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CS_372

01/19/26

Project 1 – Sockets and HTTP

This program was created by Adam Fitzpatrick, with the help of the CS 372 modules and referencing of the course book and the authors associated you tube videos.

- <https://www.youtube.com/@JimKurose>
- <https://canvas.oregonstate.edu/courses/2031497>
- Kurose and Ross, Computer Networking: A Top-Down Approach, 8th Edition, Pearson

All code was developed in the Pycharm IDE, python version 3.12.3. In order run each of these files, simply open them up in your IDE and start them. Another option would be to save the files locally and run them in the terminal, by navigating to that directory and using python3 filename.py for Linux or python filename.py in windows.

client.py:

A simple client socket, which creates a TCP socket and connects it gaia.cs.umass.edu using PORT 80. It then sends the sever a GET request and displays the response by reading and decoding up to 1024 bytes of data. This program also displays socket information such as the details of the sent request and the length of bytes received.

```
lient.py

eates a simple client socket and retrieves data via a GET Request.

l Code was generated by adam@Fitz-Cinnamon:~/Documents/School/CS_372/Project1
r class book "Networkin
    adam@Fitz-Cinnamon:~$ cd ~/Documents
    adam@Fitz-Cinnamon:~/Documents$ cd School
    bash: cd: School: No such file or directory
    adam@Fitz-Cinnamon:~/Documents$ cd CS_372
    adam@Fitz-Cinnamon:~/Documents/School/CS_372$ cd Project1
    adam@Fitz-Cinnamon:~/Documents/School/CS_372/Project1$ python3 client.py

        Request: GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
        Host:gaia.cs.umass.edu

ntSocket = socket(AF_INET, SOCK_STREAM)
ntSocket.connect((serverName, serverPort))

        Length-Recieved: 385
est = "GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1 200 OK
        Date: Mon, 19 Jan 2026 19:46:38 GMT
        Server: Apache/2.4.62 (AlmaLinux) OpenSSL/3.5.1 mod_fcgid/2.3.9 mod_perl/2.0.12 Perl/v5.32.1
        Last-Modified: Tue, 28 Oct 2025 05:59:01 GMT
        ETag: "51-64231b6715777"
        Accept-Ranges: bytes
        Content-Length: 81
        Content-Type: text/html; charset=UTF-8

ints socket details and prints socket details and
t(f"\nRequest: {request}\n")
t(f"Length-Recieved: {Length-Recieved}\n")
t(contentReceived.decode("utf-8"))
        Congratulations! You've downloaded the first Wireshark lab file!
        </html>

ntSocket.close()
```

client_large.py:

This program/socket functions just like the simple client.py socket, with the exception being; after the GET request is sent the reading and printing of the response is inside of a while loop. This allows the socket to read (4096) bytes of data at a time, until the server closes the connection, in which bytes read will be equal to zero.

```

from socket import *
serverName = 'gaia.cs.umass.edu'
serverPort = 80
clientSocket = socket(AF_INET, SOCK_STREAM)
clientSocket.connect((serverName, serverPort))
print(clientSocket.recv(4096).decode())
clientSocket.close()

```

adam@Fitz-Cinnamon:~/Documents/School/CS_372/Project1\$ python3 client_large.py

```

<html>
    Congratulations! You've downloaded the first Wireshark lab file!
</html>

request = "GET /wireshark-labs/HTTP-wireshark-file3.html HTTP/1.1
Host:gaia.cs.umass.edu

print(f"\nRequest: {request}\n")
print(f"Length-Received: 4096
HTTP/1.1 200 OK
Date: Mon, 19 Jan 2026 19:53:50 GMT
Server: Apache/2.4.62 (AlmaLinux) OpenSSL/3.5.1 mod_fcgid/2.3.9 mod_perl/2.0.12 Perl/v5.32.1
Last-Modified: Tue, 28 Oct 2025 05:59:01 GMT
ETag: "1194-64231b6713c1f"
Content-Type: text/html; charset=UTF-8
Content-Length: 4500
Accept-Ranges: bytes
Content-Type: text/html; charset=UTF-8

if len(content) > 4096:
    break
<html><head>
<title>Historical Documents:THE BILL OF RIGHTS</title></head>
<body bgcolor="#ffffff" link="#330000" vlink="#666633">
<br><br>
<p></p><center><b>THE BILL OF RIGHTS</b><br>
<em>Amendments 1-10 of the Constitution</em>
</center>

<p>The Conventions of a number of the States having, at the time of adopting
the Constitution, expressed a desire, in order to prevent misconstruction
or abuse of its powers, that further declaratory and restrictive clauses
should be added, and as extending the ground of public confidence in the
Government will best insure the beneficent ends of its institution; </p><p> Resolved, by the Senate and House o
f Representatives of the United
States of America, in Congress assembled, two-thirds of both Houses concurring,
that the following articles be proposed to the Legislatures of the several

```

5.9 mod_perl/2.0.12 Perl/v5.32.1

```

from socket import *
serverName = 'gaia.cs.umass.edu'
serverPort = 80
clientSocket = socket(AF_INET, SOCK_STREAM)
clientSocket.connect((serverName, serverPort))
print(clientSocket.recv(4096).decode())
clientSocket.close()

```

adam@Fitz-Cinnamon:~/Documents/School/CS_372/Project1\$

```

</p><p><a name="6"><strong><h3>Amendment VI</h3></strong></a>
<strong>In all criminal prosecutions, the accused shall enjoy the right
to a speedy and public trial, by an impartial jury of the state
and district wherein the crime shall have been committed, which
district shall have been previously ascertained by law, and
shall be informed of the nature and cause of the accusation;
to be confronted with the witnesses against him; to have
compulsory process for obtaining witnesses in his favor,
and to have the assistance of counsel for his defense.
</p><p><a name="7"><strong><h3>Amendment VII</h3></strong></a>
<strong>In suits at common law, where the value in controversy shall
exceed twenty dollars, the right of trial by jury shall be
preserved, and no fact tried by a jury, shall be otherwise
reexamined in any court of the U
Length-Received: 712
if len(content) > 712:
    break
<strong>ited States, than according
to the rules of the common law.
</p><p><a name="8"><strong><h3>Amendment VIII</h3></strong></a>
<strong>Excessive bail shall not be required, nor excessive fines
imposed, nor cruel and unusual punishments inflicted.
</p><p><a name="9"><strong><h3>Amendment IX</h3></strong></a>
<strong>The enumeration in the Constitution, of certain rights, shall
not be construed to deny or disparage others retained by the people.
</p><p><a name="10"><strong><h3>Amendment X</h3></strong></a>
<strong>The powers not delegated to the United States by the Constitution, nor prohibited
by it to the states, are reserved to the states respectively, or to the people.</p>
</body></html>

```

adam@Fitz-Cinnamon:~/Documents/School/CS_372/Project1\$

9 mod_perl/2.0.12 Perl/v5.32.1

server.py:

A simple program to create a server. It functions by creating two sockets, the first listens for client connection requests and the second is created upon the accepting of the client connection request. This second socket then reads up to 1024 bytes of the client request and sends back data (which is predefined).

To fully run this program first start `server.py` script, then in your web browser, navigate to <http://localhost:5005/> to view the sent response. Upon navigating to the local host, your terminal will then display the connection information and the sent response as well.

