_0 x_0 y_0 z_0$ frame)