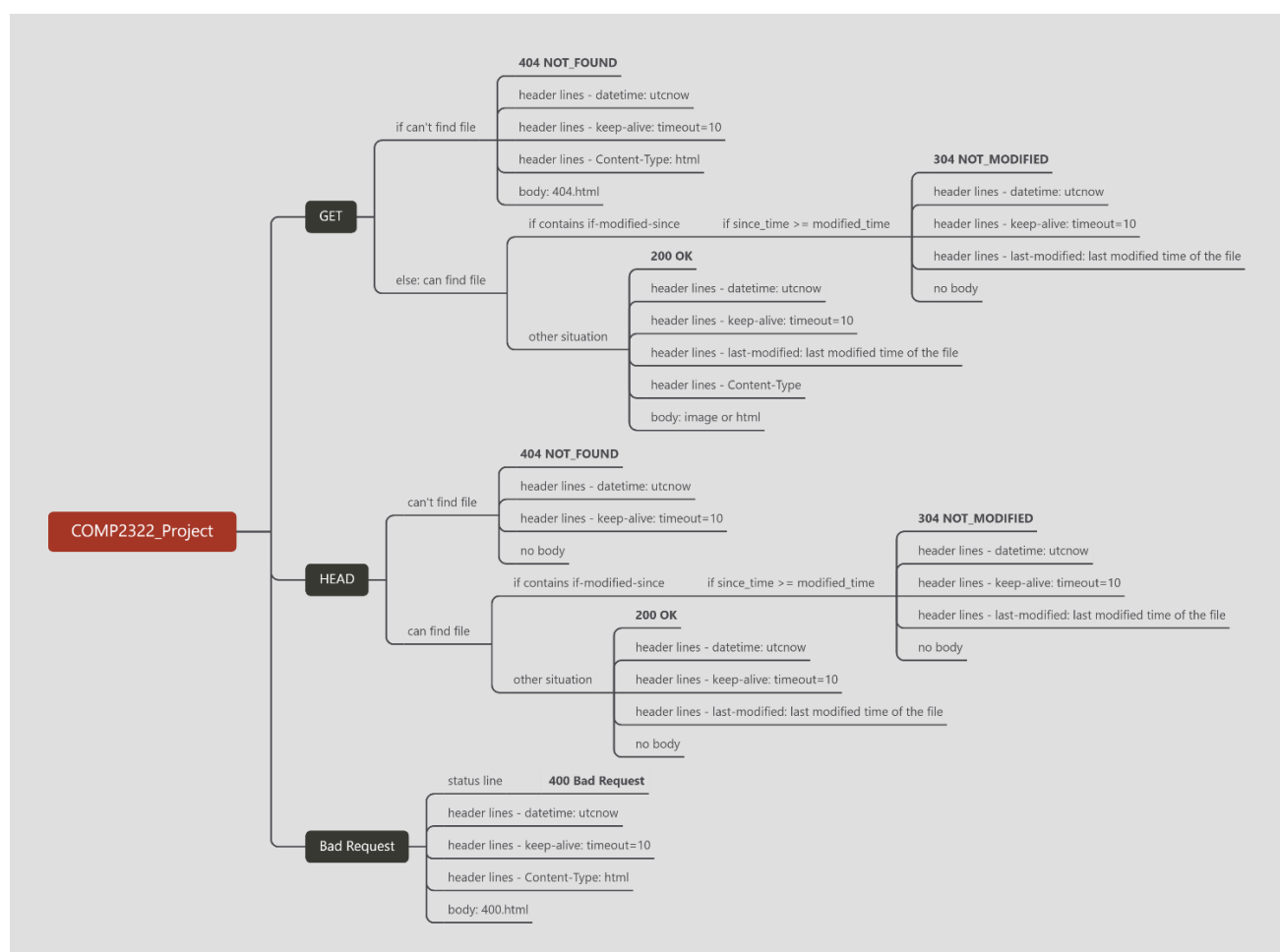


COMP2322 Computer Networking
Project Report: Multi-thread Web Server
ZHOU Siyu (21094655D)

Summary of Design & Implementation

1. Set the IP address, port number, and buffer size for receiving data.
2. Create dictionaries to map response status codes to response types and map file extensions to MIME types.
3. Create socket object and bind to specific IP address and port number, then listening incoming connections
4. Create loop to handle multiple client connections.
5. Parse the request into different parts.
6. Then follow the cases of HTTP response in the below image to deal with the responses.
7. If the method is GET, the file path is extracted from the path and necessary headers are added to the response.
8. If the requested file exists, the file is opened in 'rb' mode and sent to the client using the sendfile() method of the socket object. If the requested file is not found, a 404-error message is sent.
9. If the method is HEAD, the headers are added to the response, but the file content is not sent.
10. If the requested resource has not been modified since the last request, a 304 Not Modified response is sent.

