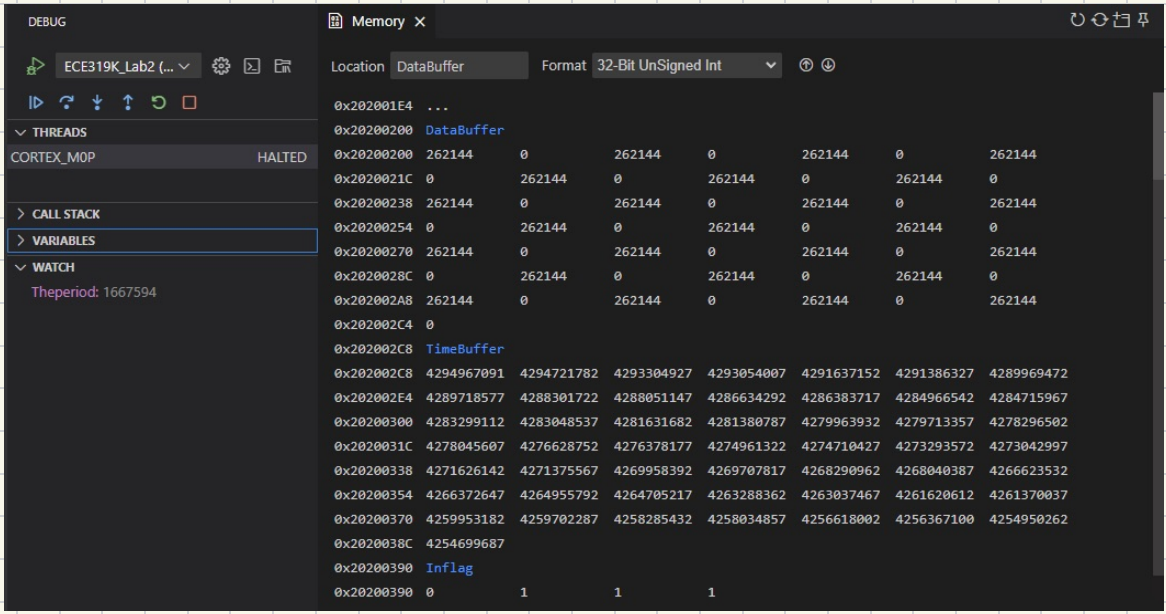
Lab 3 Deliverables:

Travis Beach tmb3456
Dr. Y



Debug Period Pseudocode:

1. Mask Data and store in a new array
2. Revalue the array, to make the data a 1 if masked data != 1 and a 0 if the masked data is a 0
3. Store the time value of each rising edge of the masked data in an array, when the index is a 1 and the index-1 is a 0
4. Count the number of rising edges
5. If there is not more than two then there is not a full period, and return a zero
6. Calculate the elapsed time by adding the time difference between each rising edge
7. Calculate the average period by dividing the elapsed time by one less than the number of rising edges
8. Return average period

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Lab 3, Spring 2025, Grader.
EID= TMB3956
Step 1) Score= 5
Step 2) Score= 10
Step 3) Score= 20
Step 4) Score= 25 out of 25
Done

