TITLE OF THE EXPERIMENT
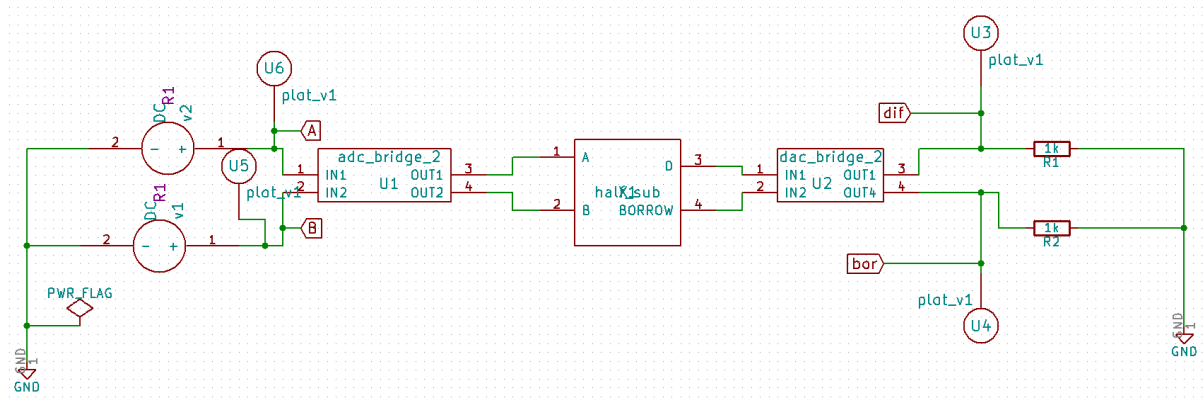
DESIGN OF HALF SUBTRACTOR USING SUBCIRCUIT BUILDER
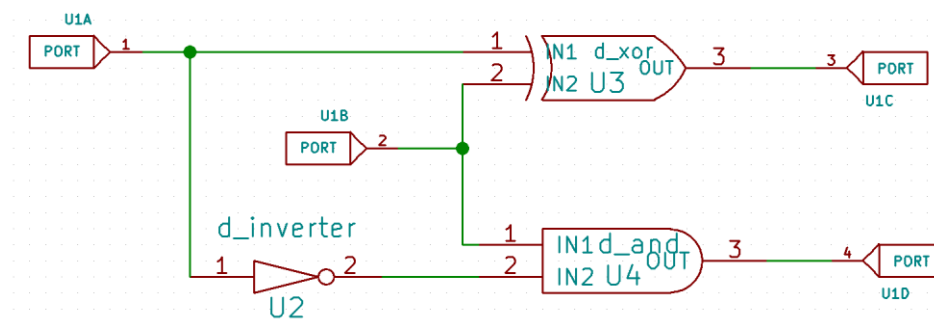
THEORY

