ICP2

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Source

Video

Introduction

For ICP2, we create a heart beat monitoring with Arduino and ThingSpeak.

Part 1:

- Load LiquidCrystal_PCF8574.h into Arduino
- Display heartbeat with data collect by heartbeat sensor on LCD display
- Change delay between heartbeat collect by heartbeat sensor

Part 2:

- Connect Arduino with WIFI module and connect to WIFI hotspot
- Create an account on ThinkSpeak and ingest heartbeat data collected by heartbeat sensor into ThingSpeak
- Display time-series data over heartbeat on ThinkSpeak
- Display data on Android phone with ThinkSpeak APP

Bonus:

- Add three LED lights to current project
  - If heartbeat goes below 100, first LED light should blink
  - If heartbeat goes above 170, second LED light should blink
  - If heartbeat goes between 100 and 170 inclusively, third LED light should blink
- Add three buttons to the current project
  - If button 1 is pressed,it will turn off display on LCD
  - If button 2 is pressed,it will turn on display on LCD
  - If button 3 is pressed,it will reset display on LCD

Objectives

The objectives for this ICP are:

- Learn to link WIFI model with Arduino
- Learn to link heartbeat sensor with Arduino
- Learn to link Arduino with ThinkSpeak
- Integrate ICP 1 into ICP 2

Approaches/Methods

For ICP 2, I worked with Mehul. We used the circuit diagram provided by instructor and build the circuit for our ICP 2. We made some changes to the provided circuit diagram due to the different types of hardware modules we received. We also used the template source code provided by instructor as the base of our project and added new code to it in order to achieve our goals and todo list in ICP 2.

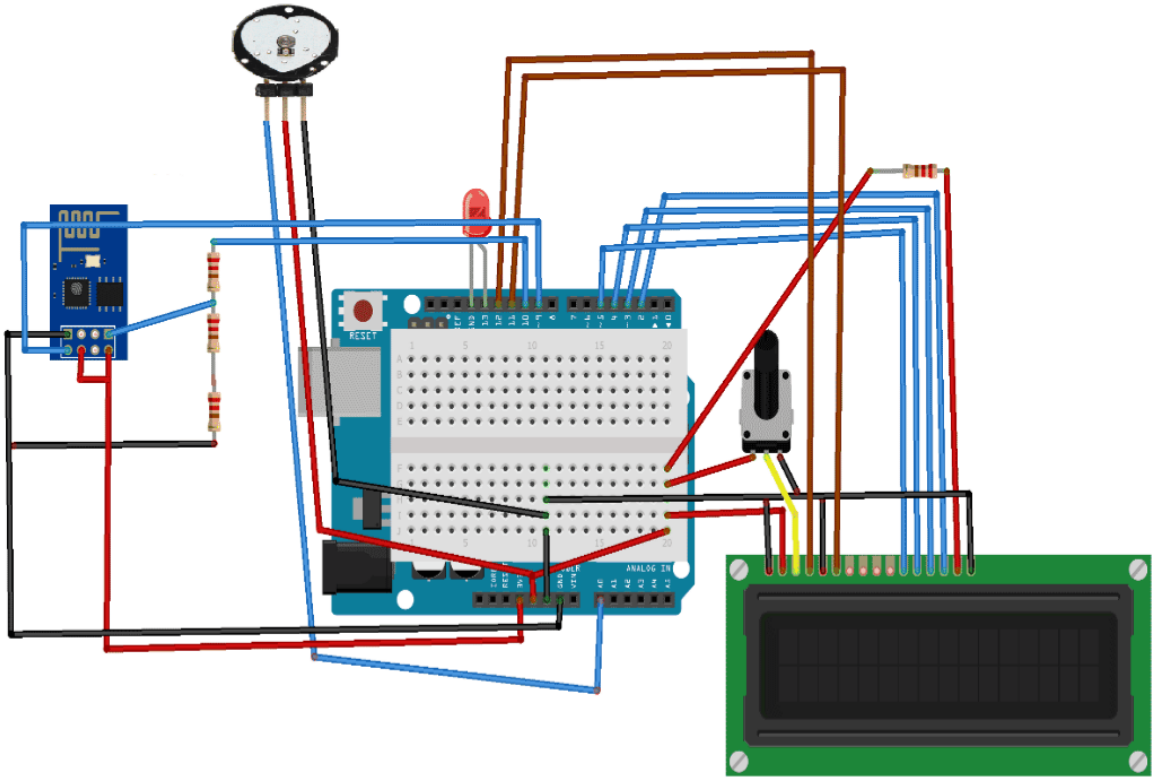
Workflow

Here is the workflow for ICP2:

- Build circuit board with Arduino to achieve the todo lists
- Push modified code to Arduino
- Arduino starts up
- Arduino connects to WIFI with provided WIFI name and password
- Arduino reads heartbeat data from heartbeat sensor
- Arduino turns on LED light corresponding to the current heartbeat value it receives from the heartbeat sensor
- Arduino pushs heartbeat value to ThinkSpeak
- User has the option to press three buttons (turn on display, turn off display, and reset display)

Circuit Diagram

Here is the circuit diagram provided by instructor:



Parameters

There is no special parameters for this ICP.

Evaluation & Discussion

This ICP is pretty interesting, I got to play with more hardware modules that will work with Arduino and integrate ICP 1 into this ICP.

Conclusion

From this ICP, I learned more about Arduino and learned how to build more complex circuit board and debug Arduino coding with various methods.

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