

Project - 1

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Browser Used: Google Chrome

How to run

> Make all

> ./http-server PortNumber

List of Implemented Options:

1. Concurrent HTTP server.
 2. GET Method (For files and directories).
 3. Request Parser (Parsing only GET method for others like POST, HEAD returns, Method not implemented)
 4. Response contains Content-Length and Content-Type.
 5. Persistent Connections.
 6. Ability to break connection, depending on the request sent by the client.
 7. All mentioned Status Code and corresponding response phrases.
 8. Additional Server Requirements:
 - i. Concurrent service requests from multiple clients.
 - ii. "<http://hostname/path/dir>" returns hyperlinked directory listing of the requested resource.
 - iii. "<http://hostname/path/dir>" returns "index.html" if dir is a directory else returns the contents of the file.
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Optional Features

Server Port Initialization

1. "Server.cpp" takes port number as argument via a command line argument.
2. Included "dirent.h" to read all the files/directories present in a given directory

Reply with a hyperlinked directory listing if a directory is the requested resource

1. If a directory is requested with the format "http://hostname/path/dir" returns the hyperlinked directory listing.
2. If a directory is requested with the format "http://hostname/path/dir/" returns "index.html" of the directory if not present FILE NOT FOUND is returned.
3. Included "dirent.h" to read all the files/directories present in a given directory.

Testing Results

1. Get request for "index.html" (given test case file)
2. Returning default file "index.html" for requested directory'

The screenshot shows a Google Chrome browser window with the address bar at `127.0.0.1:5000/webfiles/`. The page content includes the Virginia Tech logo, "ECE 4564 Network Application Design", and "Project 2 Test File". Below this are links for [Introduction], [Files], [Functionality], [Performance], and [Images]. The "Introduction" section states: "This page and the set of associated files are designed to test your Project 2 HTTP server. Use your browser's options to try and force both HTTP/1.1 and HTTP/1.0 behavior." The "Test Files" section lists a directory structure: `base_directory` containing `images` with files `thm01.gif` through `thm06.gif` and `neb01.jpg` through `neb06.jpg`.

The developer console on the right shows the following log:

```
Header Sent
Body Sent
GET /webfiles/images/badfile.gif HTTP/1.1
Host: 127.0.0.1:5000
Connection: keep-alive
User-Agent: Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/52.0.2743.116 Safari/537.36
Accept: image/webp,image/*,*/*;q=0.8
Referer: http://127.0.0.1:5000/webfiles/
Accept-Encoding: gzip, deflate, sdch
Accept-Language: en-US,en;q=0.8

Parsing
GET ** webfiles/images/badfile.gif
Host == 127.0.0.1:5000
Connection == keep-alive
User-Agent == Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/52.0.2743.116 Safari/537.36
Accept == image/webp,image/*,*/*;q=0.8
Referer == http://127.0.0.1:5000/webfiles/
Accept-Encoding == gzip, deflate, sdch
Accept-Language == en-US,en;q=0.8
Sending Response...

Requested File: (webfiles/images/badfile.gif)
File Not Found
Header Added
HTTP/1.1 404 Not Found
Content-Type: text/html
Content-Length: 81
Connection: keep-alive

HTTP/1.1 404 Not Found
Content-Type: text/html
Content-Length: 81
Connection: keep-alive

Header Sent
```

The screenshot shows a Google Chrome browser window with the address bar at `127.0.0.1:4000/webfiles/`. The page content includes the Virginia Tech logo, "New Engineering Building Construction Scenes", and a grid of 16 images. The first 15 images are successfully loaded, but the 16th image, `neb002.jpg`, is not found.

