How to implement HTTP Client for W7100A

Version 1.1

Table of Contents

1 Introduction

HTTP (Hyper Text Transfer Protocol) is a protocol for distributed, collaborative, hypermedia information systems. The use of hypertext documents led to the establishment of World Wide Web. There are two versions: HTTP/1.0 that uses a separate connection for every document and HTTP/1.1 that can reuse the same connection to download. In this application note, the outline of using W7100 to implement HTTP client will be covered.

1.1　HTTP

HTTP transaction

1. Web Browser connects to the Web Server
- Connect to the server that is shown in the URL
- default port number : 80
2. Web Browser creates a request message which includes the URL and sends it to the Web Server.
3. Web Server then creates a response message, which includes the HTTP document and header from the request message, and sends it back to the Web Browser.
- The response-header is consisted of a message showing whether the response-message is sent successfully or not and the data-type (text, image, video clip, etc).
- Send the actual data after sending the response-header.
4. After the response-message is sent, the Web Server must end connection.

2 HTTP Client Demonstration

Fig.1 shows how iMCU7100EVB is used to demonstrate HTTP Client. W7100 requests and downloads the document that exists on the Web Server. The downloaded HTTP document can be checked at the TEST PC through the RS232 port.
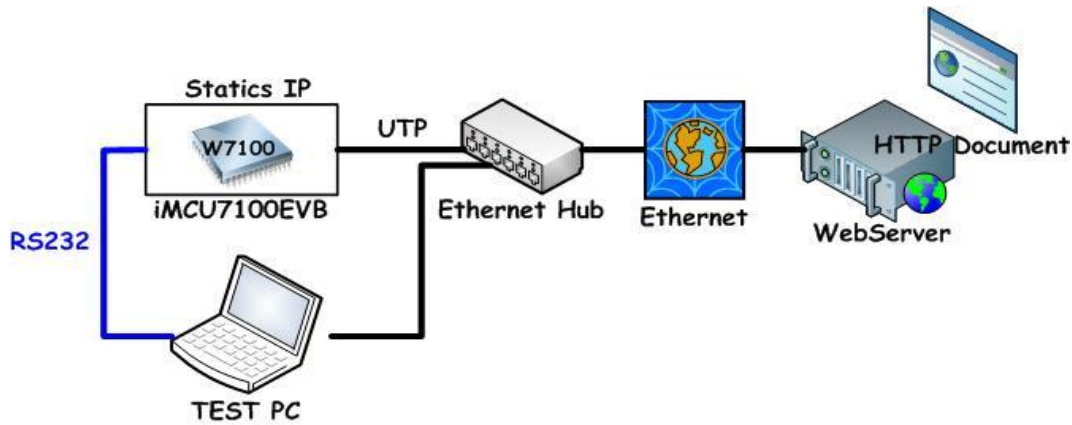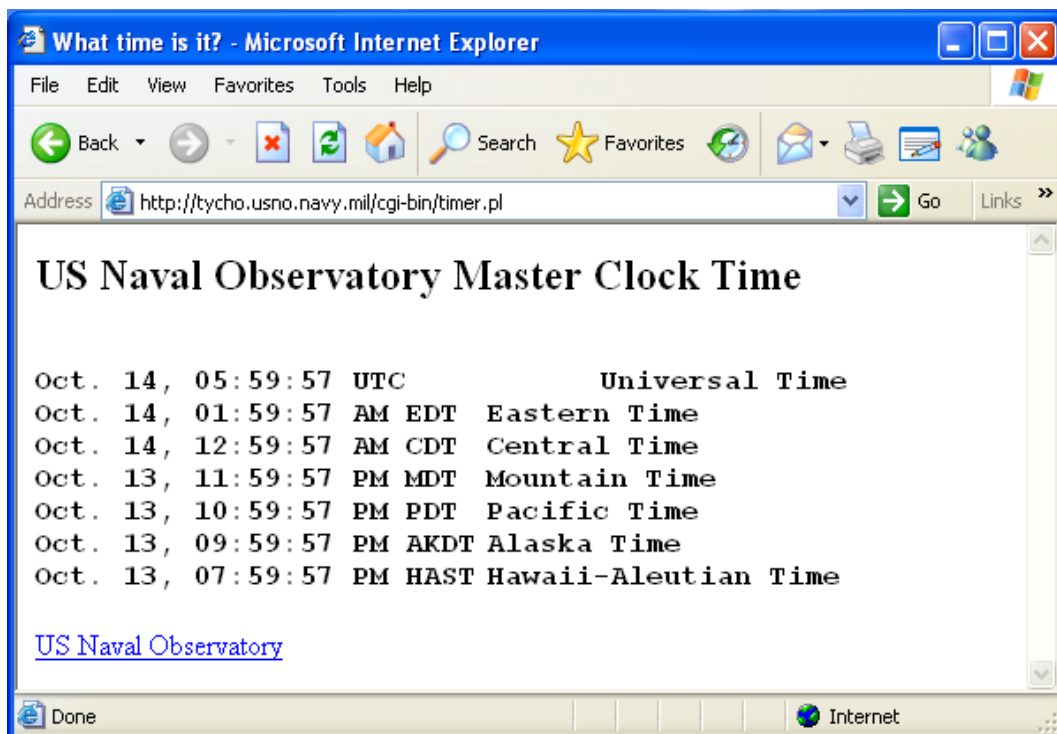
Fig. 1 Diagram of HTTP Client Demonstration

