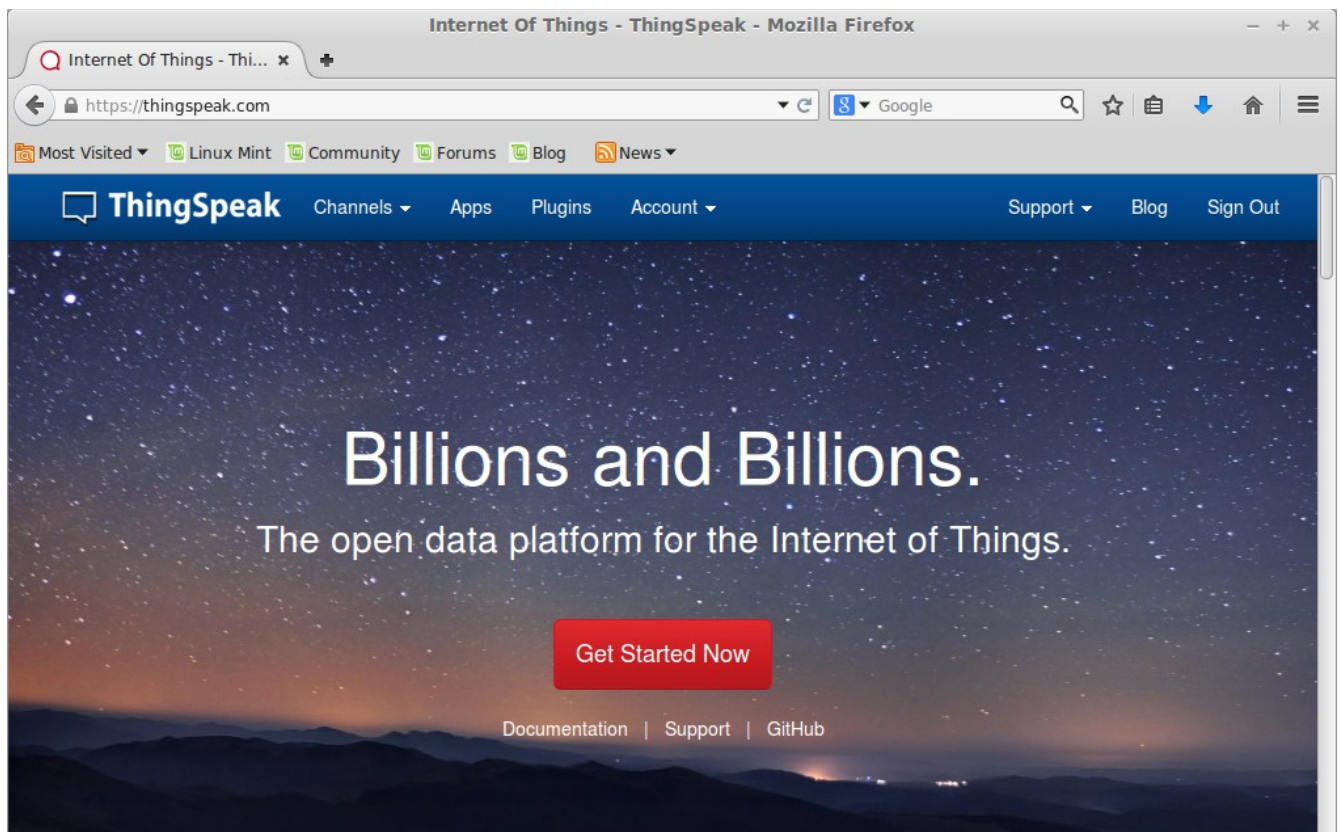


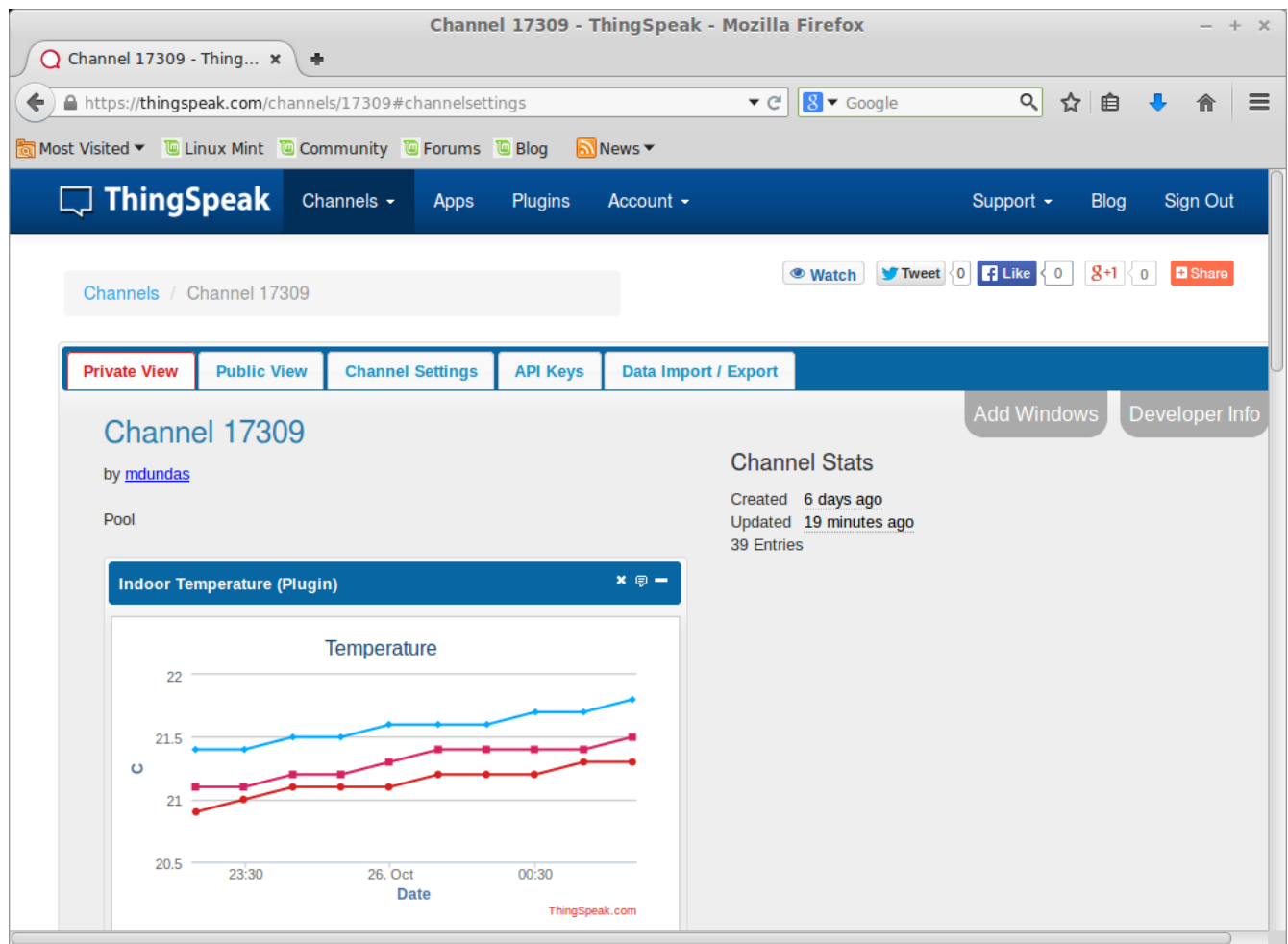
## Raspberry Pi One Wire Cloud ThingSpeak

Lab8 Part2 – Upload your temperature data to Thingspeak at a 10 minute rate. Be prepared to demo to your instructor in week9. Upload your C program to D2L week 9.

