LAB-4

Communication Protocols & Bus

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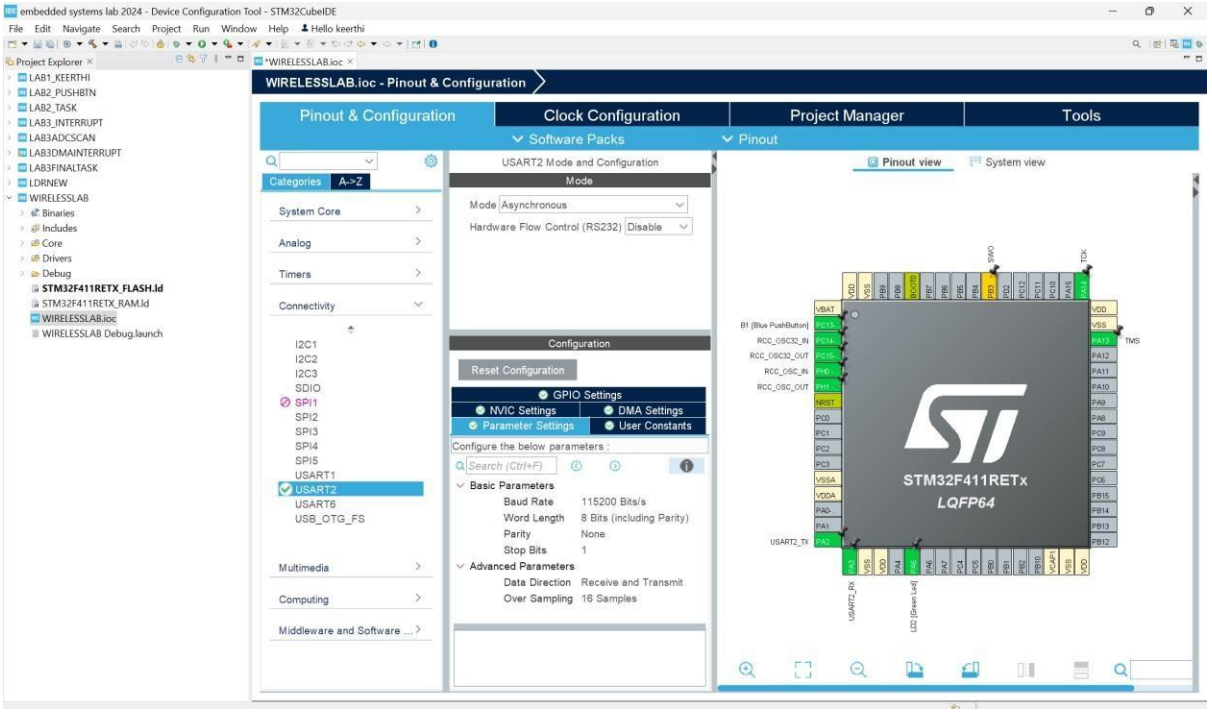
Insights Gained from Lab:

