Arduino SD Card Web Server

Created on: 28 January 2013

Part of the Arduino Ethernet Shield Web Server

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o make a web
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sts a web page
no web server,
l fetch the web
page from the SD card.

Creating the Web Page

Because the web page is to be stored on the SD card, it must first be created using a text editor and then copied to the SD card.

Web Page Editor

A text editor such as Geany can be used – it is available to download for Windows and will be in the repositories for most Ubuntu based Linux distributions. Geany has syntax highlighting and will automatically close HTML tags for you which makes web page editing easier. It is possible to use any other text editor, even Windows Notepad.

Web Page

Create the following web page in a text editor. When you save the text file, give it the name: **index.htm**

```
<!DOCTYPE html>
<html>
    <head>
        <title>Arduino SD Card Web Page</title>
    </head>
    <body>
        <h1>Hello from the Arduino SD Card!</h1>
        <p>A web page from the Arduino SD card server.</p>
    </body>
</html>
```

Nothing new here, it is the same as the web page from the first web server in this tutorial with just the text changed. Test this web page by opening it in a web browser.

Copying the Web Page

You will need a micro SD card slot on your computer or a card reader that is capable of reading and writing a micro SD card.

Insert the micro SD card into the slot on the computer or card reader that is plugged into the computer and copy the **index.htm** file to the micro SD card.

Now plug the SD card into the micro SD card slot on the Ethernet shield.

SD Card Web Server

Hardware

You should now have the micro SD card with web page copied to it inserted into the card slot on the Arduino Ethernet shield. The Ethernet shield should be plugged into a compatible Arduino and into an Ethernet cable connected to your network. The Arduino / Ethernet shield should be powered from a USB cable.

Arduino Sketch

The Arduino sketch that fetches the web page from the SD card and sends it to the browser is shown below.

```
/*---------------------------------------------------------
  Program:      eth_websrv_SD

  Description:  Arduino web server that serves up a basic
                page. The web page is stored on the SD car

  Hardware:     Arduino Uno and official Arduino Ethernet
                shield. Should work with other Arduinos ar
                compatible Ethernet shields.
                2Gb micro SD card formatted FAT16

  Software:     Developed using Arduino 1.0.3 software
                Should be compatible with Arduino 1.0 +
                SD card contains web page called index.htm

  References:   - WebServer example by David A. Mellis and
                  modified by Tom Igoe
                - SD card examples by David A. Mellis and
                  Tom Igoe
                - Ethernet library documentation:
                  http://arduino.cc/en/Reference/Ethernet
                - SD Card library documentation:
```

```
                  http://arduino.cc/en/Reference/SD

  Date:         10 January 2013

  Author:       W.A. Smith, http://startingelectronics.org
-----------------------------------------------------------

#include <SPI.h>
#include <Ethernet.h>
#include <SD.h>

// MAC address from Ethernet shield sticker under board
byte mac[] = { 0xDE, 0xAD, 0xBE, 0xEF, 0xFE, 0xED };
IPAddress ip(10, 0, 0, 20); // IP address, may need to cha
EthernetServer server(80);  // create a server at port 80

File webFile;

void setup()
{
    Ethernet.begin(mac, ip);  // initialize Ethernet devic
    server.begin();           // start to listen for clier
    Serial.begin(9600);       // for debugging

    // initialize SD card
    Serial.println("Initializing SD card...");
    if (!SD.begin(4)) {
        Serial.println("ERROR - SD card initialization fai
        return;    // init failed
    }
    Serial.println("SUCCESS - SD card initialized.");
    // check for index.htm file
    if (!SD.exists("index.htm")) {
        Serial.println("ERROR - Can't find index.htm file!
        return;  // can't find index file
    }
    Serial.println("SUCCESS - Found index.htm file.");
}
```

```
void loop()
{
    EthernetClient client = server.available();  // try to

    if (client) {  // got client?
        boolean currentLineIsBlank = true;
        while (client.connected()) {
            if (client.available()) {   // client data ava
                char c = client.read(); // read 1 byte (ch
                // last line of client request is blank an
                // respond to client only after last line
                if (c == '\n' && currentLineIsBlank) {
                    // send a standard http response heade
                    client.println("HTTP/1.1 200 OK");
                    client.println("Content-Type: text/htm
                    client.println("Connection: close");
                    client.println();
                    // send web page
                    webFile = SD.open("index.htm");
                    if (webFile) {
                        while(webFile.available()) {
                            client.write(webFile.read());
                        }
                        webFile.close();
                    }
                    break;
                }
                // every line of text received from the cl
                if (c == '\n') {
                    // last character on line of received
                    // starting new line with next charact
                    currentLineIsBlank = true;
                }
                else if (c != '\r') {
                    // a text character was received from
                    currentLineIsBlank = false;
                }
            } // end if (client.available())
        } // end while (client.connected())
```

```
            delay(1);      // give the web browser time to rec
            client.stop(); // close the connection
        } // end if (client)
}
```

Using the Sketch

Copy the above sketch and paste it into the Arduino IDE. Load the sketch to the Arduino and then surf to the IP address set in the sketch with your web browser. The web page that you created should be displayed in the browser as it is served up by the Arduino SD card web server.

Fault Finding

If the previous sketch in this tutorial worked, then the only thing that can go wrong is with initializing the SD card and finding the index.htm file on the card. If the file is not on the card or does not have the exact name index.htm, then the server will not be able to display the web page.

Open up the Arduino serial monitor window to see SD card diagnostic information.

Sketch Explanation

This sketch is a modified version of the **eth_websrv_page** sketch from the Basic Arduino Web Server part of this tutorial.

Additional Code

The sketch now initializes the SD card in the **setup()** function and sends diagnostic information out of the serial port that can be viewed in the Arduino serial monitor window.

Instead of sending the web page line by line from within the code as in the **eth_websrv_page** sketch, this new sketch now opens the **index.htm** file from the SD card and sends the contents to the web client (the web browser).

← Go back to Part 3 Go to Part 5 →

banana_split • 3 years ago

Everthing seems fine, but i got ÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿ..... on browser instead, i miss something?
thanks, :)

• Reply • Share ›

eev-notes banana_split • 2 years ago

You have a different baudrate set in your Serial Console. Set the baudrate to 9600 and you should be fine

• Reply • Share ›

Jabir El Ghayati eev-notes • a year ago

how would I change it ? is there others commandes besides serial.begin ? cuz it s already set at 9600,

• Reply • Share ›

Keith Adams • 3 years ago

Thank you for an excellent tutorial. I had to change one line in the code for the SD card:

FROM client.println("Content-Type: text/html");
TO client.println("Content-Type: html");

Without that change, the browser could not display the index.htm, but rather asked "download file".

thanks....:)

• Reply • Share ›

Cameezi • 3 months ago

Why do you break immediately after reading the sd car? If