<http://www.binarytides.com/socket-programming-c-linux-tutorial/>

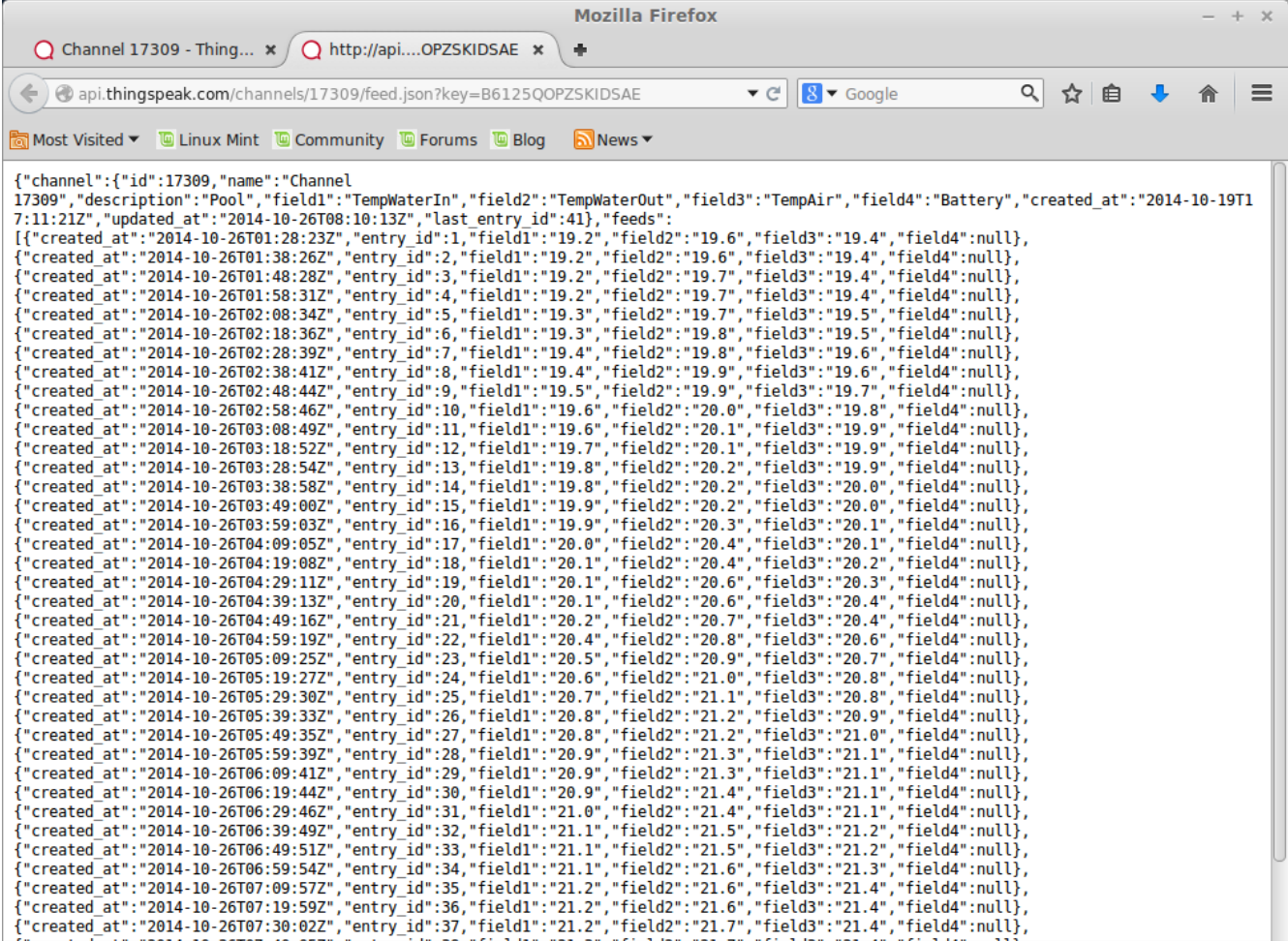


# Raspberry Pi One Wire Cloud ThingSpeak



# Raspberry Pi One Wire Cloud ThingSpeak

## Data Import / Export



The screenshot shows a Mozilla Firefox browser window with the address bar displaying `http://api....OPZSKIDSAAE`. The page content is a JSON feed from ThingSpeak, showing a channel with ID 17309 and name "Channel 17309". The feed contains multiple entries, each with a timestamp, entry ID, and four fields (field1, field2, field3, field4) representing temperature data. The data shows a steady increase in temperature over time, with field1 values ranging from 19.2 to 21.2, field2 from 19.6 to 21.6, field3 from 19.4 to 21.4, and field4 from 19.4 to 21.4.

```
{
  "channel": {
    "id": 17309,
    "name": "Channel 17309",
    "description": "Pool",
    "field1": "TempWaterIn",
    "field2": "TempWaterOut",
    "field3": "TempAir",
    "field4": "Battery",
    "created_at": "2014-10-19T17:11:21Z",
    "updated_at": "2014-10-26T08:10:13Z",
    "last_entry_id": 41,
    "feeds": [
      {
        "created_at": "2014-10-26T01:28:23Z",
        "entry_id": 1,
        "field1": "19.2",
        "field2": "19.6",
        "field3": "19.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T01:38:26Z",
        "entry_id": 2,
        "field1": "19.2",
        "field2": "19.6",
        "field3": "19.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T01:48:28Z",
        "entry_id": 3,
        "field1": "19.2",
        "field2": "19.7",
        "field3": "19.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T01:58:31Z",
        "entry_id": 4,
        "field1": "19.2",
        "field2": "19.7",
        "field3": "19.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T02:08:34Z",
        "entry_id": 5,
        "field1": "19.3",
        "field2": "19.7",
        "field3": "19.5",
        "field4": null
      },
      {
        "created_at": "2014-10-26T02:18:36Z",
        "entry_id": 6,
        "field1": "19.3",
        "field2": "19.8",
        "field3": "19.5",
        "field4": null
      },
      {
        "created_at": "2014-10-26T02:28:39Z",
        "entry_id": 7,
        "field1": "19.4",
        "field2": "19.8",
        "field3": "19.6",
        "field4": null
      },
      {
        "created_at": "2014-10-26T02:38:41Z",
        "entry_id": 8,
        "field1": "19.4",
        "field2": "19.9",
        "field3": "19.6",
        "field4": null
      },
      {
        "created_at": "2014-10-26T02:48:44Z",
        "entry_id": 9,
        "field1": "19.5",
        "field2": "19.9",
        "field3": "19.7",
        "field4": null
      },
      {
        "created_at": "2014-10-26T02:58:46Z",
        "entry_id": 10,
        "field1": "19.6",
        "field2": "20.0",
        "field3": "19.8",