Half subtractor is the most essential combinational logic circuit which is used in digital electronics. Basically, this is an electronic device or in other terms, we can say it as a logic circuit. Half subtractor is used to perform two binary digits subtraction. In the previous article, we have already discussed the concepts of half adder and a full adder circuit which uses the binary numbers for the calculation. Similarly, the subtractor circuit uses binary numbers (0,1) for the subtraction. The circuit of the half subtractor can be built with two logic gates namely AND ,NOT and EX-OR gates. This circuit gives two elements such as the difference as well as the borrow.
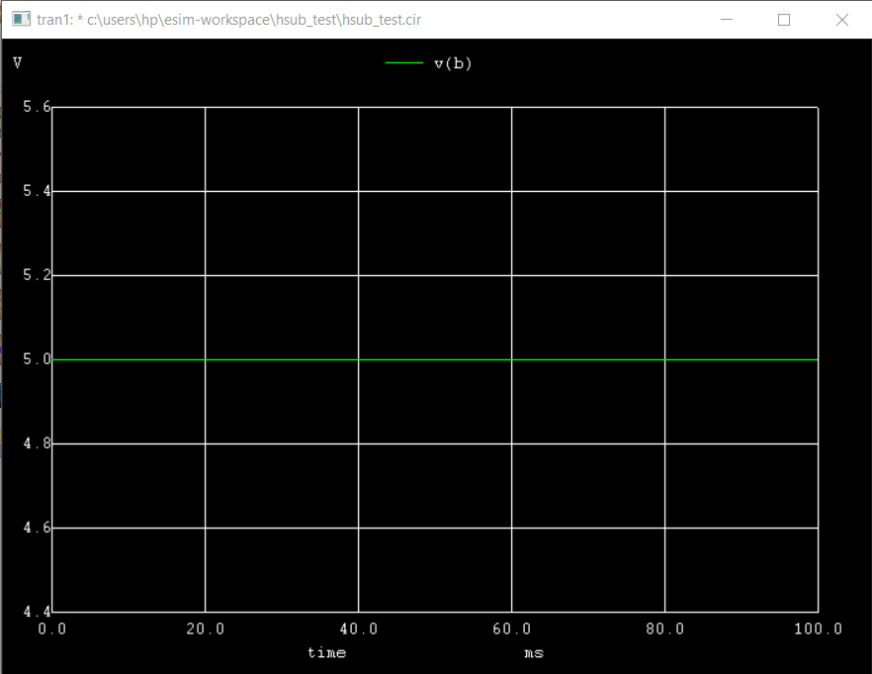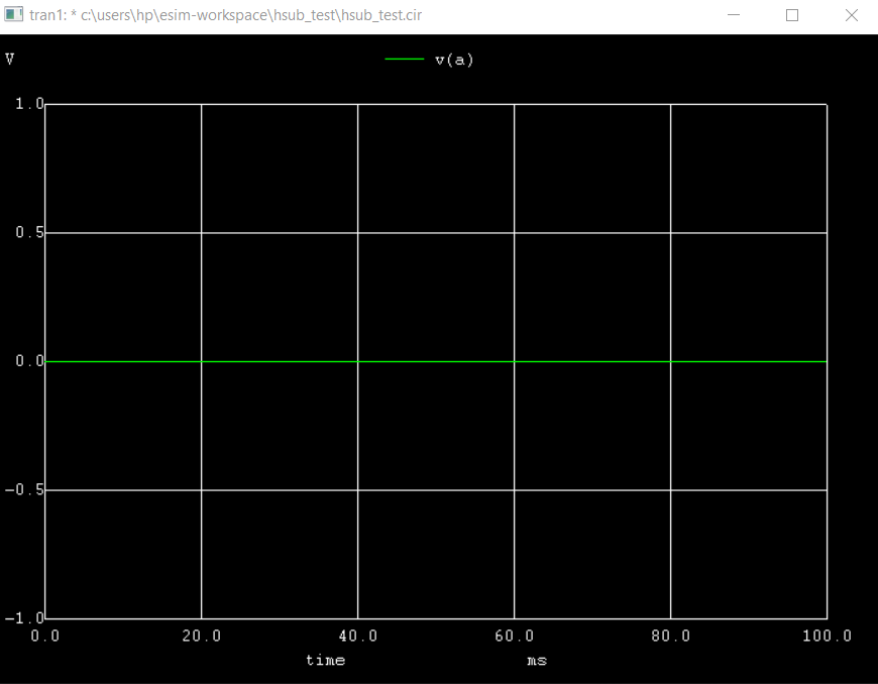
Schematic Diagram

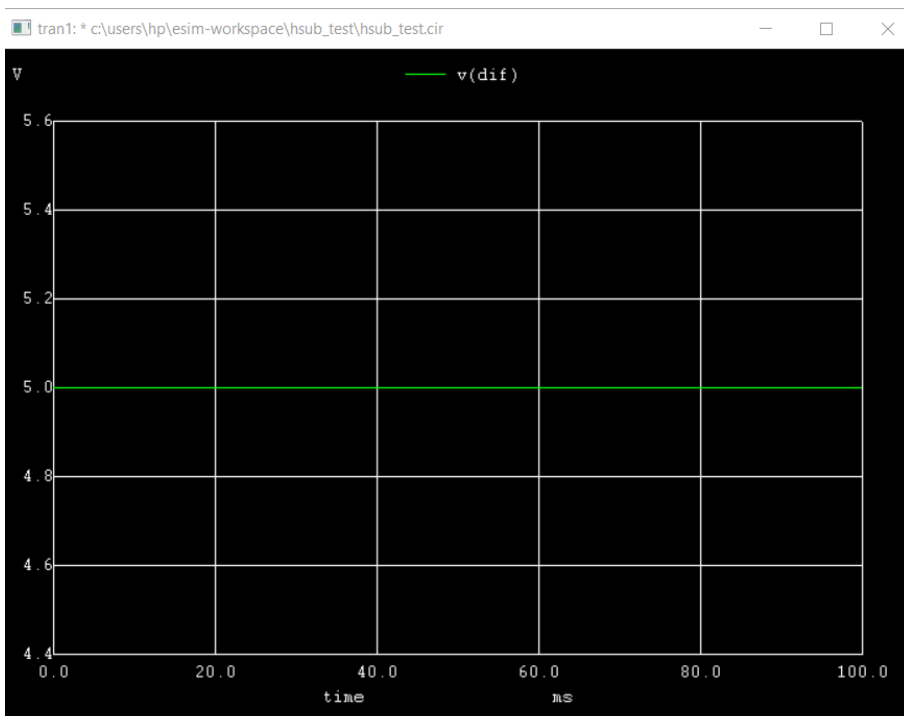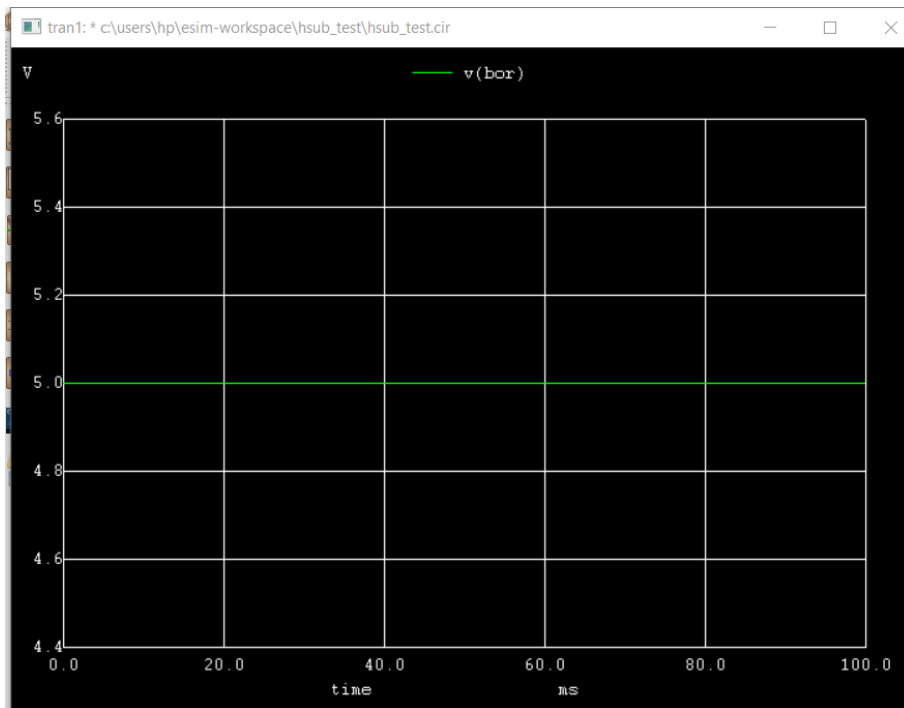The schematic diagram of half subtractor is.

