

Title of the experiment

## Analysis of Bistable Multivibrator in eSim

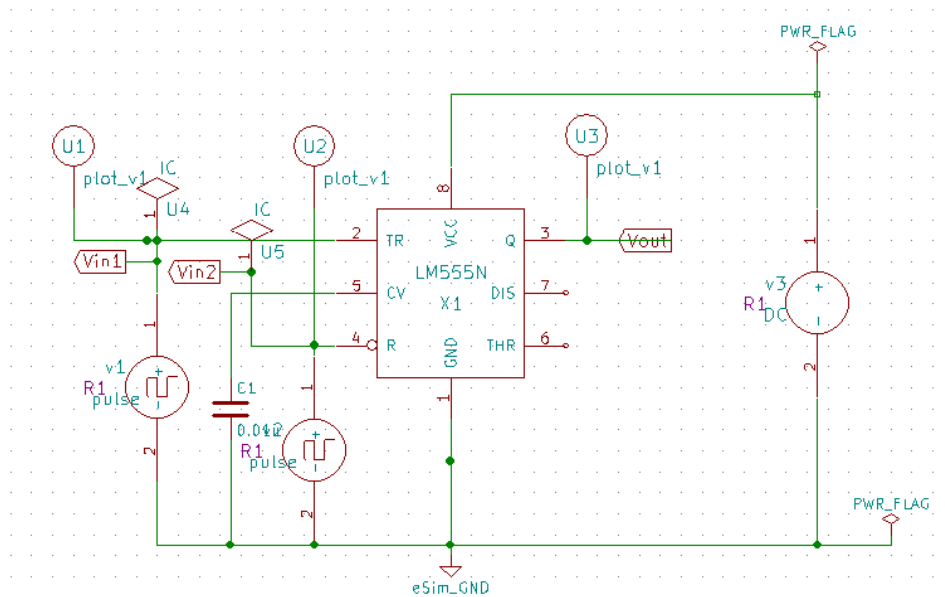
### Theory:

When an astable multivibrator has no stable states and a monostable multivibrator has a single stable state, a device with two absolute stable states is possible. A Bistable multivibrator is a type of circuit which has two stable states (high and low). It stays in the same state until and unless an external trigger input is applied.

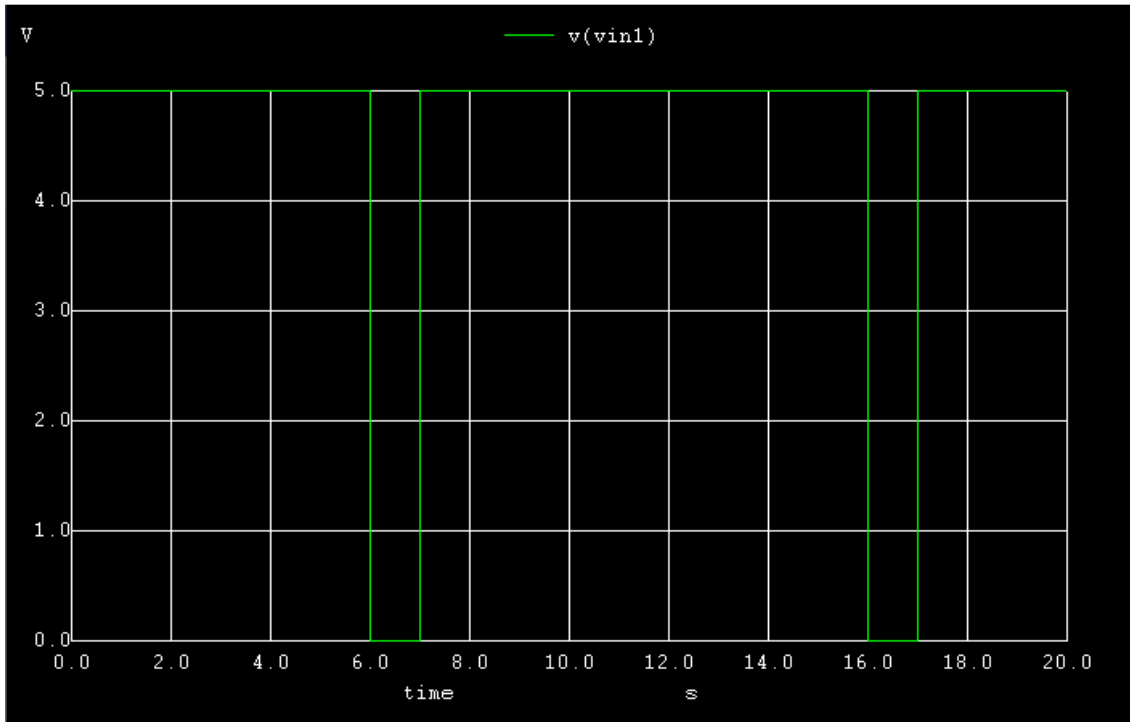
Generally, a bistable multivibrator stays low until a trigger signal is applied and it stays high until a reset signal is applied. Bistable multi vibrators are also called as flip-flops or latches. The term flip-flop is used because it 'flips' to one state and stays there until a trigger is applied and once the trigger is applied it 'flops' back to the original state.

