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Embedded Programming

Chapter 11

Assignment 3

Add the current timestamp to the burglar alarm email. Get the timestamp

from a Daytime service.

<http://tf.nist.gov/tf-cgi/servers.cgi> RFC 867

time.nist.gov

Screen Caps

I had great frustrations with this. No matter what I did, it wouldn’t work in the classroom. Upon asking David, apparently OWATC IT locks “unusual” transmission requests.

☹ It didn’t work at home either. I made sure the port was open and NTP was enabled at the firewall and router. Next, I tried the NTP sample code from Arduino. It’s a stripped-down serial output timestamp fetcher. I could Ping timeservers from my machine, but I couldn’t get the Arduino to communicate with any time server. “If it weren’t for bad luck, I’d have no luck at all.”

Arduino talks to email servers, but not time servers. What am I doing wrong?

I would welcome any advice you may have. I hate unfinished projects.

Source Code

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EmailProximityAlarmWithTimeStamp.cpp

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#include <SPI.h>

#include <Ethernet.h>

#include "burglar\_alarm.h"

const unsigned int PIR\_INPUT\_PIN = 2;

const unsigned int SMTP\_PORT = 25;

const unsigned int BAUD\_RATE = 9600;

const String USERNAME = "REDACTED"; // Encoded in Base64.

const String PASSWORD = "REDACTED"; // Encoded in Base64.

byte mac[] = { 0xDE, 0xAD, 0xBE, 0xEF, 0xFE, 0xED };

IPAddress my\_ip(205, 122, 107, 29);

// Insert IP address of your SMTP server below!

IPAddress smtp\_server(216, 22, 15, 250); //SMTP2GO

PassiveInfraredSensor pir\_sensor(PIR\_INPUT\_PIN);

SmtpService smtp\_service(smtp\_server, SMTP\_PORT, USERNAME, PASSWORD);

BurglarAlarm burglar\_alarm(pir\_sensor, smtp\_service);

void setup() {

Ethernet.begin(mac, my\_ip);

Serial.begin(BAUD\_RATE);

delay(20 \* 1000);

}

void loop() {

burglar\_alarm.check();

delay(3000);

}&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&

burglar\_alarm.h

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\* Excerpted from "Arduino: A Quick-Start Guide, Second Edition",

\* published by The Pragmatic Bookshelf.

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\* courses, books, articles, and the like. Contact us if you are in doubt.

\* We make no guarantees that this code is fit for any purpose.

\* Visit http://www.pragmaticprogrammer.com/titles/msard2 for more book information.

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#ifndef \_\_BURGLAR\_ALARM\_H\_\_

#define \_\_BURGLAR\_ALARM\_H\_\_

#include "pir\_sensor.h"

#include "smtp\_service.h"

IPAddress time\_server(198,60,73,8); //ntp-nist-ldsbc.net (05272016)

const unsigned int DAYTIME\_PORT = 13;

EthernetClient client;

char c;

class BurglarAlarm {

PassiveInfraredSensor \_pir\_sensor;

SmtpService \_smtp\_service;

void send\_alarm() {

Email email(

"arduino@example.com",

"yarnbomber@gmail.com",

"Intruder Alert!",

getTime()

);

Serial.println("Intruder Alert! Trying to send email...");

\_smtp\_service.send\_email(email);

}

public:

BurglarAlarm(

const PassiveInfraredSensor& pir\_sensor,

const SmtpService& smtp\_service) :

\_pir\_sensor(pir\_sensor),

\_smtp\_service(smtp\_service)

{

}

void check() {

Serial.println("Checking");

if (\_pir\_sensor.motion\_detected()) {

Serial.println("Intruder detected!");

send\_alarm();

}

}

const String getTime()

{

if (client.connect(time\_server, DAYTIME\_PORT) <= 0) {

Serial.println("connection failed.");

} else {

Serial.println("connected.");

delay(300);

while (client.available()) {

char c = client.read();

Serial.print(c);

}

Serial.println("Disconnecting.");

client.stop();

}

String time = String(c);

return time;

}

};

#endif

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The other headers are unchanged from “Email Burglar Alarm”

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