

# Circuits project

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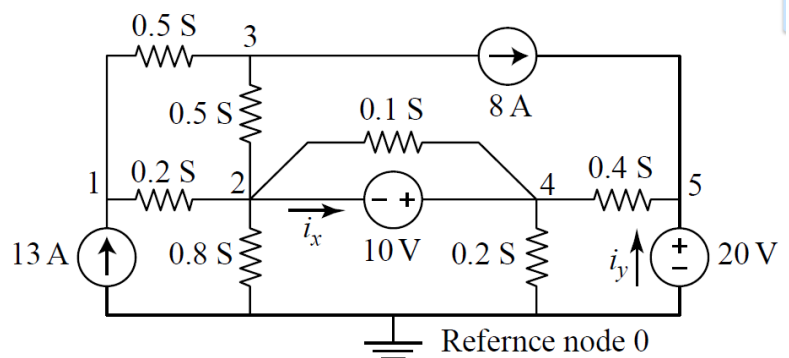
## Inputs:

1. Angular frequency ( $\omega$ ) should be entered at the beginning of the file or zero in case of DC circuits.
  2. Voltage and current sources should be entered from positive to negative, In case of DC circuits, the angle should be entered zero.
  3. The executable file will work only if windows has Redistributable library to include the DLL files.
  4. Write ".txt" at the end of file name e.g.:" test1.txt".
  5. This tool is valid for any combination of resistors, inductors and capacitors with any number of loops or nodes.
- N.B. there is no suitable validation for incorrect input as negative resistance.

## Test cases:

### Netlist:

0				
I2	1	0	13	0
R1	1	3	2	
R2	3	2	2	
V1	4	2	10	0
R3	2	1	5	
I1	5	3	8	0
R4	2	0	1.25	
R5	2	4	10	
R6	4	0	5	
R7	4	5	2.5	
V2	5	0	20	0



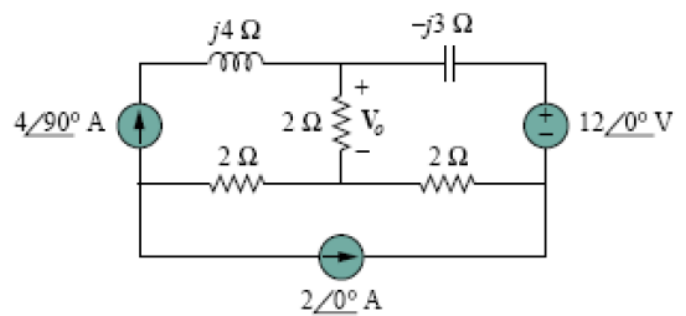
### Output:

```
F:\ConsoleApplication19.exe
Enter the name of the file
test66.txt
Voltage at Node (0) = 0
Voltage at Node (1) = 25 /_ 0
Voltage at Node (2) = 5 /_ 0
Voltage at Node (3) = 7 /_ 0
Voltage at Node (4) = 15 /_ 0
Voltage at Node (5) = 20 /_ 0
The current pass through Voltage Source 1 = 2 /_ 0
The current pass through Voltage Source 2 = 6 /_ -180
I(2 , 3) through R2 : 1 /_ 180
I(0 , 1) through I2 : 13 /_ 0
I(1 , 2) through R3 : 4 /_ 0
I(3 , 5) through I1 : 8 /_ 0
I(0 , 2) through R4 : 4 /_ 180
I(4 , 2) through R5 : 1 /_ 0
I(0 , 4) through R6 : 3 /_ 180
I(5 , 4) through R7 : 2 /_ 0
I(3 , 1) through R1 : 9 /_ 180
If you want another file press (y) ,if you want exit press any key
_
```

### Netlist:

100

I1	5	1	4	90
I2	0	1	2	0
V1	3	0	12	0
L1	5	4	0.04	
C1	4	3	0.00033333	
R1	1	2	2	
R2	2	0	2	
R3	2	4	2	

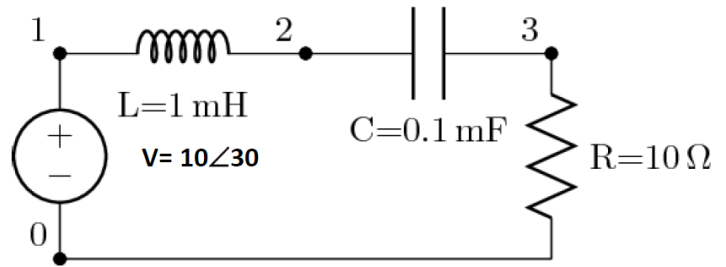


### Output:

```
F:\ConsoleApplication19.exe
Enter the name of the file
test55.txt
Voltage at Node (0) = 0
Voltage at Node (1) = 6.7882 /_ -98.1304
Voltage at Node (2) = 3.29847 /_ 22.8343
Voltage at Node (3) = 12 /_ 0
Voltage at Node (4) = 14.5986 /_ 46.3326
Voltage at Node (5) = 12.1063 /_ 119.275
The current pass through Voltage Source 1 = 3.5777 /_ 10.3051
I(1 , 0) through I2 : 2 /_ 0
I(1 , 5) through I1 : 4 /_ 90
I(4 , 5) through L1 : 4 /_ -90
I(3 , 4) through C1 : 3.5777 /_ 10.3051
I(2 , 1) through R1 : 4.47214 /_ 63.4349
I(0 , 2) through R2 : 1.64923 /_ -157.166
I(4 , 2) through R3 : 5.82409 /_ 52.8155
If you want another file press (y) ,if you want exit press any key
```

**Netlist:**

```
100
Vs 1 0 10 30
L1 1 2 0.001
C2 2 3 0.0001
R3 3 0 10
```

**Output:**

```
F:\ConsoleApplication19.exe
Enter the name of the file
test77.txt
Voltage at Node (0) = 0
Voltage at Node (1) = 10 /_ 30
Voltage at Node (2) = 10.0099 /_ 29.9943
Voltage at Node (3) = 0.996023 /_ 114.284
The current pass through Voltage Source 1 = 0.0996023 /_ 114.284
I(2 , 1) through L1 : 0.0996023 /_ -65.7163
I(3 , 2) through C2 : 0.0996023 /_ -65.7163
I(0 , 3) through R3 : 0.0996023 /_ -65.7163
If you want another file press (y) ,if you want exit press any key
```