2.1 HTTP Document

The following HTTP page is used for HTTP Client Demonstration. It can be checked from (b) HTTP Source that it is DOCTYPE HTTP.

<Note>

The size of HTTP Document (img, txt, etc), memory of W7100, or external memory that a user will use must be considered.

(a) HTTP Document

Ver. 1.0   4

(b) HTML Source
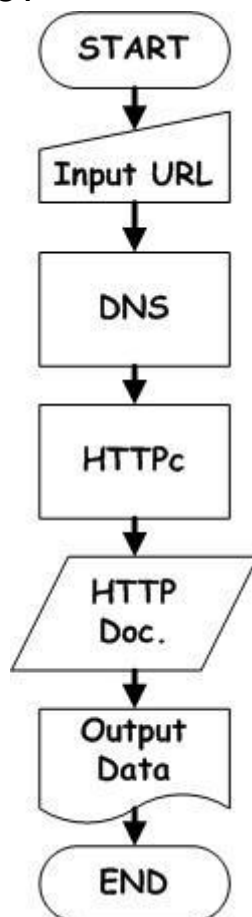
Fig.2 Example of HTTP Document

2.2 TEST

Abbreviate the 'http://' part and enter the following in the URL.

: tycho.usno.navy.mil/cgi-bin/timer.pl

IP address is acquired by using the parsed Domain name

Use the acquired IP address to connect to the Web Server. Send the Request-message and download the HTTP document from the Web Server.
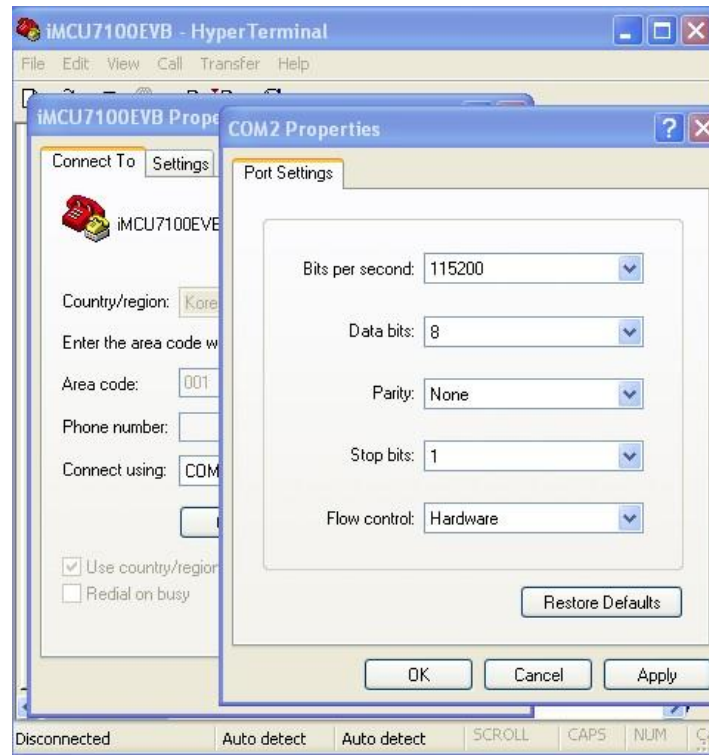
Save the HTTP document in the internal memory.

The downloaded HTTP Document is output after parsing TAG.

