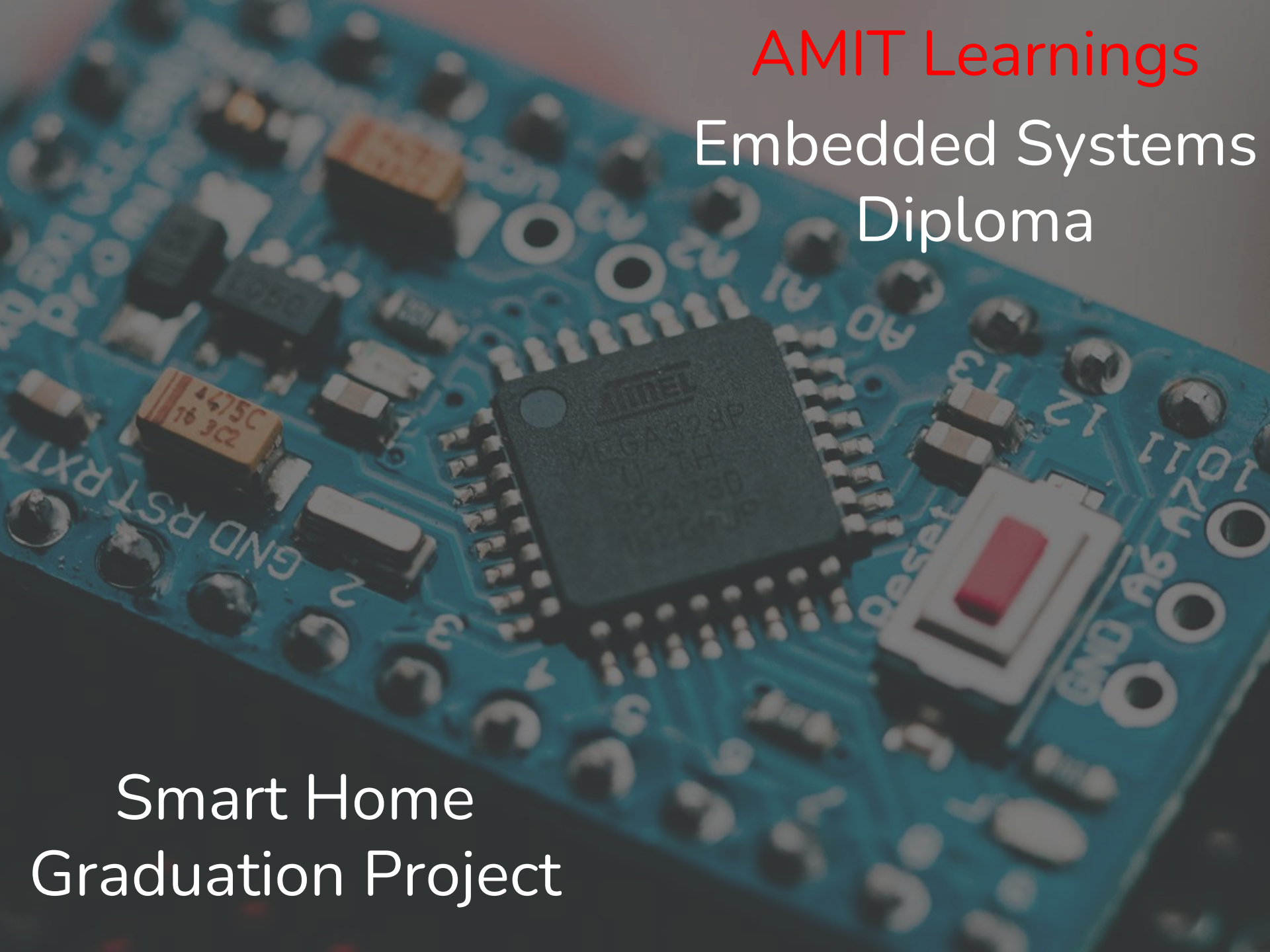


AMIT Learnings

Embedded Systems Diploma

Smart Home Graduation Project

Project Requirements

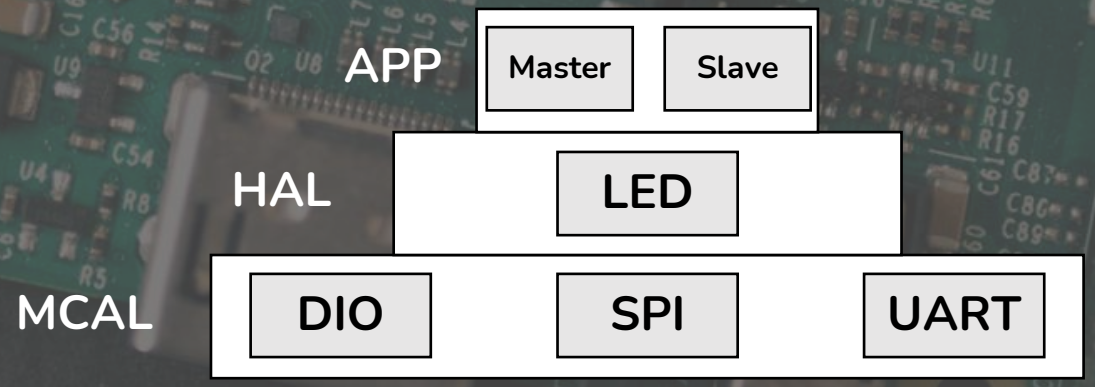
- Project Code based on Layered Architecture and Modular Programming
- Project Simulation on Proteus
- Document that describes the Architecture and Design

Project Description

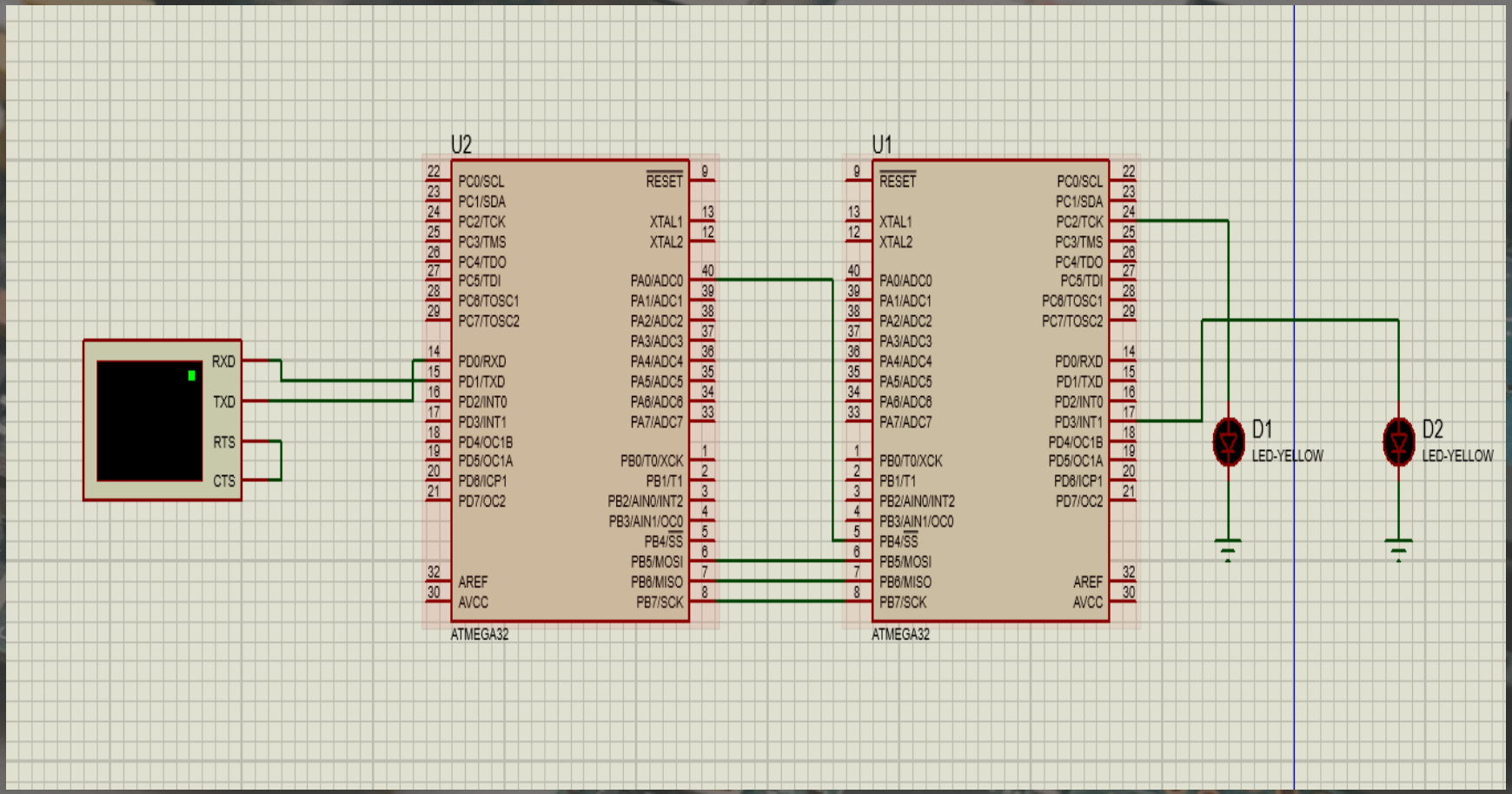
- The application Submitted demonstrates the idea of a smart home where, The Terminal expects an input of either 1 or 2 or 3 or 0 .
- The input is then transferred using UART-communication protocol- to the First Micro-Controller(MC1).
- Then the Data is transferred from MC1-Master- to MC2-Slave- by SPI-communication protocol-.
- Finally, the MC2-slave- compares the inputs transferred, if it matches any of the required Inputs to take actions on the actuators-LEDs in our case- upon the received data.

