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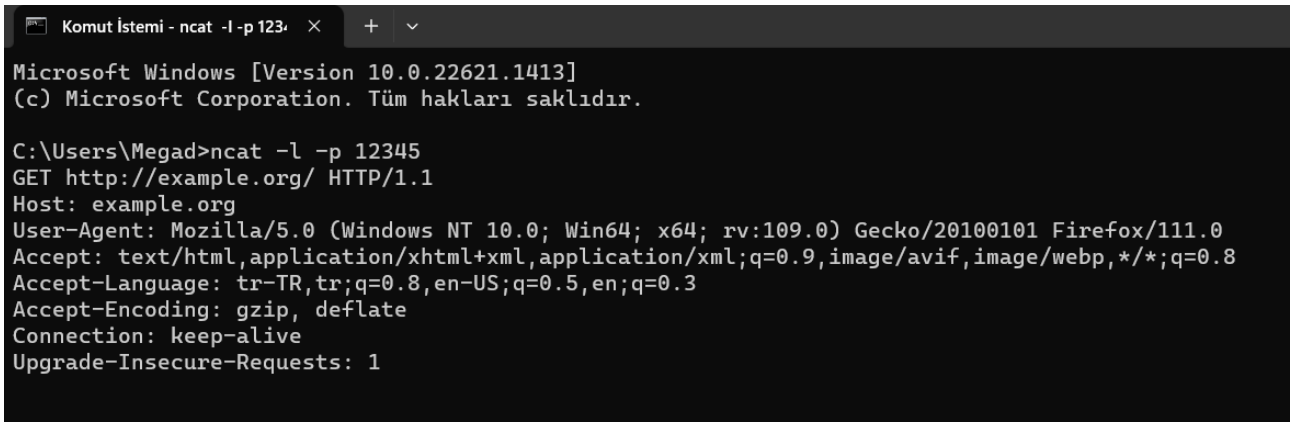
CS 421 - Computer Networks
Programming Assignment 1
ProxyDownloader

1) On the first part of programming assignment, I downloaded “Nmap” program and I observed what happened on “example.org”. But before that, I made Mozilla Firefox localhost and its port number is 12345. Since I downloaded different program, my inputs works with ncat not nc. When I worked that line for “example.org”:



Since there is no file or anything different on example.org, we get only our accepts, user agents and connections. Also, I need to check three different sites. All I get these from a site you gave on assignment.

My first site is baidu.com:

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My second site is cnnic.cn:

```
PS C:\Users\Megad> ncat -l 12345
GET http://cnnic.cn/ HTTP/1.1
Host: cnnic.cn
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:109.0) Gecko/20100101 Firefox/111.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
Accept-Language: tr-TR,tr;q=0.8,en-US;q=0.5,en;q=0.3
Accept-Encoding: gzip, deflate
Connection: keep-alive
Upgrade-Insecure-Requests: 1
```

Finally, my last site is myshopify.org:

```
PS C:\Users\Megad> ncat -l 12345
GET http://myshopify.org/ HTTP/1.1
Host: myshopify.org
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:109.0) Gecko/20100101 Firefox/111.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
Accept-Language: tr-TR,tr;q=0.8,en-US;q=0.5,en;q=0.3
Accept-Encoding: gzip, deflate
Connection: keep-alive
Upgrade-Insecure-Requests: 1
```

For all sites, since there is no downloadable information, I get all of these same messages.

2) On second part, we need to code a similar program which is “Nmap”. We need to enter “python ProxyDownloader.py (port numbers)” on command line and we need to look connection and client ports. Also, if there is downloadable concent, we need to download it and inform users.
Firstly, I coded that assignment on Python. Firstly, I added a port argument for entering our information and I labeled it as parser. After I arranged my writable port number, I started to define my codes.
Firstly, I defined a proxy downloader. On that part, firstly, I create a new socket and specify its host and ports. Then, I listen it and if there is accepting reaction, I retrieve data from the client and our request is extracting in the URL. Then, I specity that retrieving and before close that connection, I also inform users.
Secondly, I defined a code which name is urlExtract. It only makes extracting URL from an HTTP GET. This sample is for getting information on URL’s.
Thirdly, I define retrieving file. It makes retrieving a files content from the given URL. Also, there will be a tuple for file content and HTTP response is returned. For that reason, I created a new socket object and host. Same as, we get our HTTP GET message and it is received other side. After that, our file extracted at the file content and HTTP close. After that operation, our socket is closed.
Finally, I code a saving file content. Firstly, we create a download path. After that, we create a file name based on URL. Finally, we write our file content and our all code is finished.