The following image shows different cases of HTTP responses implemented in the code.



Demonstration of executing program

200 OK

```
PS D:\Desktop\COMP2322_Project> python -u "d:\Desktop\COMP2322_Project\server.py"
Socket is bind to 8888
Serving on http://127.0.0.1:8888
Server socket: ('127.0.0.1', 8888)
Client socket: ('127.0.0.1', 63654)
HTTP/1.1 200 OK
datetime:2023-04-18 09:17:56.607048+00:00
keep-alive:timeout=10
last_modified: 2023-04-18 08:50:31
Content-Type: text/html
```

127.0.0.1:8888

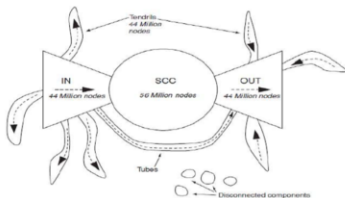
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304 Not Modified

```
PS D:\Desktop\COMP2322_Project> python -u "d:\Desktop\COMP2322_Project\server.py"
Socket is bind to 8888
Serving on http://127.0.0.1:8888
Server socket: ('127.0.0.1', 8888)
Client socket: ('127.0.0.1', 63725)
HTTP/1.1 304 Not Modified
datetime:2023-04-18 09:20:42.856995+00:00
keep-alive:timeout=10
last_modified: 2023-04-18 08:50:31
Content-Type: text/html
```

127.0.0.1:8888

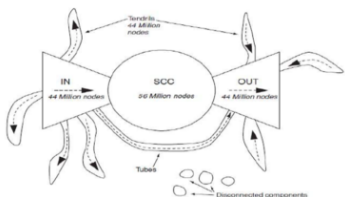
Gmail doc 迅雷下载 Weava essay PolyU tools songs translator 漫画 比赛 Live in HK 瀑布 programming 瀑布网络文档合集 瀑布网络 2019 年...

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400 Bad Request

```
PS D:\Desktop\COMP2322_Project> python -u "d:\Desktop\COMP2322_Project\server.py"
Socket is bind to 8888
Serving on http://127.0.0.1:8888
Server socket: ('127.0.0.1', 8888)
Client socket: ('127.0.0.1', 63603)
HTTP/1.1 400 Bad Request
datetime:2023-04-18 09:15:06.265846+00:00
keep-alive:timeout=10
Content-Type: text/html
```



400 Bad Request.

There may exist malformed request syntax, invalid request message framing, or deceptive request routing.

404 File Not Found

```
PS D:\Desktop\COMP2322_Project> python -u "d:\Desktop\COMP2322_Project\server.py"
Socket is bind to 8888
Serving on http://127.0.0.1:8888
Server socket: ('127.0.0.1', 8888)
Client socket: ('127.0.0.1', 63132)
HTTP/1.1 404 File Not Found
```



404 File Not Found.

The requested URL was not found on this server.

Logfile records of historical information

log.txt					
	Client IP	Access Time	File Name	Response	
1	127.0.0.1	Tue, 18 Apr 2023 08:32:14 GMT	index.html	200	
2	127.0.0.1	Tue, 18 Apr 2023 08:40:18 GMT	index.html	200	
3	127.0.0.1	Tue, 18 Apr 2023 08:42:23 GMT	index.html	200	
4	127.0.0.1	Tue, 18 Apr 2023 08:43:18 GMT	index.html	200	
5	127.0.0.1	Tue, 18 Apr 2023 08:47:06 GMT	404.html	404	
6	127.0.0.1	Tue, 18 Apr 2023 08:49:38 GMT	404.html	404	
7	127.0.0.1	Tue, 18 Apr 2023 08:53:17 GMT	404.html	404	
8	127.0.0.1	Tue, 18 Apr 2023 08:54:55 GMT	404.html	404	
9	127.0.0.1	Tue, 18 Apr 2023 09:14:06 GMT	400.html	400	
10	127.0.0.1	Tue, 18 Apr 2023 09:16:40 GMT	index.html	200	
11	127.0.0.1	Tue, 18 Apr 2023 09:17:56 GMT	index.html	200	
12	127.0.0.1	Tue, 18 Apr 2023 09:17:56 GMT	index.html	200	
13	127.0.0.1	Tue, 18 Apr 2023 09:17:56 GMT	index.html	200	
14					