SIT315 Programming Paradigms

Module1 Real-time and Embedded Systems

TaskM1.T1P: Build a simple Sense-Think-Act Board

Overview of the task

To fulfill the requirements of this task, you will need to design a simple sense-think-act system using Arduino board that uses one of the sensors available to you to sense - e.g. temprature, motion, sound, etc. Then think - update your system status - e.g. motion flag on/off. Finally, act using one of the available actuators for you - e.g. turn a led on/off. Make sure to print the inputs (from the sensors) and outputs (from the actuators) on the Serial so we can monitor this from the Arduino IDE.

In my implementation, I used motion sensor HC-SR505 as input and built-in led as output.

HC-SR505 has three legs: from left to right (front facing), the legs are: 1) GND - connect to the GND pin on the Arduino board , 2) Digital Output connect to digital input pin 2 on the Arduino board), and 3) + to the 5V pin on the Arduino board.

In your loop function, make sure to digitalRead from pin 2 (where the motion data comes in), check the value HIGH or LOW, then update the led by using digitalWrite.

Once you are done, please upload to the board and test your program.

Submission Details

Please make sure to provide the following:

- A schematic diagram of your board - if you don't have a tool then maybe try this one http://fritzing.org/download/,
- An image of the actual system/board,
- A screenshoot of your system monitoring log (from your screen), and
- The source code of your program.

Instructions

1. Find suitable sensor and actuator in the Arduino kit available to you.
2. Review the pin mapping of these sensors.
3. Review the Arduino examples available on the Arduino IDE or online on how to read digital/analog data and how to print data on Serial port.
4. Create a public GitHub Repo for SIT315
5. Add folder for Module1
6. Implement your program (save the file as Task1.1P) in the Module1 folder, upload it on Arduino and test it.

7. Submit your task as detailed on the submission details section above to OnTrack.