The developer console on the right shows the following log:

```
Header Added
Host == 127.0.0.1:4000
Connection == keep-alive
HTTP/1.1 200 OK
Content-Type: image/jpeg
Content-Length: 89436
Connection: keep-alive

User-Agent == Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/52.0.2743.116 Safari/537.36

HTTP/1.1 200 OK
Content-Type: image/jpeg
Content-Length: 89436
Connection: keep-alive

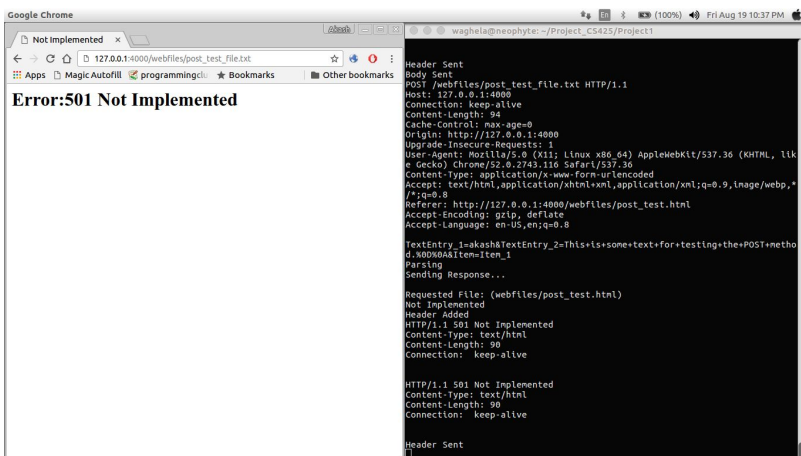
Accept == image/webp,image/*,*/*;q=0.8
Referer == http://127.0.0.1:4000/webfiles/
Accept-Encoding == gzip, deflate, sdch
Accept-Language == en-US,en;q=0.8
Sending Response...
Header Sent

Requested File: (webfiles/images/badfile.gif)
File Not Found
Header Added
HTTP/1.1 404 Not Found
Content-Type: text/html
Content-Length: 81
Connection: keep-alive

HTTP/1.1 404 Not Found
Content-Type: text/html
Content-Length: 81
Connection: keep-alive

Header Sent
Body Sent
```

3. Status Codes



The screenshot shows a Google Chrome browser window with the address bar at `127.0.0.1:4000/webfiles/post_test_file.txt`. The page content is "Error:501 Not Implemented". The developer tools console shows the following details:

```
Header Sent
Body Sent
POST /webfiles/post_test_file.txt HTTP/1.1
Host: 127.0.0.1:4000
Connection: keep-alive
Content-Length: 94
Cache-Control: max-age=0
Origin: http://127.0.0.1:4000
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/52.0.2743.116 Safari/537.36
Content-Type: application/x-www-form-urlencoded
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Referer: http://127.0.0.1:4000/webfiles/post_test.html
Accept-Encoding: gzip, deflate
Accept-Language: en-US,en;q=0.8

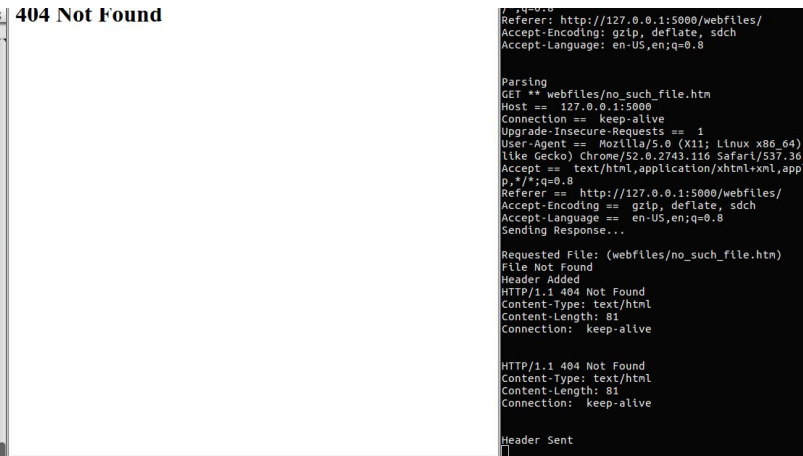
TextEntry_1=akash&TextEntry_2=This+is+some+text+for+testing+the+POST+method
Parsing...
Sending Response...

Requested File: (webfiles/post_test.html)
Not Implemented
Header Added
HTTP/1.1 501 Not Implemented
Content-Type: text/html
Content-Length: 90
Connection: keep-alive

HTTP/1.1 501 Not Implemented
Content-Type: text/html
Content-Length: 90
Connection: keep-alive

Header Sent
```

