5th Homework - Solution

• 5.1 Multibody System

5.1 Multi-body System I

We wish to simulate the system shown on the left. To this end, we start out with the demo “Kinematic Loop of Engine.” Begin by running the demo. Verify that it runs correctly.

We then solve the following problems:
Multi-body System II

- Create a new library (i.e., package).
- Rebuild the demo model from scratch. Don’t make use of the extends construct.
- Verify that the animation of the rebuilt demo model is indeed identical to the original one.
- Slow down the motion of the piston by making it 1000 times as heavy.
- Suspend a double pendulum of the piston. Use a CylinderBody (so that you don’t have to compute its mass and inertia moments by hand).

Multi-body System III

- It may make sense to design icons for all models, so that these can be easily recognized and possibly reused at a later time.
Here is the diagram window of the multi-body system.

The diagram window does not contain the entire program information. Some equations and connections were programmed in the equation window.
Notice the programming of the initial condition. In this manner, initial conditions can be integrated into the model description.