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CS 350 – Module 3 Journal

SNHU

1. **Identify three of the following interfaces to compare and contrast:**
   * **GPIO**
   * **PWM**
   * **A2D**
   * **SPI**
   * **I2C**
   * **UART**

**Selection: PWM, A2D, & UART**

1. **Explain the differences between the three interfaces chosen:**

* PWM : “A programmable component that generates pulses to achieve a specified period and duty cycle” (1).
* A2D : A mixed signal peripheral device that “converts an analog signal into a digital signal, which a microcontroller program can then use” (3).
* UART : “A Hardware Device that automatically transmits eights bits of data serially, meaning one bit at a time, over a single pin” (2).

The difference between these three interfaces are their type of form within a microcontroller and what they use for I/O with an embedded device. UART is a hardware device included with a microcontroller to automatically transmit eight bits over time. A PWM is a program component which transmits by its period and duty cycle being captured and implemented in C on a microcontroller. Last, A2D is a peripheral device that converts an analog signal, which is a voltage which values continuously change over time, into a digital signal, which represents the voltage at the given time. The digital signal represents the analog signal in a series of bits to allow it to be read and implemented by the microcontroller.

1. **Explain why you would use one interface over another.**

I would choose the UART over the other two interfaces. I chose the UART because it is a hardware has already been implemented into a microcontroller and it will automatically transmit data without any additional program. From what I have read, the other two interfaces are more accessories instead of a “body part” for a microcontroller to be able to I/O data within an embedded system.

**CITATIONS**

1. zyBooks. (n.d.). https://learn.zybooks.com/zybook/SNHUCS350Master1/chapter/2/section/7?content\_resource\_id=24466843.
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