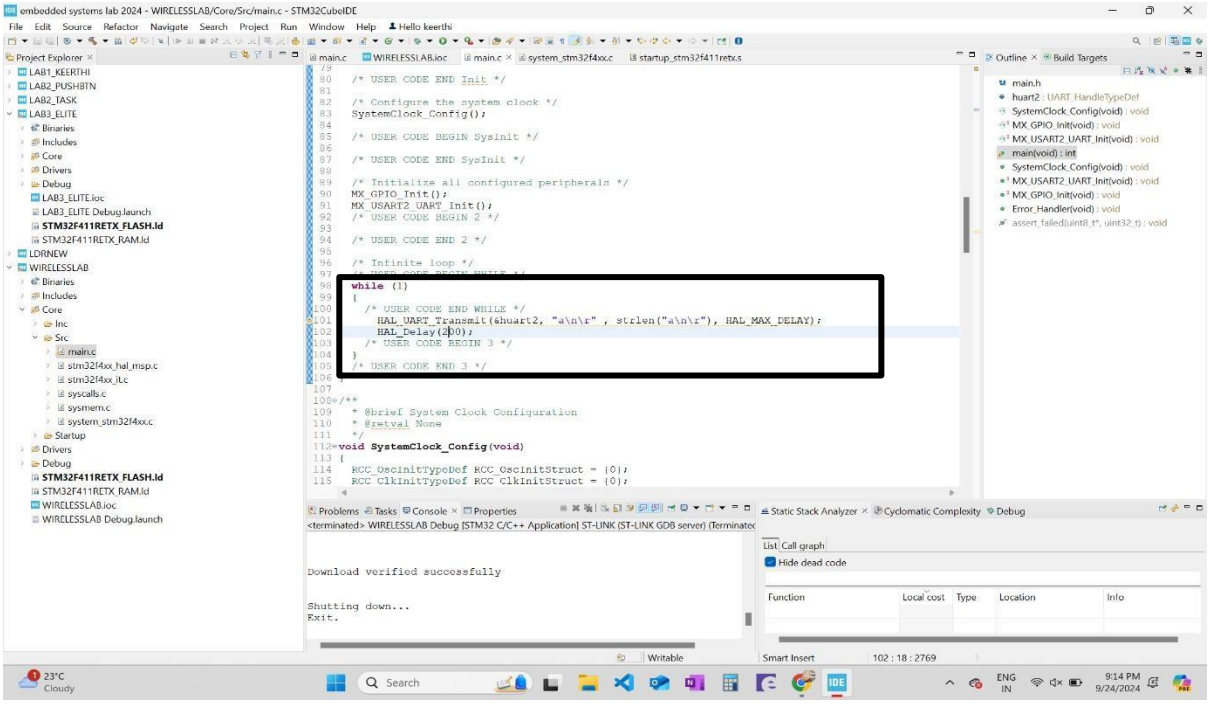
➢ Objective:

The lab session aimed to utilize the UART communication protocol for data transmission and observe the resulting waveform using an oscilloscope.

➢ Setup:

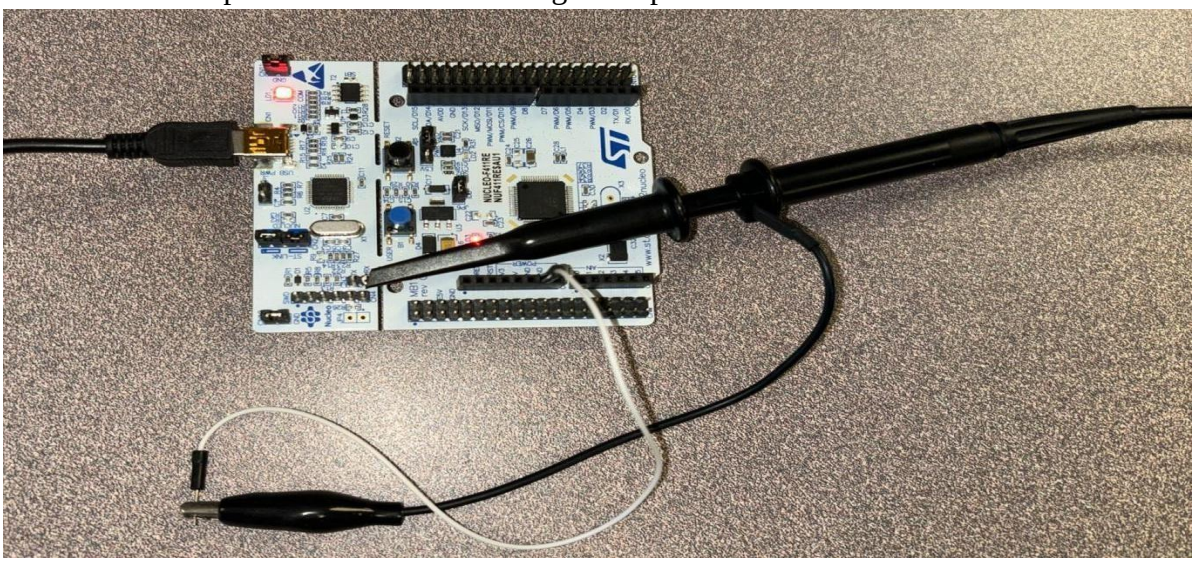


➢ Code:



