CSC450 – Computer Networks WINTER 2019-20

Assignment #2 – HTTP over TCP **DUE DATE: 1/10/20**

In this assignment, you are to implement client-server communication over TCP transport-layer protocol using HTTP application layer protocol. You are to submit code for two programs: one for client side (e.g. TCPClient.py) and one for server side (e.g. TCPServer.py). Compressed folder containing two source files has to be submitted on Moodle.

Requirements for server side code:

1. Accepts and parses the HTTP GET request.
2. Gets the requested object from the server's file system*.
3. Creates an HTTP response message consisting of the requested object preceded by an appropriate response status line.
4. Sends the HTTP response directly to the client.
5. Send an HTTP "404 Not Found" response back to the client if the requested object is not present.

Requirements for client side code:

1. Connects to the server using a TCP connection.
2. Sends an HTTP GET request to the server.
3. Displays the server response as an output.
4. Takes command line arguments specifying the server IP address, the port at which the server is listening, and the name of the requested object.

   Sample command to run the client code: *python TCPClient.py server_ip server_port filename*

Sample outputs of client code:

```
at@at:~$ python TCPClient.py 192.168.1.12 12000 index.html
HTTP request to server:
GET /index.html HTTP/1.1
Host: 192.168.1.12

HTTP response from server:
HTTP/1.1 200 OK

<html>
<body>
<h1>CSC 450: Computer Networks</h1>
<p>Assignment #2</p>
</body>
</html>


at@at:~$ python TCPClient.py 192.168.1.12 12000 home.html
HTTP request to server:
GET /home.html HTTP/1.1
Host: 192.168.1.12

HTTP response from server:
HTTP/1.1 404 Not Found
```

Sample output of server code:

```
at@at:~$ python TCPServer.py
The server is ready to receive...

HTTP request:
GET /index.html HTTP/1.1
Host: 192.168.1.14

Object to be fetched: index.html
Object content:
<html>
<body>
<h1>CSC 450: Computer Networks</h1>
<p>Assignment #2</p>
</body>
</html>

HTTP response message:
HTTP/1.1 200 OK

<html>
<body>
<h1>CSC 450: Computer Networks</h1>
<p>Assignment #2</p>
</body>
</html>

HTTP request:
GET /home.html HTTP/1.1
Host: 192.168.1.12

Object to be fetched: home.html
HTTP response message:
HTTP/1.1 404 Not Found
```

*Put an HTML file (e.g. index.html) in the same directory with the server code. When the server code is running, you should be able to access the index.html file (in browser) through *server_ip:server_port/filename* (e.g. *192.169.25.33:11000/index.html*). "Gets the requested object from the server's file system" means opening and reading index.html file in server code (e.g. *f = open(filename)* … *f.read()*, where filename is "index.html").