SSY156 - Modelling and Control of Mechatronic Systems
Peer-2-Peer Homework 03

Question 1 (2 point)

Find the dynamic model (equations of motion) of a two-link planar arm with a prismatic joint and a revolute joint in Fig. 1 with the Lagrange formulation. Assume that the center of mass m_{l1} of link 1 is located on the center of the revolute joint and there are no friction forces. Check that $\dot{\mathbf{B}} - 2\mathbf{C}$ is a skew-symmetric matrix.

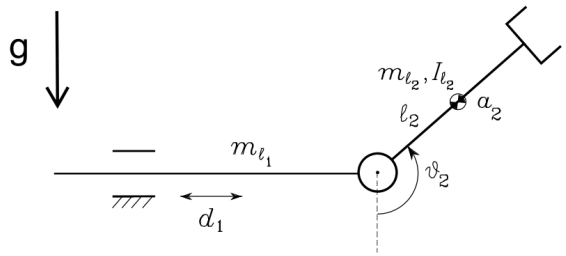

Figure 1: *Two-link planar arm with a prismatic and revolute joint*

Question 2 (1 point)

For which conditions is this manipulator decoupled with respect to the main coordinates?