        "field4": null
      },
      {
        "created_at": "2014-10-26T03:08:49Z",
        "entry_id": 11,
        "field1": "19.6",
        "field2": "20.1",
        "field3": "19.9",
        "field4": null
      },
      {
        "created_at": "2014-10-26T03:18:52Z",
        "entry_id": 12,
        "field1": "19.7",
        "field2": "20.1",
        "field3": "19.9",
        "field4": null
      },
      {
        "created_at": "2014-10-26T03:28:54Z",
        "entry_id": 13,
        "field1": "19.8",
        "field2": "20.2",
        "field3": "19.9",
        "field4": null
      },
      {
        "created_at": "2014-10-26T03:38:58Z",
        "entry_id": 14,
        "field1": "19.8",
        "field2": "20.2",
        "field3": "20.0",
        "field4": null
      },
      {
        "created_at": "2014-10-26T03:49:00Z",
        "entry_id": 15,
        "field1": "19.9",
        "field2": "20.2",
        "field3": "20.0",
        "field4": null
      },
      {
        "created_at": "2014-10-26T03:59:03Z",
        "entry_id": 16,
        "field1": "19.9",
        "field2": "20.3",
        "field3": "20.1",
        "field4": null
      },
      {
        "created_at": "2014-10-26T04:09:05Z",
        "entry_id": 17,
        "field1": "20.0",
        "field2": "20.4",
        "field3": "20.1",
        "field4": null
      },
      {
        "created_at": "2014-10-26T04:19:08Z",
        "entry_id": 18,
        "field1": "20.1",
        "field2": "20.4",
        "field3": "20.2",
        "field4": null
      },
      {
        "created_at": "2014-10-26T04:29:11Z",
        "entry_id": 19,
        "field1": "20.1",
        "field2": "20.6",
        "field3": "20.3",
        "field4": null
      },
      {
        "created_at": "2014-10-26T04:39:13Z",
        "entry_id": 20,
        "field1": "20.1",
        "field2": "20.6",
        "field3": "20.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T04:49:16Z",
        "entry_id": 21,
        "field1": "20.2",
        "field2": "20.7",
        "field3": "20.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T04:59:19Z",
        "entry_id": 22,
        "field1": "20.4",
        "field2": "20.8",
        "field3": "20.6",
        "field4": null
      },
      {
        "created_at": "2014-10-26T05:09:25Z",
        "entry_id": 23,
        "field1": "20.5",
        "field2": "20.9",
        "field3": "20.7",
        "field4": null
      },
      {
        "created_at": "2014-10-26T05:19:27Z",
        "entry_id": 24,
        "field1": "20.6",
        "field2": "21.0",
        "field3": "20.8",
        "field4": null
      },
      {
        "created_at": "2014-10-26T05:29:30Z",
        "entry_id": 25,
        "field1": "20.7",
        "field2": "21.1",
        "field3": "20.8",
        "field4": null
      },
      {
        "created_at": "2014-10-26T05:39:33Z",
