**Module Three Journal**

By: Onasis McCuien

UART (Universal Asynchronous Receiver Transmitter), is arguably one of the most widely used transmitters for serial communication. A high majority of microcontrollers such as Arduino, Raspberry Pi, and several others, utilize UARTs. The most common reason for this, is because of serial communication. What is serial communication? Serial communication is basically taking data that is received, and converting that data to output data via two wires. There is not a huge ribbon cable required, just typically two wires. The data my not be transferred as quickly as one would like, but you will have less of a clutter ball with this method. The advantage is URATs is that they simplify data transfer, and they are used universally. The disadvantage, is that you can not just transmit all of the data at once, which will reduce the speed at which the data travels. Unfortunately, we base everything on speed now a days. But technology will continue to advance, and either remedy or innovate.

PWM(Pulse Width Modulation) boards are the pioneers of transmission. PWMs first gained notoriety through RCs. They are similar to UARTS as far as how data can be received and transferred. They typically utilize two cables, one to receive the data, and the other one to send the data. So you may want to know what some of the pros and cons are? Well, lets see:

* They are inexpensive
* They do not consume a lot of power
* The efficiency is high
* High resistance to noise

These are only a few of the advantages to the PWMs. Some few disadvantages to mention with the PWM transmitter/receiver are:

* EMI issues
* Stroboscopic effect

For the most part, PWMs are satisfactory despite the cons associated with them.

GPIO(General Purpose Input/Output) transmitters are available on most modern microcontrollers. They provide a more simplified way to access the devices internal properties. GPIOs have numerous uses. They can practice typical led control, by simply turning the led(s) on and off. They can be used to drive motors and connect with secondary apparatuses. GPIOs and digital input and output structures. This mean that they can only function in and kind of binary world, as in (1s and 0s).

I would honestly go with UART. Reason being, is because UART keeps it simple. Even though it would be a little bit slower with signal transferring, it still only requires two wires for operation for the most part. This just seems a lot simpler, and easier. And again, as tech continues to evolve, the transmitters will continue to become better and operate at maximum efficiency while maintaining a very simple installation process.