EXPRIMENT-2

SUPERPOSITION THEOREM

PROBLEM STATEMENT: To Study the Superposition Theorem

THEORY:

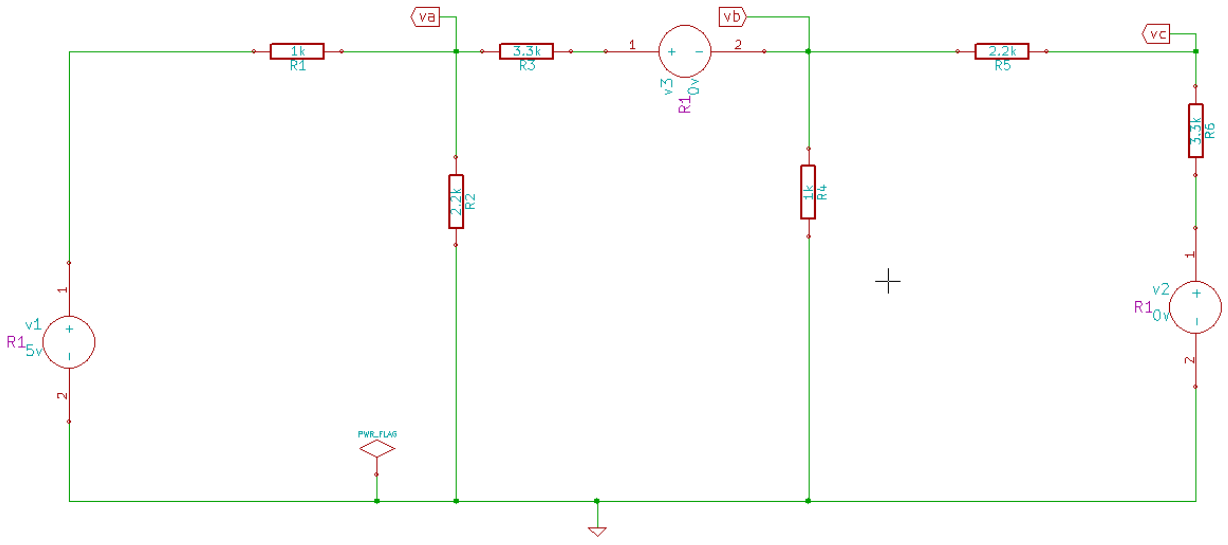
This experiment is focused on observing the linear responses in a circuit as the algebraic sum of individual responses, due to each of the independent sources acting alone. Values of current associated with an element are used to indicate linear responses.

The superposition theorem is very important to analyze linear networks, which consisting of independent sources, linear dependent (controlled) sources, and linear passive elements Resistors, Inductors and Capacitors.

This theorem is of significance since it permits the solution of the network without setting up large number of simultaneous equations. Only one source need be considered at a time. If new voltages are introduced into the network, it eliminates the need of solving the network afresh.

