

SEQUENCE DETECTOR

Theory:

A sequence detector is a machine that can be used to detect a particular sequence of any length based on the configuration. These sequence detectors are of two types. They are Moore and Mealy.

Here Moore machine detects non-overlapping sequences while Mealy machine detects overlapping sequences. These sequence detectors are designed with the help of a state diagram and implemented with the help of flip-flops. Here D Flip-Flop is used for easy implementation.

Schematic Diagram:

The below is the schematic diagram of a 1001 sequence detector built using a Mealy machine.

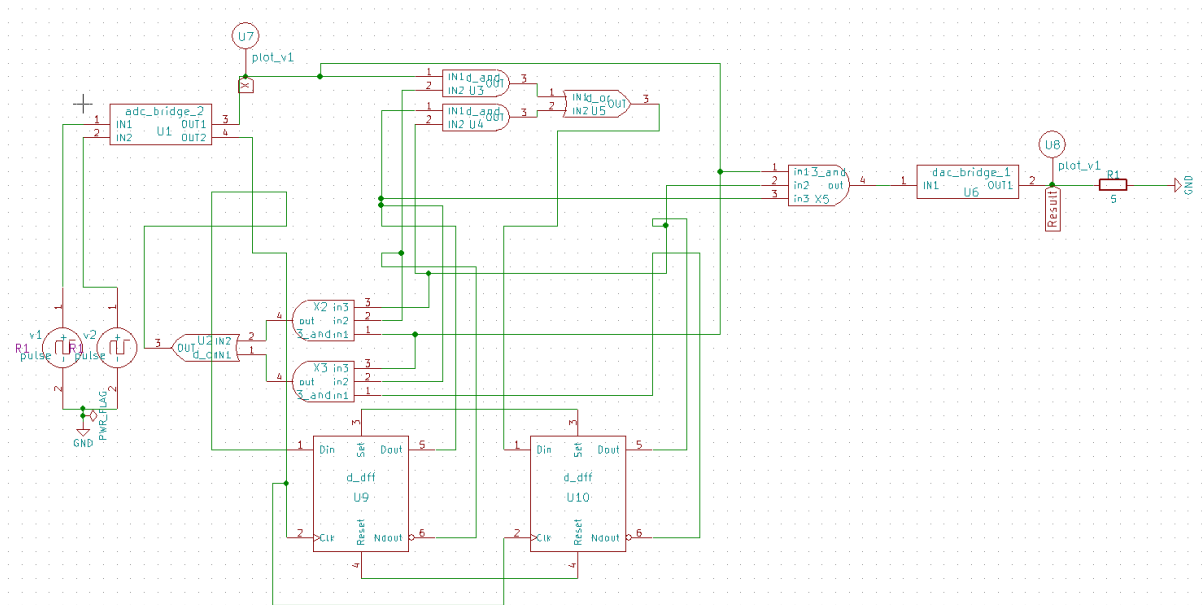


Figure 1: 1001 Sequence Detector

Simulation Result:

Ngspice Simulation:

