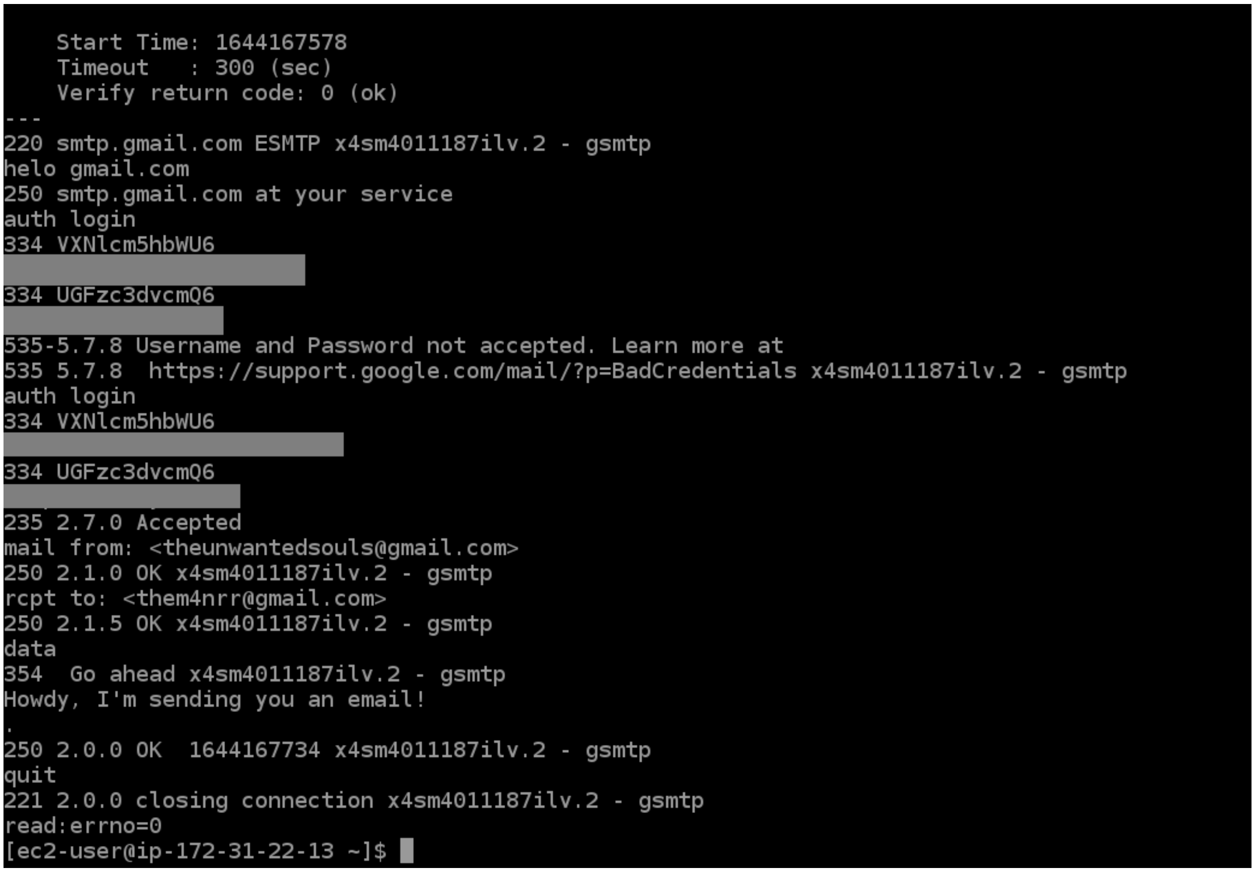
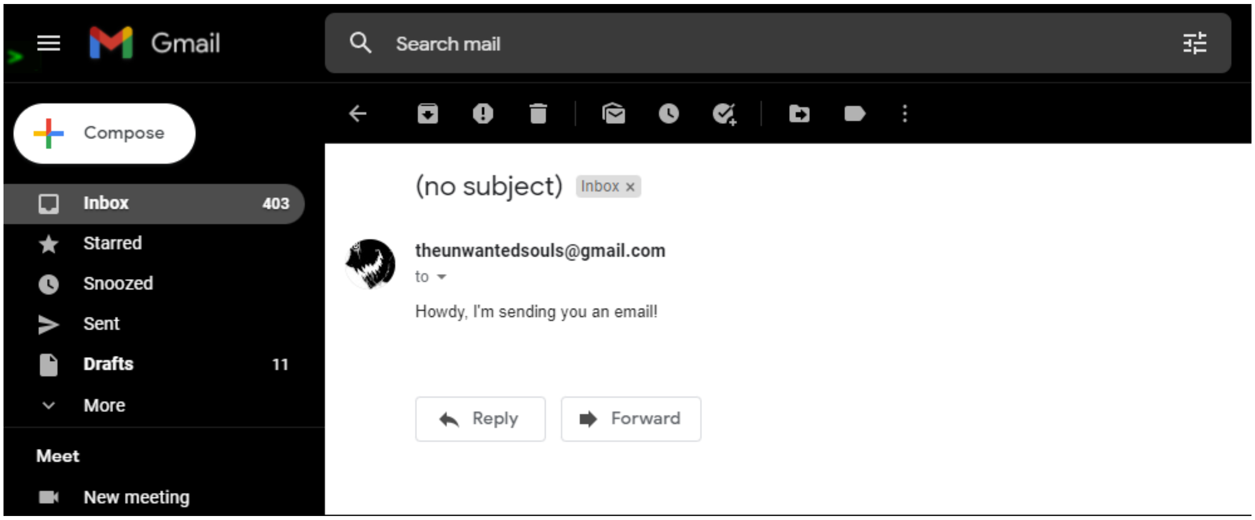
Task 1



```
    Start Time: 1644167578
    Timeout   : 300 (sec)
    Verify return code: 0 (ok)
---
220 smtp.gmail.com ESMTP x4sm4011187ilv.2 - gsmtp
helo gmail.com
250 smtp.gmail.com at your service
auth login
334 VXNlcm5hbWU6
[redacted]
334 UGFzc3dvcmQ6
[redacted]
535-5.7.8 Username and Password not accepted. Learn more at
535 5.7.8  https://support.google.com/mail/?p=BadCredentials x4sm4011187ilv.2 - gsmtp
auth login
334 VXNlcm5hbWU6
[redacted]
334 UGFzc3dvcmQ6
[redacted]
235 2.7.0 Accepted
mail from: <theunwantedsouls@gmail.com>
250 2.1.0 OK x4sm4011187ilv.2 - gsmtp
rcpt to: <them4nrr@gmail.com>
250 2.1.5 OK x4sm4011187ilv.2 - gsmtp
data
354  Go ahead x4sm4011187ilv.2 - gsmtp
Howdy, I'm sending you an email!
.
250 2.0.0 OK  1644167734 x4sm4011187ilv.2 - gsmtp
quit
221 2.0.0 closing connection x4sm4011187ilv.2 - gsmtp
read:errno=0
[ec2-user@ip-172-31-22-13 ~]$ 
```



