Consider the Scara robot shown in the figure.

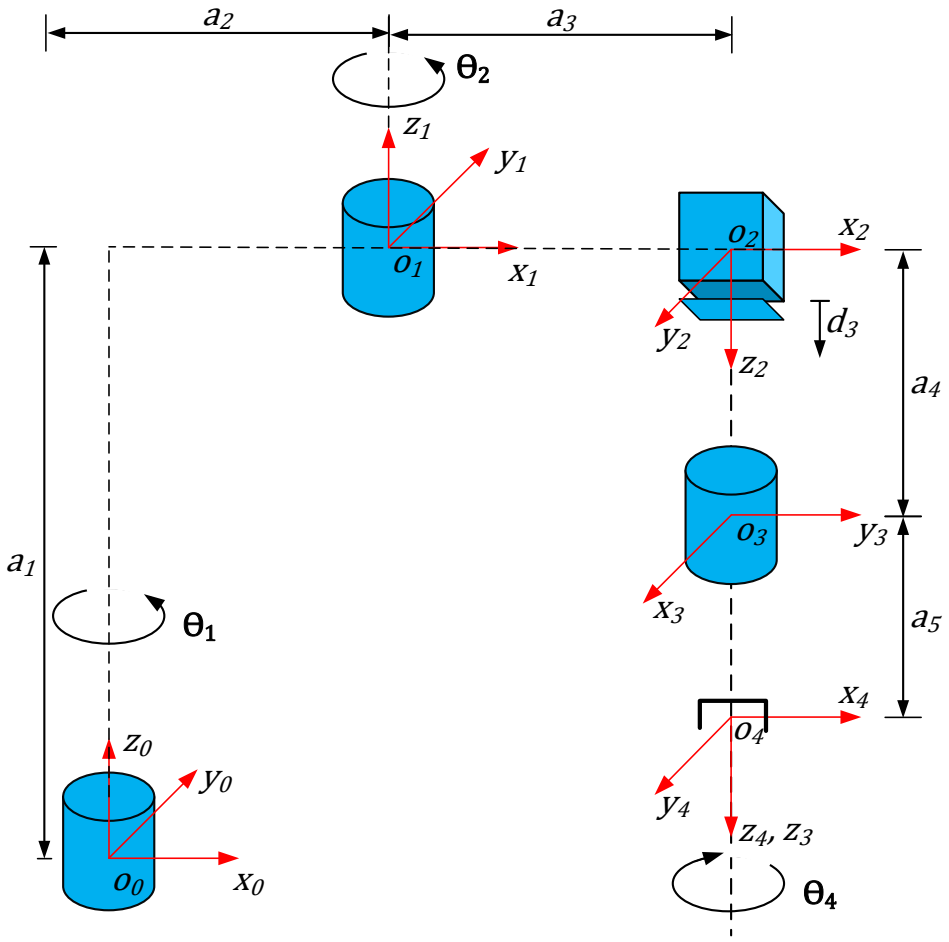

Figure 1. A kinematic diagram for a Scara robot

Part 1. Find the homogeneous transformations H_1^0 , H_2^1 , H_3^2 , H_4^3 analytically. Submit a scan of your work.

Part 2. Write a MATLAB program with the following features:

- The program should take a_1 , a_2 , a_3 , a_4 , a_5 , θ_1 , θ_2 , d_3 , θ_4 as inputs and calculates H_4^0
- The program should take coordinate of any point with the respect frame 4 (End-effector frame) $P^4$and calculate its coordinates with respect to world coordinate system (frame 0) P^0 . Submit the MATLAB file, and a screenshot of your MATLAB code.