

Lab 5: Counters and Clocks

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1 Part I

1. Export the subcircuit schematic as an image and include it in your report.

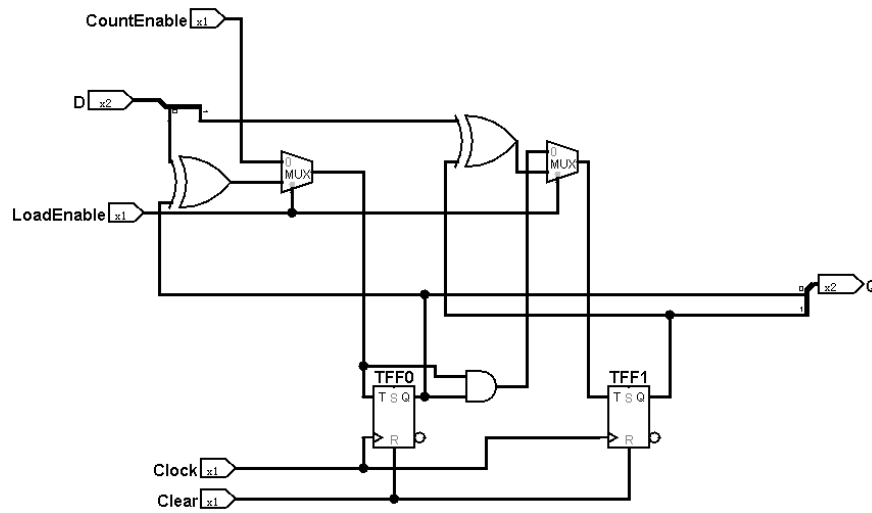


Figure 1: A schematic of counter2.

2. Export the subcircuit schematic as an image and include it in your report.

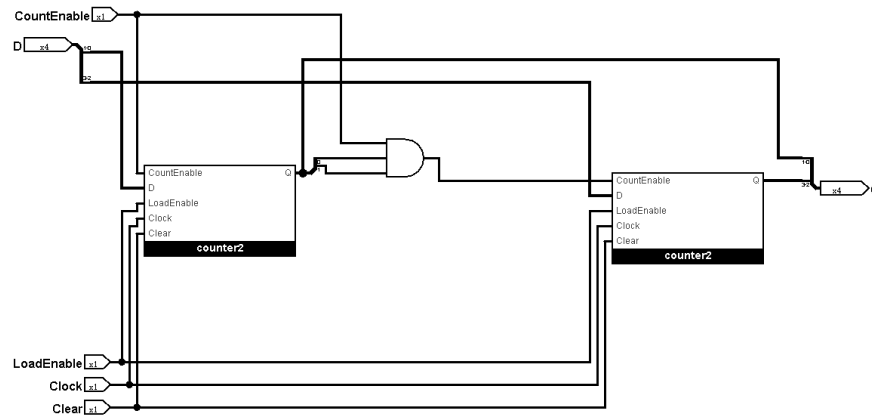


Figure 2: A schematic of counter4.

3. Export the timing diagram as an image and include it in your report.
4. Export the subcircuit schematic as an image and include it in your report.

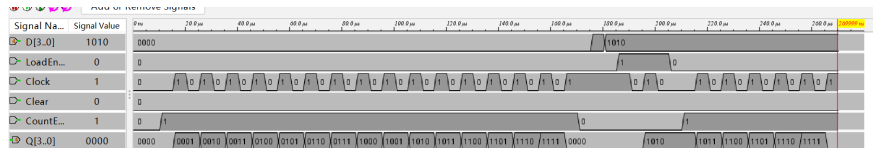


Figure 3: A timing simulation of counter4.

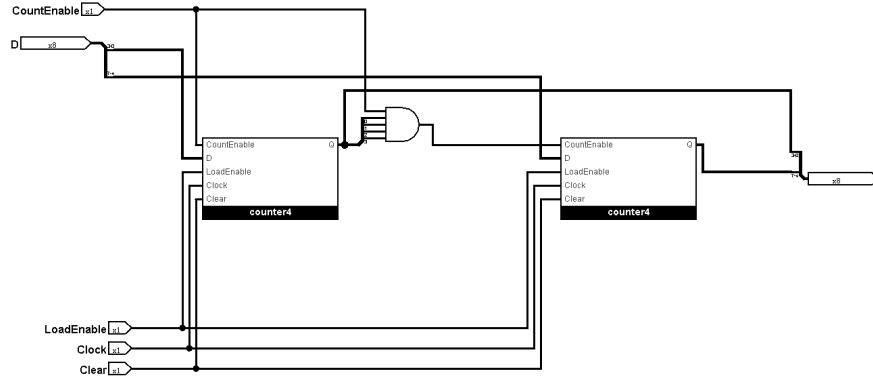


Figure 4: A schematic of counter8.

