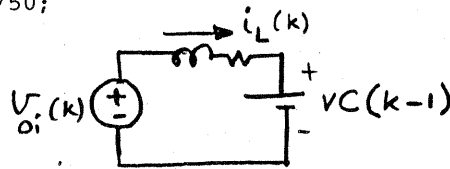


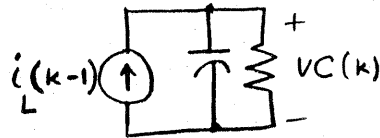
Problem 4-10

PROB4_10.M

```
%
clc, clg, clear
% Input Data
Vd=8; L=5e-6; C=100e-6; rL=1e-3; R=1.0; fs=100e3; Vcontrol=0.75;
Ts=1/fs; tmax=50*Ts; deltat=Ts/50;
TrL= L/rL;
TRC= R*C;
%
time=0:deltat:tmax;
vst=time/Ts - fix(time/Ts);
voi=Vd*(Vcontrol > vst);
%
iL(1)=4.0; vC(1)=5.5;
timelength=length(time);
%
for k = 2:timelength
    vin=voi(k) - vC(k-1);
    iL(k)=iL(k-1)*exp(-deltat/TrL) + vin/rL*(1-exp(-deltat/TrL));
    vC(k)=R*iL(k-1)*(1-exp(-deltat/TRC)) + vC(k-1)*exp(-deltat/TRC);
end
%
plot(time,iL,time,vC)
```



Calculate $i_L(k)$ in the above circuit.



Calculate $v_C(k)$.