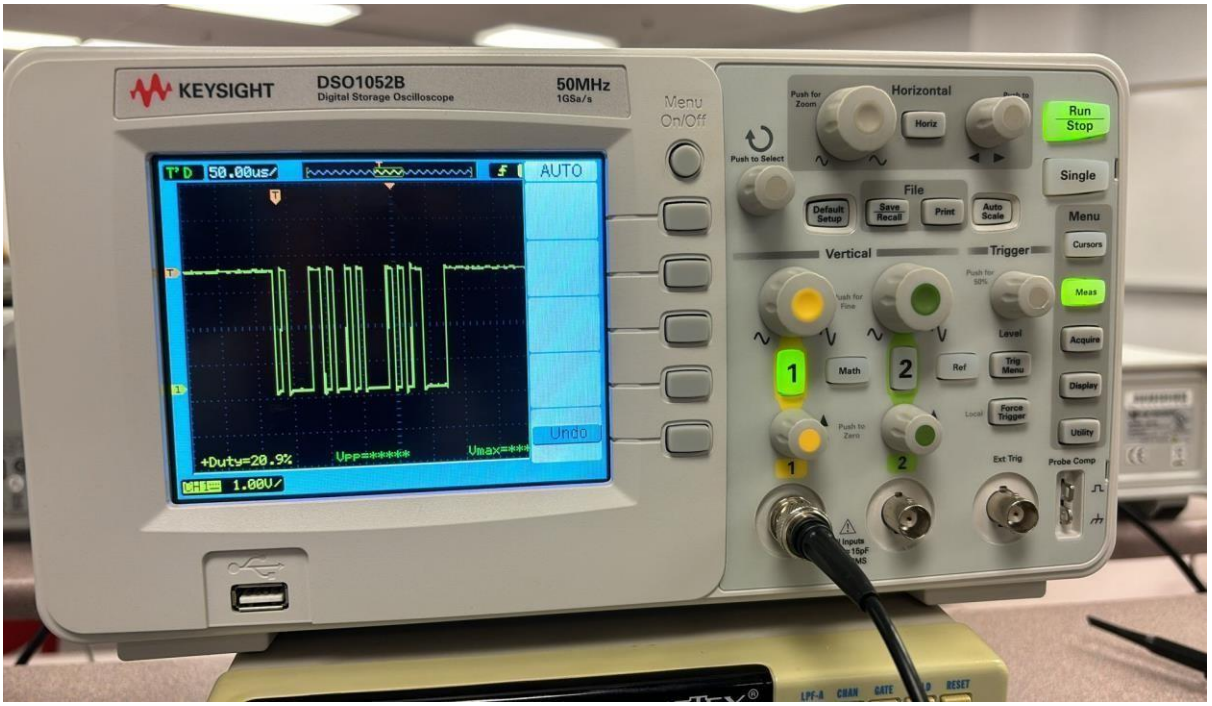
➢ Experimental setup:

To perform this experiment, I connected the microcontroller board to the oscilloscope (CRO) using a probe. The RX (receiver pin) on the board is linked to one wire of the probe, while the other wire of the probe is connected to the ground pin.



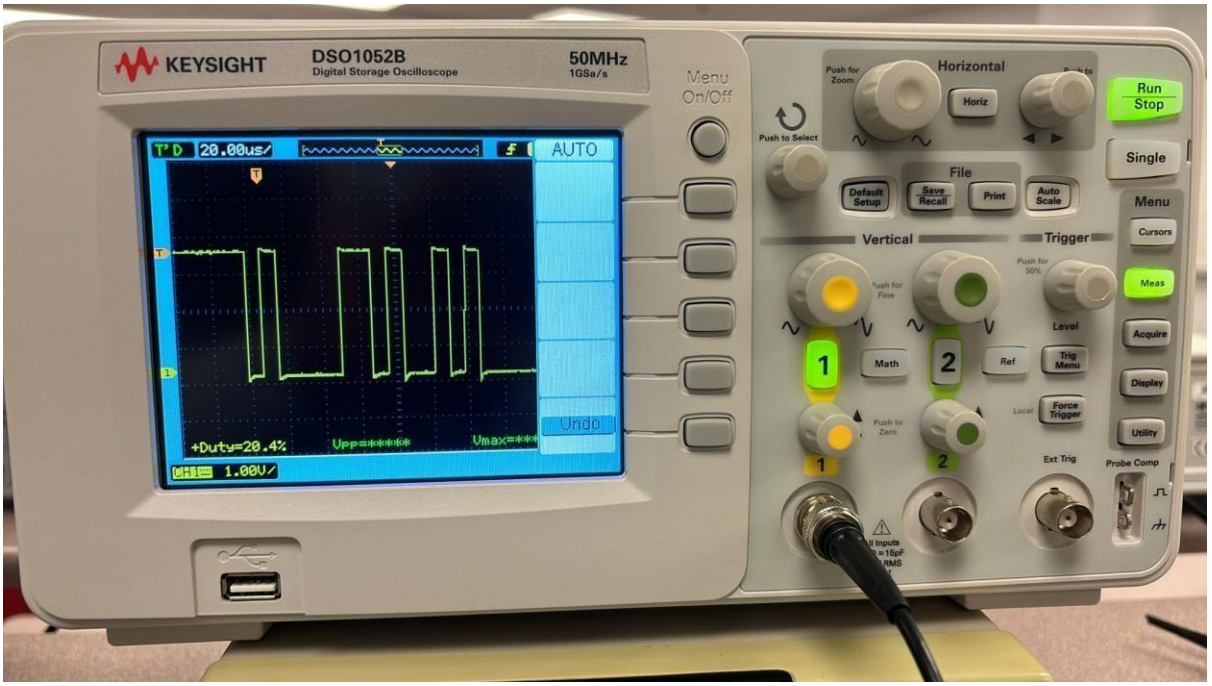
➢ Output:

