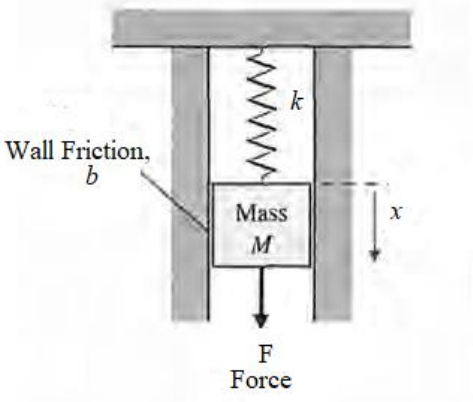
Spring Mass Damper System

Problem Statement-

The simple spring-mass-damper mechanical system shown in figure is described by Newton's second law of motion. (This system could represent, for example, an automobile shock absorber.). In this spring-mass-damper example, we model the wall friction as a viscous damper, that is, the friction force is linearly proportional to the velocity of the mass. If we apply force on the mass M, the system will start oscillating up and down. It will eventually come to rest due to the viscous damper (Wall Friction) we considered. Develop a Simulink Model for Spring-Mass-Damper System according to below given equation.



Equation –

$$M\frac{d^2x}{dt^2} + b\frac{dx}{dt} + kx = F$$

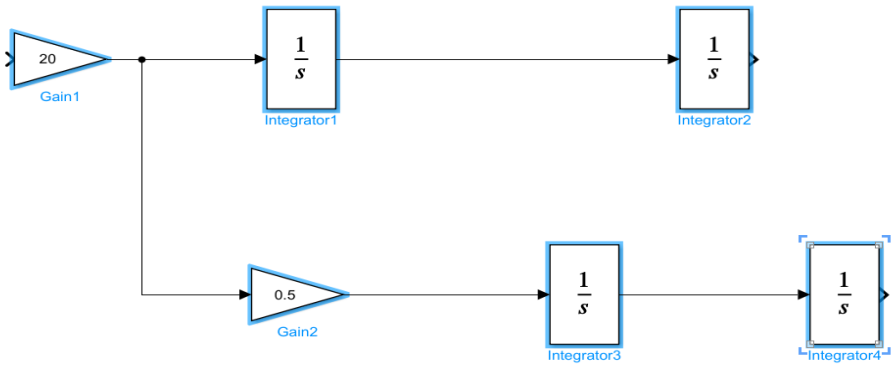
Where,

M = 10 Kg, b = 50 N-s/m, k = 100 N/m

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.


20
Gain1
1
s
Integrator1
1
s
Integrator2
0.5
Gain2
1
s
Integrator3
1
s
Integrator4