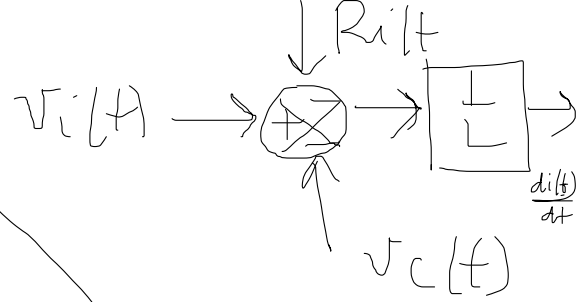


$$\frac{di(t)}{dt} = \frac{1}{L} (v_o(t) - v_c(t) - Ri(t))$$

$$\frac{dv_c(t)}{dt} = \frac{1}{C} i(t)$$



* SIMULINK

Hukum Ohm:

$$v_i(t) - v_c(t) = Ri(t) + L \frac{di(t)}{dt}$$

$$i(t) = \frac{1}{C} \frac{dv_c(t)}{dt}$$

$$\int \frac{di(t)}{dt} dt = \int di(t) = i(t)$$

$$\int \frac{dv_c(t)}{dt} dt = \int dv_c(t) = v_c(t)$$

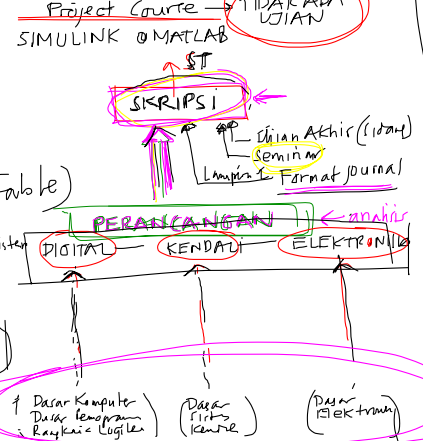
$$V_c(s) = \frac{V}{s(LCs^2 + RCs + 1)}$$

$$v_c(t) = \mathcal{L}^{-1} \left\{ \frac{V}{s(LCs^2 + RCs + 1)} \right\}$$

$$I_c(s) = \frac{V_c(s)}{Z_c} = \frac{V}{Ls^2 + RCs + 1}$$

$$i_c(t) = \mathcal{L}^{-1} \{ I_c(s) \}$$

PERANCANGAN SISTEM KENDALI

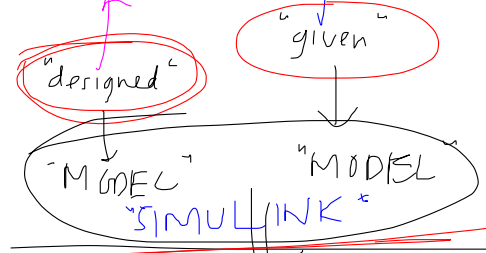
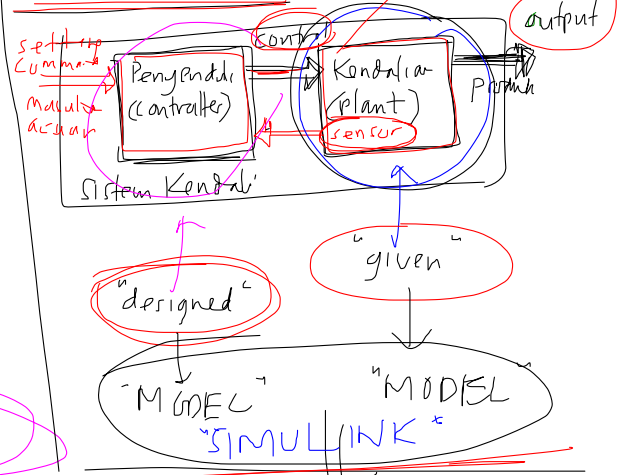


Persiapan:

- * Mencari MITRA (utk yang ingin bekerja bersama)
- * Akses MATLAB → Simulink

Nanti VERIFIKASI SIMULINK

SISTEM KENDALI

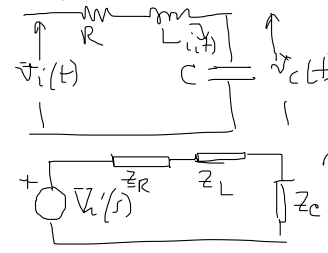


Project 1 Verifikasi Simulink

toleransi

* ANALITIK

Menggunakan Konsep Impedansi



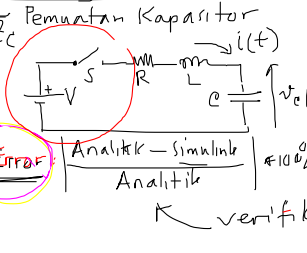
$$Z(s) = \frac{V_c(s)}{I(s)} = \frac{Z_c}{Z_R + Z_L + Z_C}$$

$$V_c(s) = \frac{Z_c V_i(s)}{Z_R + Z_L + Z_C}$$

$$= \frac{V}{R + Ls + \frac{1}{Cs}}$$

$$= \frac{V}{s(LCs^2 + RCs + 1)}$$

* Rangkaian RLC seri



Saklar S ditutup pada $t=0$, $v_c(0) = 0$. Tentukan $v_c(t)$ dan $i(t)$.

* ANALITIK → exact

* SIMULINK

verifikasi

