

$$C_{out,i+1} = C_{out,i} + \frac{C_{1,i} - C_{out,i}}{(1 - \alpha) \tau} \Delta t$$

$$\nu C_1 = \nu C_{out} + (1 - \alpha) V \frac{dC_{out}}{dt} \Rightarrow$$

$$\Rightarrow C_1 = C_{out} + (1 - \alpha) \tau \frac{dC_{out}}{dt} \Rightarrow$$

$$\Rightarrow \frac{\Delta C_{out}}{\Delta t} = \frac{C_{out,i+1} - C_{out,i}}{\Delta t} = \frac{C_1 - C_{out}}{(1 - \alpha) \tau} \Rightarrow$$

$$\Rightarrow C_{out,i+1} = C_{out,i} + \frac{C_1 - C_{out}}{(1 - \alpha) \tau} \Delta t$$