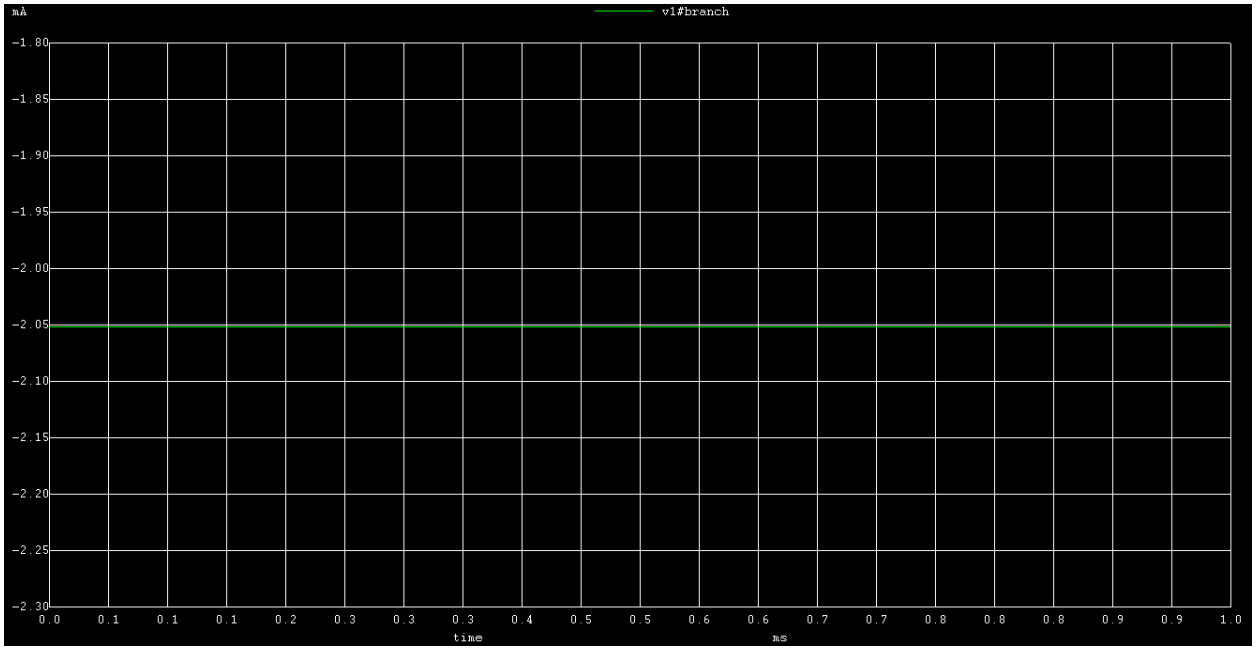
SCHEMATIC DIAGRAM:

V_1=5v; V_2=0 Refer to "superposition1" FOLDER

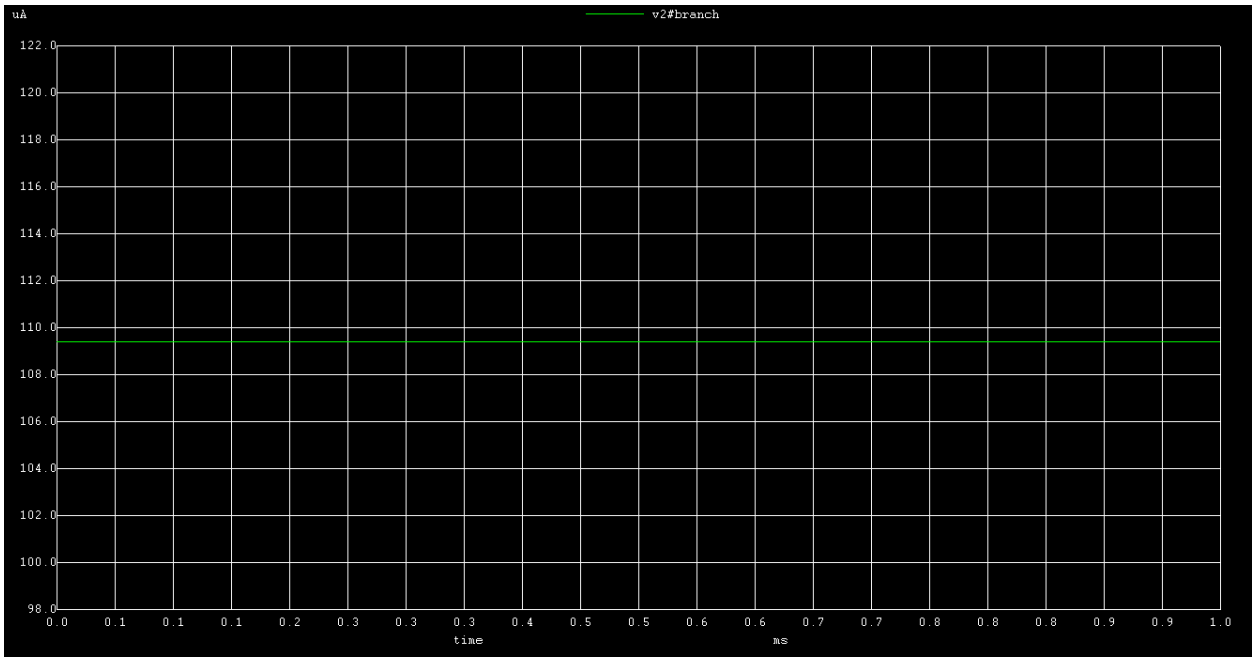


SIMULATION OUTPUT:

