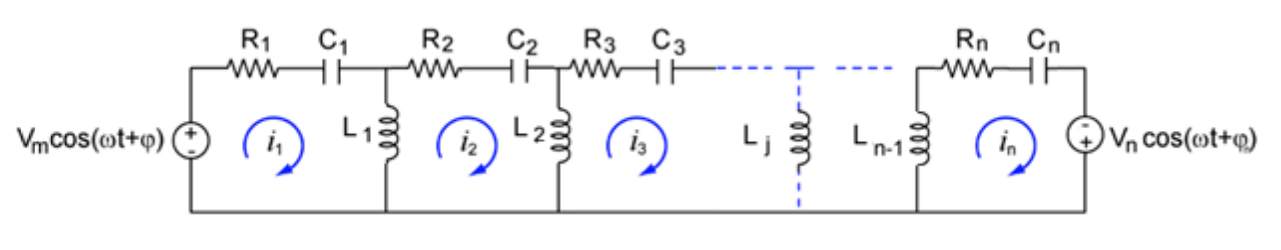
**Engineering Computation and Linear Algebra Programming Project**  
Department of Electrical & Computer Engg.  
University of Sharjah

The provided circuit is shown the figure below:



In phasor form voltage sources are:

The following Equations are referred as Eq. (1 & 2), respectively:

Inductive and capacitive reactances are given by:

The following equations are referred as Eq. (3 & 4), respectively.

Where L and C are inductance & capacitance of the respective inductor and capacitor.

For simplicity, we consider a circuit with three loop. Using KVL:

The following System of Equations are referred as Eq. (5, 6 & 7), respectively.

In Matrix Form: :

The following systems of Equations are referred as Eq. (8 & 9), respectively.

For n loops:

The following matrix equation is referred as Eq. (10), which is the general form.

Where:

The following equations are referred as Eq. (11, 12, 13 & 14)