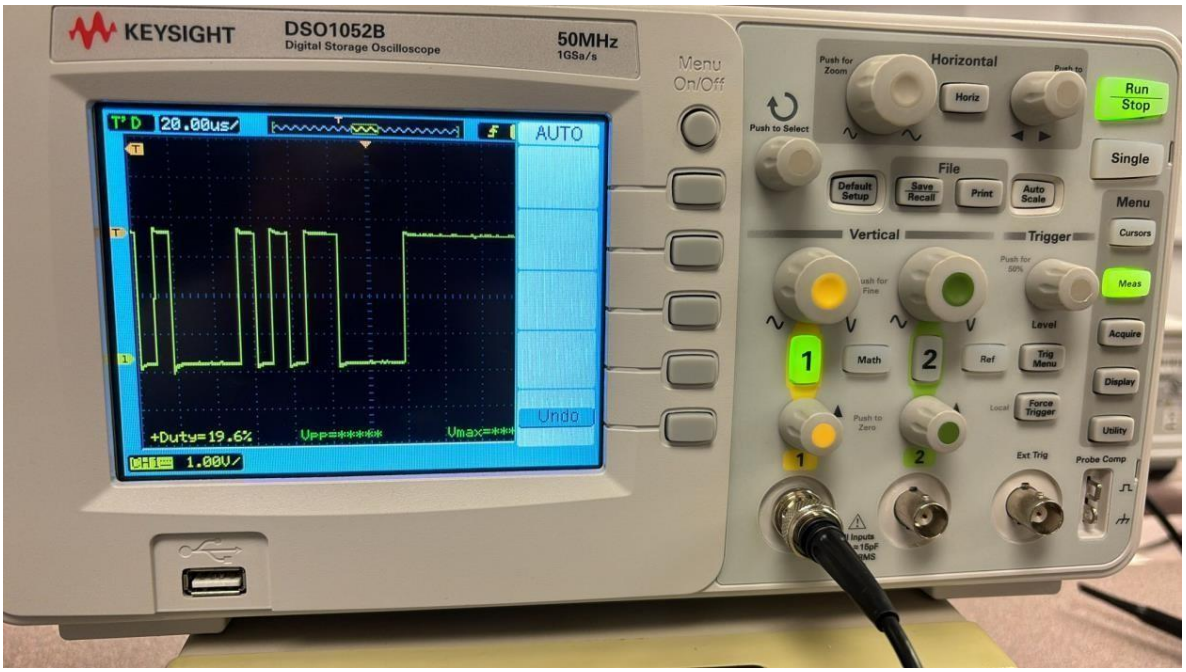
After writing the code in main.c and building it, the waveform is displayed on the oscilloscope.



Letter	ASCII Code	Binary
a	097	01100001

- The code uses the character 'a', displaying its ASCII value as an 8-bit binary representation on the oscilloscope. The waveform visually represents the UART signal, showing the binary format for 'a' during transmission.





- **Conclusion:**

This hands-on exercise successfully demonstrated the process of setting up UART communication on a microcontroller. It also highlighted the utility of an oscilloscope in visualizing transmitted data. Observing the waveform provided me insights into the timing and data format associated with serial communication protocols. Additionally, an I2C experiment was performed in class.