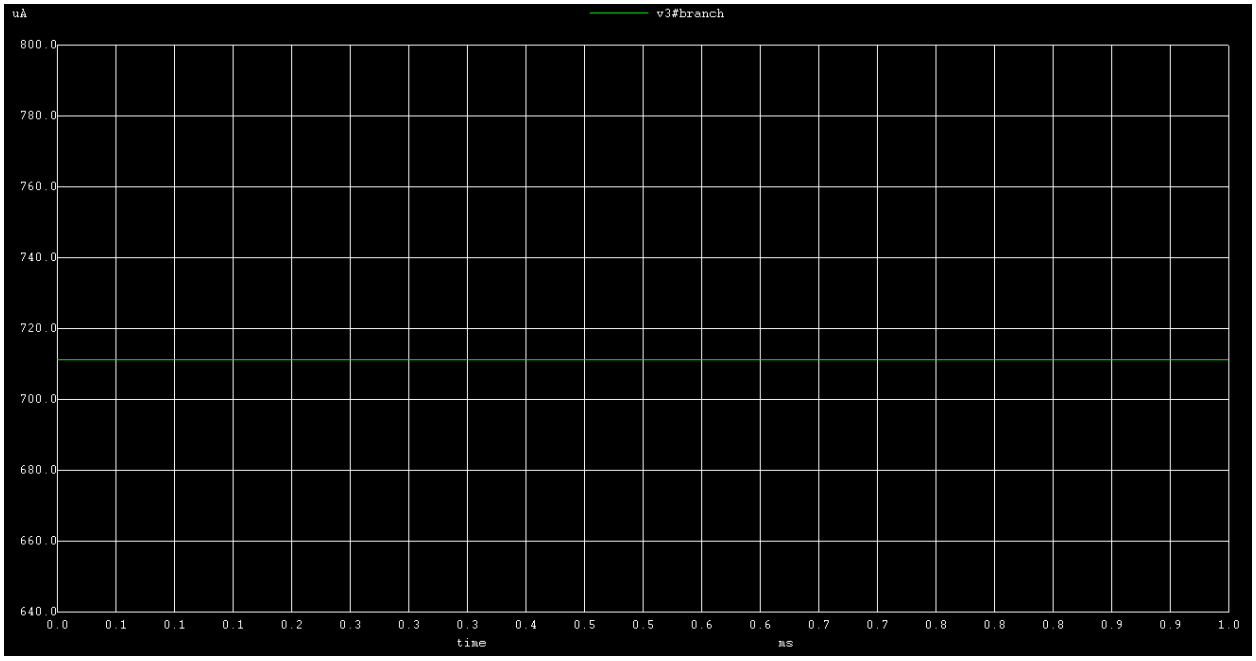
Current In Branch1



Branch 2



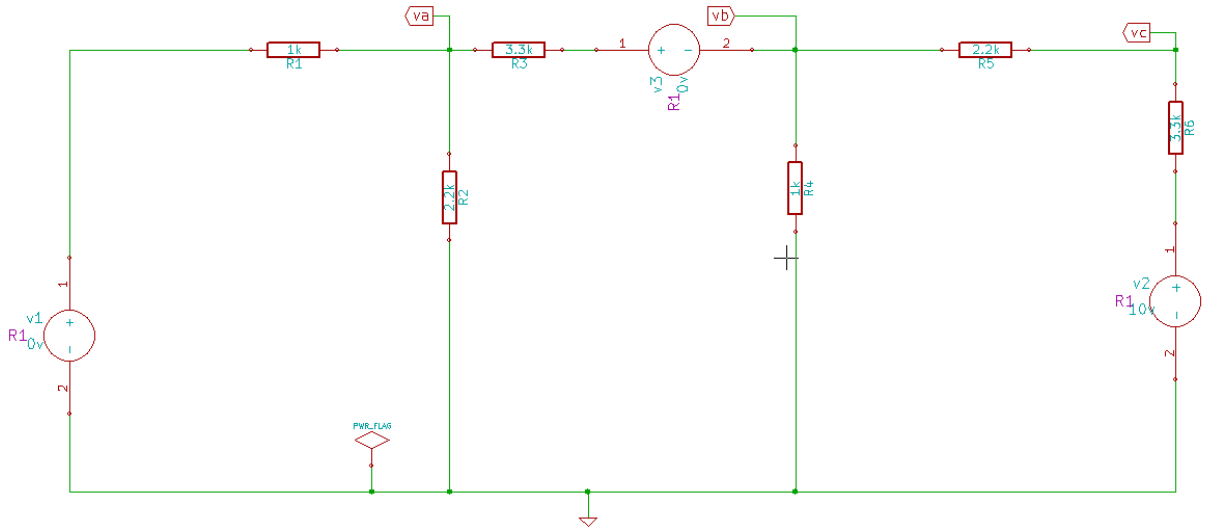
Branch 3



SCHEMATIC DIAGRAM:

