LAB #06

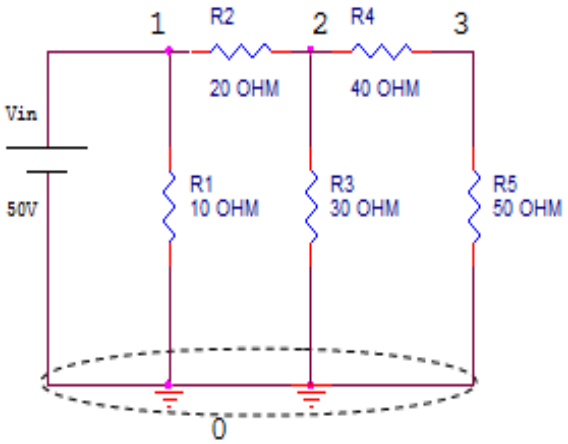
Objective: Implementation of Series-Parallel Resistive Network in PSpice.

Exercise #01: Apply the above three codes in PSpice and show the output and verify their result via manual calculation.

Example #01:

Code:

```
Vs 1 0 50
R1 3 0 40
R2 2 3 20
R3 1 2 10
.DC Vs 0 50 50
.PRINT DC V(R1) V(R2) V(R3)
.PRINT DC I(R1) I(R2) I(R3)
.END
```



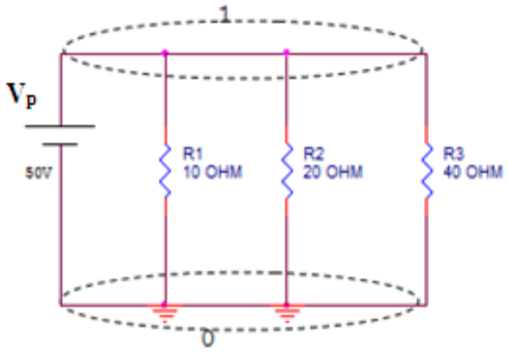
Output:

```
**** 03/27/21 09:22:36 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     CIRCUIT DESCRIPTION
******************************************************************************
Vs 1 0 50
R1 3 0 40
R2 2 3 20
R3 1 2 10
.DC Vs 0 50 50
.PRINT DC V(R1) V(R2) V(R3)
.PRINT DC I(R1) I(R2) I(R3)
.END
**** 03/27/21 09:22:36 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
Vs              V(R1)          V(R2)          V(R3)

0.000E+00    0.000E+00     0.000E+00     0.000E+00
5.000E+01    2.857E+01     1.429E+01     7.143E+00
**** 03/27/21 09:22:36 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
Vs              I(R1)          I(R2)          I(R3)

0.000E+00    0.000E+00     0.000E+00    0.000E+00
5.000E+01    7.143E-01     7.143E-01    7.143E-01
```

Example #02:

Code:

```
Vp 1 0 50
R1 1 0 10
R2 1 0 20
R3 1 0 40
.DC Vp 0 50 50
.PRINT DC V(R1) V(R2) V(R3)
.PRINT DC I(R1) I(R2) I(R3)
.END
```



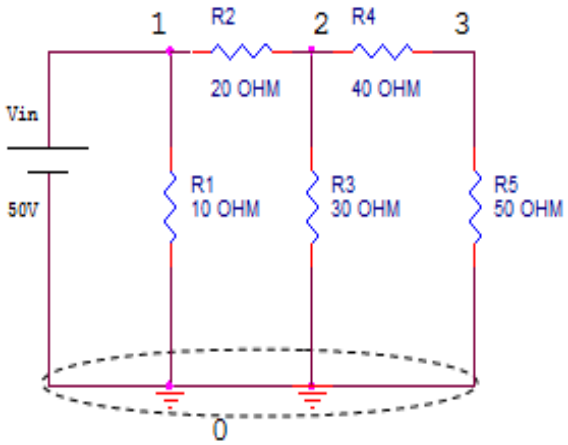
Output:

```
**** 03/27/21 09:35:03 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
 Name: Ahmad Baseer        Roll no:124
 ****     CIRCUIT DESCRIPTION
******************************************************************************
Vp 1 0 50
R1 1 0 10
R2 1 0 20
R3 1 0 40
.DC Vp 0 50 50
.PRINT DC V(R1) V(R2) V(R3)
.PRINT DC I(R1) I(R2) I(R3)
.END
**** 03/27/21 09:35:03 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
 Name: Ahmad Baseer        Roll no:124
 ****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
  Vp              V(R1)          V(R2)          V(R3)

  0.000E+00     0.000E+00     0.000E+00     0.000E+00
  5.000E+01     5.000E+01     5.000E+01     5.000E+01
**** 03/27/21 09:35:03 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
 Name: Ahmad Baseer        Roll no:124
 ****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
  Vp              I(R1)          I(R2)          I(R3)
  0.000E+00     0.000E+00     0.000E+00     0.000E+00
  5.000E+01     5.000E+00     2.500E+00     1.250E+00
```