Fig. 3

Flow chart of HTTP Client Demonstration
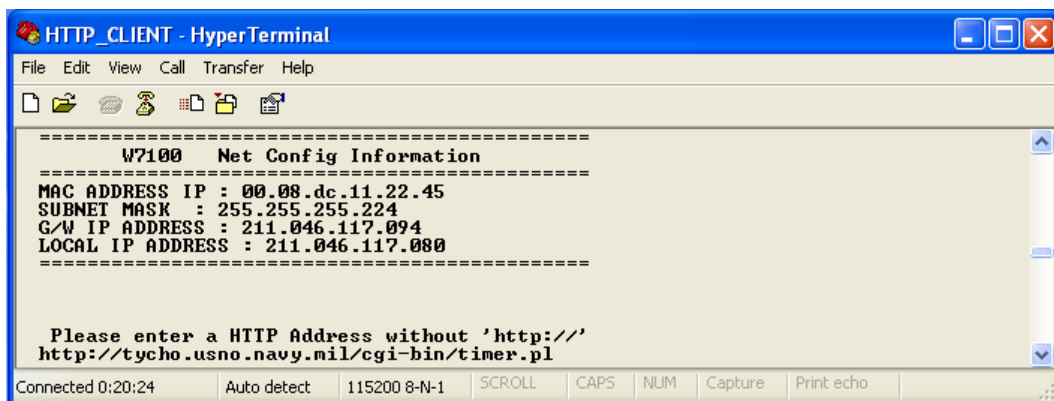
2.3   Demonstrations

2.3.1   Setting Hyper terminal

Set the Hyper Terminal as shown below to enter the URL in W7100 and check results.

Hyper terminal setting

2.3.2 Input URL

Demo. 1

2.3.3 DNS, HTTPc, and Output Doc.

Demo. 2

2.3.4 Results

(a) Parsed Data

(b) Web page

Demo. 3

3 HTTP Client Implements

HTTP Client operated in TCP Client mode. TCP Client mode works by connecting to the server (Connect), and after connecting (ESTABLISHED) the client can send/receive data. For more details, please refer to section 9.2.1.1 of Internet Embedded MCU W7100 Datasheet or document 'How 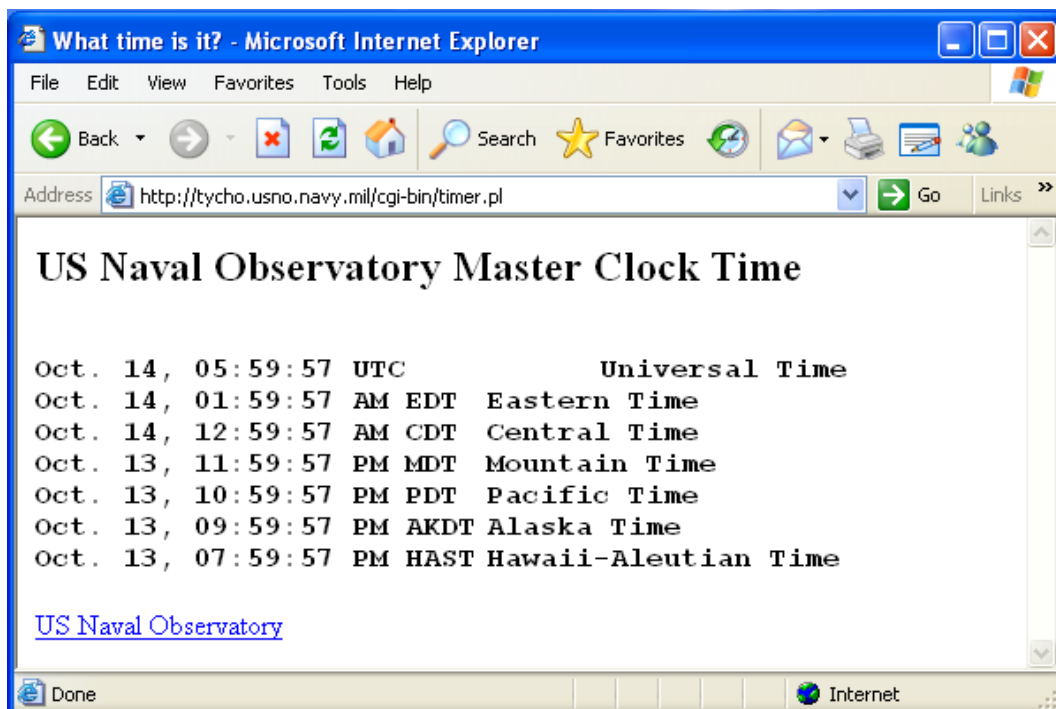to implement TCP in W7100. Expand the TCP Loopback example code to implement HTTP Client. Fig.4 is the flow chart of HTTP Client.
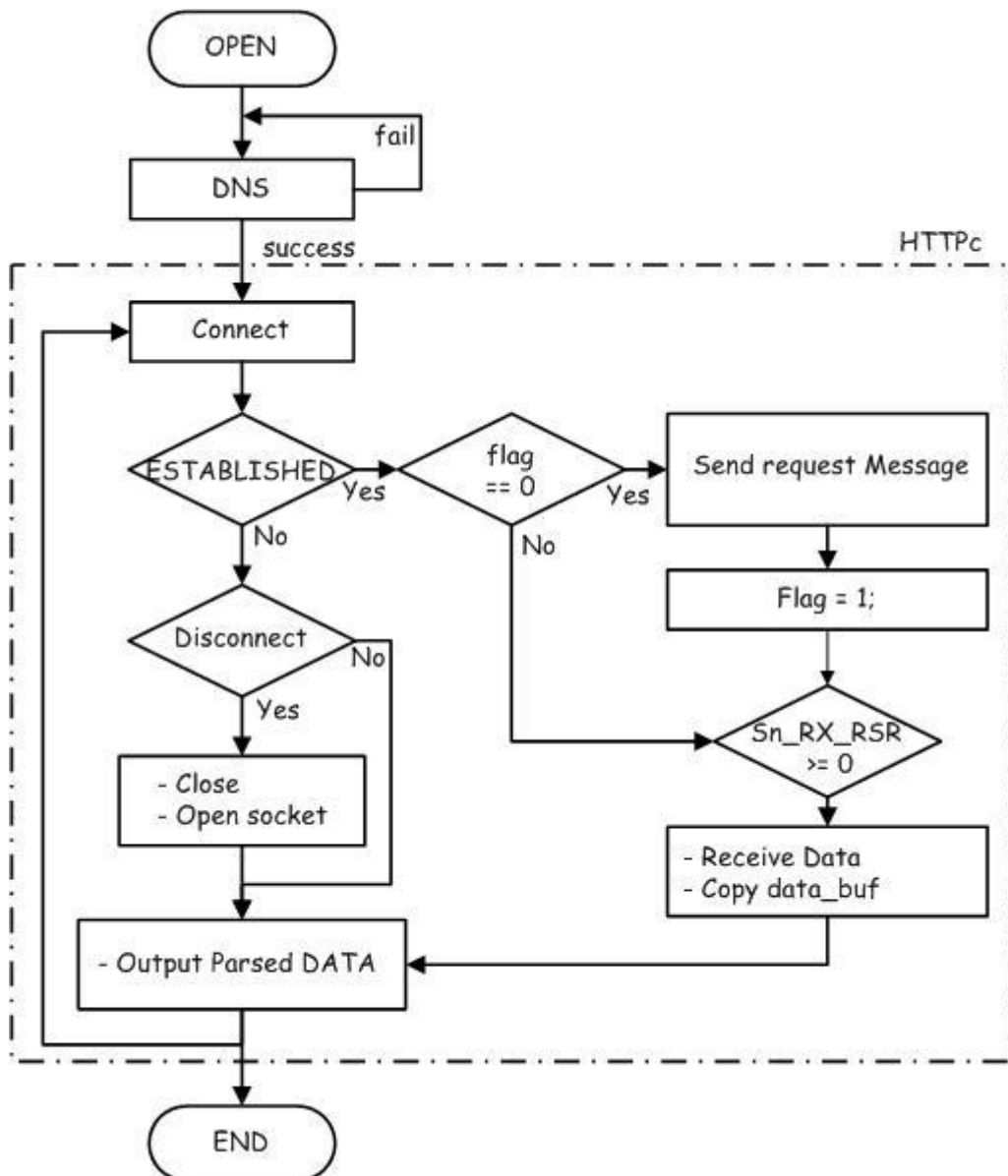

