Michael Gontarek

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3-3 journal: Peripheral Interfaces in Embedded Systems

I chose to look at the following peripheral interfaces, PWM, UART, and ADCs or (A2D). PWM’s are used to measure the voltage of an embedded system and controls things such as its lights or even its fans that may be cooling the system. UART stands for Universal asynchronous receiver / transmitter. They “define a protocol, or set of rules, for exchanging serial data between two devices” (Rohde & Schwarz GmbH & Co KG). UARTs have been replaced for the most part by SPI and I2C, however they are still used as they are “low-cost and easy to implement” (Rohde & Schwarz GmbH & Co KG). ADC’s take the analog values like sound, temperature, and voltages and converts them into digital values. From here our microcontroller can take the digital data and allow the device to use the data however it needs.   
 We used PWM’s for our blinking light application in week 2. I would think that using this for lights works well as we set the parameters for it to turn off and on. I also found out they are used in fans for cooling. I have a higher end gaming PC that has several fans to help it keep cool. This is vital as the computer’s performance could allow it to overheat quickly, so having fans turn off and on automatically is important. UART’s are what we used when we made this week’s program that had different states. This allows the system to know what state its in and respond accordingly to the input. Lastly ADCs are great because it allows our microcontrollers to take data that the computer cannot read and allow it to be converted into digital which can be read by the computer.

Resources

Rohde & Schwarz GmbH & Co KG. (n.d.). *Understanding uart*. Rohde & Schwarz. Retrieved September 21, 2022, from https://www.rohde-schwarz.com/us/products/test-and-measurement/oscilloscopes/educational-content/understanding-uart\_254524.html#:~:text=UART%20stands%20for%20universal%20asynchronous,also%20have%20a%20ground%20connection.