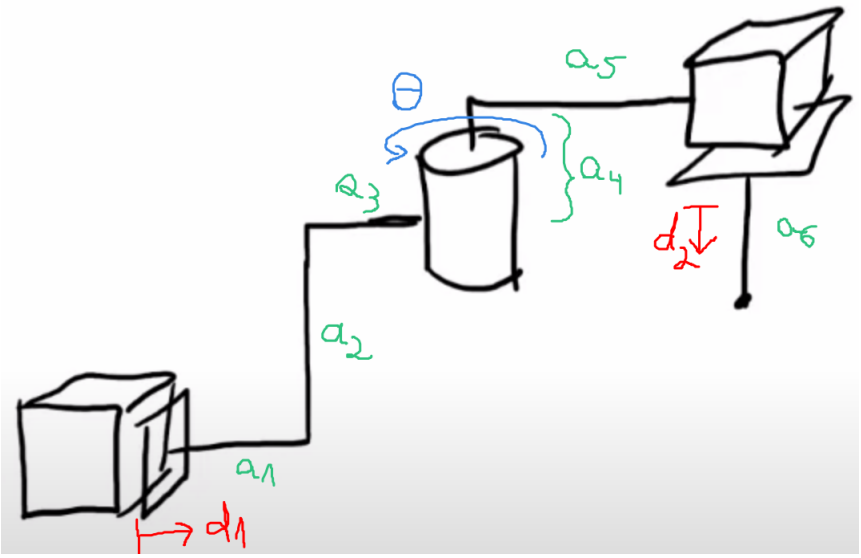
1 Robot Control Exam, Task 2 – DH convention, FK, IK

Given the visual description of the kinematic chain, consisting of:

1. prismatic joint attached to base with actuation d_1 from 0 to 1 right
2. link: a_1 right, a_2 up, a_3 right
3. revolute joint with actuation θ from 0 to 2π
4. link: a_4 up, a_5 right
5. prismatic joint with actuation d_2 from 0 to 1 downwards
6. link: a_6 down, ending with the end-effector



Please do:

1. Find the forward kinematics $FK(d_1, \theta, d_2)$ of the robot
2. Find the workspace of the robot with fixed $d_1 = 0$
3. Find the inverse kinematics of the robot with fixed $d_1 = 0$, ie. $IK(x, y, z) = (\theta, d_2)$, such that $FK(0, \theta, d_2) = (x, y, z)$
4. Assign frames to the joints of the kinematic chain using the DH-convention
5. Create the DH-table for the kinematic chain including the actuation of joints

Each subtask is worth 20% of points for the task.