Example #03:

Code:

```
Vin 1 0 50
R1 1 0 10
R2 1 2 20
R3 2 0 30
R4 2 3 40
R5 3 0 50
.DC Vin 0 50 50
.PRINT DC V(R1) V(R2) V(R3) V(R4) V(R5)
.PRINT DC I(R1) I(R2) I(R3) I(R4) I(R5)
.END
```



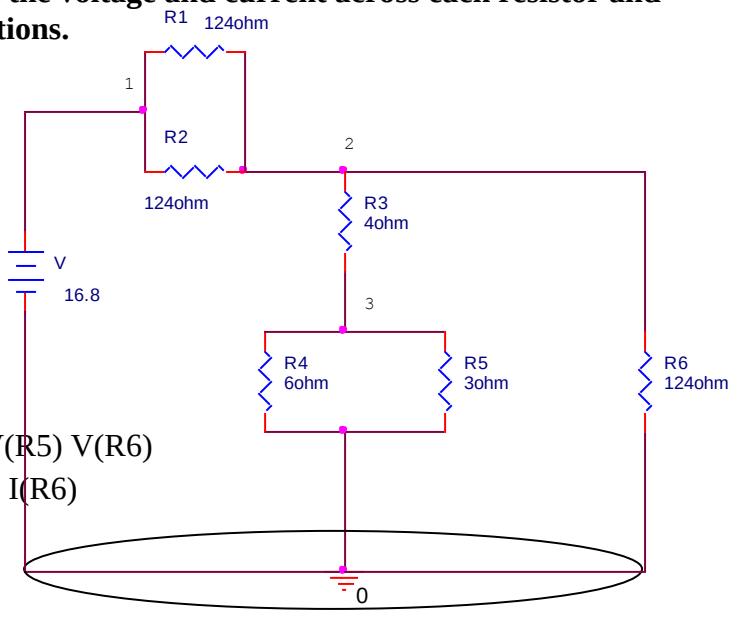
Output:

```
**** 03/27/21 09:44:25 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     CIRCUIT DESCRIPTION
******************************************************************************
Vin 1 0 50
R1 1 0 10
R2 1 2 20
R3 2 0 30
R4 2 3 40
R5 3 0 50
.DC Vin 0 50 50
.PRINT DC V(R1) V(R2) V(R3) V(R4) V(R5)
.PRINT DC I(R1) I(R2) I(R3) I(R4) I(R5)
.END
**** 03/27/21 09:44:25 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
Vin             V(R1)         V(R2)         V(R3)         V(R4)         V(R5)

0.000E+00     0.000E+00     0.000E+00     0.000E+00     0.000E+00     0.000E+00
5.000E+01     5.000E+01     2.353E+01     2.647E+01     1.176E+01     1.471E+01
**** 03/27/21 09:44:25 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
Vin             I(R1)         I(R2)         I(R3)         I(R4)         I(R5)

0.000E+00   0.000E+00     0.000E+00     0.000E+00     0.000E+00     0.000E+00
5.000E+01   5.000E+00     1.176E+00     8.824E-01     2.941E-01     2.941E-01
```

Exercise #02: Write down the code in PSpice and find the voltage and current across each resistor and verify your result using manual calculations.