(no subject)

theunwantedsouls@gmail.com

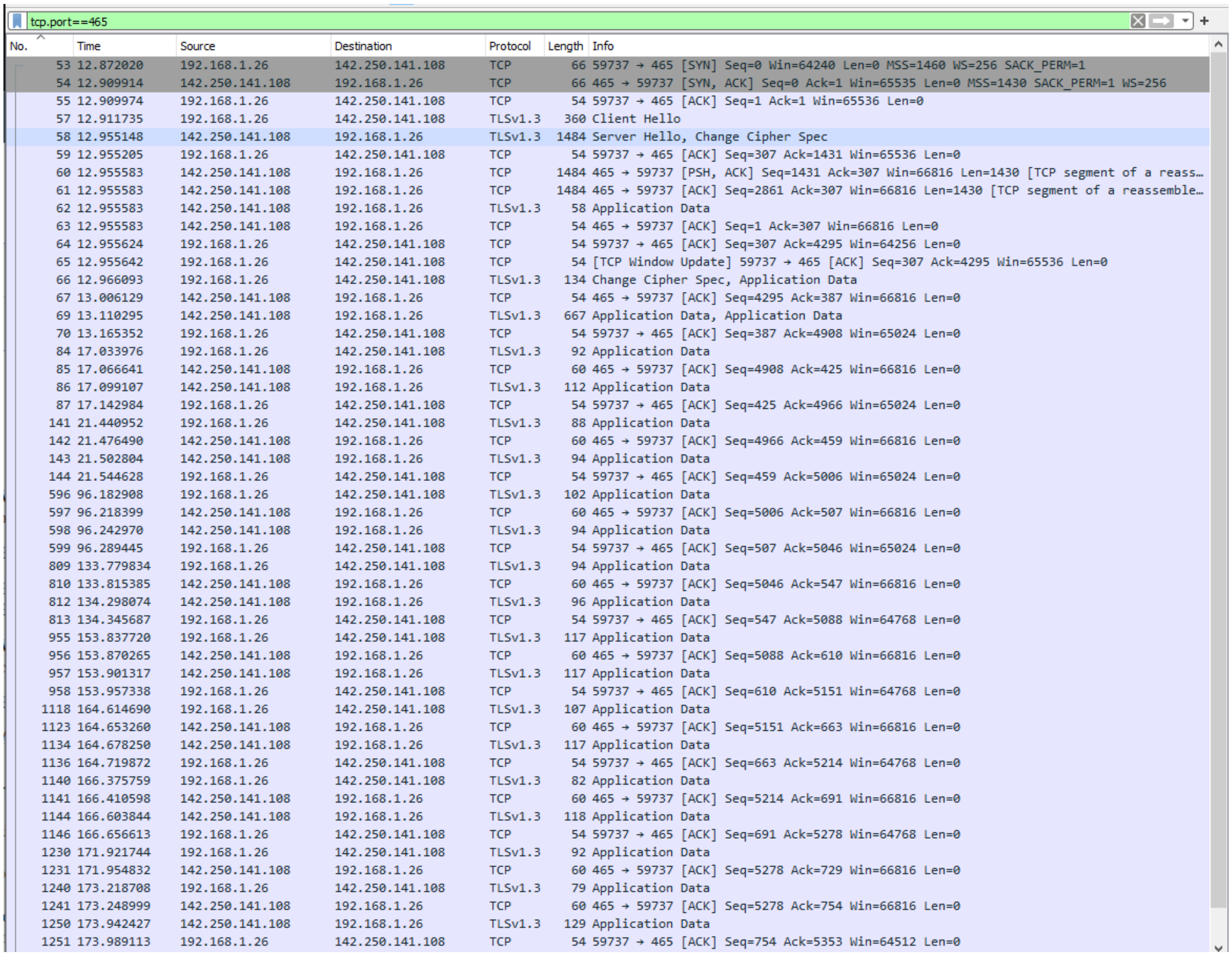
to

Howdy, I'm sending you an email!

1. The filter I used was tcp.port==465. I assumed it was port 465 since that number was used when starting the connection then I just tried tcp and the connection was there.
2. The standard port is 25 but 465 is often used for encrypted SMTP
3. The helo gmail.com starts the connection with the server saying you're ready to send your mail and letting it know you're about to do something. Then the login makes sure you're using your own email account. Without that I could send mail from anyone's account. Then mail from:

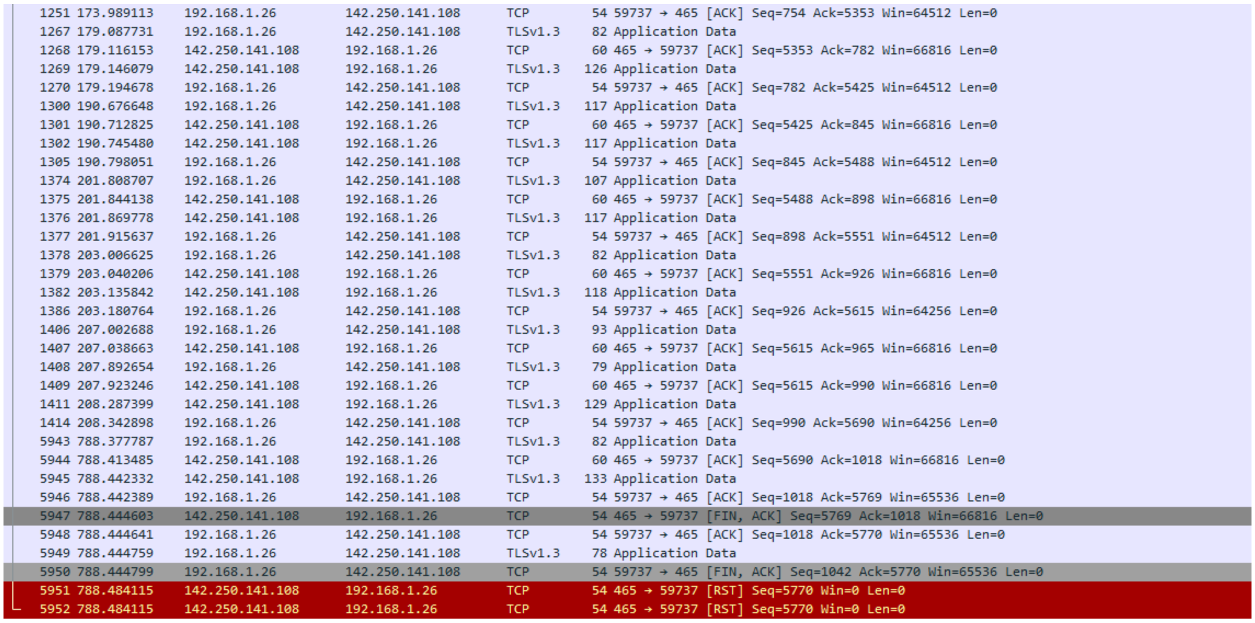
specifies what account you're wanting to send from. Rcpt to: is who you want to send mail to. Anything entered after the 'data' command will be what is sent in the email.

4. I see three packets sent before I say 'helo gmail.com'
5. My computer is using port 59737
6. Gmail.com sends the first FIN flag. The quitting process appears to be me saying 'ok goodbye' then gmail.com saying 'ok we're finished here' and I say 'ok sounds good' then gmail sends a couple messages saying that we can't speak anymore.
7.



