Report 3

System modules interaction check

INFO2055 - Embedded Systems Project

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Academic Year 2020-2021

1 Problems solved

- The 3.3V regulator has now been received and is therefore used to regulate the power supply of our circuit.
- Temperature and humidity sensors are correctly connected. For the luminosity sensor, the circuit is also ready and only the hardware component is missing.
- The Analog to Digital Conversion of voltage output by sensors is done and configured on the PIC. Value computed by the PIC are close to those measured by a voltmeter. The switch between the different analog inputs is also already implemented in the PIC code.
- The flash memory module is properly connected to the circuit and code to program it, i.e to store data inside it, is fully working. We were able to check the value at a given address and it corresponds to the one we previously stored.
- Our Bluetooth module was not usable as is on a breadboard. Indeed, it needed to be soldered first on a kind of PCB. Thanks to M. H. Pierre, we now have our module soldered on a small plastic piece that connects the pads we need to some pins that can easily be plugged into a breadboard. In brief, electrical connections for our Bluetooth module are now operational.

2 Still to do

- Now that the Bluetooth module can be inserted in the breadboard, we have to connect it properly to the rest of the circuit. For that purpose, we have to understand how to configure UART in the microcontroller and how the Bluetooth module interacts with its environment. Then, a code needs to be written in order to send the data collected to an app or a server on which data will be displayed in a stylish way.
- We still wait for the luminosity sensor to be received in order to add it to our circuit. The code is ready, we are just waiting for the electrical component that works like the two sensors we already have. We hope to have some news about it soon.
- We also planned to have a gas sensor. However, we have not received the component yet because it was not available. For now, we put this sensor aside because we prefer to focus on making the current circuit fully operate. Indeed, the gas sensor works in I2C and will therefore need additional research in order to understand how the PIC micro-controller operates in I2C. We will come back to it once data will be correctly extracted from the system using Bluetooth so that the data we already collected (temperature, humidity and hopefully luminosity) can be useful for an end user.