A bistable multivibrator is one of the easiest circuits that can be built using a 555 timer. It doesn't require a capacitor as the RC charging unit is not responsible for the generation of the output. The generation of high and low outputs is not dependent on the charging and discharging of the capacitor in the RC unit but rather it is controlled by the external trigger and reset signals.

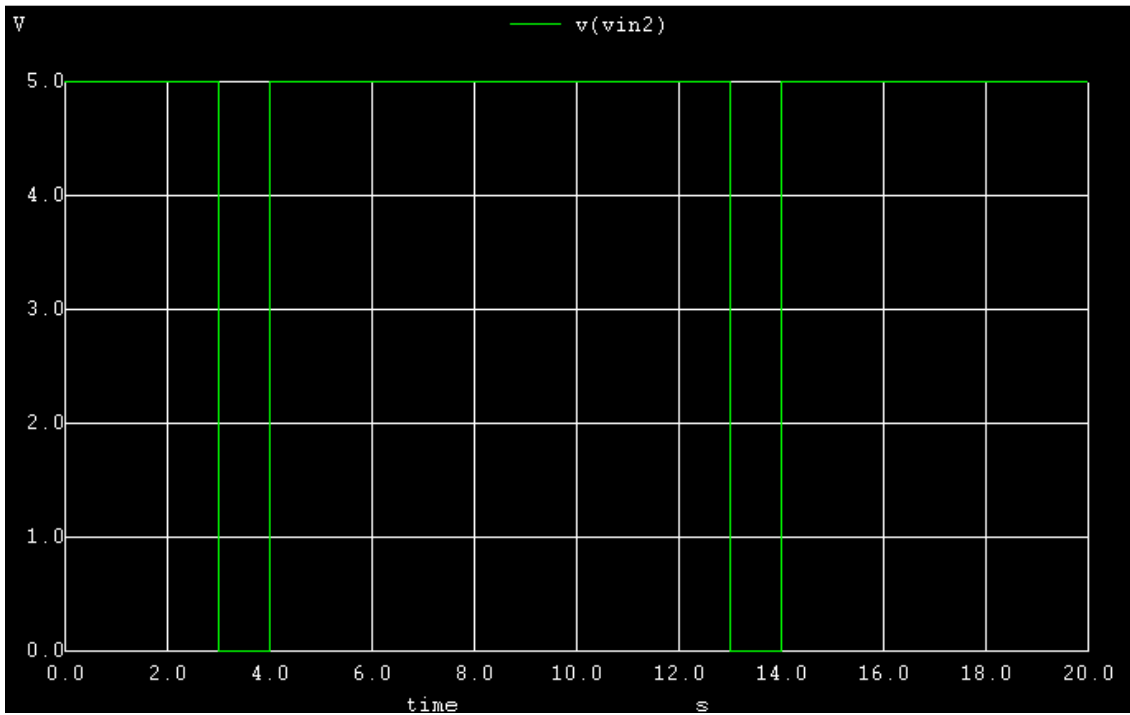
### Schematic diagram:



