

ECE 204L - COUNTERS - LAB 20

RIPPLE COUNTERS

WINTER 2004

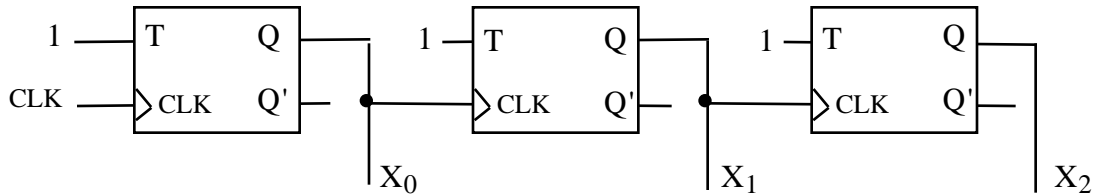
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OBJECTIVE

The objective of this lab is to build and analyze a 3-bit ripple down counter.

LAB

1. Given the following 3-bit ripple counter.



- Draw a logic diagram with pin numbers for this circuit with the T flip-flops implemented with D flip-flops
- Analyze the counter to obtain its next state table
- Make use of your result in part (b) to obtain the counter's state diagram
- Build your circuit and then measure the next state table. Make use of preset and clear to start the counter at 0 with $X_2X_1X_0 = 000$. Make use of your 7-segment display to display the results
- Make use of your measured results in part (d) to obtain the counter's state diagram
- Verify that the measured and calculated results are the same
- Is this an up or down counter. How can you tell