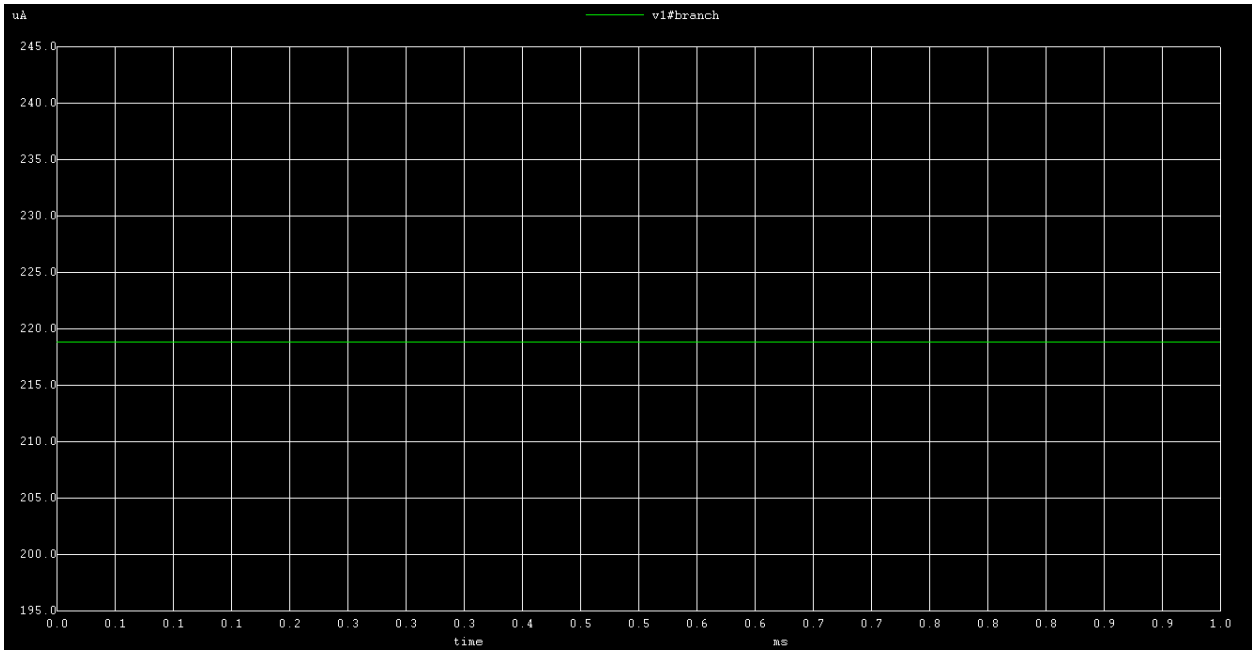
V_1=0; V_2=10v

Refer to "superposition2" FOLDER

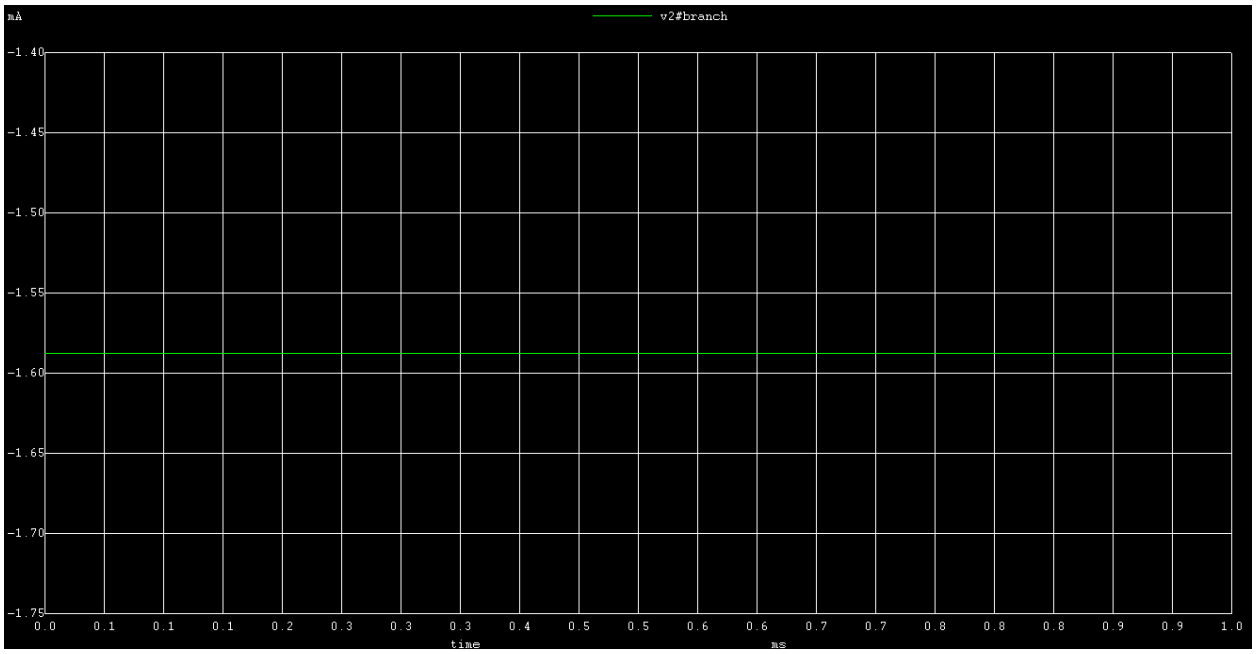


SIMULATION OUTPUT:

