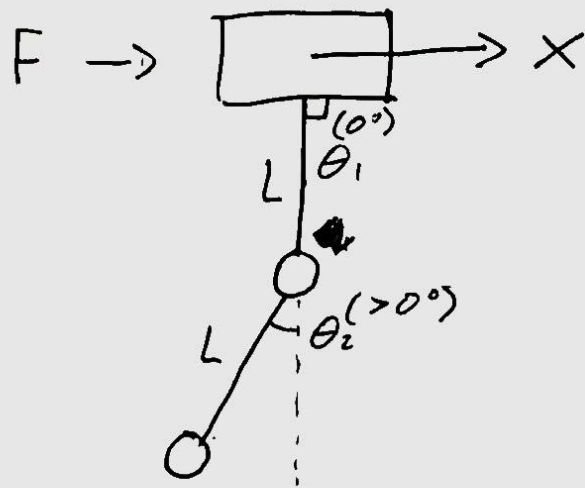TTK4130 - Modelling and Simulation
Assignement 4
Ingebrigt Stamnes Reinsborg

1a) $m = 1kg$, $M_1 = 1kg$ and $M_2 = 1kg$

$L = 1m$

I did as instructed, so see the code (included :̈

b) See included code

c) I tried a few different ones and in each case the system behaves as expected (or unexpected, n-pendulums are after all, quite chaotic...)

(It works!

2a) $q = \begin{bmatrix} x \\ \theta \end{bmatrix}$ (distance from origin)
(angle of beam)

b) $\dot{q} = \begin{bmatrix} \dot{x} \\ \dot{\theta} \end{bmatrix}$ (I guess...)

c) $E_K = \boxed{\frac{1}{2} J \dot{\theta}^2} + \frac{1}{2} M \left((\dot{x} \dot{\theta} R)^2 + (\dot{\theta} x)^2 \right)$
d)

$+ \frac{1}{2} I W^2 \longrightarrow$ Kinetic energy of ball.

$\longrightarrow$ Kinetic energy of beam.

e) See code

f-g) See code

Again, the simulation makes sense, it performs as expected