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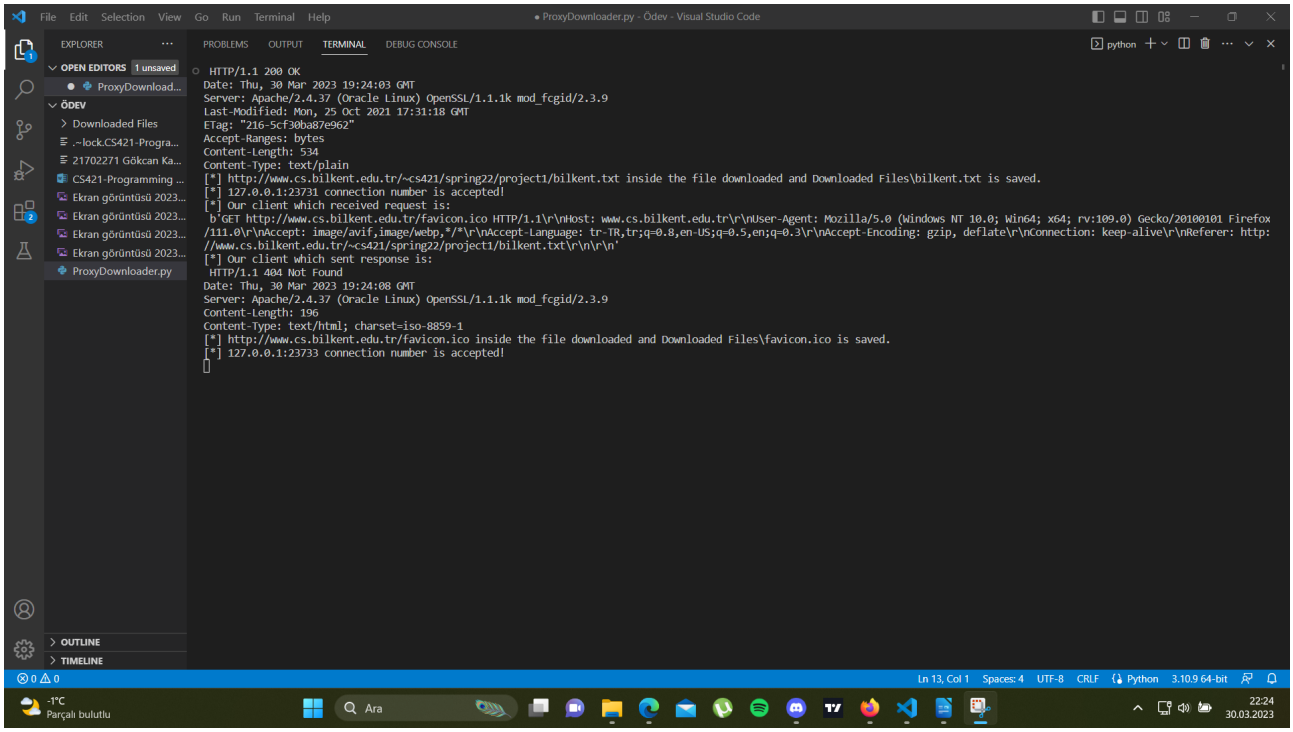
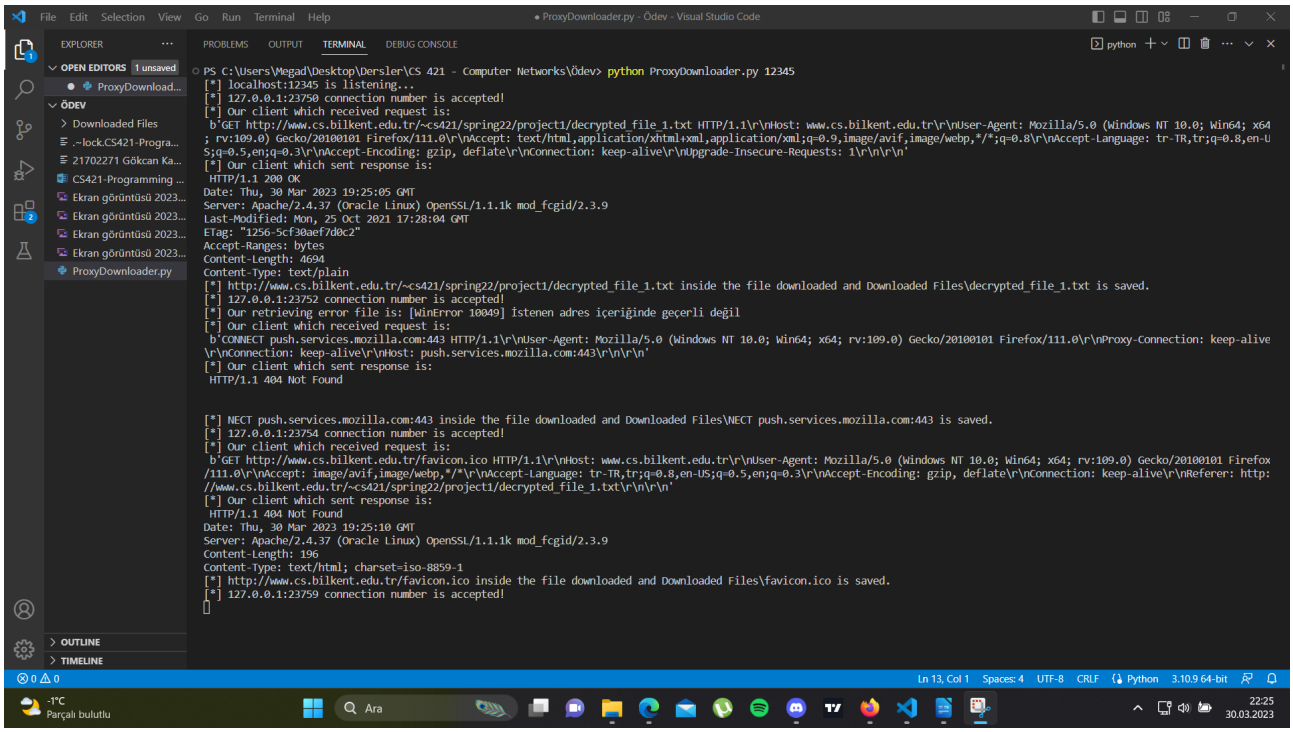
To test my code, I used four different links which you will give and they consist cs.bilkent...

