ECE 319H Lab 3

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Pseudo code

Pseudo code for all five parts of the lab including: Debug Initialize, Debug Dump, Debug Dump 2, Debug Period, and Debug Duty.

Debug Initialize

Copied and pasted from my code notes (now deleted):

```
/*
    First, initialize timer, no variable needed
    Make DebugCnt = 0
    Then, make a for loop that goes through all values of DataBuffer
    and TimeBuffer and make them all = 0
*/
```

Debug Dump

Copied and pasted from my code notes (now deleted):

```
/*
    Determine if we have space in the buffer arrays (use if statement with maxbuf)
    If we don't have space return 0, but if we do, save data and time
    To save data, just save it into databuffer at debug counter
    To save timer, use the timer function g12 to read timer at that time
    Make debugcnt++ to go to the next possible array value
    return 1
*/
```

Debug Dump 2

Copied and pasted from my code notes (now deleted):

```
/*
    Copy the way done in debug dump 1
    Detect if previous data is the same as the current data
```

```
    if current = previous, just return 1, don't do anything
    if not, then do what done in debug dump 1
    Possible issues when debugcnt = 0, so add if statement for that case specifically
    return 1
*/
```

Debug Period

Copied and pasted from my code notes (now deleted):

```
/*
    Have a variable to detect the start of a period and then end of a period
    To calculate avg period, have a period counter
    How to determine if it was 0 before it being a one? ...
    Have variable that changes depending if it's a 0 or a 1 and use it for
    if statements
    Possible cases:
    -   If data is bigger than 0, and it was a 0 before, it's a rising edge
    -   If both conditions before + it already had rising edge before,
    it's a new period and the end of the previous one (create variable for this)
    -   So if only 1, it doesn't do anything, and if it's 0, then set the variable to
    detect if it was 0 before to 1 so we know that we can now have a rising edge.

    In the data > 0 and zero before, if this is true, this means our
    first rising edge, so set the rising edge variable to 1 and the
    start period is going to be the time at this point

    In the data > 0 and zero before and rising edge, set the ending
    period to the current time and calculate period, then add to an
    accumulated period variable (create this) and period counter++

    If 0, then just set zero before to 1.

    After getting out of the loop, calculate avg.
    Problem if period counter = 0, because x/0 is not possible,
    so create condition for this and return 0.
*/
```

Debug Duty

Copied and pasted from my code notes (now deleted):

```
/*
    Essentially the same as debug period but change it so it also
    detects falling edges and add variables for duty stuff

    No need for period counter, no period avg, but need duty counter
```

```
    Add condition to detect if falling edge. If it's 1 before
    and now 0, then it's falling edge, set a variable
    end pulse = time at this point

    Reuse everything else, calculate duty instead of period in %

    Use formula given in lab sheet
    TEST WITH H AND O!!!!
*/
```

Image of Terminal window - Proof of completion

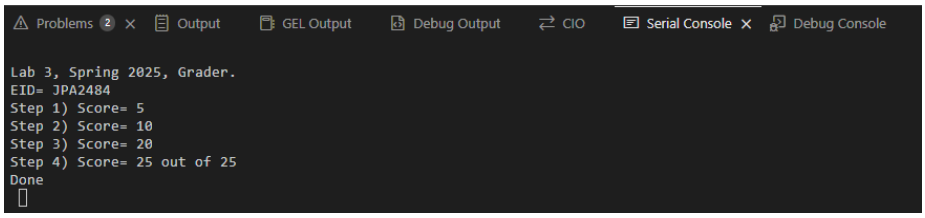

Figure 1: Terminal window

Image of Memory window - Proof of completion

DISCLAIMER: *Theperiod* **IS 0 BECAUSE AFTER ONLY ONE BUTTON PRESS, IT ISN'T ENOUGH TO FILL** *Debug_Dump*, **AND THIS IS IMPORTANT BECAUSE THERE'S A CONDITION THAT CHECKS FOR THIS, AND IF NOT FULL, IT DOES NOT UPDATE** *Theperiod*.

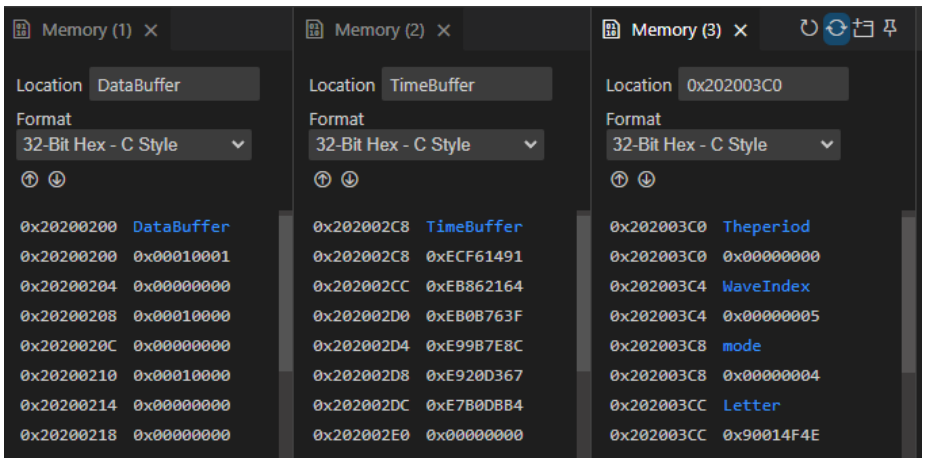

Figure 2: Memory window, output is "O"