2 Part II

1. Export the subcircuit schematic as an image and include it in your report.

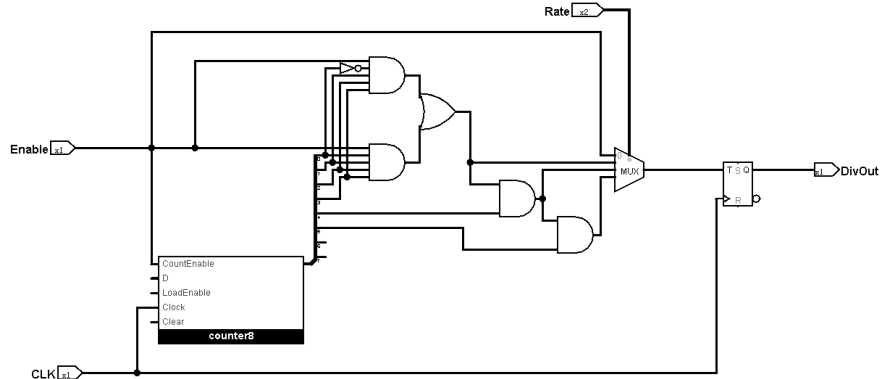


Figure 5: A schematic of rate_divider.

2. Export the timing diagram as an image and include it in your report.

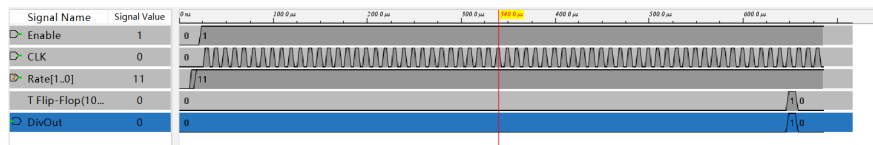


Figure 6: A timing simulation of rate_divider.

3 Part III

1. Fill in a table with your binary representation of each letter from S to Z.
2. Export the subcircuit schematic as an image and include it in your report.

Letter	Morse Code	Pattern Representation (pattern length is <u>14</u> bits)
S	• • •	101010000000000
T	—	111000000000000
U	• • —	101011100000000
V	• • • —	101010111000000
W	• — —	101110111000000
X	— • • —	111010101110000
Y	— • — —	11101011101110
Z	— — • •	11101110101000

Table 1: Morse Pattern Representation with fixed bit-width

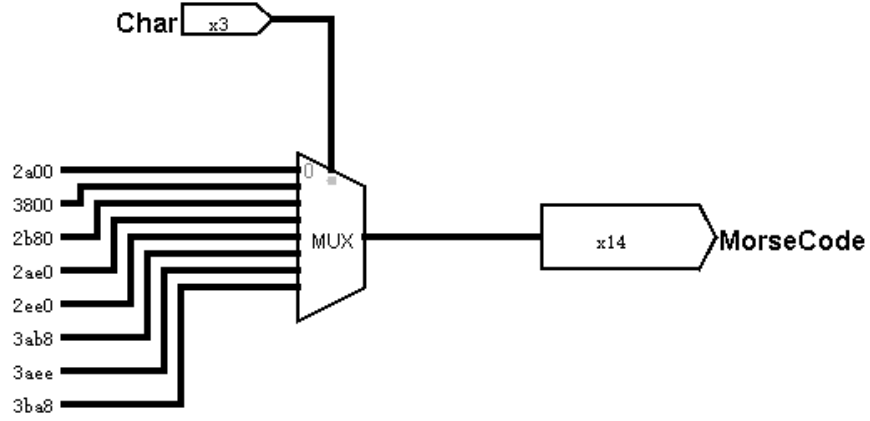


Figure 7: A schematic of MORSE_LUT.