        "entry_id": 26,
        "field1": "20.8",
        "field2": "21.2",
        "field3": "20.9",
        "field4": null
      },
      {
        "created_at": "2014-10-26T05:49:35Z",
        "entry_id": 27,
        "field1": "20.8",
        "field2": "21.2",
        "field3": "21.0",
        "field4": null
      },
      {
        "created_at": "2014-10-26T05:59:39Z",
        "entry_id": 28,
        "field1": "20.9",
        "field2": "21.3",
        "field3": "21.1",
        "field4": null
      },
      {
        "created_at": "2014-10-26T06:09:41Z",
        "entry_id": 29,
        "field1": "20.9",
        "field2": "21.3",
        "field3": "21.1",
        "field4": null
      },
      {
        "created_at": "2014-10-26T06:19:44Z",
        "entry_id": 30,
        "field1": "20.9",
        "field2": "21.4",
        "field3": "21.1",
        "field4": null
      },
      {
        "created_at": "2014-10-26T06:29:46Z",
        "entry_id": 31,
        "field1": "21.0",
        "field2": "21.4",
        "field3": "21.1",
        "field4": null
      },
      {
        "created_at": "2014-10-26T06:39:49Z",
        "entry_id": 32,
        "field1": "21.1",
        "field2": "21.5",
        "field3": "21.2",
        "field4": null
      },
      {
        "created_at": "2014-10-26T06:49:51Z",
        "entry_id": 33,
        "field1": "21.1",
        "field2": "21.5",
        "field3": "21.2",
        "field4": null
      },
      {
        "created_at": "2014-10-26T06:59:54Z",
        "entry_id": 34,
        "field1": "21.1",
        "field2": "21.6",
        "field3": "21.3",
        "field4": null
      },
      {
        "created_at": "2014-10-26T07:09:57Z",
        "entry_id": 35,
        "field1": "21.2",
        "field2": "21.6",
        "field3": "21.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T07:19:59Z",
        "entry_id": 36,
        "field1": "21.2",
        "field2": "21.6",
        "field3": "21.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T07:30:02Z",
        "entry_id": 37,
        "field1": "21.2",
        "field2": "21.7",
        "field3": "21.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T07:40:05Z",
        "entry_id": 38,
        "field1": "21.3",
        "field2": "21.7",
        "field3": "21.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T07:50:08Z",
        "entry_id": 39,
        "field1": "21.3",
        "field2": "21.7",
        "field3": "21.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T08:00:11Z",
        "entry_id": 40,
        "field1": "21.3",
        "field2": "21.7",
        "field3": "21.4",
        "field4": null
      },
      {
        "created_at": "2014-10-26T08:10:13Z",
        "entry_id": 41,
        "field1": "21.3",
        "field2": "21.7",
        "field3": "21.4",
        "field4": null
      }
    ]
  }
}
```