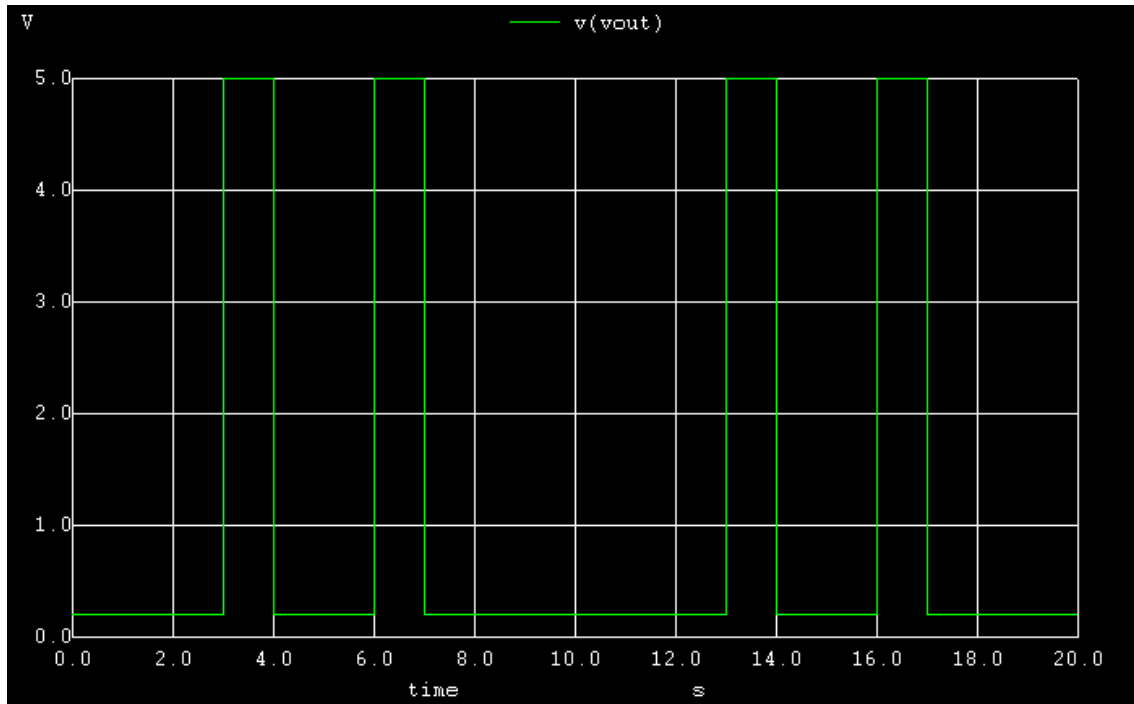
### Simulation Results : Ngspice Plots- Input signal to Trigger Pin



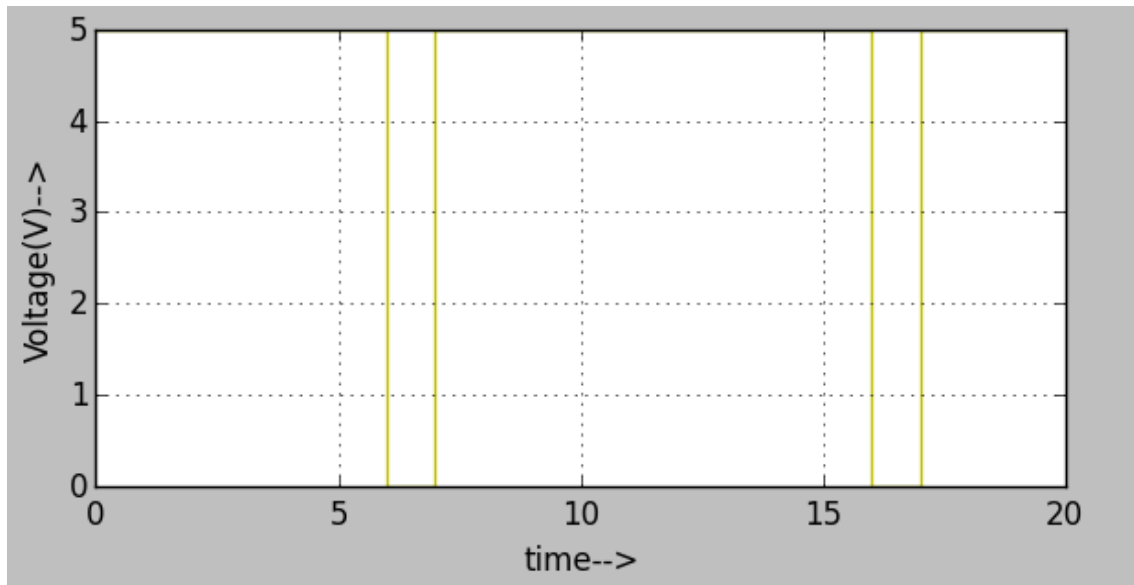
### Ngspice Plots- Input signal to Reset Pin