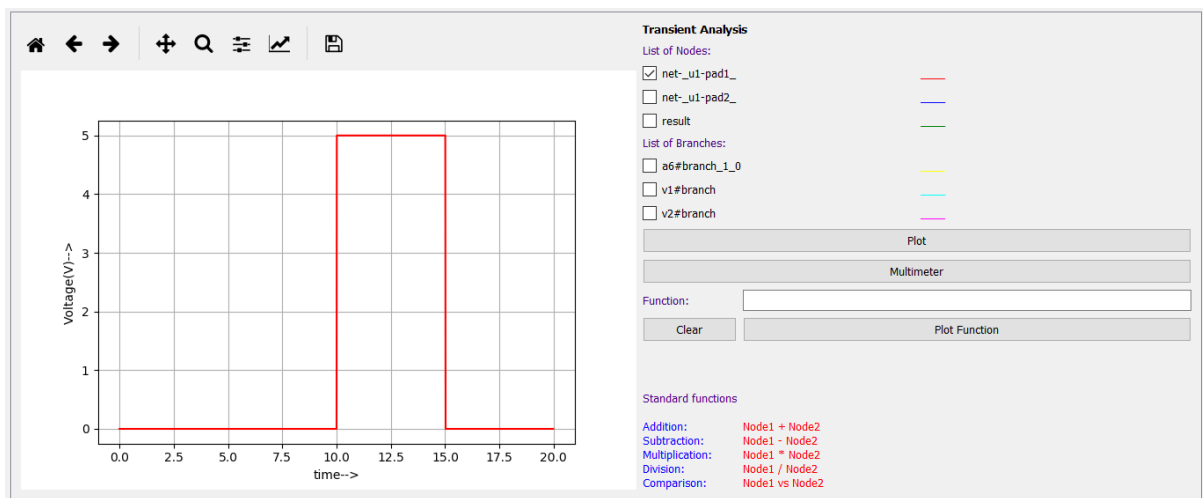


Figure 2: Voltage Source

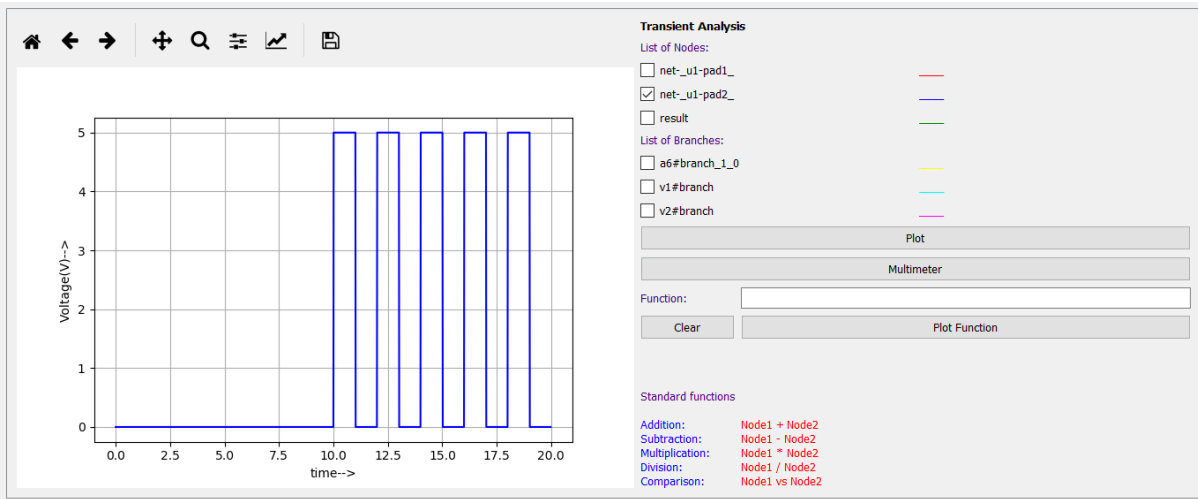


Figure 3: Clock Cycle

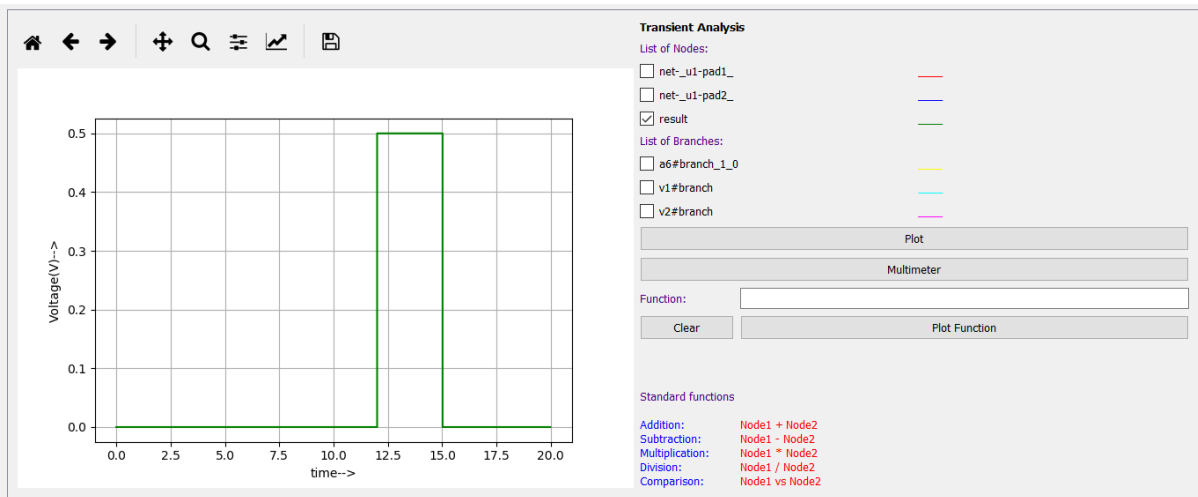


Figure 4: Result

References:

<https://yue-guo.com/2018/11/18/sequence-detector-1001-moore-machine-mealy-machine-overlapping-non-overlapping/>