Here I used a subcircuit for subtraction.The internal structure of half subtractor is shown below.
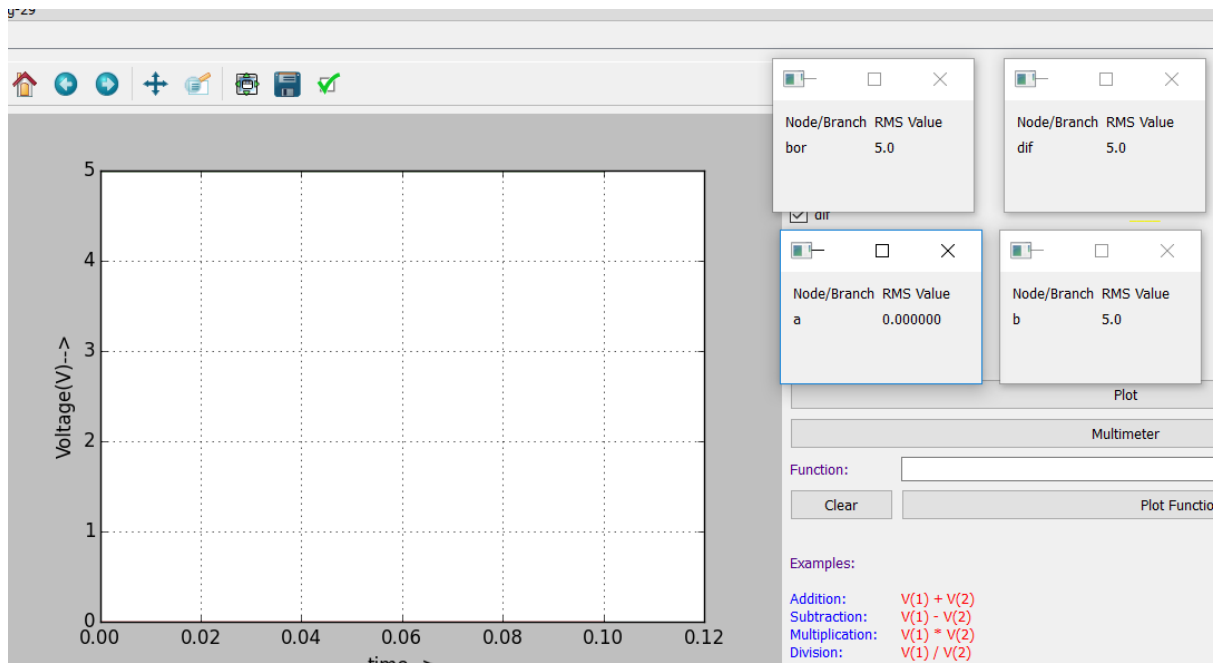
Input Ngspice Plots:

Output Ngspice Plots:

Python Plot:

References:

https://www.elprocus.com/half-subtractor-circuit-construction-using-logic-gates/