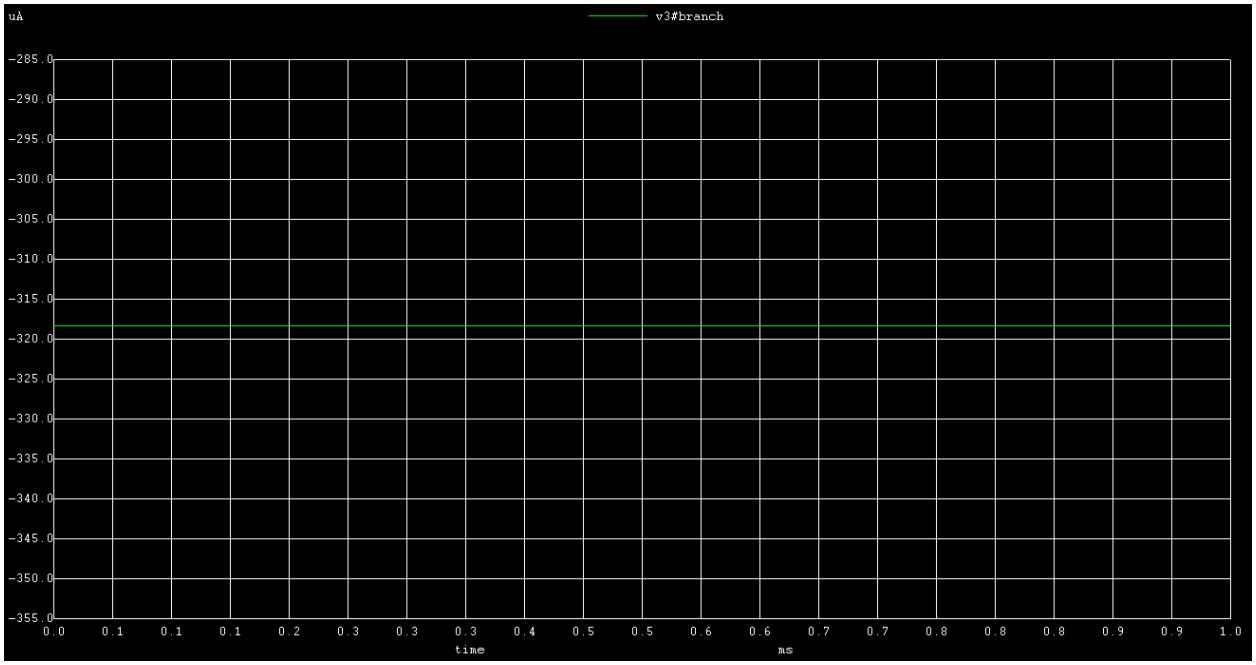
Current In Branch 1



Branch 2

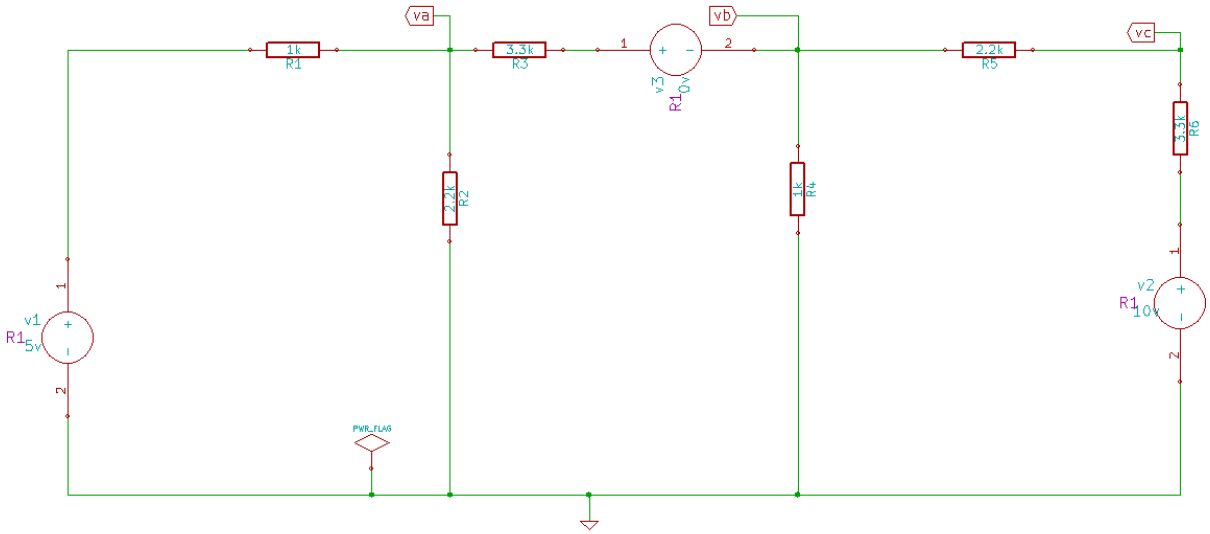