Extra Credit Duty Cycle Calculations:
Duty Cycle Mask 0: 0%
Duty Cycle Mask 1: 50%
Duty Cycle Mask 2: 54%
Duty Cycle Mask 3: 75%
Duty Cycle Mask 4: 60%
Duty Cycle Mask 5: 75%
Duty Cycle Mask 6: 90%
Duty Cycle Mask 7: 87%
Duty Cycle Mask 8: 0%
Duty Cycle Mask 0xABCD1230: 0%
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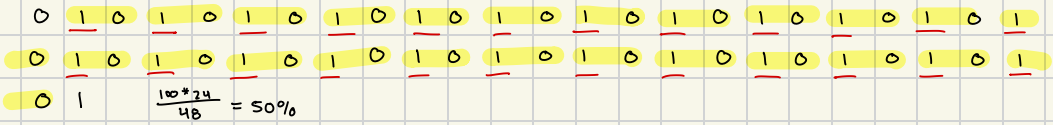
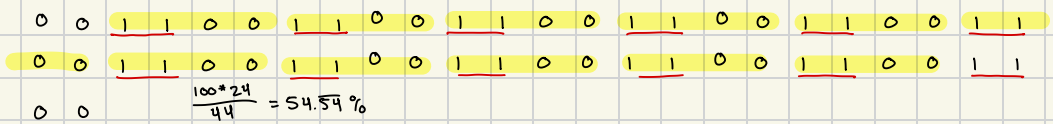
Period = rising edge → rising edge Pulse width = rise to fall Duty Cycle = $\frac{100 * \text{Pulse}}{\text{Period}}$

Mask of 1 (1)



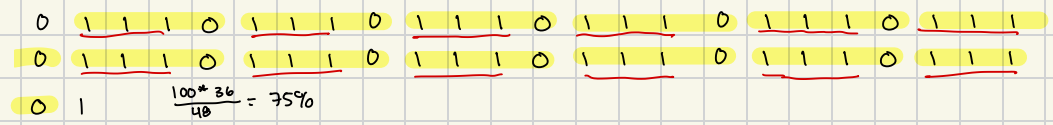
$\frac{100 * 24}{48} = 50\%$

Mask of 2 (10)



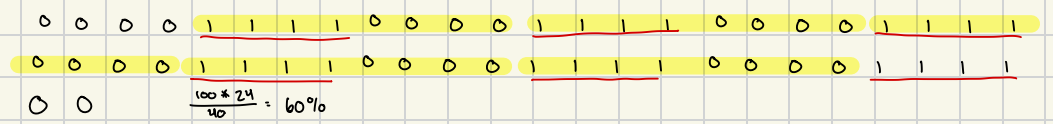
$\frac{100 * 24}{44} = 54.\overline{54}\ \%$

Mask of 3 (11)



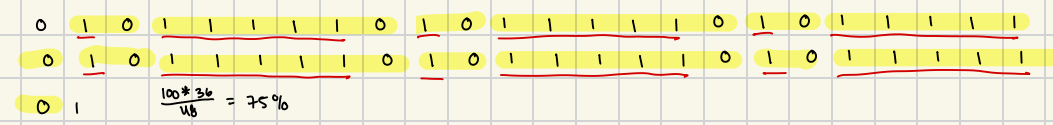
$\frac{100 * 36}{48} = 75\%$

Mask of 4 (100)



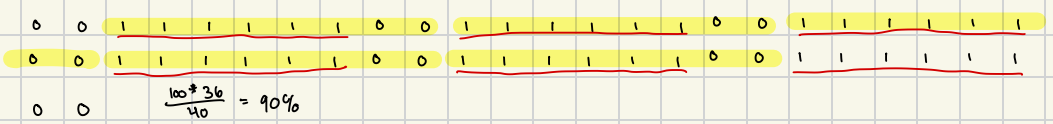
$\frac{100 * 24}{40} = 60\%$

Mask of 5 (101)



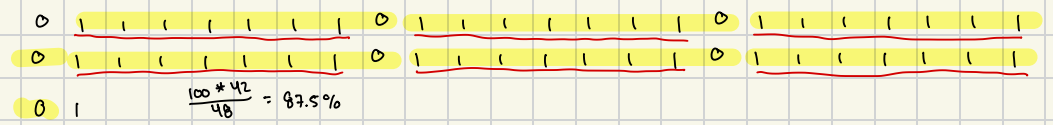
$\frac{100 * 36}{48} = 75\%$

Mask of 6 (110)



$\frac{100 * 36}{40} = 90\%$

Mask of 7 (111)



$\frac{100 * 42}{48} = 87.5\%$