tcp.port==465

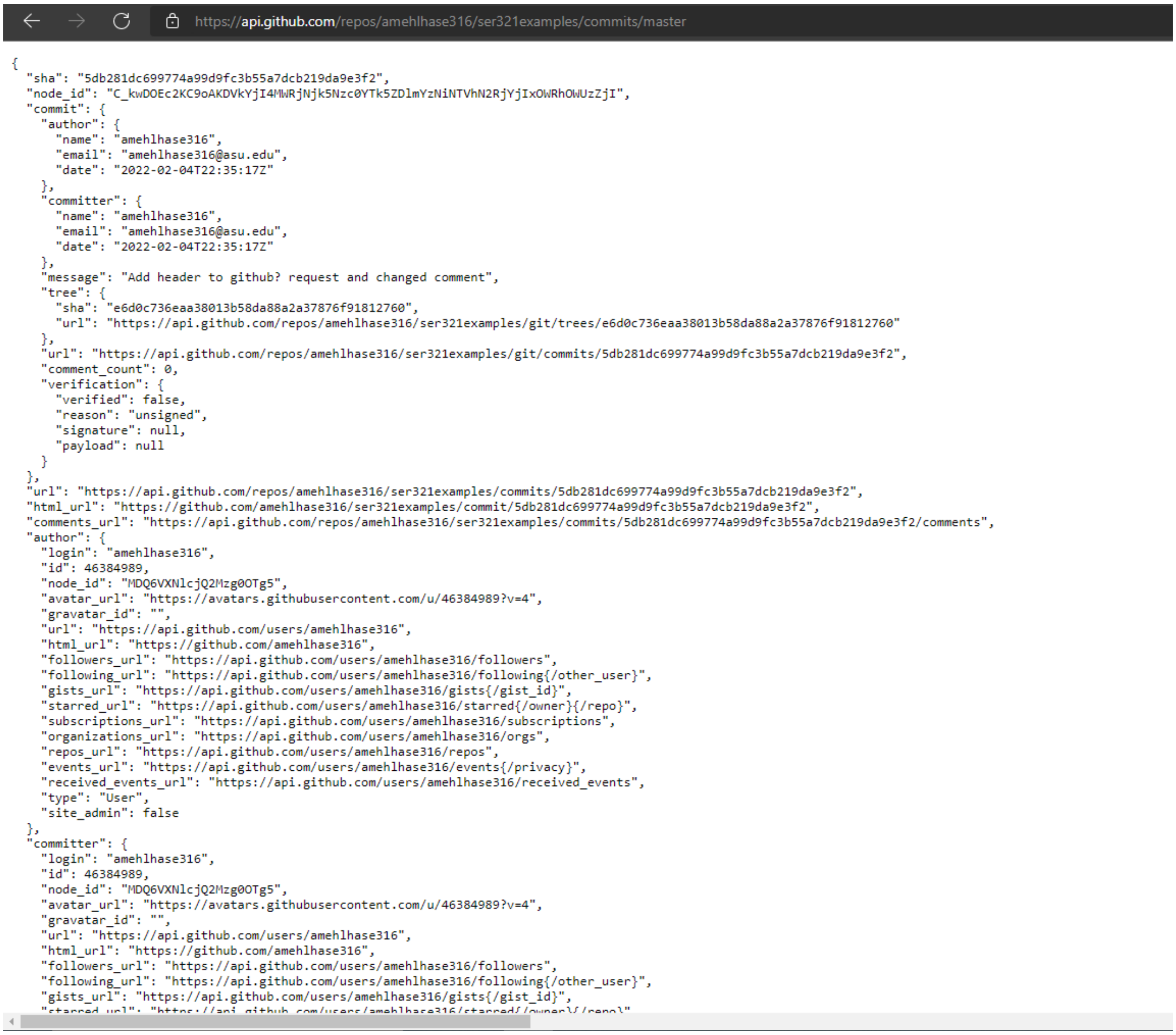
No.	Time	Source	Destination	Protocol	Length	Info
53	12.872020	192.168.1.26	142.250.141.108	TCP	66	59737 → 465 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
54	12.909914	142.250.141.108	192.168.1.26	TCP	66	465 → 59737 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1430 SACK_PERM=1 WS=256
55	12.909974	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=1 Ack=1 Win=65536 Len=0
57	12.911735	192.168.1.26	142.250.141.108	TLSv1.3	360	Client Hello
58	12.955148	142.250.141.108	192.168.1.26	TLSv1.3	1484	Server Hello, Change Cipher Spec
59	12.955205	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=307 Ack=1431 Win=65536 Len=0
60	12.955583	142.250.141.108	192.168.1.26	TCP	1484	465 → 59737 [PSH, ACK] Seq=1431 Ack=307 Win=66816 Len=1430 [TCP segment of a reass…
61	12.955583	142.250.141.108	192.168.1.26	TCP	1484	465 → 59737 [ACK] Seq=2861 Ack=307 Win=66816 Len=1430 [TCP segment of a reassemble…
62	12.955583	142.250.141.108	192.168.1.26	TLSv1.3	58	Application Data
63	12.955583	142.250.141.108	192.168.1.26	TCP	54	465 → 59737 [ACK] Seq=1 Ack=307 Win=66816 Len=0
64	12.955624	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=307 Ack=4295 Win=64256 Len=0
65	12.955642	192.168.1.26	142.250.141.108	TCP	54	[TCP Window Update] 59737 → 465 [ACK] Seq=307 Ack=4295 Win=65536 Len=0
66	12.966093	192.168.1.26	142.250.141.108	TLSv1.3	134	Change Cipher Spec, Application Data
67	13.006129	142.250.141.108	192.168.1.26	TCP	54	465 → 59737 [ACK] Seq=4295 Ack=387 Win=66816 Len=0
69	13.110295	142.250.141.108	192.168.1.26	TLSv1.3	667	Application Data, Application Data
70	13.165352	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=387 Ack=4908 Win=65024 Len=0
84	17.033976	192.168.1.26	142.250.141.108	TLSv1.3	92	Application Data
85	17.066641	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=4908 Ack=425 Win=66816 Len=0
86	17.099107	142.250.141.108	192.168.1.26	TLSv1.3	112	Application Data
87	17.142984	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=425 Ack=4966 Win=65024 Len=0
141	21.440952	192.168.1.26	142.250.141.108	TLSv1.3	88	Application Data
142	21.476490	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=4966 Ack=459 Win=66816 Len=0
143	21.502804	142.250.141.108	192.168.1.26	TLSv1.3	94	Application Data
144	21.544628	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=459 Ack=5006 Win=65024 Len=0
596	96.182908	192.168.1.26	142.250.141.108	TLSv1.3	102	Application Data
597	96.218399	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=5006 Ack=507 Win=66816 Len=0
598	96.242970	142.250.141.108	192.168.1.26	TLSv1.3	94	Application Data
599	96.289445	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=507 Ack=5046 Win=65024 Len=0
809	133.779834	192.168.1.26	142.250.141.108	TLSv1.3	94	Application Data
810	133.815385	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=5046 Ack=547 Win=66816 Len=0
812	134.298074	142.250.141.108	192.168.1.26	TLSv1.3	96	Application Data
813	134.345687	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=547 Ack=5088 Win=64768 Len=0
955	153.837720	192.168.1.26	142.250.141.108	TLSv1.3	117	Application Data
956	153.870265	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=5088 Ack=610 Win=66816 Len=0
957	153.901317	142.250.141.108	192.168.1.26	TLSv1.3	117	Application Data
958	153.957338	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=610 Ack=5151 Win=64768 Len=0
1118	164.614690	192.168.1.26	142.250.141.108	TLSv1.3	107	Application Data
1123	164.653260	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=5151 Ack=663 Win=66816 Len=0
1134	164.678250	142.250.141.108	192.168.1.26	TLSv1.3	117	Application Data
1136	164.719872	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=663 Ack=5214 Win=64768 Len=0
1140	166.375759	192.168.1.26	142.250.141.108	TLSv1.3	82	Application Data
1141	166.410598	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=5214 Ack=691 Win=66816 Len=0
1144	166.603844	142.250.141.108	192.168.1.26	TLSv1.3	118	Application Data
1146	166.656613	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=691 Ack=5278 Win=64768 Len=0
1230	171.921744	192.168.1.26	142.250.141.108	TLSv1.3	92	Application Data
1231	171.954832	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=5278 Ack=729 Win=66816 Len=0
1240	173.218708	192.168.1.26	142.250.141.108	TLSv1.3	79	Application Data
1241	173.248999	142.250.141.108	192.168.1.26	TCP	60	465 → 59737 [ACK] Seq=5278 Ack=754 Win=66816 Len=0
1250	173.942427	142.250.141.108	192.168.1.26	TLSv1.3	129	Application Data
1251	173.989113	192.168.1.26	142.250.141.108	TCP	54	59737 → 465 [ACK] Seq=754 Ack=5353 Win=64512 Len=0



```
1251 173.989113    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=754 Ack=5353 Win=64512 Len=0
1267 179.087731    192.168.1.26        142.250.141.108     TLSv1.3    82 Application Data
1268 179.116153    142.250.141.108     192.168.1.26        TCP        60 465 → 59737 [ACK] Seq=5353 Ack=782 Win=66816 Len=0
1269 179.146079    142.250.141.108     192.168.1.26        TLSv1.3   126 Application Data
1270 179.194678    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=782 Ack=5425 Win=64512 Len=0
1300 190.676648    192.168.1.26        142.250.141.108     TLSv1.3   117 Application Data
1301 190.712825    142.250.141.108     192.168.1.26        TCP        60 465 → 59737 [ACK] Seq=5425 Ack=845 Win=66816 Len=0
1302 190.745480    142.250.141.108     192.168.1.26        TLSv1.3   117 Application Data
1305 190.798051    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=845 Ack=5488 Win=64512 Len=0
1374 201.808707    192.168.1.26        142.250.141.108     TLSv1.3   107 Application Data
1375 201.844138    142.250.141.108     192.168.1.26        TCP        60 465 → 59737 [ACK] Seq=5488 Ack=898 Win=66816 Len=0
1376 201.869778    142.250.141.108     192.168.1.26        TLSv1.3   117 Application Data
1377 201.915637    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=898 Ack=5551 Win=64512 Len=0
1378 203.006625    192.168.1.26        142.250.141.108     TLSv1.3    82 Application Data
1379 203.040206    142.250.141.108     192.168.1.26        TCP        60 465 → 59737 [ACK] Seq=5551 Ack=926 Win=66816 Len=0
1382 203.135842    142.250.141.108     192.168.1.26        TLSv1.3   118 Application Data
1386 203.180764    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=926 Ack=5615 Win=64256 Len=0
1406 207.002688    192.168.1.26        142.250.141.108     TLSv1.3    93 Application Data
1407 207.038663    142.250.141.108     192.168.1.26        TCP        60 465 → 59737 [ACK] Seq=5615 Ack=965 Win=66816 Len=0
1408 207.892654    192.168.1.26        142.250.141.108     TLSv1.3    79 Application Data
1409 207.923246    142.250.141.108     192.168.1.26        TCP        60 465 → 59737 [ACK] Seq=5615 Ack=990 Win=66816 Len=0
1411 208.287399    142.250.141.108     192.168.1.26        TLSv1.3   129 Application Data
1414 208.342898    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=990 Ack=5690 Win=64256 Len=0
5943 788.377787    192.168.1.26        142.250.141.108     TLSv1.3    82 Application Data
5944 788.413485    142.250.141.108     192.168.1.26        TCP        60 465 → 59737 [ACK] Seq=5690 Ack=1018 Win=66816 Len=0
5945 788.442332    142.250.141.108     192.168.1.26        TLSv1.3   133 Application Data
5946 788.442389    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=1018 Ack=5769 Win=65536 Len=0
5947 788.444603    142.250.141.108     192.168.1.26        TCP        54 465 → 59737 [FIN, ACK] Seq=5769 Ack=1018 Win=66816 Len=0
5948 788.444641    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [ACK] Seq=1018 Ack=5770 Win=65536 Len=0
5949 788.444759    192.168.1.26        142.250.141.108     TLSv1.3    78 Application Data
5950 788.444799    192.168.1.26        142.250.141.108     TCP        54 59737 → 465 [FIN, ACK] Seq=1042 Ack=5770 Win=65536 Len=0
5951 788.484115    142.250.141.108     192.168.1.26        TCP        54 465 → 59737 [RST] Seq=5770 Win=0 Len=0
5952 788.484115    142.250.141.108     192.168.1.26        TCP        54 465 → 59737 [RST] Seq=5770 Win=0 Len=0
```