Layered Architecture

- To build This application I started by Building the MCAL where I build different peripheral Modules such as DIO, SPI, UART.
- Then I build the HAL, where I didn't use any Hardware except for the LED which was based on DIO Module.
- Finally, I started including my files inside the APP Layer to build two Projects for both MC1 and MC2



Logic Circuit



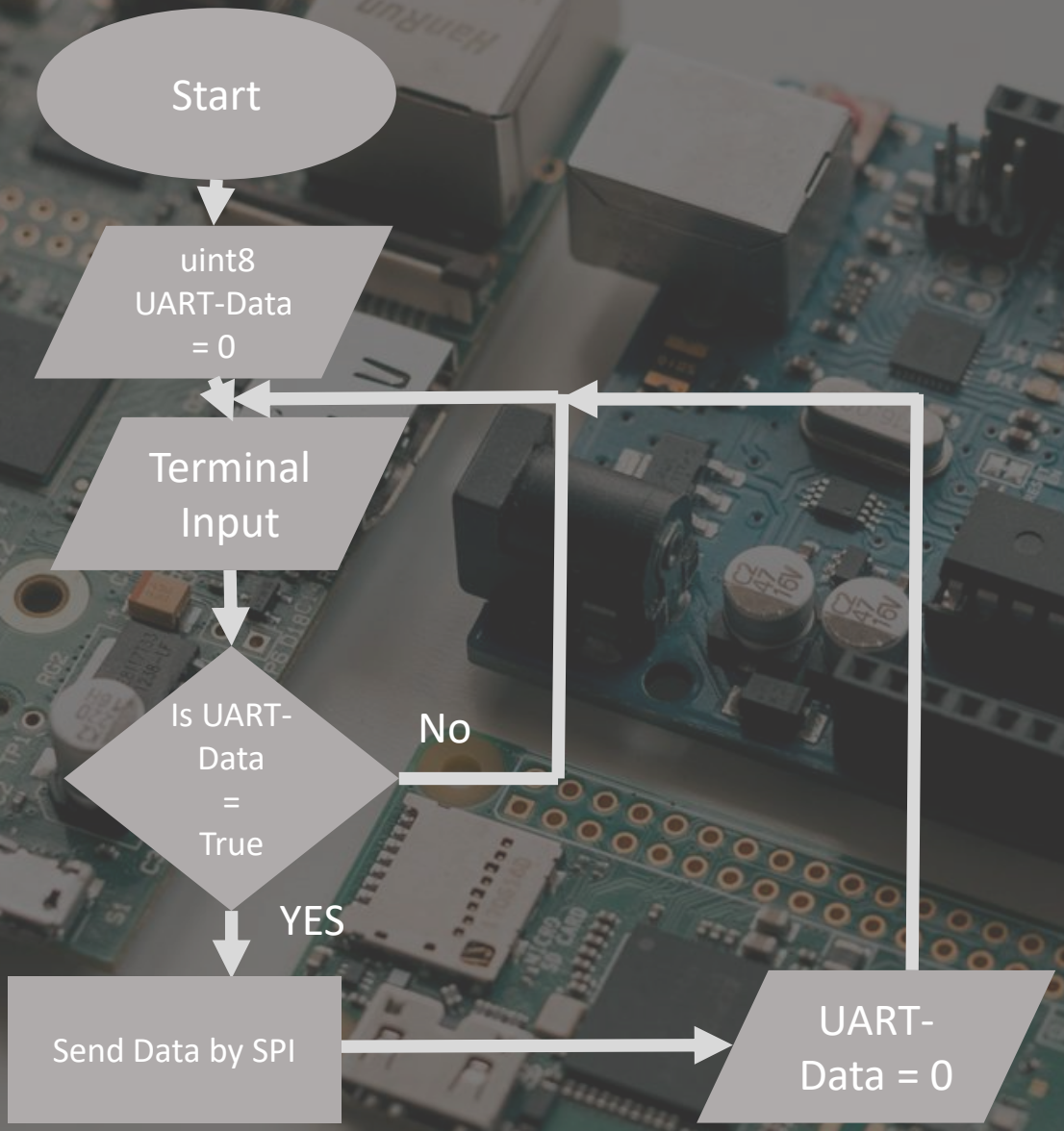
Project Notes

- I did edit on the MCU file we used on classwork to make the DIO registers as a struct just as a good practice.
- Did use the Terminal Window in the Project instead of the Bluetooth device as mentioned in the frequently asked questions document.
- You can find the Slave folder that contains its code inside the Master Folder.

