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Arduino SD Card Web Server – Linking Pages

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Part 10 of the Arduino Ethernet Shield Web Server Tutorial

This part of the Arduino Ethernet shield web server tutorial shows how to create links between web pages that are hosted on the micro SD card of the Arduino web server.

These are links on a hosted web page that can be clicked in order to go to or open a different web page.

Creating Links in HTML

Links are created in HTML by using the HTML <a> tag. Text between the opening <a> tag and closing tag becomes a clickable link on the web page.

The value of the **href** attribute of the <a> tag must contain the file name of the web page that is linked to, e.g.:

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Part 2: Basic Arduino Web Server

Part 3: HTML Web Page Structure

```
<p>Go to <a href="page2.htm">page 2</a>.</p>
```

The above line of HTML will create a paragraph of text with the **page 2** part of the paragraph becoming a link to a file called **page2.htm**.

The file **page2.htm** must exist and also be in the same directory as the page that contains the link to it.

Example HTML Files

Two HTML files will be used as examples in this part of the tutorial. They must be saved to the micro SD card and the micro SD card must be plugged into the Ethernet shield.

The main page that will be loaded first from the server is made from the following HTML code (file name is index.htm):

```
<!DOCTYPE html>
<html>
    <head>
        <title>Arduino SD Card Web Page</title>
    </head>
    <body>
        <h1>Arduino SD Card Page with Link</h1>
        <p>Go to <a href="page2.htm">page 2</a>.</p>
    </body>
</html>
```

The above page links to a second page called page2.htm:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Arduino SD Card Web Page 2</title>
    </head>
    <body>
        <h1>Arduino SD Card Page 2</h1>
        <p>Go back to <a href="index.htm">main page</a
```

```
    </body>
  </html>
```

page2.htm links back to the main page **index.htm**.

Create the above two files (index.htm and page2.htm) and copy them to your micro SD card. Insert the micro SD card into the Ethernet shield micro SD card holder.

These pages can be tested on a computer (with the two files in the same folder on the hard-drive) by opening index.htm in a browser and clicking the link. page2.htm should open when the link is clicked. Clicking the link on page2.htm should send the browser back to index.htm.

This video shows how to copy the web page files to the SD card and then shows the Arduino hosting the pages. The sketch is described below in this part of the tutorial.

Web Page Links on the Arduino Web Serv...

▶

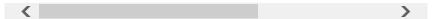Watch on ▶ YouTube

Can't see the video? View on YouTube →

HTTP Page Requests

When a web browser first requests a page from the Arduino web server, it sends an HTTP request similar to this:

```
GET / HTTP/1.1

Host: 10.0.0.20

User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux i686; rv:1

Accept: text/html,application/xhtml+xml,application/xm

Accept-Language: en-ZA,en-GB;q=0.8,en-US;q=0.5,en;q=0.

Accept-Encoding: gzip, deflate

Connection: keep-alive
```

We have already seen this HTTP request in previous parts of this tutorial.

When the link on the page is clicked (the link on the index.htm page to the page2.htm page in our example), the web browser sends the following HTTP request:

```
GET /page2.htm HTTP/1.1

Host: 10.0.0.20

User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux i686; rv:1

Accept: text/html,application/xhtml+xml,application/xm

Accept-Language: en-ZA,en-GB;q=0.8,en-US;q=0.5,en;q=0.

Accept-Encoding: gzip, deflate

Referer: http://10.0.0.20/

Connection: keep-alive
```

So the initial HTTP request contains a GET request for the root file: **GET /** (this would be our index.htm file).

When the link is clicked, the request is now for a specific page: **GET /page2.htm** – now we know that we must check the HTTP request to see whether it is requesting the root file or a specific file that was linked to. This check will be done in the Arduino sketch.

Arduino Sketch for Linked Web Pages on Web Server

The sketch below is a modified version of the first SD card web server from part 4 of this series.

The **eth_websrv_SD_link** Arduino sketch:

```
/*-----------------------------------------------
  Program:      eth_websrv_SD_link

  Description:  Arduino web server that serves up a
                page that links to a second page. Cl
                link will open the second page. The
                links back to the first page.

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

  Software:     Developed using Arduino 1.0.5 softwa
                Should be compatible with Arduino 1.

                Requires index.htm and page2.htm to
                micro SD card in the Ethernet shiel
                SD card socket.
```

NOTE: The IP address is set to **192.168.0.20** in this sketch and not **10.0.0.20** as in other sketches in this tutorial, so change it for your system if necessary.

The changes to the original SD card sketch from part 4 are described below.

HTTP Request

The sketch was modified to store the HTTP request from the web browser in the string **HTTP_req**. This string can then be searched to find out which page is being requested.

The HTTP request is sent out of the serial port and can be viewed in the Arduino serial monitor window for diagnostics and debugging purposes.

Sending the Correct Web Page

After the Arduino has received the HTTP request from the browser, it responds with a standard HTTP header and then sends the requested web page.

The code that selects which web page to send is shown here:

```
// open requested web page file
if (StrContains(HTTP_req, "GET / ")
             || StrContains(HTTP_req, "GET /index.htm"
    webFile = SD.open("index.htm");        // open web
}
else if (StrContains(HTTP_req, "GET /page2.htm")) {
    webFile = SD.open("page2.htm");        // open web
}
```

All this code does is open either index.htm or page2.htm from the SD card. The code that sends the file is the same as the code from part 4 of this series.

The code to select the correct file looks at the received HTTP request using the **StrContains()** function. **HTTP_req** is the string in our sketch that contains the HTTP request. If the HTTP request contains "GET / ", then this is a request for our root file index.htm.

If the HTTP request string contains "GET /page2.htm", then page2.htm will be opened and sent to the web browser.

When the link on page2.htm is clicked, it links back to index.htm and not /. This is the reason for checking if the HTTP request contains "GET / " or "GET /index.htm" in the first **if** statement in the above code listing.

Sketch Improvements

The above sketch is used to demonstrate the mechanism for opening page links on the Arduino web server, so was kept simple. Some improvements that could be made to the code would be firstly to extract the file name after the GET in the HTTP request and then open the file without checking for the specific name in the code. A second improvement would be to handle the case where a page is requested by the browser, but it does not exist on the SD card.

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Mario · *29 weeks ago*   0

Hello,
all parts are working perfect! And I can follow very good as a beginner.

But here I have the first error: "if (StrContains(HTTP_req, "GET / ")"

StrContains and StrClear are the problem

Please advice what to do

Thx in advance

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