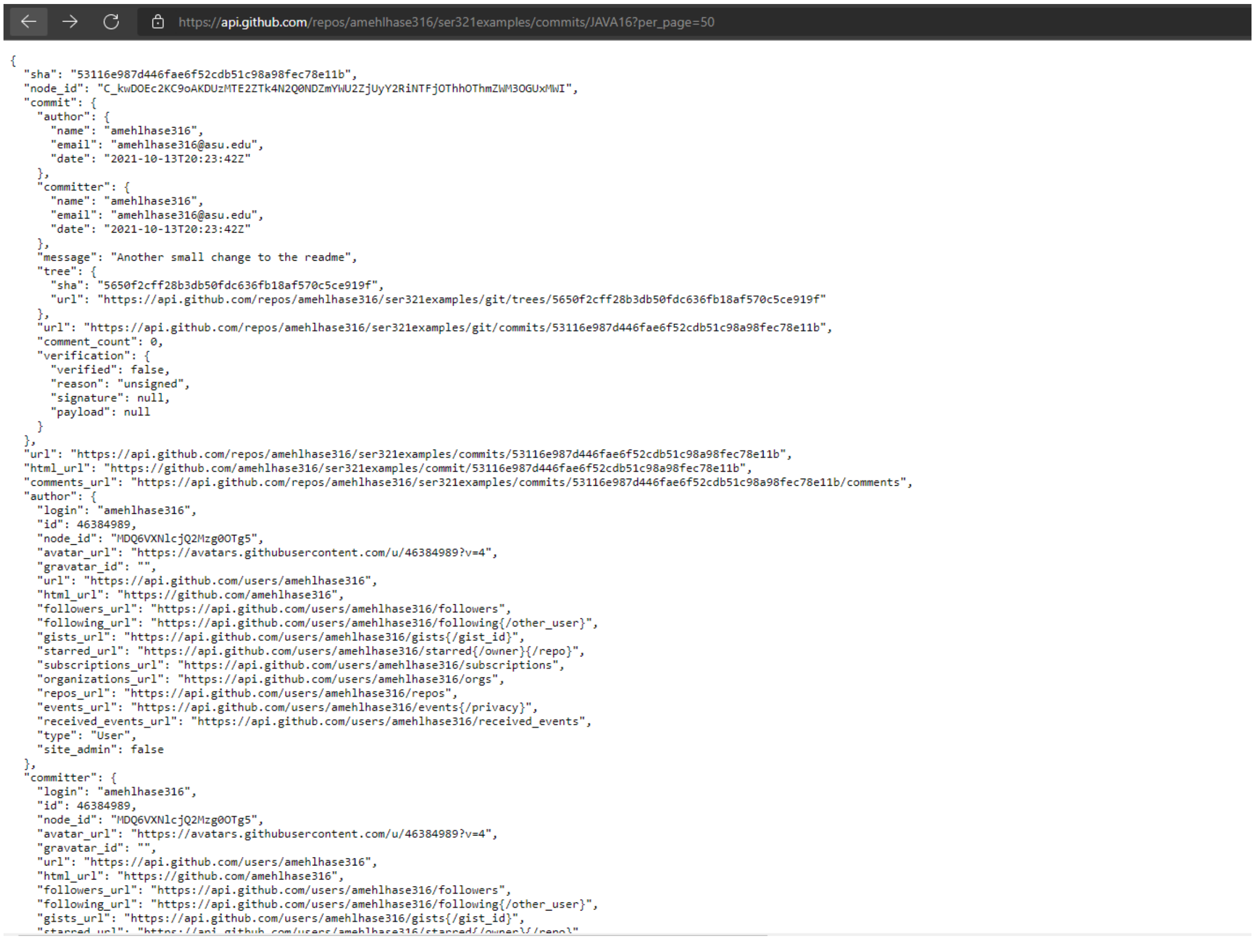
Task 2

https://api.github.com/repos/amehlhase316/ser321examples/commits/master



```
{
  "sha": "5db281dc699774a99d9fc3b55a7dcb219da9e3f2",
  "node_id": "C_kwDOEc2KC9oAKDVkYjI4MWRjNjk5Nzc0YTk5ZDlmYzNiNTVhN2RjYjIxOWRhOWUzZjI",
  "commit": {
    "author": {
      "name": "amehlhase316",
      "email": "amehlhase316@asu.edu",
      "date": "2022-02-04T22:35:17Z"
    },
    "committer": {
      "name": "amehlhase316",
      "email": "amehlhase316@asu.edu",
      "date": "2022-02-04T22:35:17Z"
    },
    "message": "Add header to github? request and changed comment",
    "tree": {
      "sha": "e6d0c736eaa38013b58da88a2a37876f91812760",
      "url": "https://api.github.com/repos/amehlhase316/ser321examples/git/trees/e6d0c736eaa38013b58da88a2a37876f91812760"
    },
    "url": "https://api.github.com/repos/amehlhase316/ser321examples/git/commits/5db281dc699774a99d9fc3b55a7dcb219da9e3f2",
    "comment_count": 0,
    "verification": {
      "verified": false,
      "reason": "unsigned",
      "signature": null,
      "payload": null
    }
  },
  "url": "https://api.github.com/repos/amehlhase316/ser321examples/commits/5db281dc699774a99d9fc3b55a7dcb219da9e3f2",
  "html_url": "https://github.com/amehlhase316/ser321examples/commit/5db281dc699774a99d9fc3b55a7dcb219da9e3f2",
  "comments_url": "https://api.github.com/repos/amehlhase316/ser321examples/commits/5db281dc699774a99d9fc3b55a7dcb219da9e3f2/comments",
  "author": {
    "login": "amehlhase316",
    "id": 46384989,
    "node_id": "MDQ6VXNlcjQ2Mzg0OTg5",
    "avatar_url": "https://avatars.githubusercontent.com/u/46384989?v=4",
    "gravatar_id": "",
    "url": "https://api.github.com/users/amehlhase316",
    "html_url": "https://github.com/amehlhase316",
    "followers_url": "https://api.github.com/users/amehlhase316/followers",
    "following_url": "https://api.github.com/users/amehlhase316/following{/other_user}",
    "gists_url": "https://api.github.com/users/amehlhase316/gists{/gist_id}",
    "starred_url": "https://api.github.com/users/amehlhase316/starred{/owner}{/repo}",
    "subscriptions_url": "https://api.github.com/users/amehlhase316/subscriptions",
    "organizations_url": "https://api.github.com/users/amehlhase316/orgs",
    "repos_url": "https://api.github.com/users/amehlhase316/repos",
    "events_url": "https://api.github.com/users/amehlhase316/events{/privacy}",
    "received_events_url": "https://api.github.com/users/amehlhase316/received_events",
    "type": "User",
    "site_admin": false
  },
  "committer": {
    "login": "amehlhase316",
    "id": 46384989,
    "node_id": "MDQ6VXNlcjQ2Mzg0OTg5",
    "avatar_url": "https://avatars.githubusercontent.com/u/46384989?v=4",
    "gravatar_id": "",
    "url": "https://api.github.com/users/amehlhase316",
    "html_url": "https://github.com/amehlhase316",
    "followers_url": "https://api.github.com/users/amehlhase316/followers",
    "following_url": "https://api.github.com/users/amehlhase316/following{/other_user}",
    "gists_url": "https://api.github.com/users/amehlhase316/gists{/gist_id}",
    "starred_url": "https://api.github.com/users/amehlhase316/starred{/owner}{/repo}"
```

