```
clc;
clear all;
close all;
R=1000;
L=3.18;
C = 3.18*10^-6;
b = inv(2*pi*C);
f=50;
Vin=220*sqrt(2)+0i;
c =2*pi*f*L;
%Phase angle of Input voltage has been taken as reference
%rms value of input voltage is 220 V
Z=R+ c*1i -b*1i;
ZLC = c*1i - b*1i;
vr = R/Z*Vin;
vlc = ZLC/Z*Vin;
vl = c*1i/ZLC*vlc;
vc = -b*1i/ZLC*vlc;

%Finding value of total impedance from the value of R and L
%Z=R+jX
I=Vin/Z;
%Finding series current, I
amplitude_I=sqrt(2)*abs(I);
angle_I=angle(I);
%Finding magnitude and angle of I
%Converting rms to peak value
amplitude_Vr=sqrt(2)*abs(vr);
angle_Vr=angle(vr);
amplitude_Vl=sqrt(2)*abs(vl);
angle_Vl=angle(vl);
amplitude_Vc=sqrt(2)*abs(vc);
angle_Vc=angle(vc);
amplitude_V=sqrt(2)*abs(Vin);
angle_V=angle(Vin);
%Finding magnitude and angle of Vin
t=0:1/(20*f):2/f;
%time array for plotting first two cycles of Vin and I
V_in=amplitude_V*sin(2*pi*f*t+angle_V);
I_t=amplitude_I*sin(2*pi*f*t+angle_I);
V_r=amplitude_Vr*sin(2*pi*f*t+angle_Vr);
V_l=amplitude_Vl*sin(2*pi*f*t+angle_Vl);
V_c=amplitude_Vc*sin(2*pi*f*t+angle_Vc);
%Finding Instantaneous value of input Vin and I
subplot(5,1,1), plot(t,V_in);
title('Input voltage vs. time in RLC circuit')
xlabel('time (in second)'),ylabel('Voltage (in Volt)');
subplot(5,1,2), plot(t,I_t);
title('Series current vs. time in RLC circuit')
```

```
xlabel('time (in second)'),ylabel('Series current (in Ampere)');
subplot(5,1,3), plot(t,V_r);
title('Voltage_R vs. time in RLC circuit')
xlabel('time (in second)'),ylabel('Voltage (in Volt)');
subplot(5,1,4), plot(t,V_l);
title('voltage_L vs. time in RLC circuit')
xlabel('time (in second)'),ylabel('Voltage (in Volt)');
subplot(5,1,5), plot(t,V_c);
title('voltage_C vs. time in RLC circuit')
xlabel('time (in second)'),ylabel('Voltage (in Volt)');
```