Fig. 4 Flow char of HTTPc

The code below shows the main.c of HTTPc. HTTPc parses URL as the URL Domain and URL path. When the DNS acquires the IP, HTTPc will open. HTTPc connects to the Server as shown in the flowchart above. The Request message is sent once more after the connection. The Server acts upon the request and sends data.

(Note)

A simple algorithm is used to parse the received data in this application. In order to parse the received data differently, the user must modify the parsed part.

```
main.c

/* Scanf URL */

  95:  /* Do DNS Client */
  96:  memset(HTTPs_IP,0,sizeof(HTTPs_IP));
  97:  done_dns = dns_query(s, url_dn, HTTPs_IP);

  99:  while( done_dns == 1 ){ // on success, done_dns is '1'
  100: /* ouput for LCD : DSN SERVER IP */
  101: evb_set_lcd_text(0,"DNS SERVER IP   ");
  102: sprintf(str,"%.3bu.%.3bu.%.3bu.%.3bu",
  103: HTTPs_IP[0], HTTPs_IP[1], HTTPs_IP[2], HTTPs_IP[3]);
  104: evb_set_lcd_text(1,str);

  106: /* Do HTTP Client */
  107: done_http = http_client(s, HTTPs_IP, url_path, data_buf);
  108: if(done_http) { // on success, done_dns is not   '0'

/* parsed Part */

/* print parsed data */
  }
```

Code main.c

Document History Information

Version	Date	Descriptions
Ver. 0.9ßeta	2009	Release with W7100 launching
Ver. 1.0	Mar, 2011	Modified for W7100A QFN 64pin package

Copyright Notice