https://api.github.com/repos/amehlhase316/ser321examples/commits/JAVA16?per_page=50

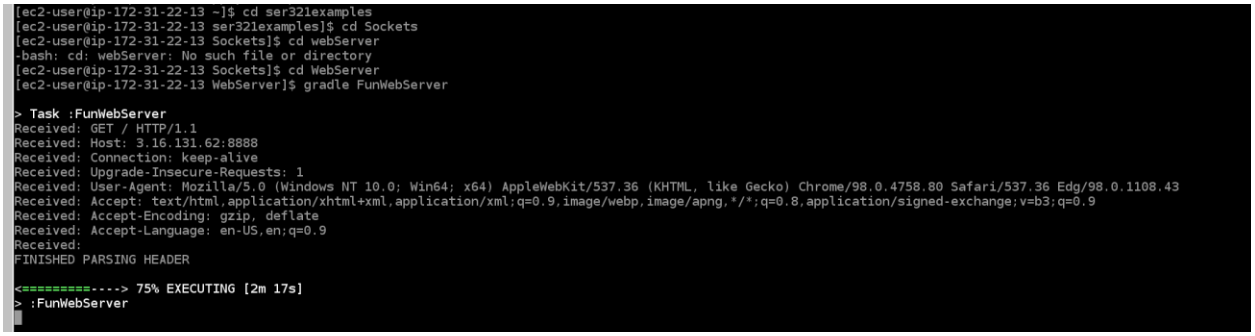


https://api.github.com/repos/amehlhase316/ser321examples/commits/JAVA16?per_page=50

```
{
  "sha": "53116e987d446fae6f52cdb51c98a98fec78e11b",
  "node_id": "C_kwDOEc2KC9oAKDUzMTE2ZTk4N2Q0NDZmYWU2ZjUyY2RiNTFjOThhOThmZWM3OGUxMWI",
  "commit": {
    "author": {
      "name": "amehlhase316",
      "email": "amehlhase316@asu.edu",
      "date": "2021-10-13T20:23:42Z"
    },
    "committer": {
      "name": "amehlhase316",
      "email": "amehlhase316@asu.edu",
      "date": "2021-10-13T20:23:42Z"
    },
    "message": "Another small change to the readme",
    "tree": {
      "sha": "5650f2cff28b3db50fdc636fb18af570c5ce919f",
      "url": "https://api.github.com/repos/amehlhase316/ser321examples/git/trees/5650f2cff28b3db50fdc636fb18af570c5ce919f"
    },
    "url": "https://api.github.com/repos/amehlhase316/ser321examples/git/commits/53116e987d446fae6f52cdb51c98a98fec78e11b",
    "comment_count": 0,
    "verification": {
      "verified": false,
      "reason": "unsigned",
      "signature": null,
      "payload": null
    }
  },
  "url": "https://api.github.com/repos/amehlhase316/ser321examples/commits/53116e987d446fae6f52cdb51c98a98fec78e11b",
  "html_url": "https://github.com/amehlhase316/ser321examples/commit/53116e987d446fae6f52cdb51c98a98fec78e11b",
  "comments_url": "https://api.github.com/repos/amehlhase316/ser321examples/commits/53116e987d446fae6f52cdb51c98a98fec78e11b/comments",
  "author": {
    "login": "amehlhase316",
    "id": 46384989,
    "node_id": "MDQ6VXNlcjQ2Mzg0OTg5",
    "avatar_url": "https://avatars.githubusercontent.com/u/46384989?v=4",
    "gravatar_id": "",
    "url": "https://api.github.com/users/amehlhase316",
    "html_url": "https://github.com/amehlhase316",
    "followers_url": "https://api.github.com/users/amehlhase316/followers",
    "following_url": "https://api.github.com/users/amehlhase316/following{/other_user}",
    "gists_url": "https://api.github.com/users/amehlhase316/gists{/gist_id}",
    "starred_url": "https://api.github.com/users/amehlhase316/starred{/owner}{/repo}",
    "subscriptions_url": "https://api.github.com/users/amehlhase316/subscriptions",
    "organizations_url": "https://api.github.com/users/amehlhase316/orgs",
    "repos_url": "https://api.github.com/users/amehlhase316/repos",
    "events_url": "https://api.github.com/users/amehlhase316/events{/privacy}",
    "received_events_url": "https://api.github.com/users/amehlhase316/received_events",
    "type": "User",
    "site_admin": false
  },
  "committer": {
    "login": "amehlhase316",
    "id": 46384989,
    "node_id": "MDQ6VXNlcjQ2Mzg0OTg5",
    "avatar_url": "https://avatars.githubusercontent.com/u/46384989?v=4",
    "gravatar_id": "",
    "url": "https://api.github.com/users/amehlhase316",
    "html_url": "https://github.com/amehlhase316",
    "followers_url": "https://api.github.com/users/amehlhase316/followers",
    "following_url": "https://api.github.com/users/amehlhase316/following{/other_user}",
    "gists_url": "https://api.github.com/users/amehlhase316/gists{/gist_id}",
    "starred_url": "https://api.github.com/users/amehlhase316/starred{/owner}{/repo}"
```

1. For the first call I assumed Master was the default branch. The commits part of the url had to come before the specified branch. Then for the second one I switched to a different branch. I'm not 100% sure that the ?per_page=50 actually worked since I didn't see any branches with more than 50 commits but the web page still popped up so I assume it worked.
2. These api calls were stateless since I had to type out the whole path every single time. A stateful communication would remember where I am and made it easier to go back.

