Implementing Johnson Counter with Astable Multivibrator

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Abstract: Ring counters are used to count the data in a continuous loop. Astable multivibrators are also known as Free-running Multivibrator as they do not require any additional inputs or external assistance to oscillate. From the Astable Multivibrator, the squarewave output is given to the Johnson counter. In this way, we implement the Johnson counter with the help of the Astable Multivibrator.

1. Reference Circuit Details

As shown in circuit diagram Figure 1, we have an astable multivibrator. It also includes a Johnson counter connected. From the astable multivibrator, we get the squarewave output which can be used as the clock input.

The squarewave used as clock input is given to the johnson counter. We are getting the output from the overall circuit as shown in Figure 2. The advantage of the circuit is that we can observe the outputs of the astable multivibrator and johnson counter. It can be used as a multipurpose circuit.

2. Implemented Circuit

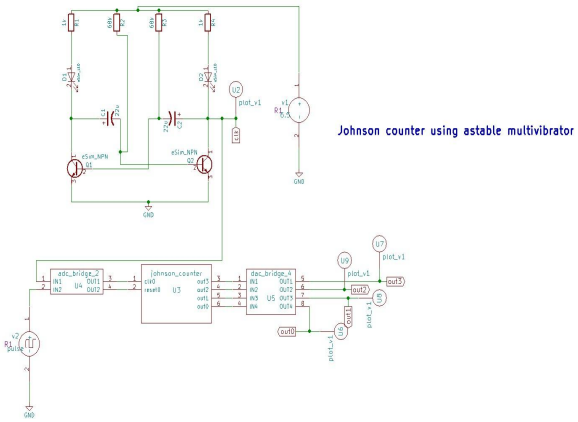

Figure 1.

3. Implemented Circuit Waveforms

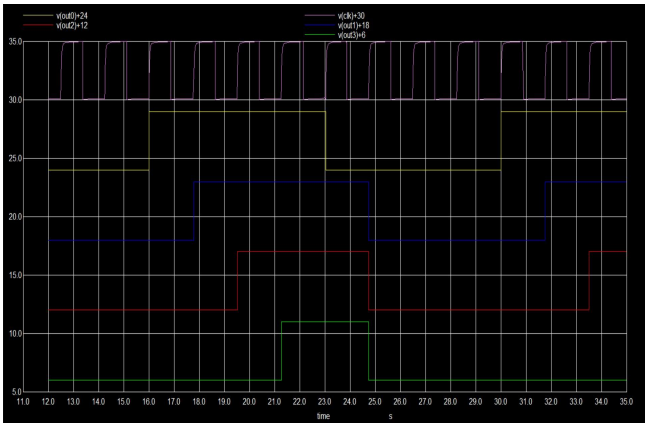

Figure 2.

References:

Website:" Astable multivibrator -> Schmitt trigger -> johnson counter (CD4017be). If I skipp the Schmitt trigger it works fine, but when using it ONE Led on the counter refuse to light when supposed to. This seems like such a random error. Any ideas of why this would be? (More info in comments) : AskElectronics (reddit.com)"