www.cs.bilkent.edu.tr/~cs421/spring22/project1/bilkent.txt:



www.cs.bilkent.edu.tr/~cs421/spring22/project1/decrypted_file_1.txt:



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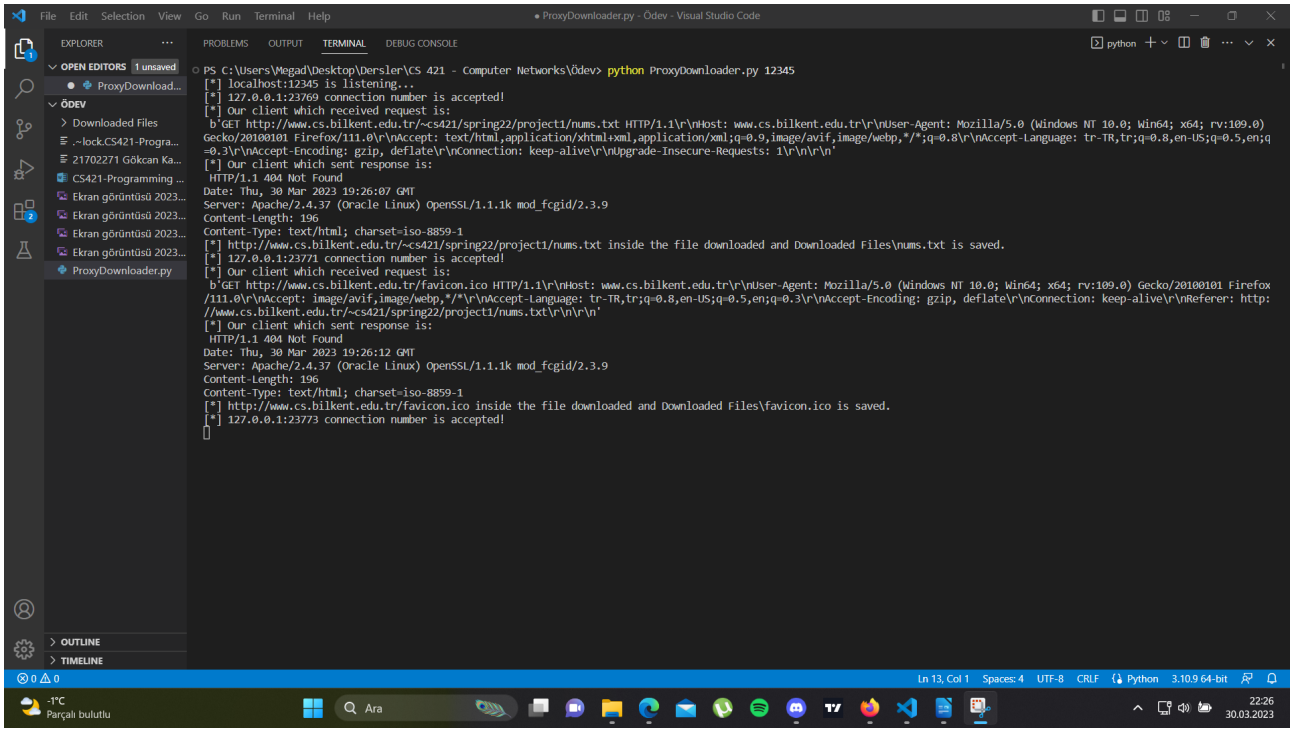
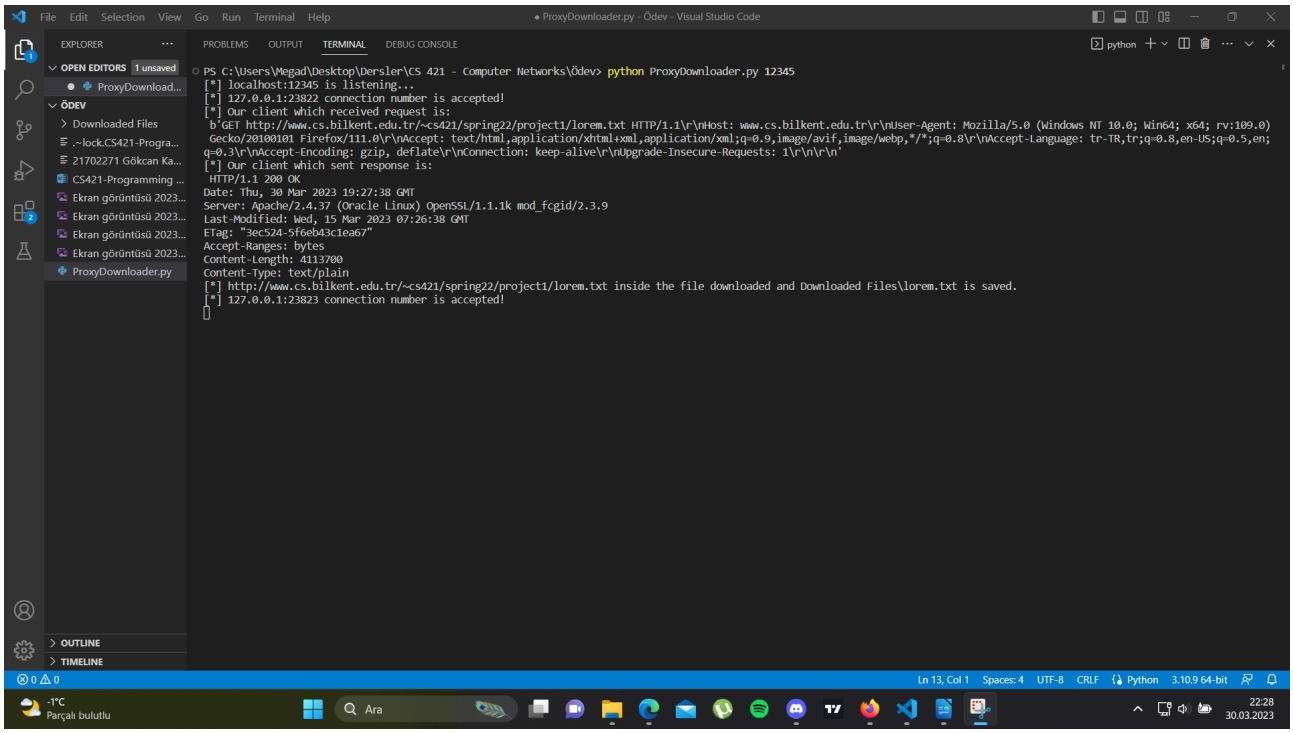
www.cs.bilkent.edu.tr/~cs421/spring22/project1/nums.txt (Handle 404 error):



