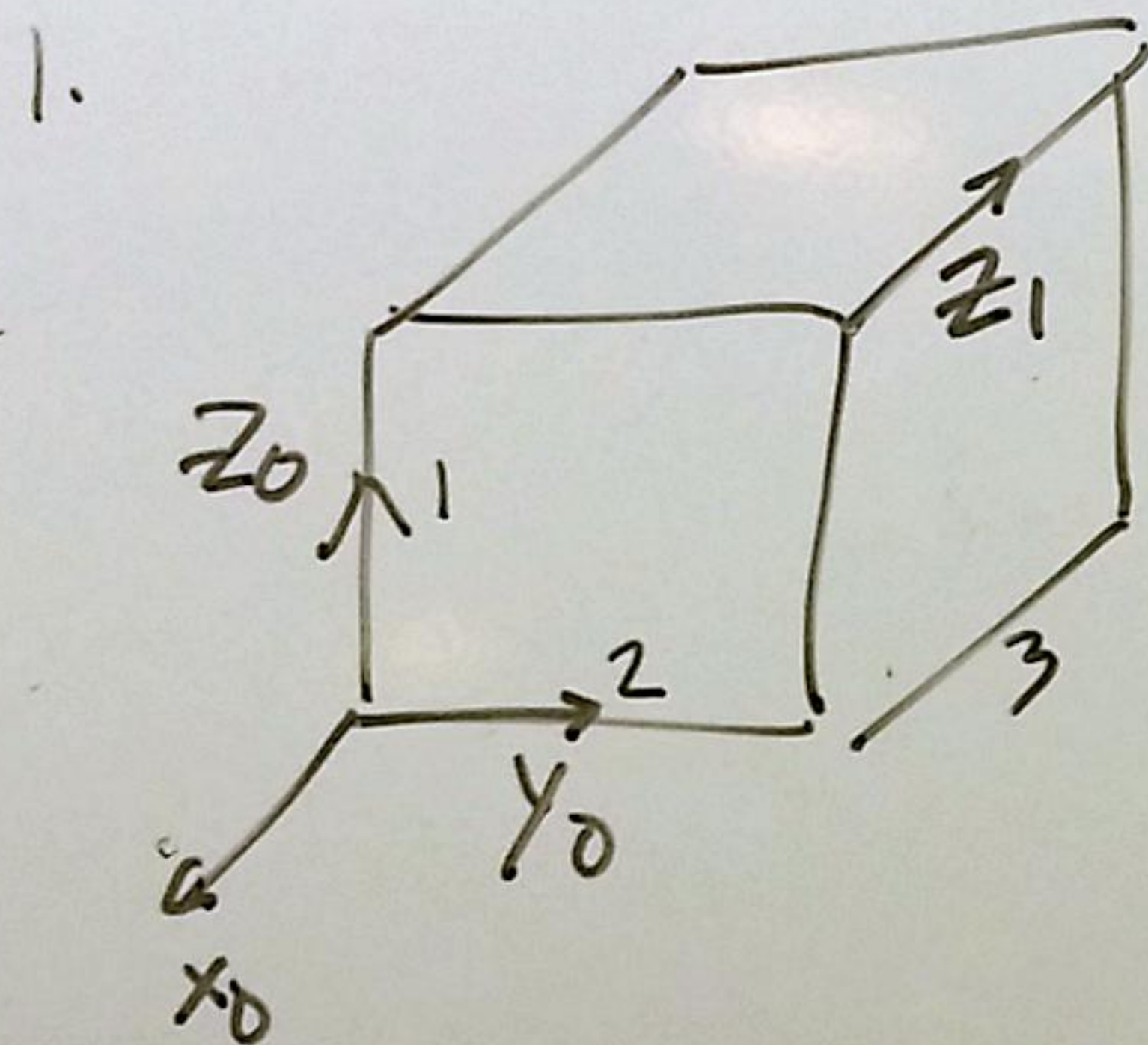


Quiz 1.2

45 mins



a) Complete the frame assignment for Frame 1 accdg to DH convention.

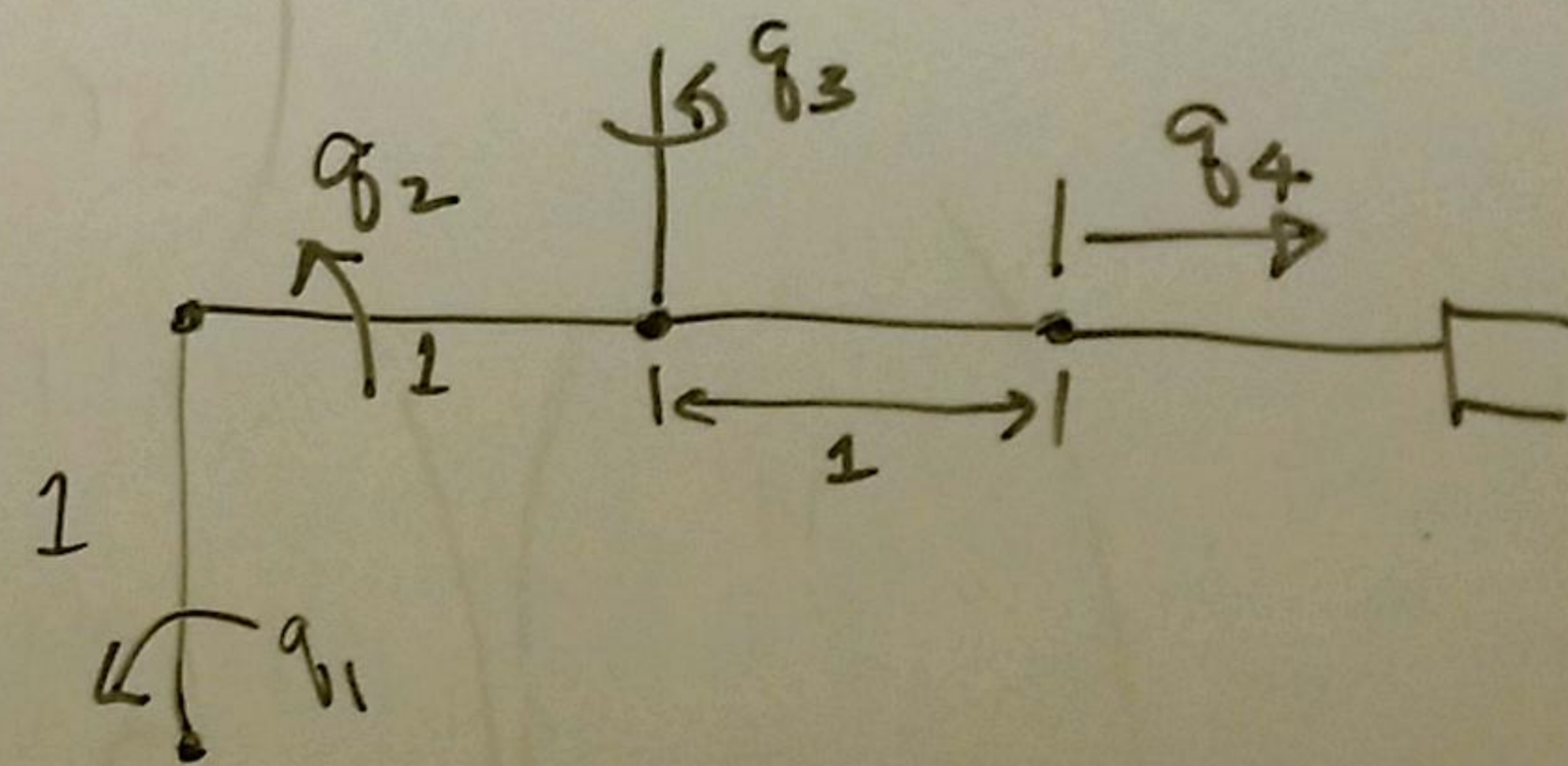
b) $\theta = ?$
 $r = ?$
 $d = ?$
 $\alpha = ?$

2. The ff robot has 4 joints.
1st 3 are rotational + last joint is translational.

a) Assign frames accdg to DH convention.

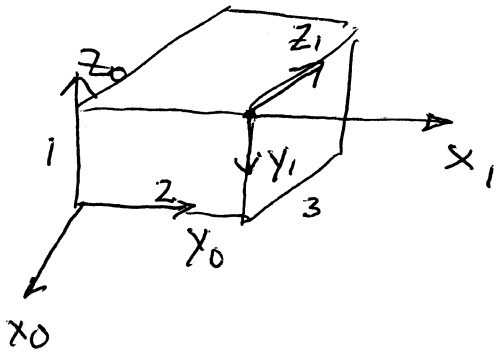
b) Draw each link + frame attached to link

c) Define the DH Table of kinematic parameters



In this figure, all robot links are in same vertical plane. The 3rd joint axis is also on the same plane (pointing up)

1.



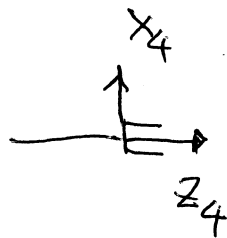
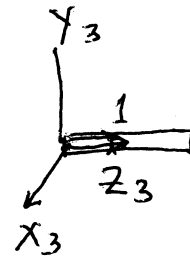
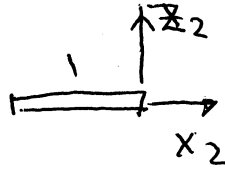
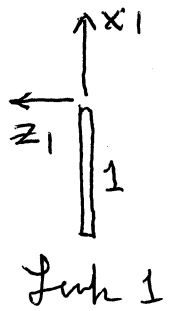
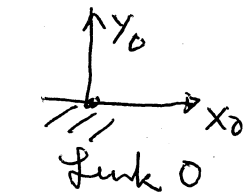
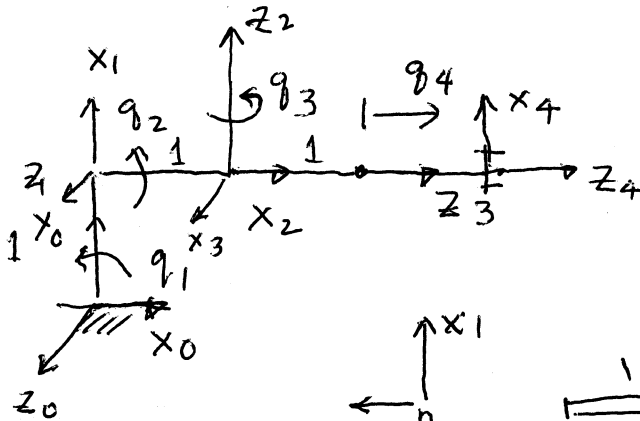
$$\theta_1 = 90^\circ$$

$$r_1 = 1$$

$$d_1 = 2$$

$$\alpha_1 = -90^\circ$$

2.



$$\theta_2 = \theta_3$$

| Link | θ | r | d | α |
|------|-------------------|-----------|-----------|-------------|
| 1 | $q_1 = 90^\circ$ | 0 | 1 | 0° |
| 2 | $q_2 = -90^\circ$ | 0 | 1 | -90° |
| 3 | $q_3 = -90^\circ$ | 0 | 0 | -90° |
| 4 | -90° | $q_4 + 1$ | 0° | 0° |

Note, at $q_1 = q_2 = q_3 = 0^\circ$