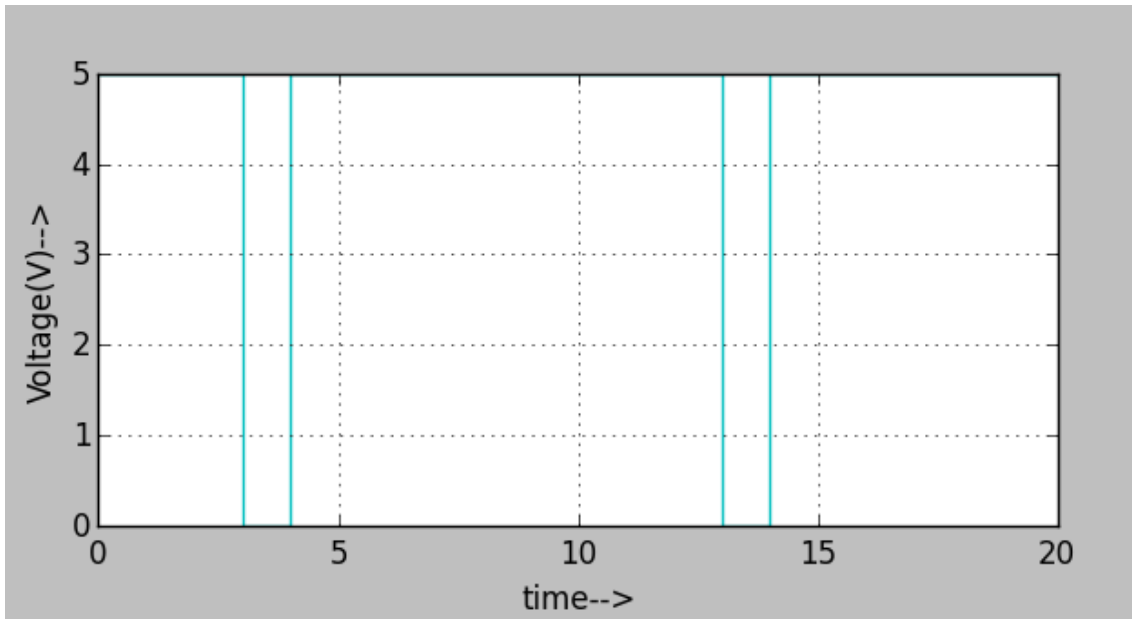
### Ngspice Plots- Output signal



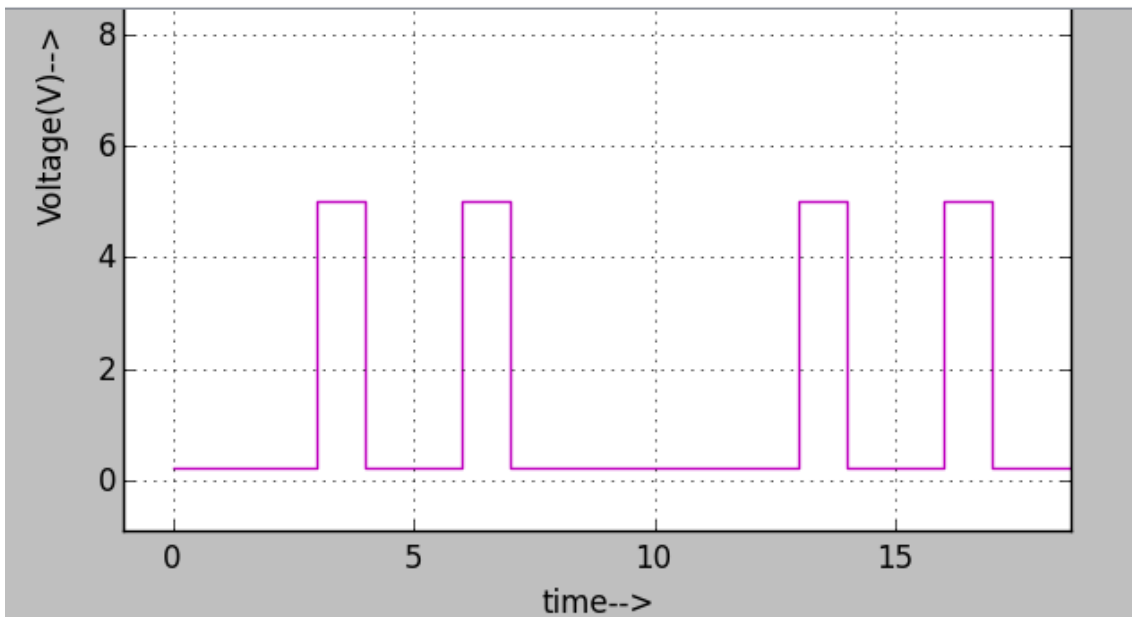
### Python Plots- Input signal to Trigger Pin



### Python Plots- Input signal to Reset Pin



### Python Plots- Output signal



**Conclusion :**

Thus, we have studied the bistable multivibrator and the simulation plot of ngspice and python plot obtained in eSim.

**References:**

- 1) <https://www.electronicshub.org/bistable-multivibrator-using-555-timer/>
- 2) <https://www.elprocus.com/bistable-multivibrator-using-555-timer/>