www.cs.bilkent.edu.tr/~cs421/spring22/project1/lorem.txt (Large file, around 4 MB):



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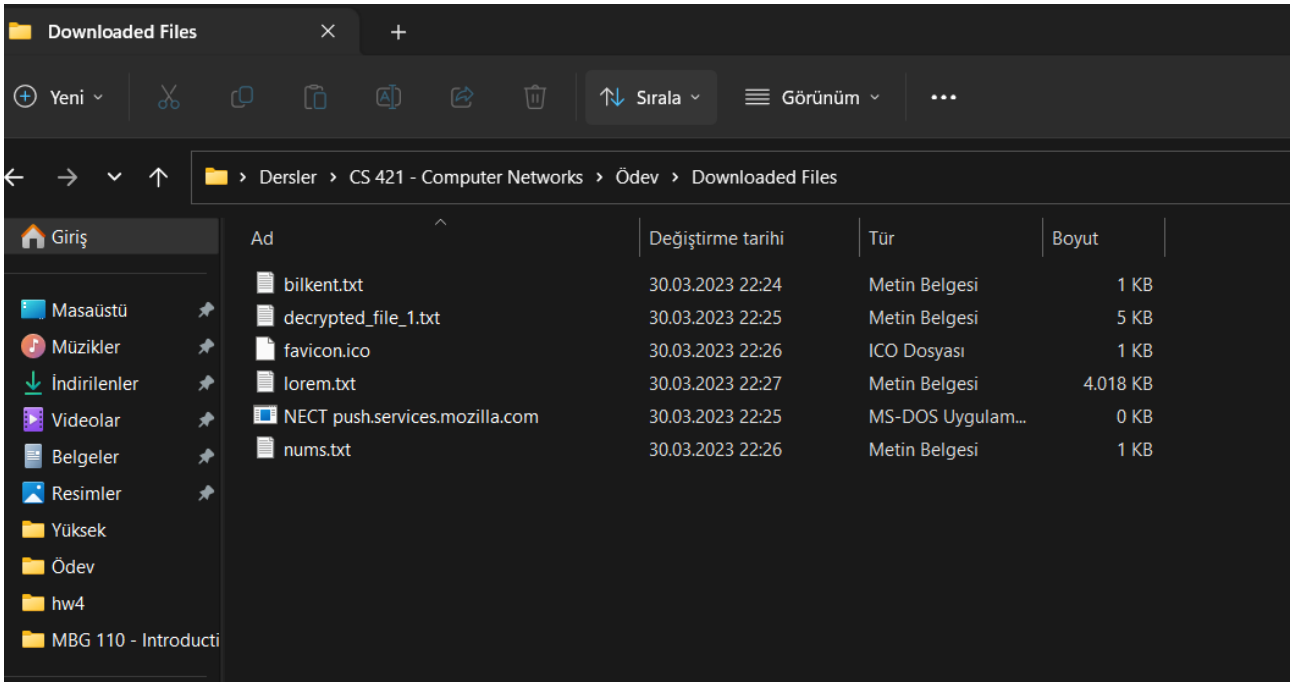
Finally, our downloaded contents are: