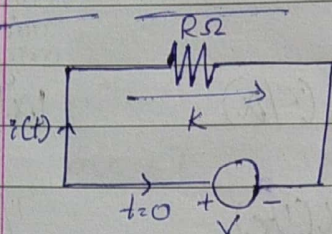- Evaluation of initial and final conditions in RL, RC and R-L-C circuits.

→ Pure resistance circuit element :-

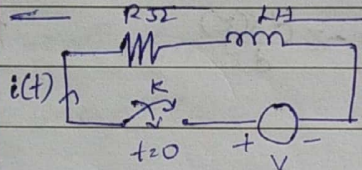At time $t=0$, $i(t) = (V/R)$ Amps.

At time $t=\infty$, $i(t) = (V/R)$ Amps.

$i(t) = i(\infty) + [i(0) - i(\infty)] \times e^{-(1/\tau)}$ Amps.

$i(t) = V/R + [V/R - V/R] \times e^{-(1/\tau)}$ Amps.

It confirms that, current in the resistance will follow Ohm's law.

→ Inductance circuit element :

$V_L = L \times di_L/dt$ & hence, $L = V_L/(di_L/dt)$

So inductance property opposes the charge in current.

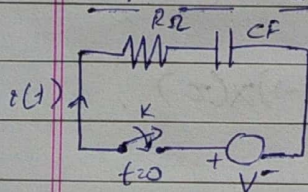At time $t=0$, $i(t) = 0$ Amps.

At time $t=\infty$, $i(t) = V/R$ Amps.

$i(t) = i(\infty) + [i(0) - i(\infty)] \times e^{-(1/\tau)}$ Amps.

$i(t) = V/R + [0 - V/R] \times e^{-(1/\tau)}$ Amps.

$i(t) = V/R (1 - e^{-(1/\tau)})$ Amps.

{ inductor opposes the charge in current.

- Capacitor circuit element :

$i_c = C \times dV_c/dt$

$C = \dfrac{i_c}{(dV_c/dt)}$

So, capacitance oppose the charge in voltage across it.

Switch (K) is open, and it is open for infinite time before closing.

So, capacitor is uncharged, Hence, $V_c(0) = 0$, therefore, $V_c(0^+) = 0$. So, entire applied voltage V appears across it.

- Procedure for evaluating initial & final conditions.
  there is no unique procedure that must be followed
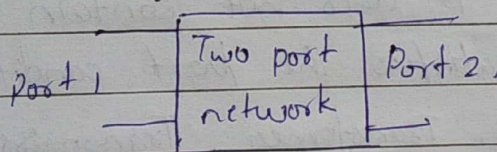 in solving for initial and final conditions.
- **Initial Condition:** While solving for the initial
  conditions when certain circuit is switched at
  say, $t=0$;

  If the initial condition that is, voltage across
  the capacitor and the current through the inductance
  before switching, are given in the problem statement,
  that is fine.

- **Final Condition:** While solving for the Final conditions
  when certian circuit is switched at, $t=\infty$;

- Two Port network:

  It is the electrical circuit which contains
  the two ports but about port is a
  pair of terminals which connects the circuit
  or n/w to the external circuit.

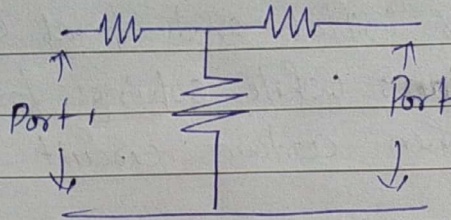 | Port 1 | Two port network | Port 2 |

  Port condition: If the current I enters to the
  One terminal of the port then the same
  current shd leave to the other port.

  If the electrical ckt or n/w contains
  the one such port then it is called as
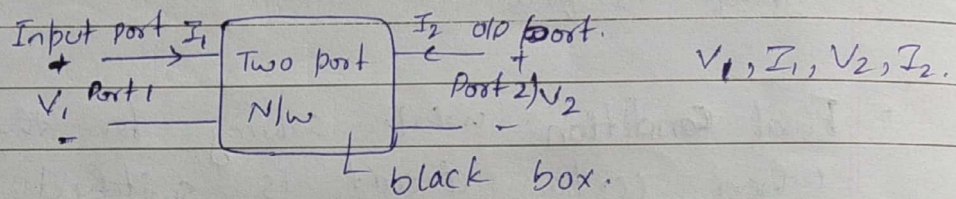 one port network.

  Ex: of 1 port n/w: R, C, L.
  Two port network: which contains 2 ports
  called two port network.

Eg: T - network :

Port 1   Port

→ If it has more than 2 n/w then it is
called as multiport n/w:
Eg: Directional Coupler, Circulator.

Input port I_1 | Two port | I_2 o/p port.
V_1 Port 1 | N/w | Port 2) V_2 V_1, I_1, V_2, I_2.

black box.

Here two port network it is used in
mathematical circuit analysis for complex circuits.
we can isolate the portion of larger circuits.
It reduces the complexity of the circuits.

In general Any linear circuit with two pair
of terminals can be regarded as two -port n/w
provided that it does not contain independent
source and satisfies the port condition.

Where Filters, Transformer, Transmission line
and small signal model of transistor are
small example of Circuit analysis.

Here in 4 variables 2 are independent
variables and other 2 are dependent variables
it can be expressed as
$$V_1 = f(I_1, I_2)$$
$$V_2 = f(I_1, I_2)$$

And the parameters would described
about the variables.

Two port Parameters:

① z - parameter.

② y - Parameter.

③ h - Parameter.

④ ABCD or Transmission - Parameter.

⑤ Inverse Hybrid - Parameter.

⑥ Inverse transmission - Parameter.

. Python:

Application - 9 Build a web - based Financial Graph:

① web based Financial Graph -
We will learn how to get stock market data loss. in terms of Python.
we use Boteh library to visualize the stock market data and Even Panda also.

② Down loading Datasets with Python:
Pandas Datareader.
→ Instal this library and Jupiter notebook and create Jupiter file called stock analysis.
→ Data will taken from Yahoo, Finance etc. and pardas in a library.
from pandas - datareader import data.

data. Data Reader?
To get data from the source like Yahoo!. we have to pass parameter.
data. Datareader (name = "AAPL", data_source "yahoo"), start = end =)
Then Save the product in a variable.
then the stock market with apperr.

Stock Market Data:

→ we can minimize the data to 10 days or any number of days of stock market.

open - means open share for the share in sources like Goole, Yahoo etc.

- Stock Market Data Candlestick charts.

  Open, High, Low, Close, Volume and Adj close are the needed for the Candle chart.

  → Here we build the Candlestick chart.

  candle chart resembles the table and data been there.

  Here in candle stick chart we have to select the leaves like rectangle or line called segment.

- Candlestick charts with Bokeh Quadrants.
- Candle stick charts with bokeh Rectangles.
- Candle stick segments:
- Styling the chart.
- The concept behind Embedding bokeh chart.
- we can visualize by colouring the data.
- Embedding the Bokeh Chart in a webpage First download the flask files.
- Deploying the chart website to a Live server:

  Here we can access the chart.