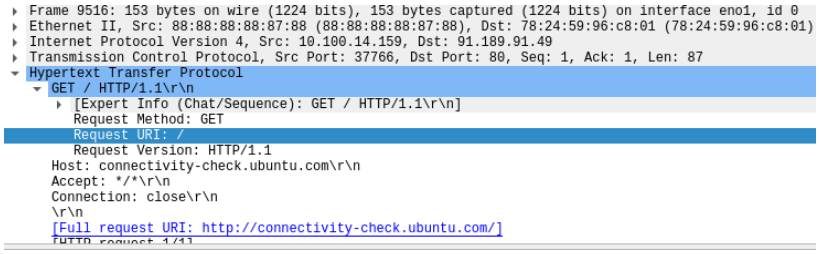
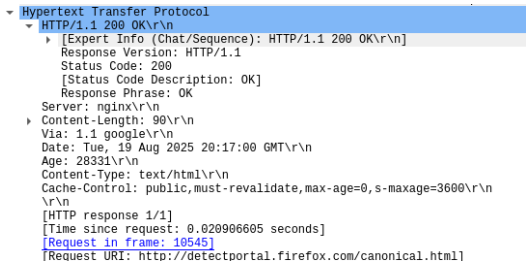
1)

1.



These packets typically have the method (GET, POST, etc.) . The source ip of the above request is also same as the computer. GET / HTTP/1.1 shows that it is a GET request from my computer to the server



These packets contain an HTTP status code and the server's response headers. A response from the server has 200 OK status code. Also the destination IP is that of my computer

2.

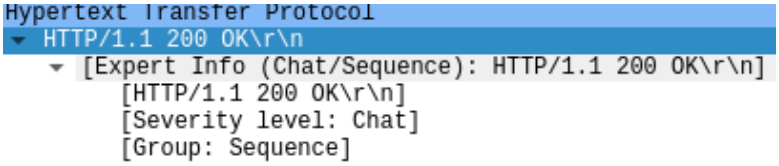
Ipv6 of computer - 2400:4f20:0:200:4522:d5ca:c6b4:980f

Ipv4 of computer - 10.100.14.159

IP of server - 2600:1901:0:38d7::

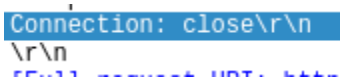
3.

200 OK



4.

Connection close - which means that the connection needs to be closed after sending the response



5.

Yes, there is an ETAG header for responses which return cached resources. This is a mechanism used by HTTP to cache resources. It is a unique identifier assigned by the server to a specific version of a resource. If the resource changes, so does the ETag.

```
ETag: "5b26428c-1a81"\r\n
Expires: Thu, 31 Dec 2037 23:55:55 GMT\r\n
```

6.

Yes, there is a cache control header for some responses. It controls caching behavior between the client and the server. The max age indicates that the resource can be cached by the client or any intermediate cache (like a CDN) for the 'max age' duration. After that, the resource will be considered stale, and the client must request it again from the server.

```
Connection: keep-alive\r\n
ETag: "5b26428c-1a81"\r\n
Expires: Thu, 31 Dec 2037 23:55:55 GMT\r\n
Cache-Control: max-age=315360000\r\n
```

2)

Yes, the referer header is present in some requests.

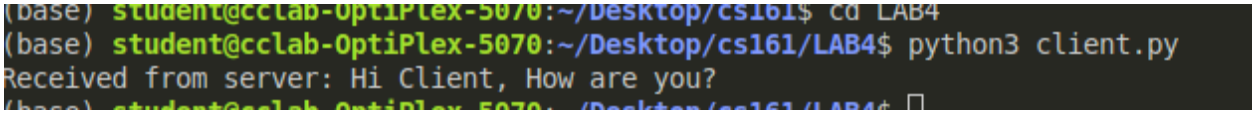
The Referer header is used to indicate the URL of the previous webpage from which the request originated. This is useful for the server to understand the context of the request. It can be used for:

- Analytics: To track how users are navigating between pages.
- Security: To ensure requests are coming from valid or expected sources.
- Customization: For displaying personalized content based on where the request originated.

```
Connection: keep-alive\r\n
Referer: http://cse.nitk.ac.in/\r\n
Cookie: _ga_FNBH7GK3Z7=GS2.1.s17556617
```

3)

```
(base) student@cclab-OptiPlex-5070:~/Desktop/cs161$ cd LAB4
(base) student@cclab-OptiPlex-5070:~/Desktop/cs161/LAB4$ python3 server.py
Server is listening on 127.0.0.1 : 65432
Connected to ('127.0.0.1', 48348)
Received from client: Hello Server
(base) student@cclab-OptiPlex-5070:~/Desktop/cs161/LAB4$
```


(base) student@cclab-OptiPlex-5070:~/Desktop/cs161$ cd LAB4
(base) student@cclab-OptiPlex-5070:~/Desktop/cs161/LAB4$ python3 client.py
Received from server: Hi Client, How are you?