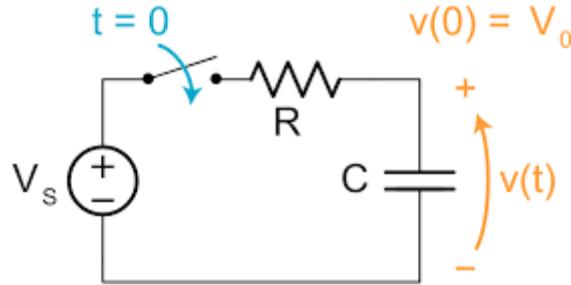


KUIS 4 EL2008 PEMECAHAN MASALAH DENGAN C

Dorothea Claresta P. (18318007)

PENURUNAN RUMUS



Dengan analisis KCL:

$$C \frac{dV_C(t)}{dt} + \frac{V_C(t) - V_s}{R} = 0$$

$$C \frac{\Delta V_C(t)}{\Delta t} + \frac{V_C(t) - V_s}{R} = 0$$

$$\frac{\Delta V_C(t)}{\Delta t} + \frac{V_C(t) - V_s}{RC} = 0$$

$$\frac{V_C(t) - V_C(t - \Delta t)}{\Delta t} + \frac{V_C(t) - V_s}{RC} = 0$$

$$\frac{V_C(t)}{\Delta t} - \frac{V_C(t - \Delta t)}{\Delta t} + \frac{V_C(t) - V_s}{RC} = 0$$

$$\frac{V_C(t)}{\Delta t} + \frac{V_C(t)}{RC} = \frac{V_C(t - \Delta t)}{\Delta t} + \frac{V_s}{RC}$$

$$V_C(t) \left(\frac{1}{\Delta t} + \frac{1}{RC} \right) = \frac{V_C(t - \Delta t)}{\Delta t} + \frac{V_s}{RC}$$

$$V_C(t) = \frac{\frac{V_C(t - \Delta t)}{\Delta t} + \frac{V_s}{RC}}{\left(\frac{1}{\Delta t} + \frac{1}{RC} \right)}$$

Sehingga diperoleh:

$$V_C(t) = \frac{\frac{V_C(t - \Delta t)RC}{\Delta t} + V_s}{\left(\frac{RC}{\Delta t} + 1 \right)}$$

Keterangan:

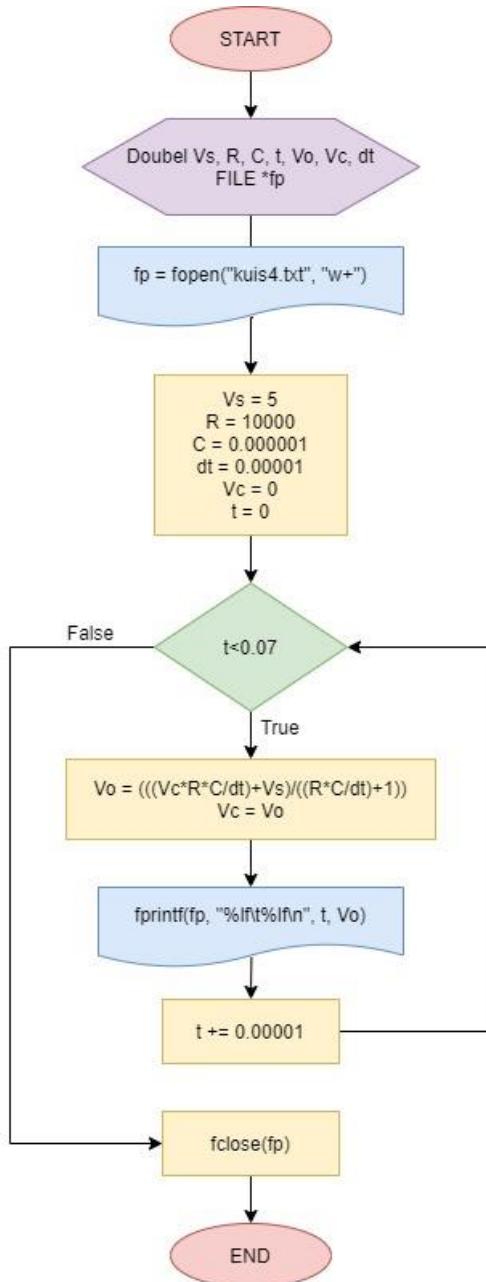
V_s = tegangan sumber

V_c = tegangan pada kapasitor

R = resistansi resistor

C = kapasitansi kapasitor

FLOWCHART



GRAFIK