404 Not Found



The screenshot shows the developer tools console with the following details:

```
Referer: http://127.0.0.1:5000/webfiles/
Accept-Encoding: gzip, deflate, sdch
Accept-Language: en-US,en;q=0.8

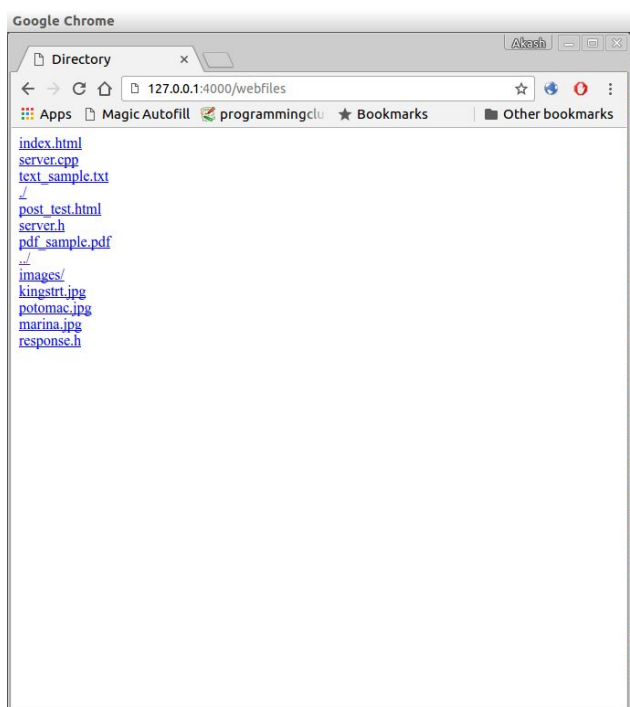
Parsing
GET ** webfiles/no_such_file.htm
Host == 127.0.0.1:5000
Connection == keep-alive
Upgrade-Insecure-Requests == 1
User-Agent == Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/52.0.2743.116 Safari/537.36
Accept == text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Referer == http://127.0.0.1:5000/webfiles/
Accept-Encoding == gzip, deflate, sdch
Accept-Language == en-US,en;q=0.8
Sending Response...

Requested File: (webfiles/no_such_file.htm)
File Not Found
Header Added
HTTP/1.1 404 Not Found
Content-Type: text/html
Content-Length: 81
Connection: keep-alive

HTTP/1.1 404 Not Found
Content-Type: text/html
Content-Length: 81
Connection: keep-alive

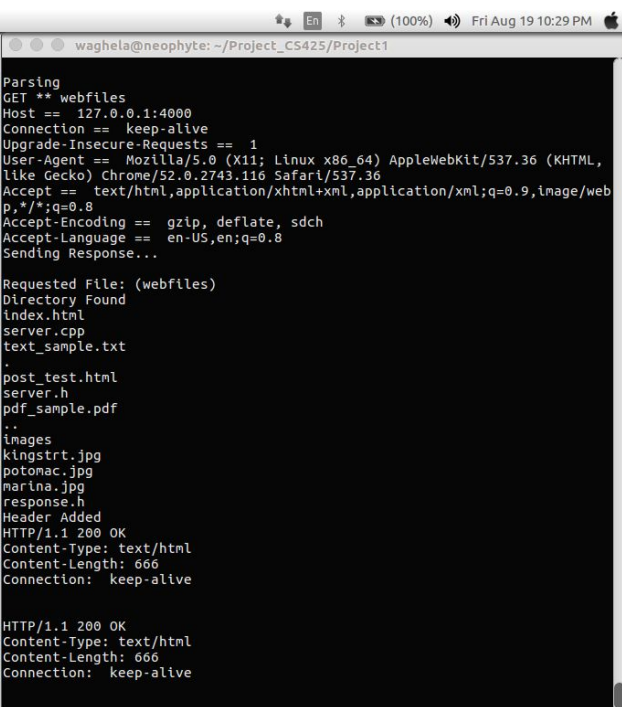
Header Sent
```

4. Directory Listing



The screenshot shows a Google Chrome browser window with the address bar at `127.0.0.1:4000/webfiles`. The page content is a directory listing:

- [index.html](#)
- [server.cpp](#)
- [text_sample.txt](#)
- [post_test.html](#)
- [server.h](#)
- [pdf_sample.pdf](#)
- [images/](#)
 - [kingstrt.jpg](#)
 - [potomac.jpg](#)
 - [marina.jpg](#)
 - [response.h](#)



The screenshot shows the developer tools console with the following details:

```
Parsing
GET ** webfiles
Host == 127.0.0.1:4000
Connection == keep-alive
Upgrade-Insecure-Requests == 1
User-Agent == Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/52.0.2743.116 Safari/537.36
Accept == text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Encoding == gzip, deflate, sdch
Accept-Language == en-US,en;q=0.8
Sending Response...

Requested File: (webfiles)
Directory Found
index.html
server.cpp
text_sample.txt
.
post_test.html
server.h
pdf_sample.pdf
..
images
kingstrt.jpg
potomac.jpg
marina.jpg
response.h
Header Added
HTTP/1.1 200 OK
Content-Type: text/html
Content-Length: 666
Connection: keep-alive

HTTP/1.1 200 OK
Content-Type: text/html
Content-Length: 666
Connection: keep-alive
```