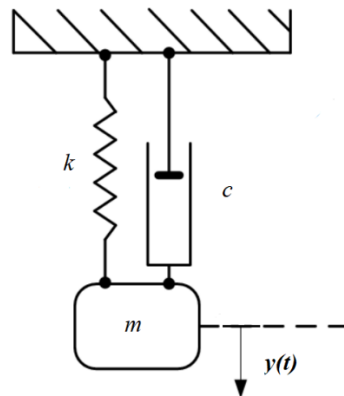# Critically Damped system

Problem Statement-

A mass m = 80 kg suspended by a spring with spring constant k = 100 N/m. The system is critically damped with damping coefficient is c = 178.89 N-s/m. Create a model of this system using MATLAB Simulink and considering initial displacement to be 2 m.

Equation-

$$m\frac{d^2y(t)}{dt^2} + c\frac{dy(t)}{dt} + ky(t) = 0$$

Instructions for modelling-

1.While giving names to blocks, rename gains as Gain1, Gain2, …from top to bottom and Integrators as Integrator1, Integrator2… from left to right.

2. Use **only** calculated value for the gain blocks rather than assigning it to a variable.