

2322 Project Report

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I . General introduction

This program implements multi-threaded HTTP server in Python that handles GET and HEAD requests with support for keep-alive connections and conditional requests (If-Modified-Since). The server follows basic HTTP/1.1 protocol standards and includes proper error handling.

II. Key features and Design

1. **Multi-threaded Architecture:**

- Creates a new thread for each client connection
- Maintains a list of active connections
- Handles concurrent requests efficiently

2. **HTTP Method Support:**

- Fully implements GET and HEAD methods
- Returns appropriate status codes (200, 304, 400, 404)
- Handles conditional requests with If-Modified-Since header

3. **Connection Management:**

- Supports both keep-alive and close connection modes
- Implements timeout for keep-alive connections (10 seconds)
- Properly cleans up resources on shutdown

4. **Content Handling:**

- Serves both text (HTML) and binary (images) content
- Automatically detects content type from file extensions
- Includes proper Content-Length and Last-Modified headers

5. Logging:

- Maintains a server log (server_log.txt) with timestamped records
- Logs client address, requested file, and response status

III. Execution and Screen Capture

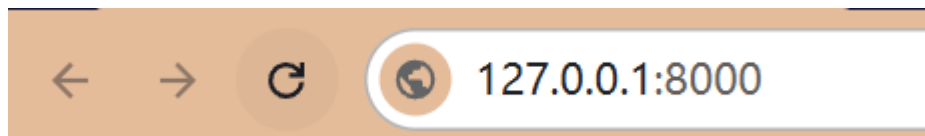
1. Start listening to ports

```
C:\Users\LEGION\PycharmProjects\COMP2322Project>python webserver.py
```

The HTTP server is now running on port 8000

After executing the program, you can see that our server is running on the port 8000.

2. Entering the link in the browser



After entering this, you can see the index.html page, which is the default page.

Index.html page

```
2025-04-27 23:09:27.415363: client('127.0.0.1', 49584) requested file /test.html with response 200 OK
```

The record now is generated by the program, into the log file.

3. Testing not exist (404) case:

Entering <http://127.0.0.1:8000/not-exist.html>

You can see the server gives msg:



```
Server response:

HTTP/1.1 404 Not Found
Content-Length : 0
Content-Type: text/plain

2025-04-28 12:36:05.013010: client('127.0.0.1', 61548) requested file /not-exist.html with response 404 Not Found
```

(This is what in the log file)

4. Testing other cases

Let's now enter other cases by entering

<http://127.0.0.1:8000/index2.html> in the browser. You will see a page like this.

To test **Request command**

- 1. Click link below to test **GET** request on **text and image file**:
[test.html](#)
- 2. Click button below to test **HEAD** request and show received header fields:

response message:

To test **Response messages**

- 3. Click button below to test **400 Bad Request** response:

response message:

- 4. Click button below to test **304 Not Modified** response:

response message:

After clicking the buttons, you can see their status code and msg.

To test **Request command**

- 1. Click link below to test **GET** request on **text and image file**:
[test.html](#)
- 2. Click button below to test **HEAD** request and show received header fields:

`http://127.0.0.1:8000/test.html [HEAD]`

response message: **Status: 200 OK; Type: text/html; Length: 654**

To test **Response messages**

- 3. Click button below to test **400 Bad Request** response:

`http://127.0.0.1:8000 [DELETE]`

response message: **Status:400 Bad Request**

- 4. Click button below to test **304 Not Modified** response:

`http://127.0.0.1:8000/test.html [GET]`

response message: **Status: 304 Not Modified**