Branch 3



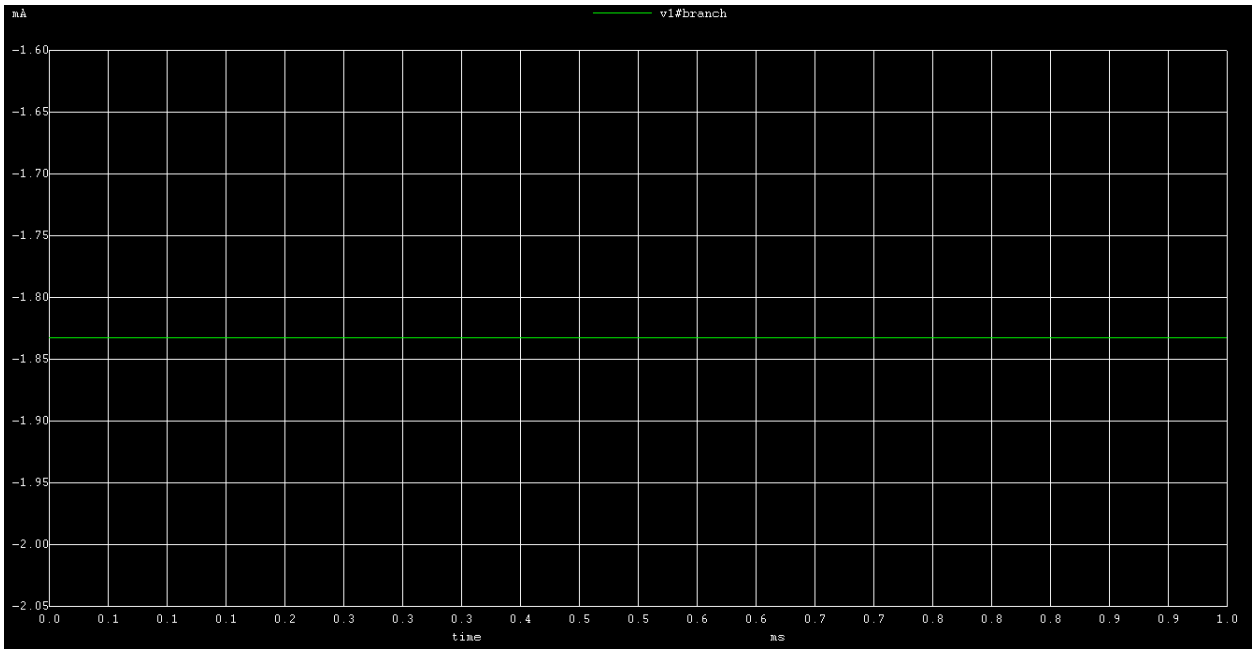
SCHEMATIC DIAGRAM:

