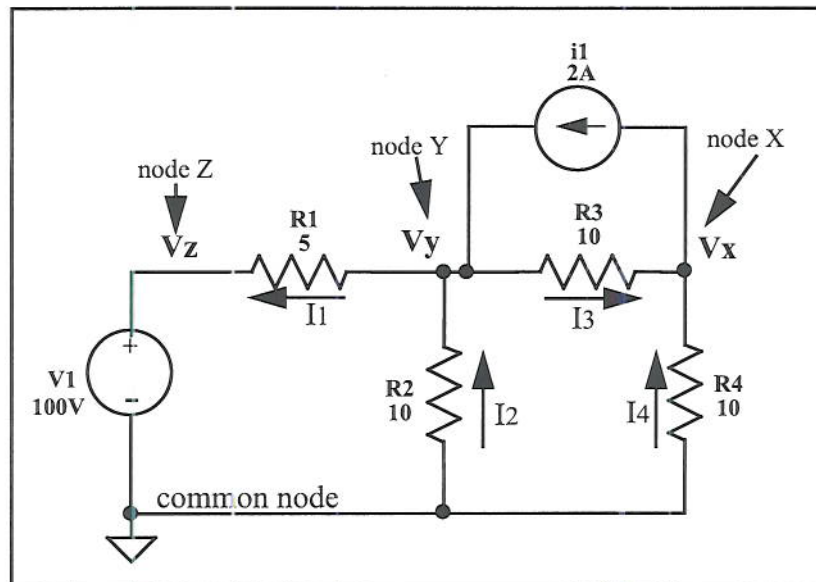


Using Spice for KCL Analysis

Below is a circuit analyzed by hand earlier. We shall now create a Spice netlist for this circuit and simulate it.



The Spice netlist for the circuit above is placed in a normal text file with whatever editor you like. It looks like this:

```
.title class example problem (kcl)

***** netlist follows *****
v1 z gnd 10
r1 y z 5
r2 gnd y 10
r3 y x 10
r4 gnd x 10
i1 x y 2
***** netlist done *****

.control
set numdgt=2
op
echo Node voltages:
print line v(x) v(y) v(z) ← note, this line changes to print out new notes.
echo
show v1 ← gives info on v1
quit
.endc

.end
```

The body of the netlist is shown below. A review of its format is given below. Note that nodes

Vx, Vy, and Vz have been abbreviated x, y and z respectively.

type of element and its reference designation			
r = resistor			
v = voltage source			
i = current source			
	node to which the positive terminal of element is connected		node to which the negative terminal of element is connected
			value of the element
v1	z	gnd	10v
r1	y	z	5
r2	gnd	y	10
r3	y	x	10
r4	gnd	x	10
i1	x	y	2

spice is invoked on the file *kcl1.sp* at the unix prompt by typing:

```
ngspice kcl1.sp > output
```

The results from the simulation are in the file *output*:

```
*****
** ngspice-21plus : Circuit level simulation program
** The U. C. Berkeley CAD Group
** Copyright 1985-1994, Regents of the University of California.
** Please submit bug-reports to: ngspice-bugs@lists.sourceforge.net
** Creation Date: Thu Jul 22 18:02:18 UTC 2010
*****
```

```
Circuit: class example problem (kcl)
```

```
Doing analysis at TEMP = 27.000000 and TNOM = 27.000000
```

```
No. of Data Rows : 1
```

```
node voltages:
```

```
v(x) = -5.7e+00
```

```
v(y) = 8.57e+00
```

```
v(z) = 1.00e+01
```

```
Vsource: Independent voltage source
```

```
device      v1
dc           10
acmag        0
pulse        -
sine         -
sin          -
exp          -
pwl          -
sffm         -
am           -
i            -0.285714
p            2.85714
```

```
ngspice-21plus done
```