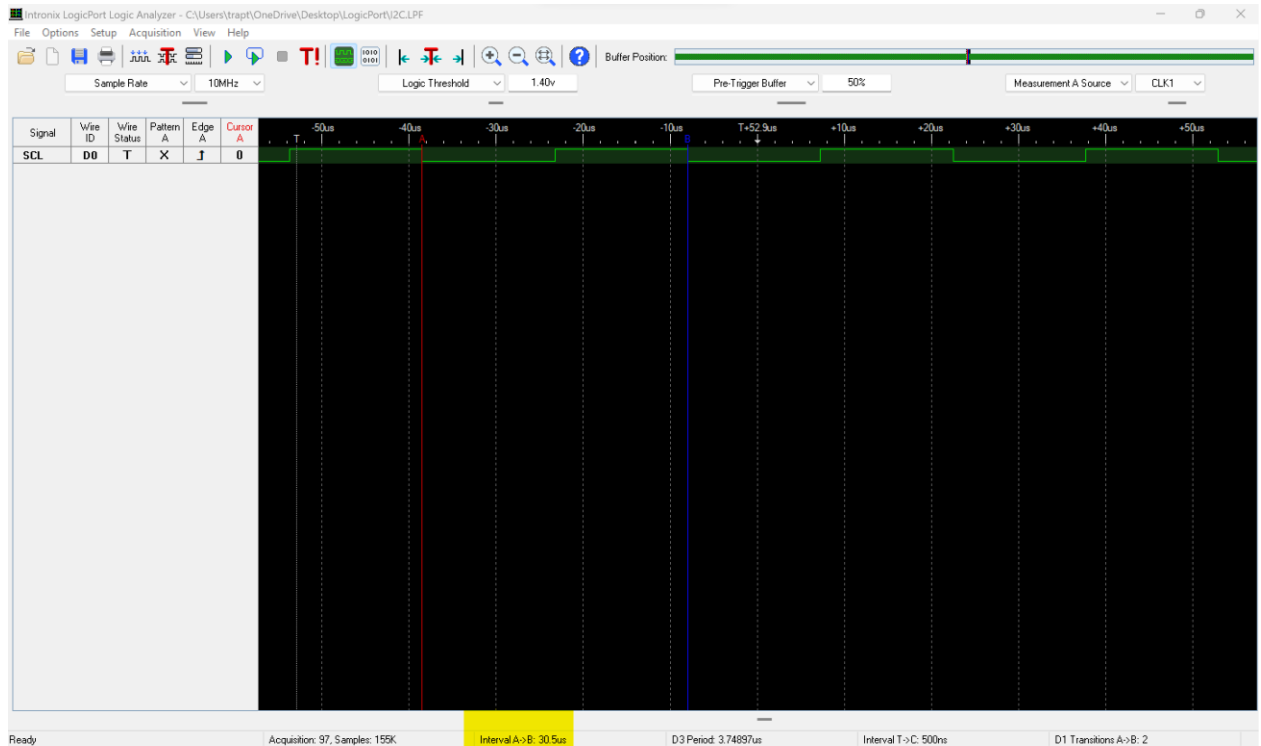
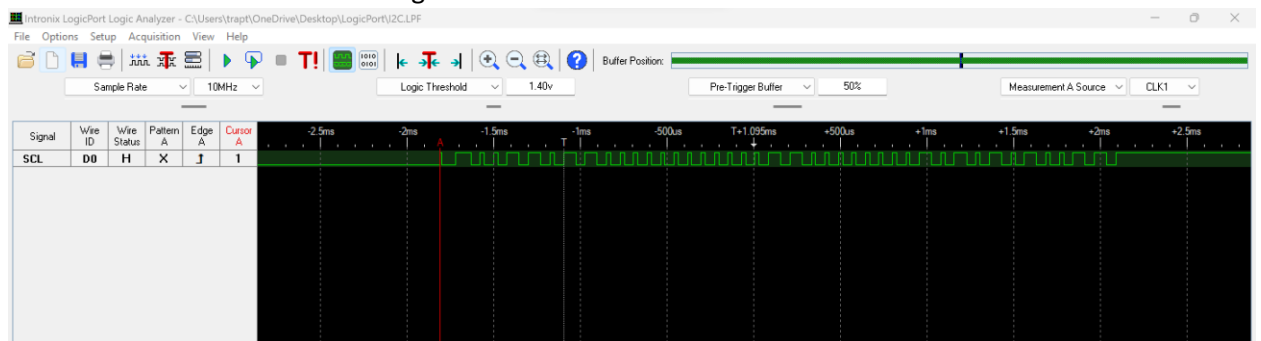