Code:

```
V 1 0 16.8
R1 1 2 124
R2 1 2 124
R3 2 3 4
R4 3 0 6
R5 3 0 3
R6 2 0 124
.DC V 0 16.8 16.8
.PRINT DC V(R1) V(R2) V(R3) V(R4) V(R5) V(R6)
.PRINT DC I(R1) I(R2) I(R3) I(R4) I(R5) I(R6)
.END
```



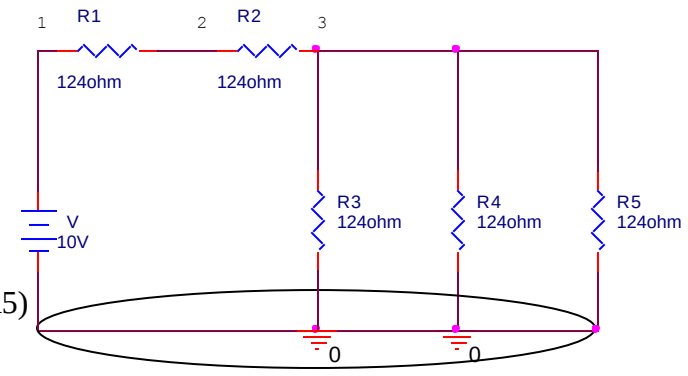
Ouput:

```
**** 03/27/21 10:30:17 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     CIRCUIT DESCRIPTION
******************************************************************************
V 1 0 16.8
R1 1 2 124
R2 1 2 124
R3 2 3 4
R4 3 0 6
R5 3 0 3
R6 2 0 124
.DC V 0 16.8 16.8
.PRINT DC V(R1) V(R2) V(R3) V(R4) V(R5) V(R6)
.PRINT DC I(R1) I(R2) I(R3) I(R4) I(R5) I(R6)
.END
**** 03/27/21 10:30:17 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
V            V(R1)        V(R2)        V(R3)        V(R4)        V(R5)        V(R6)

0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00
1.680E+01   1.538E+01   1.538E+01   9.465E-01   4.732E-01   4.732E-01   1.420E+00
**** 03/27/21 10:30:17 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
V            I(R1)        I(R2)        I(R3)        I(R4)        I(R5)        I(R6)
0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00
1.680E+01   1.240E-01   1.240E-01   2.366E-01   7.887E-02   1.577E-01   1.145E-02
```

Exercise #03: **Write down the code in PSpice and find the voltage and current across each component and verify your results using manual calculations.**

Code:

```
V 1 0 10
R1 1 2 124
R2 2 3 124
R3 3 0 124
R4 3 0 124
R5 3 0 124
.DC V 0 10 10
.PRINT DC V(R1) V(R2) V(R3) V(R4) V(R5)
.PRINT DC I(R1) I(R2) I(R3) I(R4) I(R5)
.END
```



Output:

```
**** 03/27/21 10:58:16 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     CIRCUIT DESCRIPTION
******************************************************************************
V 1 0 10
R1 1 2 124
R2 2 3 124
R3 3 0 124
R4 3 0 124
R5 3 0 124
.DC V 0 10 10
.PRINT DC V(R1) V(R2) V(R3) V(R4) V(R5)
.PRINT DC I(R1) I(R2) I(R3) I(R4) I(R5)
.END
**** 03/27/21 10:58:16 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
V              V(R1)         V(R2)         V(R3)         V(R4)         V(R5)

0.000E+00     0.000E+00     0.000E+00     0.000E+00     0.000E+00     0.000E+00
1.000E+01     4.286E+00     4.286E+00     1.429E+00     1.429E+00     1.429E+00
**** 03/27/21 10:58:16 ********* PSpice 9.2 (Mar 2000) ******** ID# 1 ********
Name: Ahmad Baseer        Roll no:124
****     DC TRANSFER CURVES            TEMPERATURE =   27.000 DEG C
******************************************************************************
V              I(R1)         I(R2)         I(R3)         I(R4)         I(R5)

0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00   0.000E+00
1.000E+01   3.456E-02   3.456E-02   1.152E-02   1.152E-02   1.152E-02
```