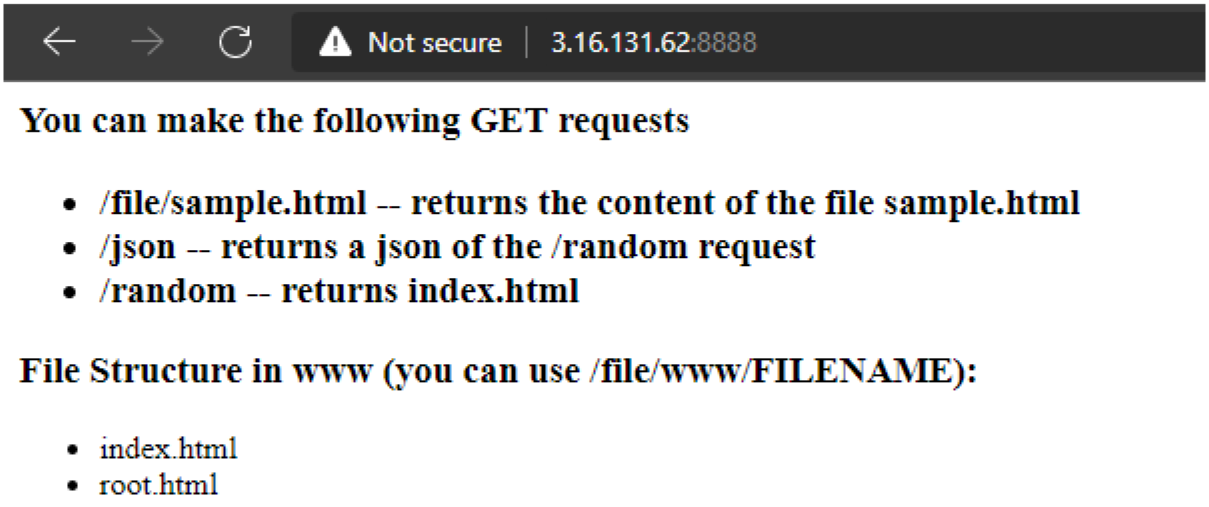
Task 3:



```
[ec2-user@ip-172-31-22-13 ~]$ cd ser321examples
[ec2-user@ip-172-31-22-13 ser321examples]$ cd Sockets
[ec2-user@ip-172-31-22-13 Sockets]$ cd webServer
-bash: cd: webServer: No such file or directory
[ec2-user@ip-172-31-22-13 Sockets]$ cd WebServer
[ec2-user@ip-172-31-22-13 WebServer]$ gradle FunWebServer

> Task :FunWebServer
Received: GET / HTTP/1.1
Received: Host: 3.16.131.62:8888
Received: Connection: keep-alive
Received: Upgrade-Insecure-Requests: 1
Received: User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.80 Safari/537.36 Edg/98.0.1108.43
Received: Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Received: Accept-Encoding: gzip, deflate
Received: Accept-Language: en-US,en;q=0.9
Received:
FINISHED PARSING HEADER

<=========----> 75% EXECUTING [2m 17s]
> :FunWebServer
```



You can make the following GET requests

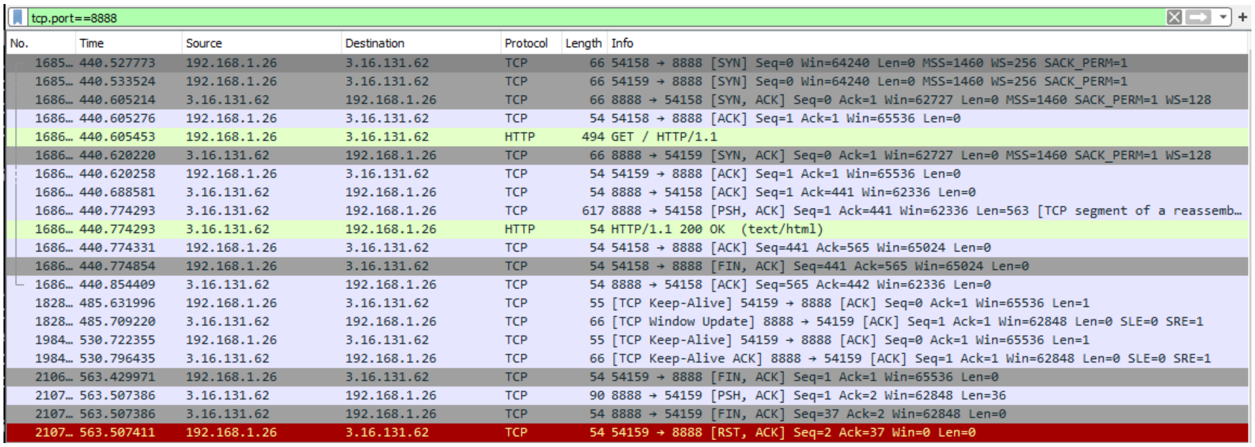
- /file/sample.html -- returns the content of the file sample.html
- /json -- returns a json of the /random request
- /random -- returns index.html

File Structure in www (you can use /file/www/FILENAME):

- index.html
- root.html

I had to change the port to 8888 since I forgot to allow traffic on port 9000 for my ec2 instance.

Section 3.3:



No.	Time	Source	Destination	Protocol	Length	Info
1685…	440.527773	192.168.1.26	3.16.131.62	TCP	66	54158 → 8888 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
1685…	440.533524	192.168.1.26	3.16.131.62	TCP	66	54159 → 8888 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
1686…	440.605214	3.16.131.62	192.168.1.26	TCP	66	8888 → 54158 [SYN, ACK] Seq=0 Ack=1 Win=62727 Len=0 MSS=1460 SACK_PERM=1 WS=128
1686…	440.605276	192.168.1.26	3.16.131.62	TCP	54	54158 → 8888 [ACK] Seq=1 Ack=1 Win=65536 Len=0
1686…	440.605453	192.168.1.26	3.16.131.62	HTTP	494	GET / HTTP/1.1
1686…	440.620220	3.16.131.62	192.168.1.26	TCP	66	8888 → 54159 [SYN, ACK] Seq=0 Ack=1 Win=62727 Len=0 MSS=1460 SACK_PERM=1 WS=128
1686…	440.620258	192.168.1.26	3.16.131.62	TCP	54	54159 → 8888 [ACK] Seq=1 Ack=1 Win=65536 Len=0
1686…	440.688581	3.16.131.62	192.168.1.26	TCP	54	8888 → 54158 [ACK] Seq=1 Ack=441 Win=62336 Len=0
1686…	440.774293	3.16.131.62	192.168.1.26	TCP	617	8888 → 54158 [PSH, ACK] Seq=1 Ack=441 Win=62336 Len=563 [TCP segment of a reassemb…
1686…	440.774293	3.16.131.62	192.168.1.26	HTTP	54	HTTP/1.1 200 OK (text/html)
1686…	440.774331	192.168.1.26	3.16.131.62	TCP	54	54158 → 8888 [ACK] Seq=441 Ack=565 Win=65024 Len=0
1686…	440.774854	192.168.1.26	3.16.131.62	TCP	54	54158 → 8888 [FIN, ACK] Seq=441 Ack=565 Win=65024 Len=0
1686…	440.854409	3.16.131.62	192.168.1.26	TCP	54	8888 → 54158 [ACK] Seq=565 Ack=442 Win=62336 Len=0
1828…	485.631996	192.168.1.26	3.16.131.62	TCP	55	[TCP Keep-Alive] 54159 → 8888 [ACK] Seq=0 Ack=1 Win=65536 Len=1
1828…	485.709220	3.16.131.62	192.168.1.26	TCP	66	[TCP Window Update] 8888 → 54159 [ACK] Seq=1 Ack=1 Win=62848 Len=0 SLE=0 SRE=1
1984…	530.722355	192.168.1.26	3.16.131.62	TCP	55	[TCP Keep-Alive] 54159 → 8888 [ACK] Seq=0 Ack=1 Win=65536 Len=1
1984…	530.796435	3.16.131.62	192.168.1.26	TCP	66	[TCP Keep-Alive ACK] 8888 → 54159 [ACK] Seq=1 Ack=1 Win=62848 Len=0 SLE=0 SRE=1
2106…	563.429971	192.168.1.26	3.16.131.62	TCP	54	54159 → 8888 [FIN, ACK] Seq=1 Ack=1 Win=65536 Len=0
2107…	563.507386	3.16.131.62	192.168.1.26	TCP	90	8888 → 54159 [PSH, ACK] Seq=1 Ack=2 Win=62848 Len=36
2107…	563.507386	3.16.131.62	192.168.1.26	TCP	54	8888 → 54159 [FIN, ACK] Seq=37 Ack=2 Win=62848 Len=0
2107…	563.507411	192.168.1.26	3.16.131.62	TCP	54	54159 → 8888 [RST, ACK] Seq=2 Ack=37 Win=0 Len=0

1. The filter I used was tcp.port==8888. I had to change from port 9000 to 8888 since I forgot to allow port 9000 on my AWS server.
2. When I used /random there is an extra line on the command line that says ‘Upgradse-Insecure-Requests: 1’ It also doesn’t say GET /random and instead says GET /json
3. I get a 400 code when I do a get for something not listed like when I did /perhaps. Then I get a 200 code when I do something normal like the /random.
4. Well the 200 code is just saying everything went well and then 400 says ‘bad request’ so it’s just saying there is nothing at the page I’m trying to get to.
5. Yes, the information does not appear to be encrypted. It’s just in there as plain text.
6. With HTTPS since data is usually super weird and unreadable.
7. Well, this server is on port 8888 but usually HTTP data is on port 80.
8. Looks like my local port being used is 54159