Testing Manual - Real-Time Environment Monitor with RTC and DHT11

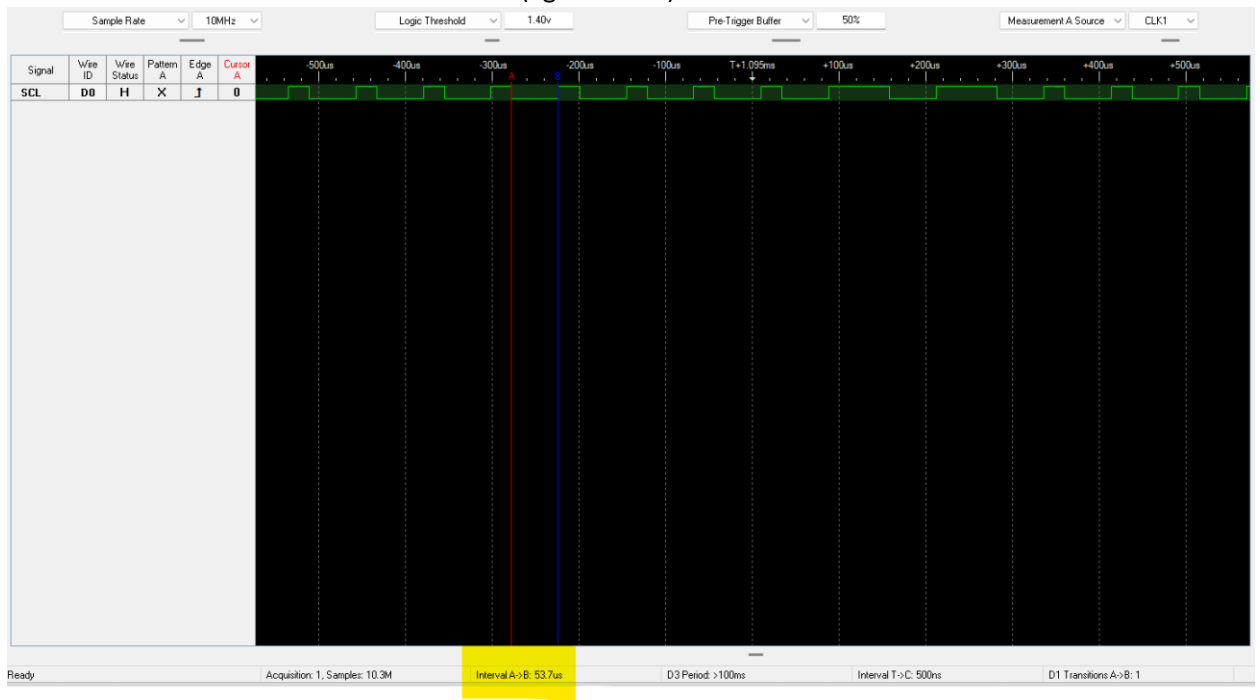
1. I verified the RTC clock through a logic analyzer. Period: 30.5us. Therefore, the frequency is 32.768KHz.



