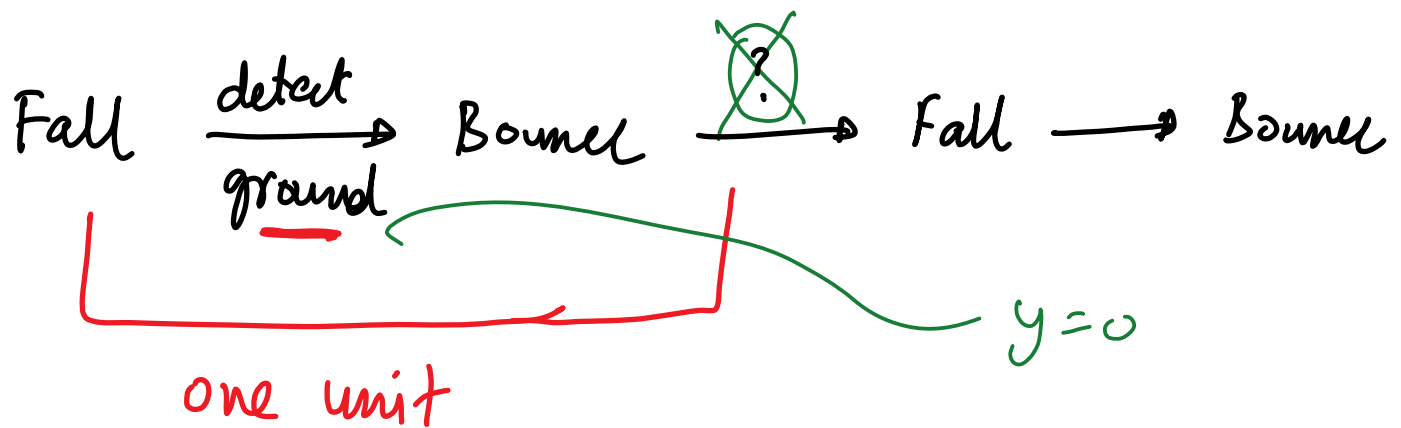
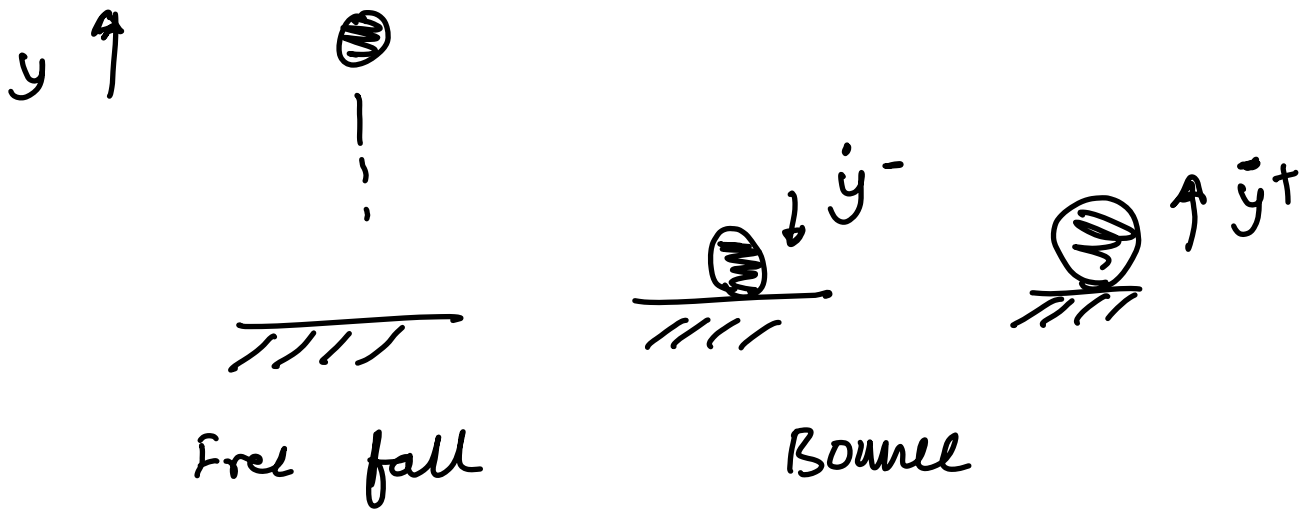


Hybrid systems

Example - Bouncing ball



① Equations : Fall

$$\ddot{y} = -g$$

② Bounce

$$-e = \frac{\dot{y}^+}{\dot{y}^-}$$

$$\dot{y}^+ = -e \dot{y}^-$$

velocity after collision

velocity before collision

coefficient of restitution
 $0 \leq e < 1$

We need to integrate Free Fall equations
till $y = 0$

`sol = solve_ivp(rhs, time, method, events)`

return y

`t = sol.t`
`z = sol.y`
↑ state