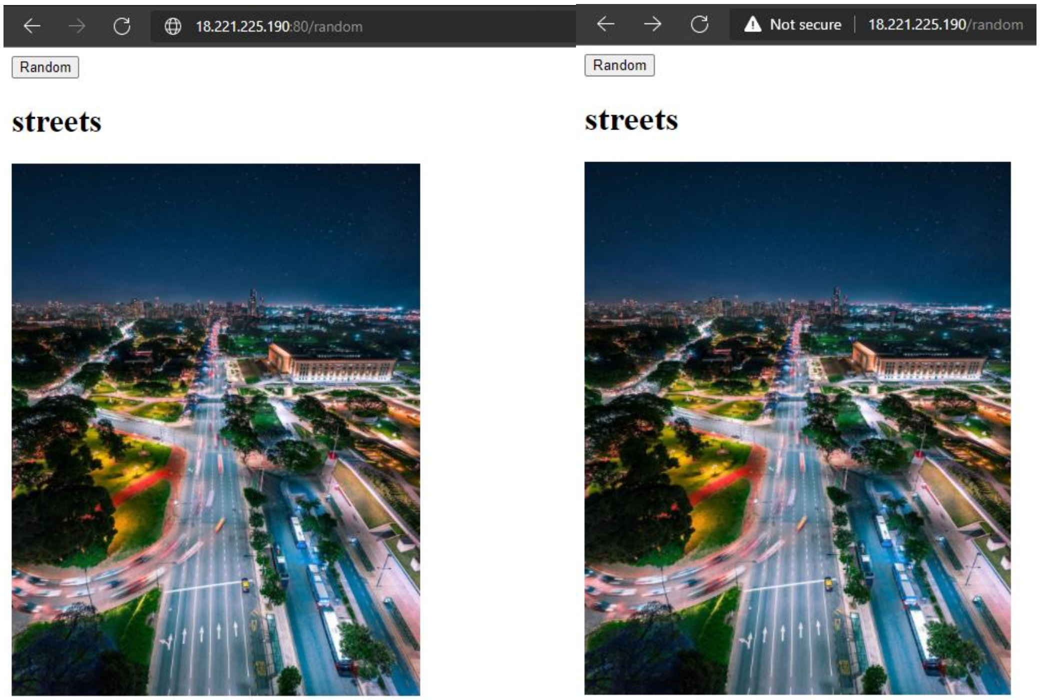
3.4:

1. Now I can do ‘ipAdress’:80 to get to the web page instead of 8888.

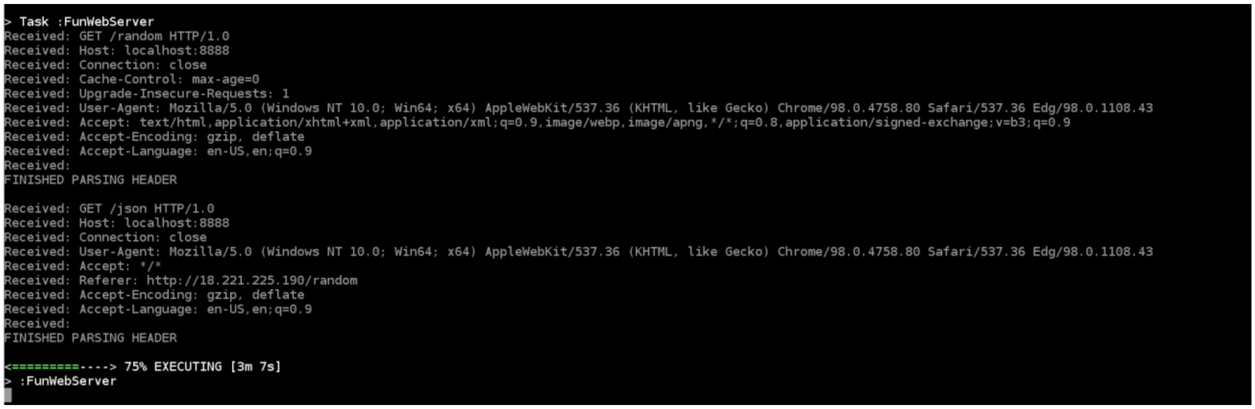
2. Now the traffic shows up on port 80 on wireshark. Which is different than before since I had to filter for port 8888 in the last section.

3. Well it’s still HTTP since I can see the messages being sent in wire shark aren’t encrypted.

4.



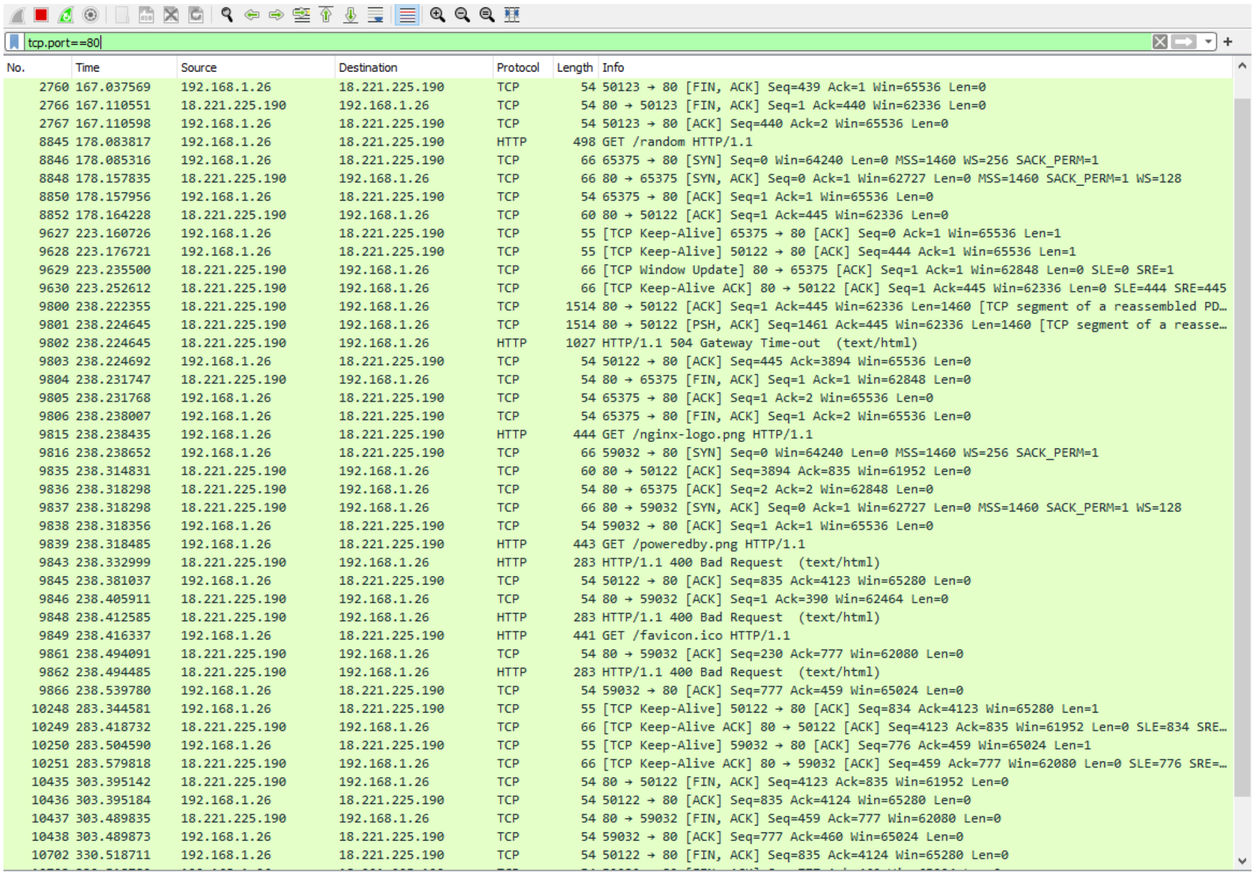
Picture on the right is the web page then on the left I just added the port back into the URL to show how I got there since it disappeared when the page loaded.



```
> Task :FunWebServer
Received: GET /random HTTP/1.0
Received: Host: localhost:8888
Received: Connection: close
Received: Cache-Control: max-age=0
Received: Upgrade-Insecure-Requests: 1
Received: User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.80 Safari/537.36 Edg/98.0.1108.43
Received: Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Received: Accept-Encoding: gzip, deflate
Received: Accept-Language: en-US,en;q=0.9
Received:
FINISHED PARSING HEADER

Received: GET /json HTTP/1.0
Received: Host: localhost:8888
Received: Connection: close
Received: User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.80 Safari/537.36 Edg/98.0.1108.43
Received: Accept: */*
Received: Referer: http://18.221.225.190/random
Received: Accept-Encoding: gzip, deflate
Received: Accept-Language: en-US,en;q=0.9
Received:
FINISHED PARSING HEADER

<=========----> 75% EXECUTING [3m 7s]
> :FunWebServer
```