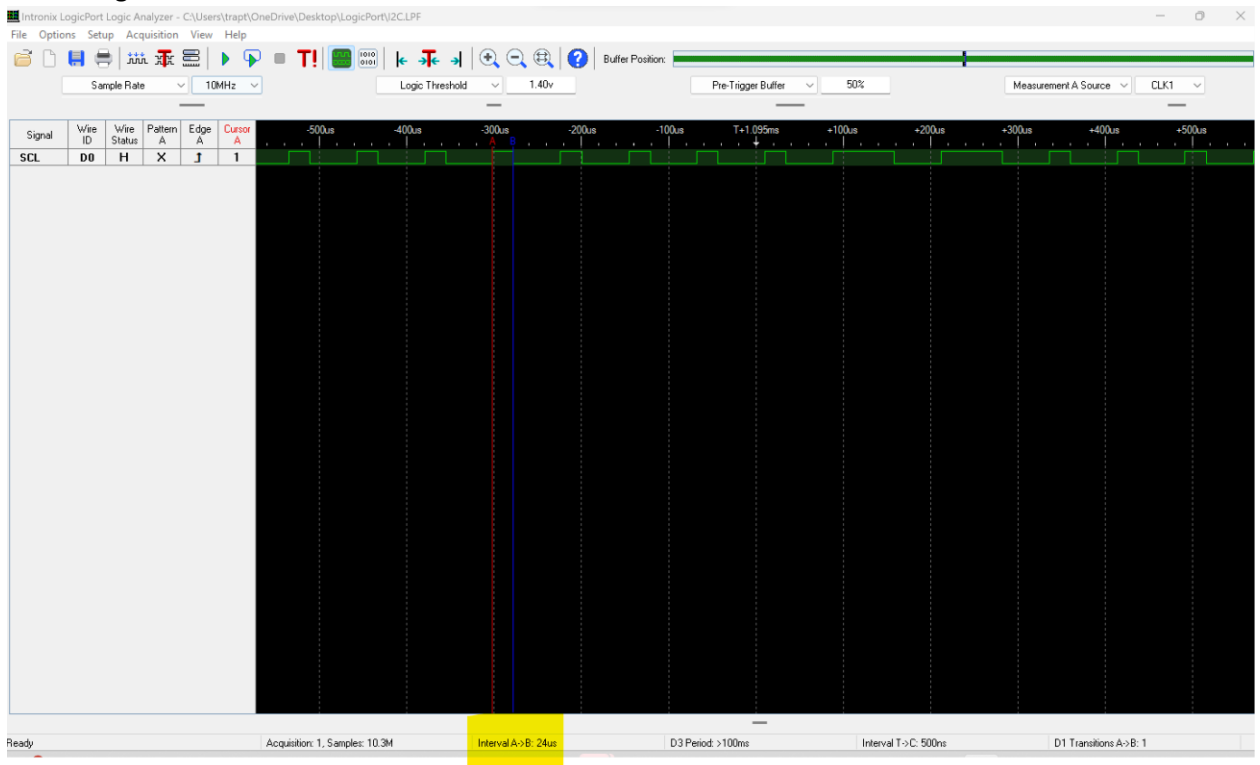
2. I verified that the DHT11 is sending the data in the correct manner.



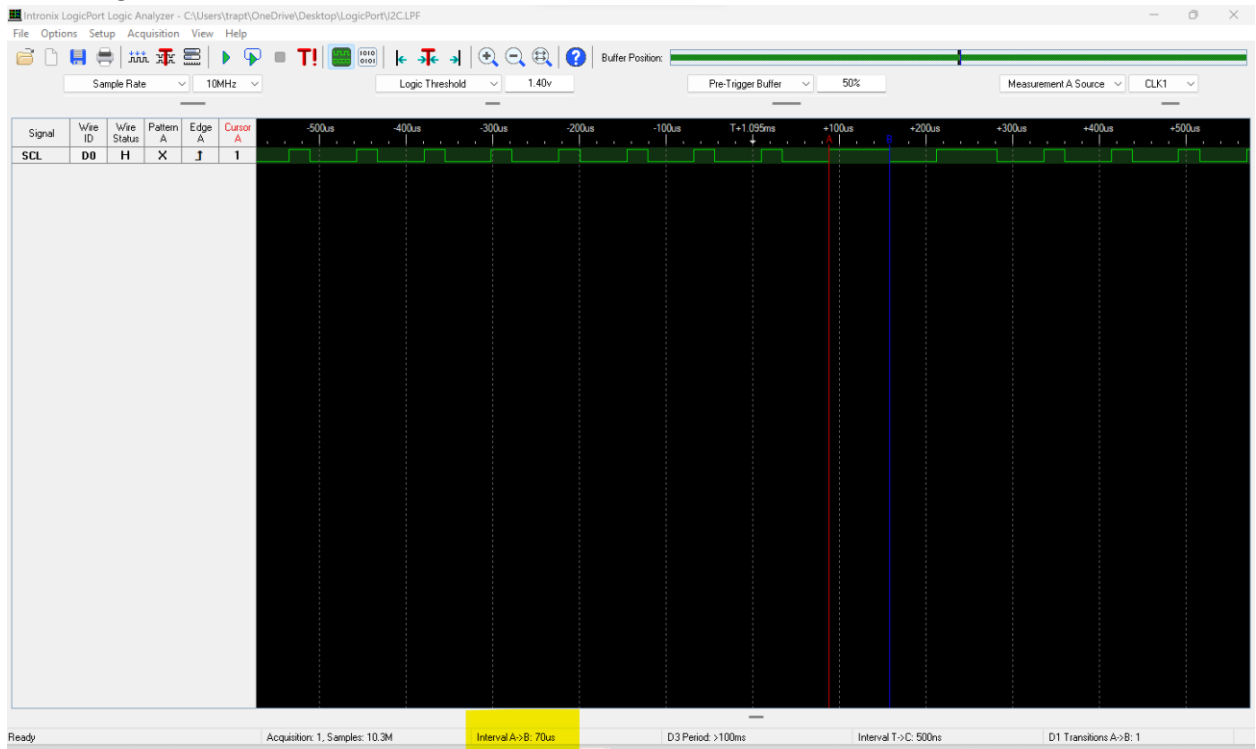
3. The low time between data is around 50us (I got 53.6us)



