Exercise 5

$$C^{n+1} = \frac{C^n}{(1 + k\Delta t)}$$

$(1 + k\Delta t) > 0$ because denominator can't be 0.

$\therefore k\Delta t > -1$ as if it is < 0, no proper solution & can't be negative because C can't be negative.

$\therefore \Delta t > -\frac{1}{k}$

$\therefore$ unconditional stability as Δt needs to be positive as time steps.