# Raspberry Pi One Wire Cloud ThingSpeak

## Channel Settings

The screenshot shows the ThingSpeak web interface in a Mozilla Firefox browser. The address bar displays the URL `https://thingspeak.com/channels/17309#channelsettings`. The page title is "Channel 17309 - ThingSpeak". The navigation bar includes links for "Channels", "Apps", "Plugins", "Account", "Support", "Blog", and "Sign Out".

The "Channel Settings" tab is selected, showing the following fields:

- Percentage Complete:** 35%
- Channel ID:** 17309
- Name:** Channel 17309
- Description:** Pool
- Metadata:** (Empty text area)
- Tags:** (Empty text area)
- Latitude:** (Empty text input)
- Longitude:** (Empty text input)
- Elevation:** (Empty text input)

A "Help" section on the right provides instructions:

- Help:** Make this channel public to allow anyone to view its feed and charts without using API keys.
- By using the URL field, you can provide a link to more information for your public channel, such as a blog post or webpage about the channel.
- Add a video to the public view of your channel by providing a YouTube or Vimeo ID, which is found in the URL of your video.
- Add up to 8 fields that can be tracked. A field must be added before it can store data.
- Clicking on the "Clear Channel" button will delete ALL feed data associated with this channel, but will leave the channel's info intact.
- Completeness will help your channel appear higher in the list of public channels.

# Raspberry Pi One Wire Cloud ThingSpeak

Channel 17309 - ThingSpeak - Mozilla Firefox

Channel 17309 - Thing... x http://api....OPZSKIDSAE x

https://thingspeak.com/channels/17309#channelsettings

Most Visited Linux Mint Community Forums Blog News

ThingSpeak Channels Apps Plugins Account Support Blog Sign Out

Elevation

Make Public? ☐

URL

Video ID  ☐ YouTube ☐ Vimeo

Field 1  TempWaterIn ☐ remove field

Field 2  TempWaterOut ☐ remove field

Field 3  TempAir ☐ remove field

Field 4  Battery ☐ remove field

Field 5  ☐ add field

Field 6  ☐ add field

Field 7  ☐ add field

Field 8  ☐ add field

Save Channel

Want to clear all feed data from this channel?

Clear Channel

# Raspberry Pi One Wire Cloud ThingSpeak

Some defines to help:

```
#include <stdio.h>
#include <string.h>
#include <sys/socket.h>
#include <arpa/inet.h> //inet_addr
#include <unistd.h>    //sleep
#include <stdlib.h>    //atoi

#define w1_master_slaves "/sys/bus/w1/devices/w1_bus_master1/w1_master_slaves"
#define w1_master_slave_count "/sys/bus/w1/devices/w1_bus_master1/w1_master_slave_count"
#define one_wire_device_p1 "/sys/bus/w1/devices/"
#define one_wire_device_p2 "/w1_slave"

#define IP "184.106.153.149" // thingspeak.com
#define GET "GET /update?key=yourkey";
#define field1 "&1="
#define field2 "&2="
#define field3 "&3="
#define CRLF "\r\n"
```

## Raspberry Pi One Wire Cloud ThingSpeak

Some example socket code:

```
//Create socket
socket_desc = socket(AF_INET , SOCK_STREAM , 0);
if (socket_desc == -1)
{
    printf("Could not create socket");
}

server.sin_addr.s_addr = inet_addr(IP);
server.sin_family = AF_INET;
server.sin_port = htons( 80 );

//Connect to remote server
if (connect(socket_desc , (struct sockaddr *)&server , sizeof(server)) < 0)
{
    printf("connect error\n");
}

printf("Connected\n");

strcat(msg, "GET /update?key=yourkey");
strcat(msg, field1);
strcat(msg, templ);
strcat(msg, CRLF);

printf("%s\n", msg);

if( send(socket_desc , msg , strlen(msg) , 0) < 0)
{
    puts("Send failed");
}

puts("Data Sent\n");

strcpy(msg, ""); //clear msg string
```