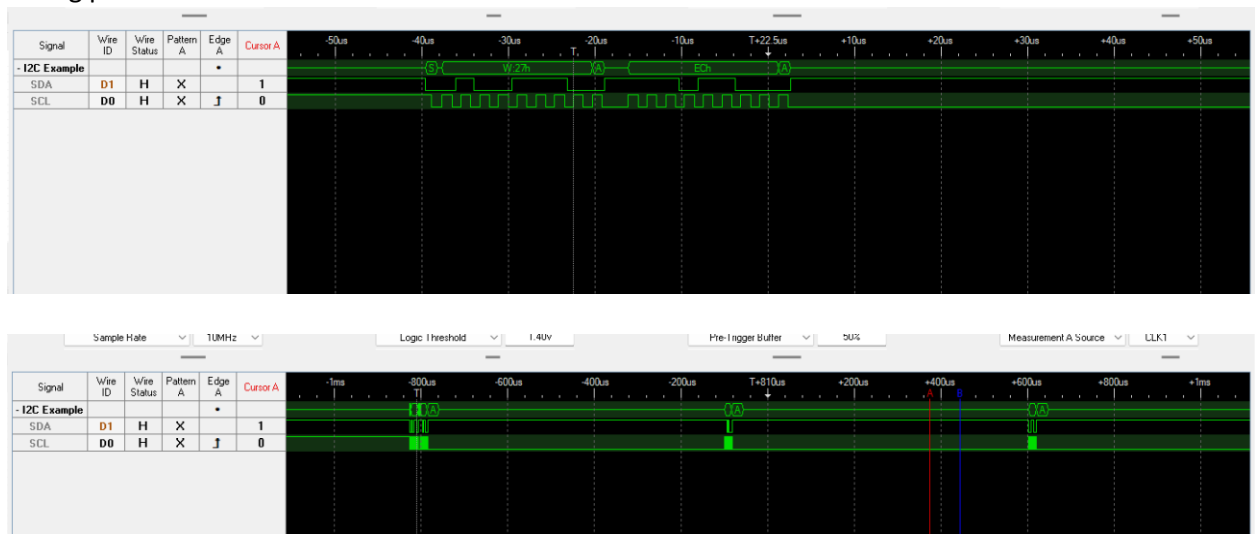
4. Bit 0 is high for 26-28 us. Calculated 24us



5. Bit 1 is high for 70us. Calculated 70us



6. To verify the data is received correctly, I added the humidity and temperature values and confirmed that the sum is equal to the checksum (last 8 bits). If not, I've kept a print statement mentioning the data is corrupt.
7. I verified that the I2C bus is working and the data is being sent as I needed. I also checked the timing parameters of the bus.



8. These are some of the main test cases I tried for the project:
 - a) I verified the temperature and humidity readings on the LCD with a logic analyzer.
 - b) I increased the temperature and humidity by placing the sensor near a warm cup of water and verifying the temperature and humidity increases. I did the same with ice to ensure it decreased.
 - c) I kept printing the temperature to see if there is any glitch since there is an RTC interrupt that also prints on the LCD and both mustn't affect the other.
 - d) I timed the clock for 20+ mins to ensure accuracy.
 - e) I typed a long string for the echo command to make sure the cursor positions are working well and there is a wrap-around. This also helped to verify the program can handle relatively lengthy data.
 - f) I tried out the command processing tests that were in place for assignment 6.