V_1=5v; V_2=10v Refer to "superposition" FOLDER

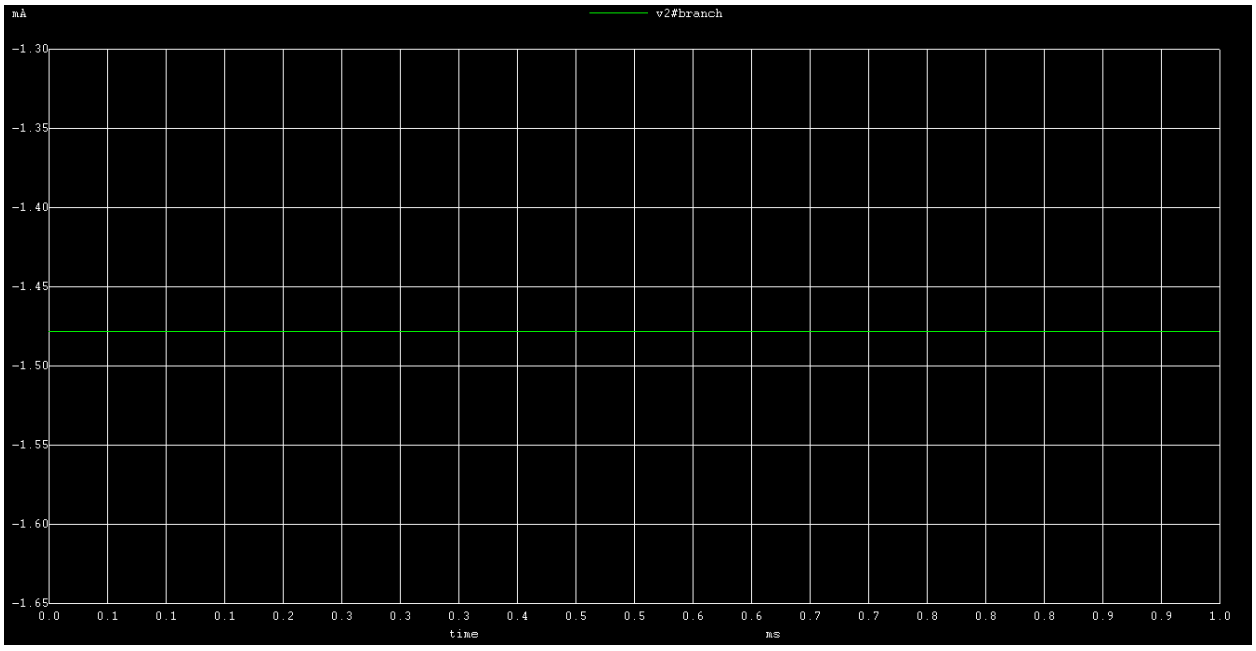


SIMULATION OUTPUT:

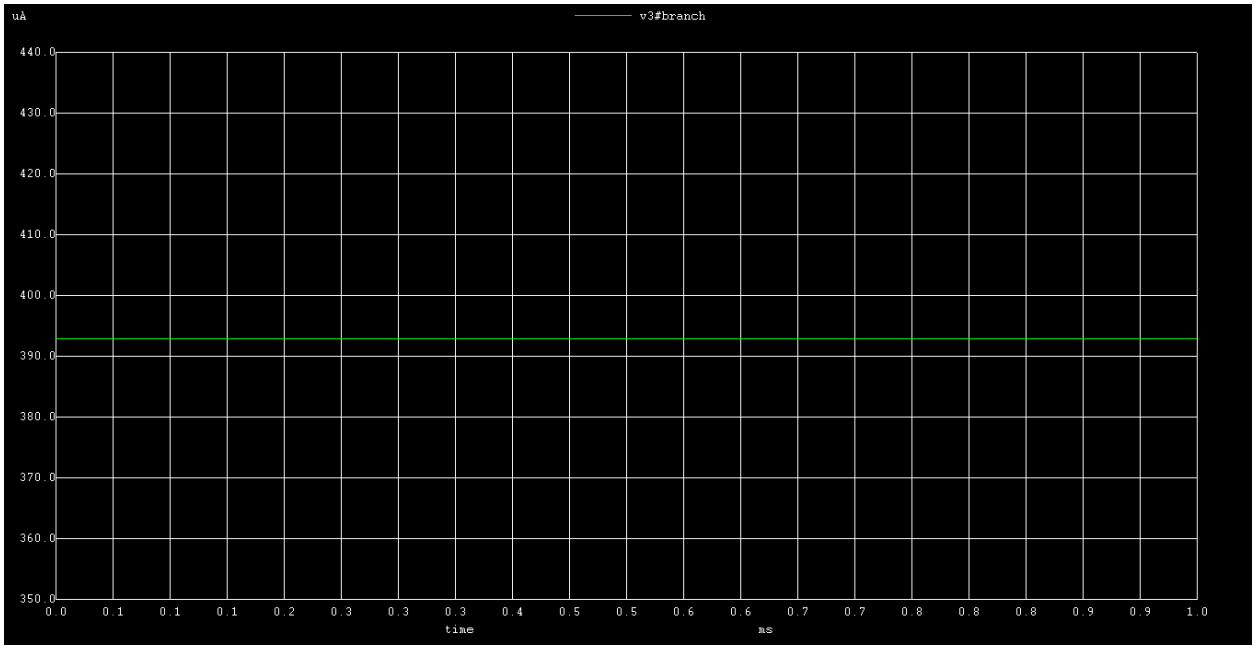
Current In Branch 1



Branch 2



Branch 3



	V_1=5V, V_2=0V	**V_1=0V, V_2=10V**	**Theoretical Total Current**	**V_1=5V, V_2=10V (Practical Value)**
Branch 1 Current (mA)	-2.05	0.219	-1.831	-1.83
Branch 2 Current (mA)	0.1099	-1.58	-1.4701	-1.47
Branch 3 Current (mA)	0.715	-0.318	0.397	0.394

CONCLUSION: