Activity Management with Arduino and Evrythng

version 1.0 13th of feb 2014.

Introduction

This is a sample to simulate an activity registration component.

The user can register the time he spent on an activity.

This sample will demonstrate :

- obtaining thng properties from the Evrythng platform to the Arduino platform
- registering activities from the Arduino platform to the Evrythng platform

The setup is a simple user interface with push buttons.
LEDs are used to show the interaction.

The user has 5 switches available :

- 1 button will trigger a configuration update (updating activity description code)
- 3 buttons will activate a specific activity code (activity1, activity2 or activity3)
- 1 button will stop all activities

The current activity in progress will be indicated by the corresponding LED.
The user can switch from one activity to another and hence stopping the previous activity
The user can decide to do no activity at all

The duration of each activity will be sent to the Evrythng API.

The configuration settings (the activity code for each button) will be obtained from the Evrythng platform. During the update the red configuration LED will flash.
When the configuration is not being updated, the green configuration LED will permanently be on.

Physical View

Hardware Required

- Arduino UNO
- Ethernet Shield
- Resistors
    - 220 Ohm x 7
    - 10kOhm x1
    - 1MOhm x1
- 5 momentary button or switch
- LED : 2x RED, 2x GREEN, 1x Yellow, 1xBLUE
- hook up wire
- ethernet cable connected with the internet

Circuit

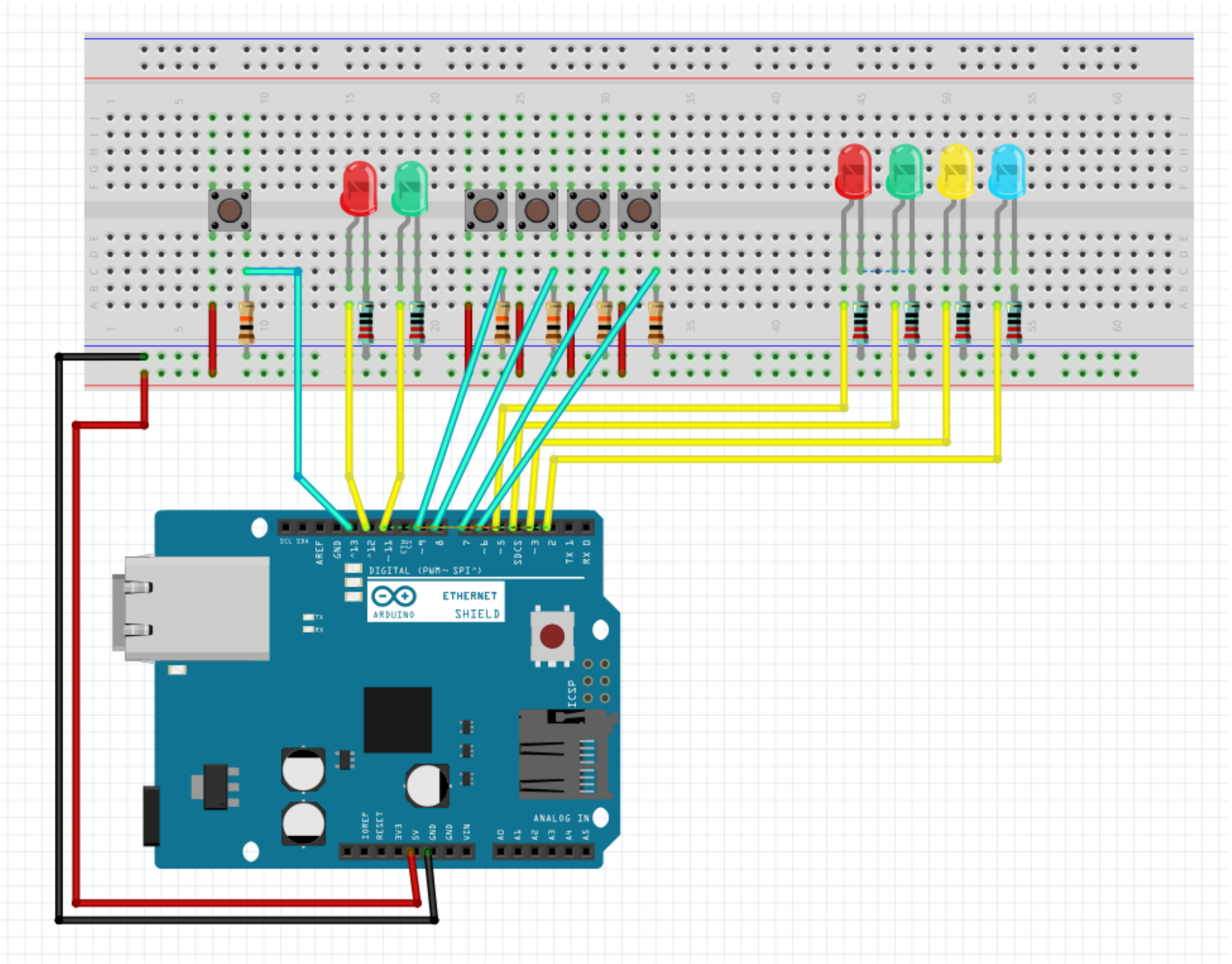
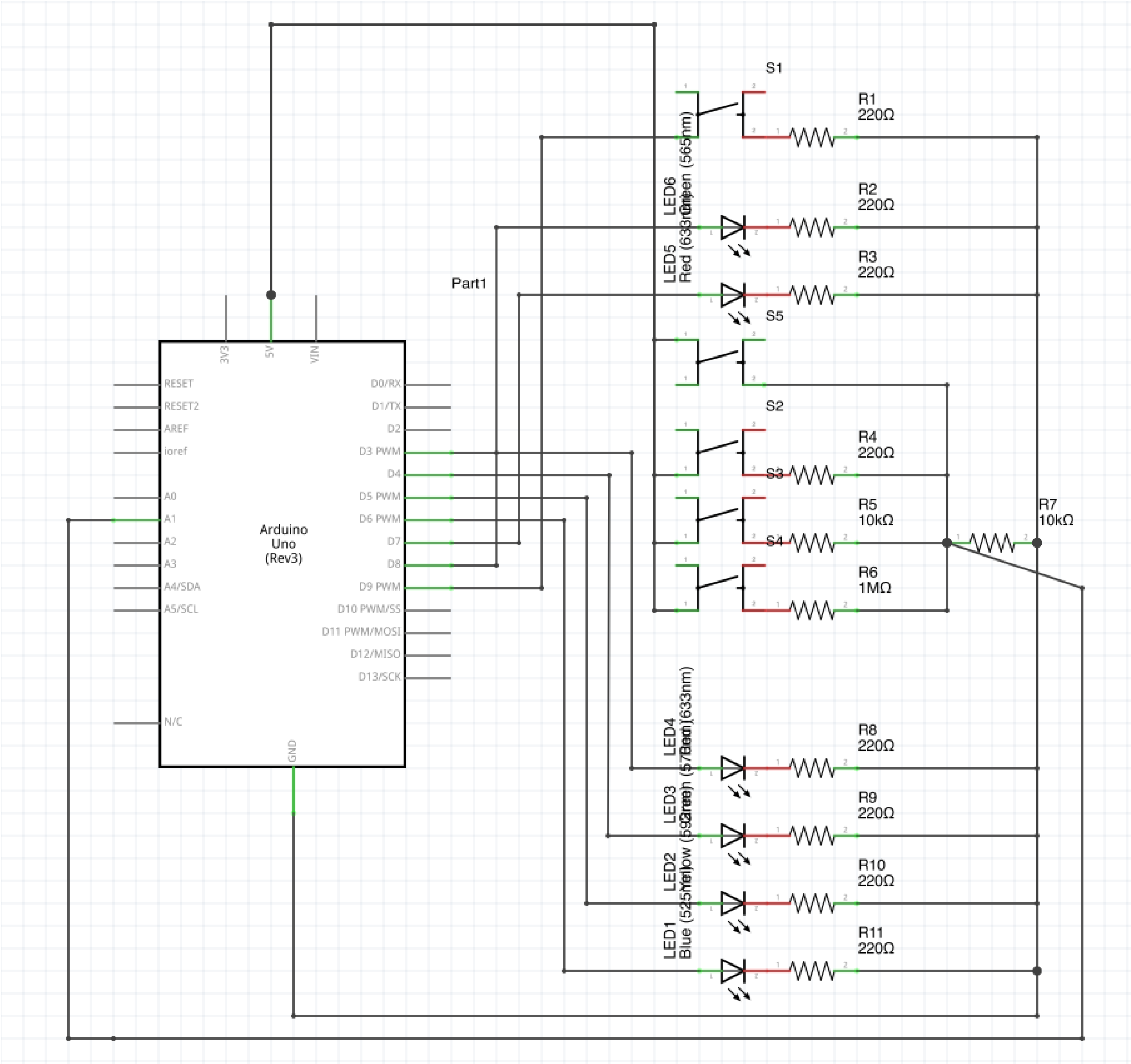


image developed using Fritzing (more information on www.fritzing.org)

Schematic


Part1
Arduino
Uno
(Rev3)
3V3
5V
VIN
RESET
RESET2
AREF
ioref
A0
A1
A2
A3
A4/SDA
A5/SCL
N/C
GND
D0/RX
D1/TX
D2
D3 PWM
D4
D5 PWM
D6 PWM
D7
D8
D9 PWM
D10 PWM/SS
D11 PWM/MOSI
D12/MISO
D13/SCK
S1
S2
S3
S4
S5
R1
220Ω
R2
220Ω
R3
220Ω
R4
220Ω
R5
10kΩ
R6
1MΩ
R7
10kΩ
R8
220Ω
R9
220Ω
R10
220Ω
R11
220Ω
LED6
Green (565nm)
LED5
Red (633nm)
LED4
Red (633nm)
LED3
Green (570nm)
LED2
Yellow (595nm)
LED1
Blue (525nm)

Process View

- **Arduino Setup**

Open the serial Port
Setup the pins connected to the LEDs
Initialize ethernet

- **Arduino Loop**

```
Check if first loop ->  in http mode & update config

If not in http mode
    check update config button
        if pushed -> do http mode & getconfig
    check analog input for value
        depending on value -> set new activity & do httpmode & push action
If in http mode
    check if configupdate
        -> loop till all properties on thng are get, when all got -> stop http mode
    check if recordactivity
        -> post new activity & stop http mode
```

Configuration and Setup

For more information see www.evrything.com

The following steps are required :

- Obtain an API Token from Evrythng
- Create a new thng with specific properties
- Create a new action _recordactivity
- Update the Arduino sketch with the thng and token values

- *Obtain an API Token from Evrythng*

To access our API, you will need to sign every request with your personal authentication token.
Go to the Evrything developers portal, create an account and obtain your token.

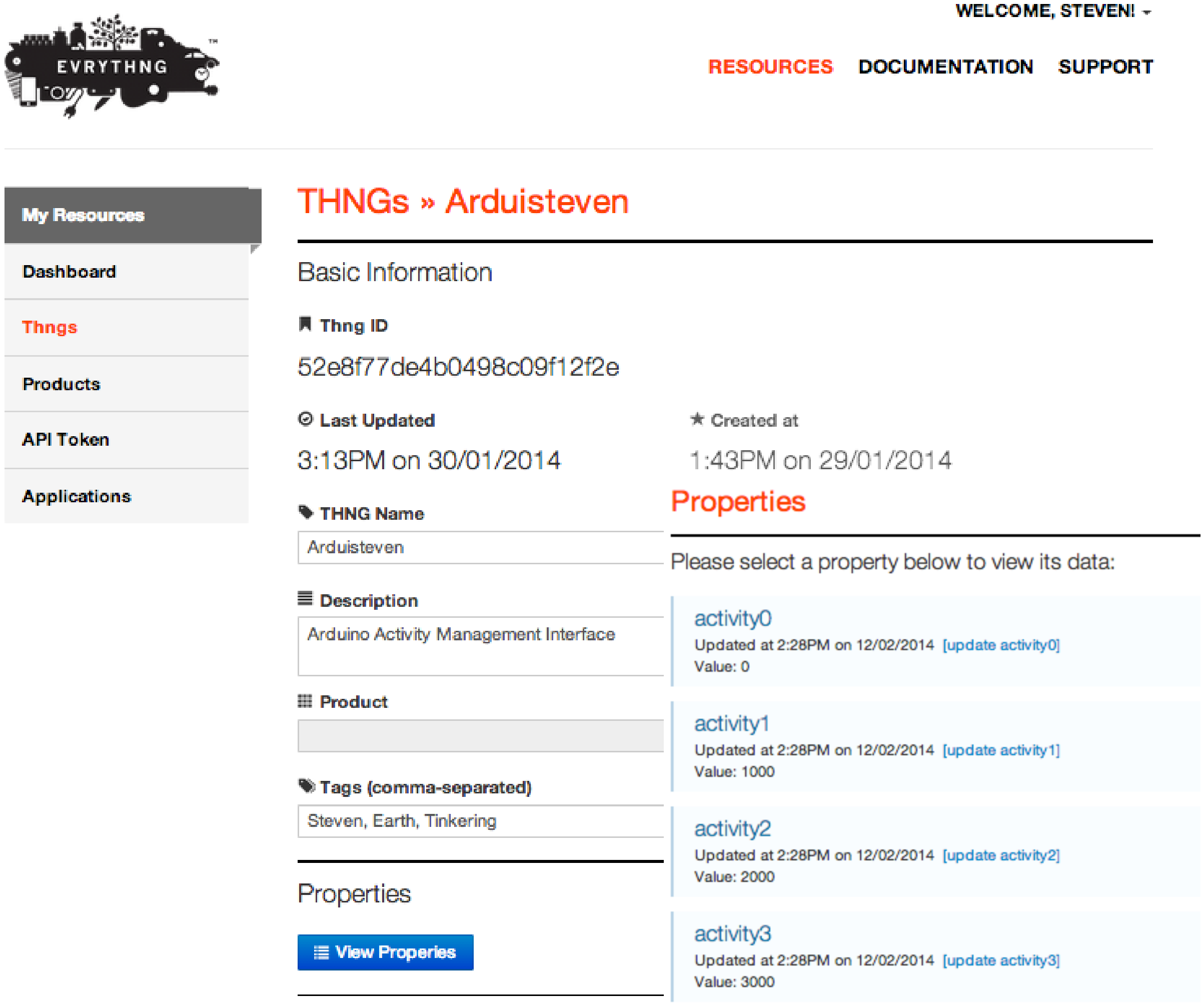
- *Create a new thng with specific properties*

Replace the *APIToken* with your evrythng value.
The elements in green can be changed.
The activity codes need to be integers (not a string).

```
curl -i -H "Content-Type: application/json" \
-H "Authorization: *APIToken*" \
-X POST "https://api.evrythng.com/thngs" \
-d '{
  "name": "Arduisteven",
  "description": "Arduino Activity Management Interface",
  "location": {
            "latitude": 43.772828,"longitude": 11.249488},
"properties":{
  "activity0":"0",
  "activity1":"1000",
  "activity2":"2000",
  "activity3":"3000"
  },
  "tags":["Steven","Earth","Tinkering"]
  }'
```

Get the thng id from the response. For example : 52e8f77de4b0498c09f12f2e

You can also create a new thng on the Evrythng developer portal.
You can verify your thng on the portal :



THNGs » Arduisteven

Basic Information

Thng ID

52e8f77de4b0498c09f12f2e

Last Updated

3:13PM on 30/01/2014

Created at

1:43PM on 29/01/2014

THNG Name

Arduisteven

Description

Arduino Activity Management Interface

Product

Tags (comma-separated)

Steven, Earth, Tinkering

Properties

Properties

Please select a property below to view its data:

activity0
Updated at 2:28PM on 12/02/2014 [update activity0]
Value: 0

activity1
Updated at 2:28PM on 12/02/2014 [update activity1]
Value: 1000

activity2
Updated at 2:28PM on 12/02/2014 [update activity2]
Value: 2000

activity3
Updated at 2:28PM on 12/02/2014 [update activity3]
Value: 3000

- Create a new action _recordactivity

```
curl -i -H "Content-Type: application/json" \
    -H "Authorization: *APIToken*" \
    -X POST "https://api.evrythng.com/actions" \
    -d '{
      "name": "_recordactivity",
      "customFields":{
      "activityname":"code of activity",
      "duration":"duration in ms"
      },
      "tags":["Arduino","Activity","Automatic"]
      }'
```

Update the Arduino sketch with the thng and token values

Variables to modify

```
  const char *APIToken = " replace by api token value"
  const char *thngid = " replace by thng identifier value"
```

Now you are all set.
Upload your sketch to your Arduino
Hook up the ethernet to the internet.
Record your activities.

To view all activities
https://api.evrythng.com/actions/_recordactivity?access_token=*APIToken*