

Lab3

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Introduction

For lab 3, we created an Android app that will retrieve data from sensor via Arduino through WIFI module and display data as a graph.

Objectives

The objective for this lab is for us to practice our skills on creating Android APP that can work with Arduino and associated sensors/modules.

Member Contribution

We did this one together, so each member will have same contribution.

Approaches/Methods

- Created circuit board with Arduino that can read data from sensor and transfer via WIFI module
- Create Android APP with MIT APP Inventor that can pull data from HTTP GET method via Internet.
- Generate graph based on data retrieved

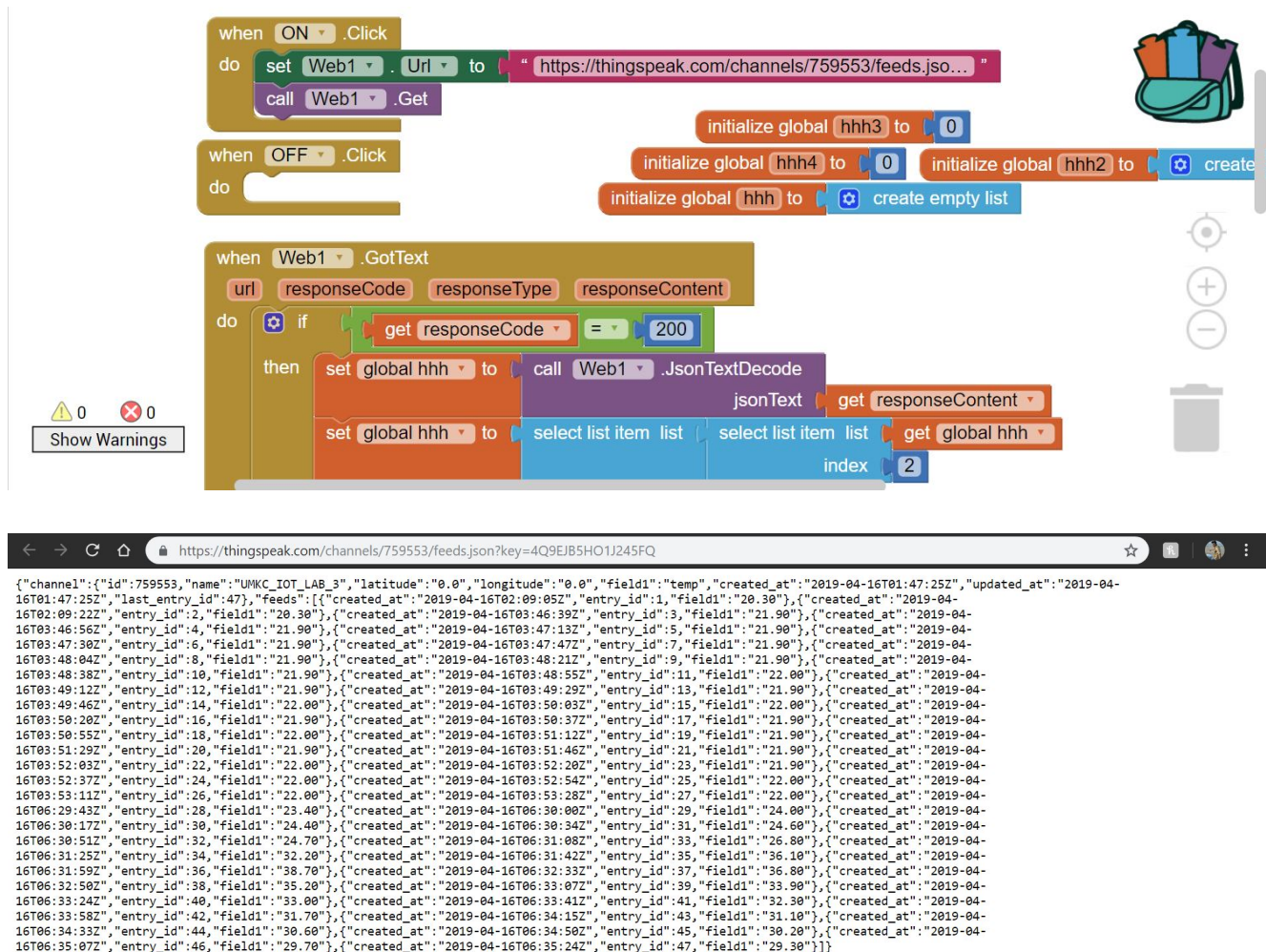
Workflow

Same as above.

Circuit Diagram

Same as previous Lab/ICPs.

Additional images



The image displays a Scratch script and a Thingspeak data feed. The Scratch script is designed to interact with a Thingspeak channel. It features three main event-driven blocks: a 'when ON .Click' block, an 'when OFF .Click' block, and a 'when Web1 .GotText' block. The 'when ON .Click' block contains a 'set Web1 .Url to' block with the URL 'https://thingspeak.com/channels/759553/feeds.json...' and a 'call Web1 .Get' block. The 'when OFF .Click' block is currently empty. The 'when Web1 .GotText' block contains an 'if' block that checks if the 'responseCode' is equal to 200. If true, it sets a global variable 'hhh' to the result of 'call Web1 .JsonTextDecode', which is then used to 'select list item list' and 'select list item list' (index 2) to get the 'responseContent'. The script also includes initialization blocks for global variables 'hhh3', 'hhh4', and 'hhh2' to 0, and a 'create empty list' block for 'hhh'. A 'Show Warnings' button is visible in the bottom left corner of the Scratch interface.

The Thingspeak data feed is shown in a web browser window, displaying a JSON array of data points. The data points are structured as follows:

```
{
  "channel": {
    "id": "759553",
    "name": "UMKC_IOT_LAB_3",
    "latitude": "0.0",
    "longitude": "0.0",
    "field1": "temp",
    "created_at": "2019-04-16T01:47:25Z",
    "updated_at": "2019-04-16T01:47:25Z",
    "last_entry_id": 47,
    "feeds": [
      {
        "created_at": "2019-04-16T02:09:05Z",
        "entry_id": 1,
        "field1": "20.30",
        "created_at": "2019-04-16T02:09:22Z",
        "entry_id": 2,
        "field1": "20.30",
        "created_at": "2019-04-16T03:46:39Z",
        "entry_id": 3,
        "field1": "21.90",
        "created_at": "2019-04-16T03:46:56Z",
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        "field1": "21.90",
        "created_at": "2019-04-16T03:47:13Z",
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        "field1": "21.90",
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        "field1": "21.90",
        "created_at": "2019-04-16T03:47:47Z",
        "entry_id": 7,
        "field1": "21.90",
        "created_at": "2019-04-16T03:48:04Z",
        "entry_id": 8,
        "field1": "21.90",
        "created_at": "2019-04-16T03:48:21Z",
        "entry_id": 9,
        "field1": "21.90",
        "created_at": "2019-04-16T03:48:38Z",
        "entry_id": 10,
        "field1": "21.90",
        "created_at": "2019-04-16T03:48:55Z",
        "entry_id": 11,
        "field1": "22.00",
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        "field1": "21.90",
        "created_at": "2019-04-16T03:49:29Z",
        "entry_id": 13,
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        "created_at": "2019-04-16T03:49:46Z",
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        "field1": "22.00",
        "created_at": "2019-04-16T03:50:20Z",
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        "field1": "21.90",
        "created_at": "2019-04-16T03:50:37Z",
        "entry_id": 17,
        "field1": "21.90",
        "created_at": "2019-04-16T03:50:54Z",
        "entry_id": 18,
        "field1": "22.00",
        "created_at": "2019-04-16T03:51:11Z",
        "entry_id": 19,
        "field1": "21.90",
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        "entry_id": 21,
        "field1": "21.90",
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        "created_at": "2019-04-16T06:30:34Z",
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        "field1": "24.60",
        "created_at": "2019-04-16T06:30:51Z",
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        "field1": "32.20",
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        "field1": "36.10",
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        "field1": "38.70",
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        "created_at": "2019-04-16T06:33:58Z",
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        "field1": "29.70",
        "created_at": "2019-04-16T06:35:06Z",
        "entry_id": 47,
        "field1": "29.30"
      ]
    ]
  }
}
```

Evaluation & Discussion

We spent a good amount of time on the Android part as we are not familiar with the code block used by MIT APP Inventor.

Conclusion

From this lab, I reviewed all of the materials I learned for previous lectures.

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