

Final Project: BLE + RF

Due Date: See Website

Q: Write, simulate, and demonstrate using Atmel Studio 7 a C code for the AVR ATMEGA328p microcontroller that performs the following functions:

1. Program the ATmega328/p to read data from any sensor (could be any new SPI or I2C sensor – see the list of approved sensors in class website).
2. Display the value to UART.
3. Display the sensor value through WiFi protocol to a cloud server using the ESP32 module. (OR)
4. Display the sensor value through BLE protocol to a Mobile device using the ESP32 module. (OR)
5. Display the sensor value through RF protocol to another RF device (LoRA) using the ESP32 module. (you can work in groups of two for this part of the project)

Submission:

The following are required for successful completion of the design assignment:

- a. AVR C code that has been assembled and working.
- b. The C code should be well documented with explanation of every instruction.
- c. A word document that contains the flow chart of the assembly code along with the screenshots/snapshot of the Atmel Studio 7 and/or live connections during debugging at the beginning and end of Task 1-6.
- d. Submit one solution folder, with doc and video/snapshot file

Points:

Task 1~4: 100%. (Code=60%, Documentation=20%, Verification/Snapshots=20%)

Evaluation Rubrics:

See class website for the Final evaluation rubrics.

Helpers:

TBA