tcp.port==80

```
No.     Time        Source          Destination     Protocol Length Info
   2760 167.037569  192.168.1.26    18.221.225.190  TCP        54 50123 → 80 [FIN, ACK] Seq=439 Ack=1 Win=65536 Len=0
   2766 167.110551  18.221.225.190  192.168.1.26    TCP        54 80 → 50123 [FIN, ACK] Seq=1 Ack=440 Win=62336 Len=0
   2767 167.110598  192.168.1.26    18.221.225.190  TCP        54 50123 → 80 [ACK] Seq=440 Ack=2 Win=65536 Len=0
   8845 178.083817  192.168.1.26    18.221.225.190  HTTP      498 GET /random HTTP/1.1
   8846 178.085316  192.168.1.26    18.221.225.190  TCP        66 65375 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
   8848 178.157835  18.221.225.190  192.168.1.26    TCP        66 80 → 65375 [SYN, ACK] Seq=0 Ack=1 Win=62727 Len=0 MSS=1460 SACK_PERM=1 WS=128
   8850 178.157956  192.168.1.26    18.221.225.190  TCP        54 65375 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
   8852 178.164228  18.221.225.190  192.168.1.26    TCP        60 80 → 50122 [ACK] Seq=1 Ack=445 Win=62336 Len=0
   9627 223.160726  192.168.1.26    18.221.225.190  TCP        55 [TCP Keep-Alive] 65375 → 80 [ACK] Seq=0 Ack=1 Win=65536 Len=1
   9628 223.176721  192.168.1.26    18.221.225.190  TCP        55 [TCP Keep-Alive] 50122 → 80 [ACK] Seq=444 Ack=1 Win=65536 Len=1
   9629 223.235500  18.221.225.190  192.168.1.26    TCP        66 [TCP Window Update] 80 → 65375 [ACK] Seq=1 Ack=1 Win=62848 Len=0 SLE=0 SRE=1
   9630 223.252612  18.221.225.190  192.168.1.26    TCP        66 [TCP Keep-Alive ACK] 80 → 50122 [ACK] Seq=1 Ack=445 Win=62336 Len=0 SLE=444 SRE=445
   9800 238.222355  18.221.225.190  192.168.1.26    TCP      1514 80 → 50122 [ACK] Seq=1 Ack=445 Win=62336 Len=1460 [TCP segment of a reassembled PD…
   9801 238.224645  18.221.225.190  192.168.1.26    TCP      1514 80 → 50122 [PSH, ACK] Seq=1461 Ack=445 Win=62336 Len=1460 [TCP segment of a reasse…
   9802 238.224645  18.221.225.190  192.168.1.26    HTTP     1027 HTTP/1.1 504 Gateway Time-out  (text/html)
   9803 238.224692  192.168.1.26    18.221.225.190  TCP        54 50122 → 80 [ACK] Seq=445 Ack=3894 Win=65536 Len=0
   9804 238.231747  18.221.225.190  192.168.1.26    TCP        54 80 → 65375 [FIN, ACK] Seq=1 Ack=1 Win=62848 Len=0
   9805 238.231768  192.168.1.26    18.221.225.190  TCP        54 65375 → 80 [ACK] Seq=1 Ack=2 Win=65536 Len=0
   9806 238.238007  192.168.1.26    18.221.225.190  TCP        54 65375 → 80 [FIN, ACK] Seq=1 Ack=2 Win=65536 Len=0
   9815 238.238435  192.168.1.26    18.221.225.190  HTTP      444 GET /nginx-logo.png HTTP/1.1
   9816 238.238652  192.168.1.26    18.221.225.190  TCP        66 59032 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
   9835 238.314831  18.221.225.190  192.168.1.26    TCP        60 80 → 50122 [ACK] Seq=3894 Ack=835 Win=61952 Len=0
   9836 238.318298  18.221.225.190  192.168.1.26    TCP        54 80 → 65375 [ACK] Seq=2 Ack=2 Win=62848 Len=0
   9837 238.318298  18.221.225.190  192.168.1.26    TCP        66 80 → 59032 [SYN, ACK] Seq=0 Ack=1 Win=62727 Len=0 MSS=1460 SACK_PERM=1 WS=128
   9838 238.318356  192.168.1.26    18.221.225.190  TCP        54 59032 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
   9839 238.318485  192.168.1.26    18.221.225.190  HTTP      443 GET /poweredby.png HTTP/1.1
   9843 238.332999  18.221.225.190  192.168.1.26    HTTP      283 HTTP/1.1 400 Bad Request  (text/html)
   9845 238.381037  192.168.1.26    18.221.225.190  TCP        54 50122 → 80 [ACK] Seq=835 Ack=4123 Win=65280 Len=0
   9846 238.405911  18.221.225.190  192.168.1.26    TCP        54 80 → 59032 [ACK] Seq=1 Ack=390 Win=62464 Len=0
   9848 238.412585  18.221.225.190  192.168.1.26    HTTP      283 HTTP/1.1 400 Bad Request  (text/html)
   9849 238.416337  192.168.1.26    18.221.225.190  HTTP      441 GET /favicon.ico HTTP/1.1
   9861 238.494091  18.221.225.190  192.168.1.26    TCP        54 80 → 59032 [ACK] Seq=230 Ack=777 Win=62080 Len=0
   9862 238.494485  18.221.225.190  192.168.1.26    HTTP      283 HTTP/1.1 400 Bad Request  (text/html)
   9866 238.539780  192.168.1.26    18.221.225.190  TCP        54 59032 → 80 [ACK] Seq=777 Ack=459 Win=65024 Len=0
  10248 283.344581  192.168.1.26    18.221.225.190  TCP        55 [TCP Keep-Alive] 50122 → 80 [ACK] Seq=834 Ack=4123 Win=65280 Len=1
  10249 283.418732  18.221.225.190  192.168.1.26    TCP        66 [TCP Keep-Alive ACK] 80 → 50122 [ACK] Seq=4123 Ack=835 Win=61952 Len=0 SLE=834 SRE…
  10250 283.504590  192.168.1.26    18.221.225.190  TCP        55 [TCP Keep-Alive] 59032 → 80 [ACK] Seq=776 Ack=459 Win=65024 Len=1
  10251 283.579818  18.221.225.190  192.168.1.26    TCP        66 [TCP Keep-Alive ACK] 80 → 59032 [ACK] Seq=459 Ack=777 Win=62080 Len=0 SLE=776 SRE=…
  10435 303.395142  18.221.225.190  192.168.1.26    TCP        54 80 → 50122 [FIN, ACK] Seq=4123 Ack=835 Win=61952 Len=0
  10436 303.395184  192.168.1.26    18.221.225.190  TCP        54 50122 → 80 [ACK] Seq=835 Ack=4124 Win=65280 Len=0
  10437 303.489835  18.221.225.190  192.168.1.26    TCP        54 80 → 59032 [FIN, ACK] Seq=459 Ack=777 Win=62080 Len=0
  10438 303.489873  192.168.1.26    18.221.225.190  TCP        54 59032 → 80 [ACK] Seq=777 Ack=460 Win=65024 Len=0
  10702 330.518711  192.168.1.26    18.221.225.190  TCP        54 50122 → 80 [FIN, ACK] Seq=835 Ack=4124 Win=65280 Len=0
```