C7 – Serial Communication

Preparation

1. UART – Universal Asynchronus Receiver / Transmitter.
2. The most common baud rates are 9600 and 115200 but can go all the way up to 2M.
3. The communication starts with a start bit (0), then it sends the ascii character (8 bits), then a parity bit, then either one or two stop bits and then ends high.
4. UART is end to end communication between two devices.
5. SPI – Serial Peripheral Interface.
6. SPI supports clock speeds up to 100MHz.
7. When sending 8 bits, the clock will pulse 8 times and the bits will be sent on each clock pulse one by one.
8. There can only be one master but then multiple slaves (each with a different chip select pin).
9. I^2C – Inter Integrated Circuit.
10. The clock for I2C is usually either 100kHz or 400kHz but can be up to 5MHz.
11. The communication starts with a start bit (0), then a 7 bit address, then a read/write bit (write 0, read 1), then an acknowledge bit, then the 8 bits of data, then another acknowledge bit and then stop bit (0).
12. Like SPI, there is 1 master and multiple slaves, this time limited by the 7 bit address (128).