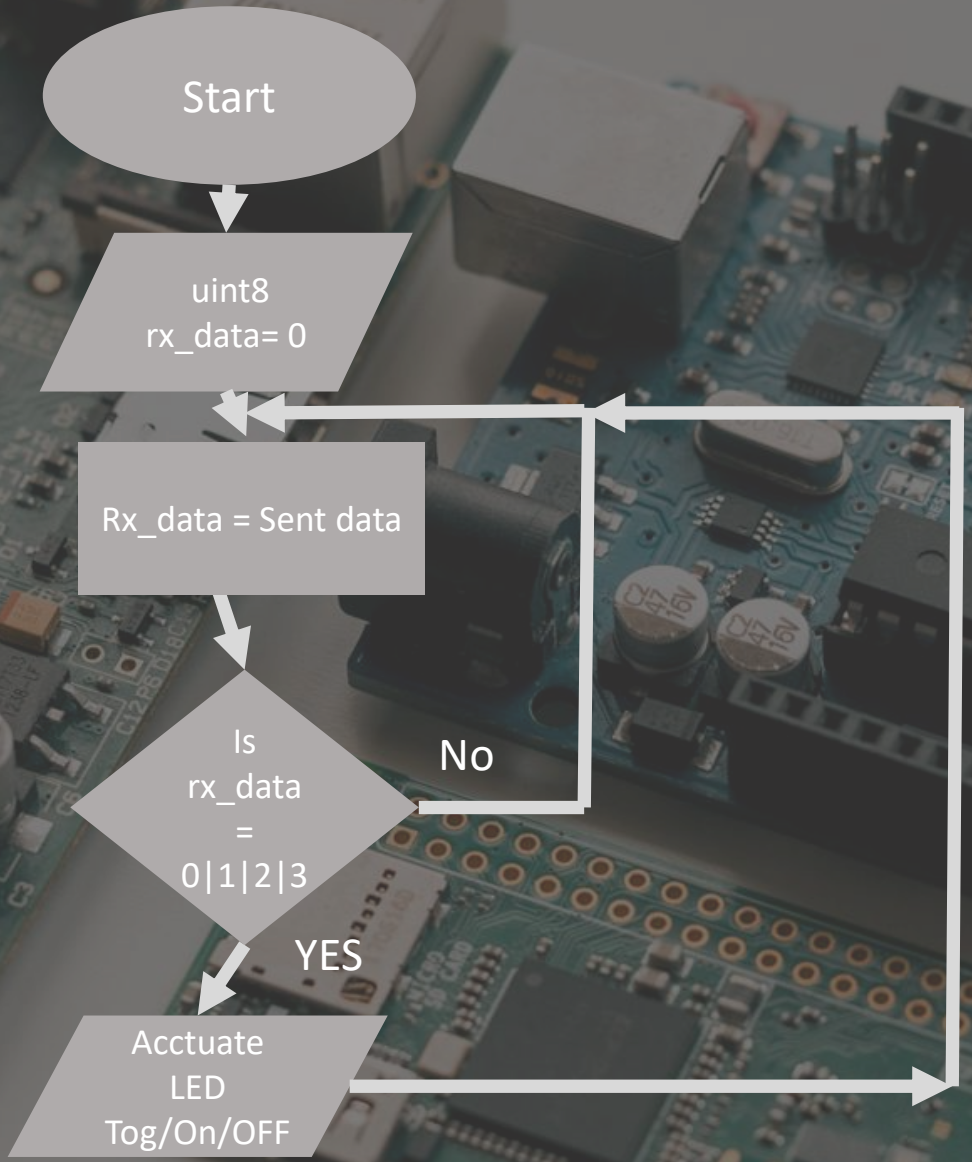
Expected Terminal I/OP

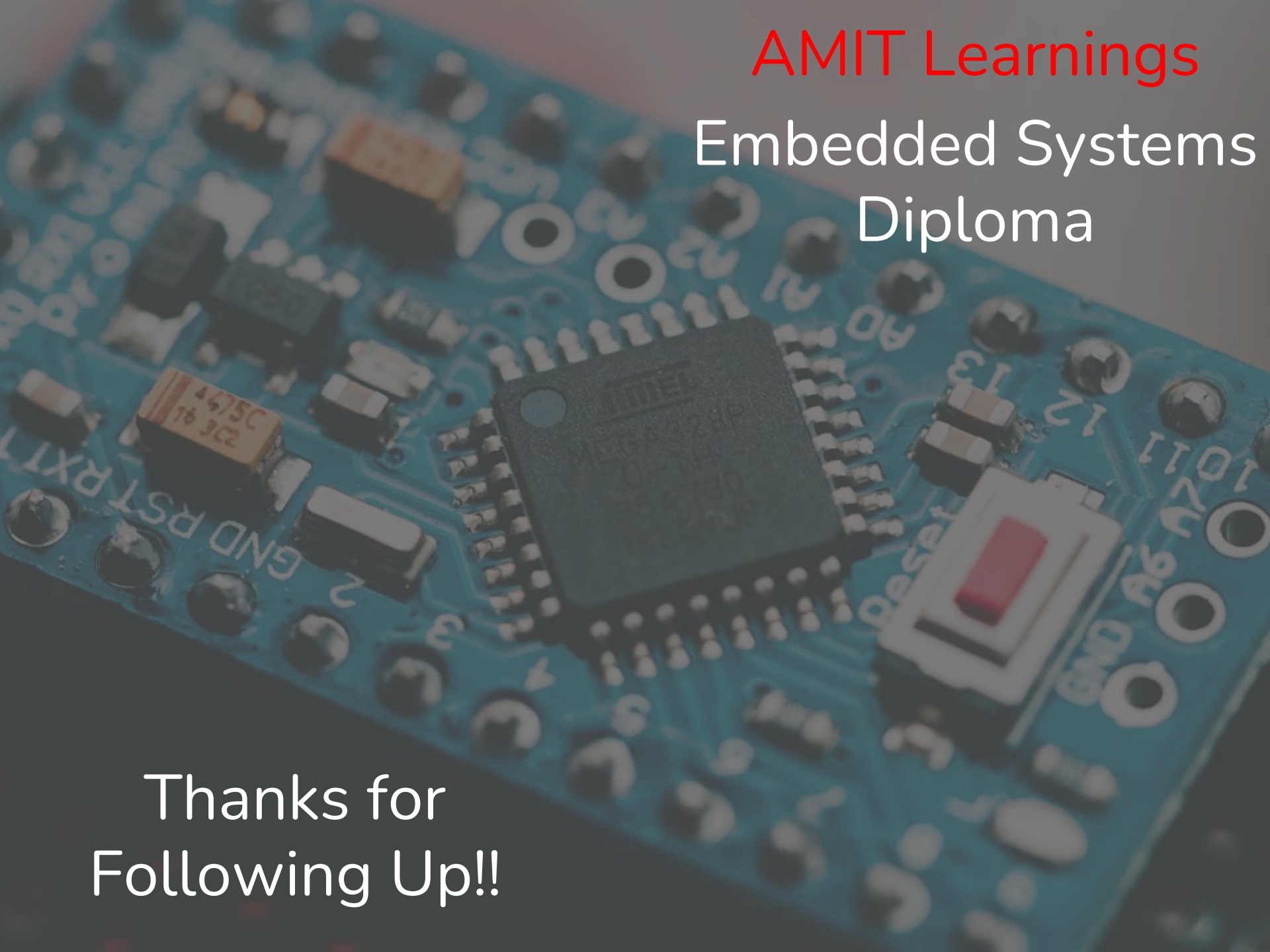
Expected Inputs	Expected Outputs
0	All LEDs Off
1	LED1 Toggle
2	LED2 Toggle
3	All LEDs On

Master Flow-Chart



Slave Flow-Chart

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Thanks for
Following Up!!