$i(t)$ for current

$$L\frac{di}{dt} = Vd(t) - \frac{q(t)}{C} - Ri(t)$$

$$L\frac{i(t+\Delta t) - i(t)}{\Delta t} = Vd(t) - \frac{q(t)}{C} - Ri(t)$$

$$i(t+\Delta t) = i(t) + \frac{\Delta t}{L}\left(Vd(t) - \frac{q(t)}{C} - Ri(t)\right)$$

$q(t)$ for Charge

$$\frac{dq}{dt} = i(t)$$

$$\frac{q(t+\Delta t) - q(t)}{\Delta t} = i(t)$$

$$q(t+\Delta t) = q(t) + i(t)\cdot\Delta t)$$