COMPUTER NETWORKS
ASSIGNMENT 02

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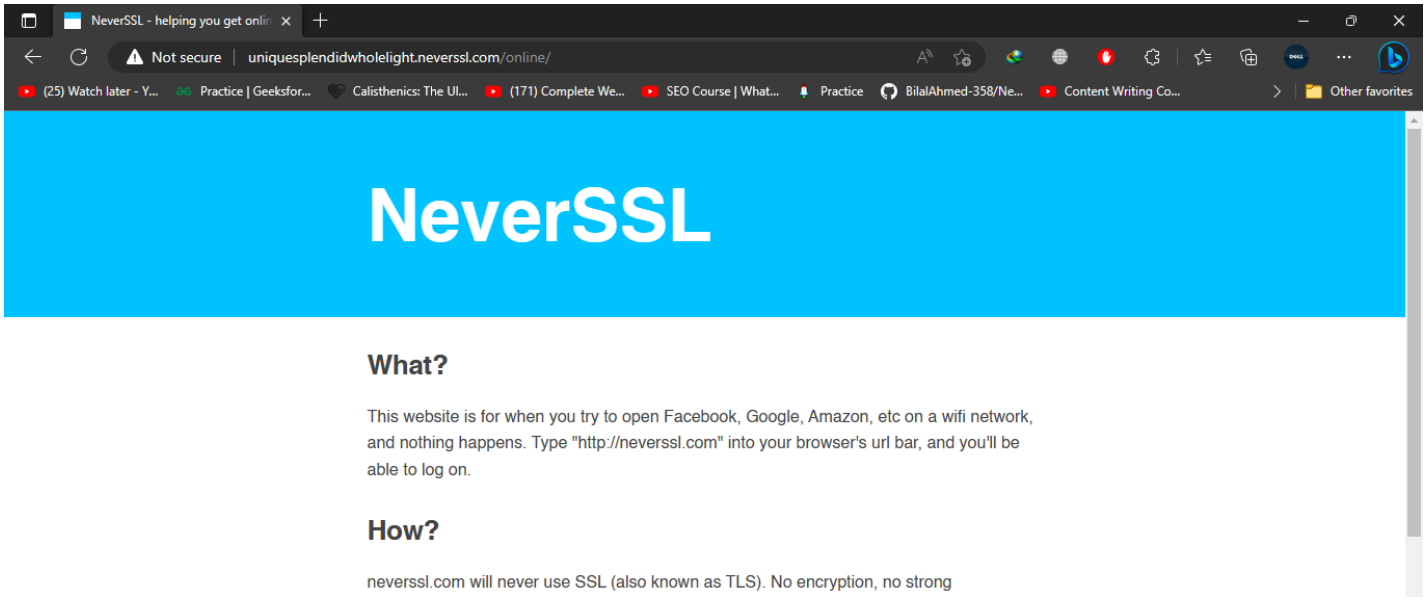
Task:

Develop a web proxy server with the following features

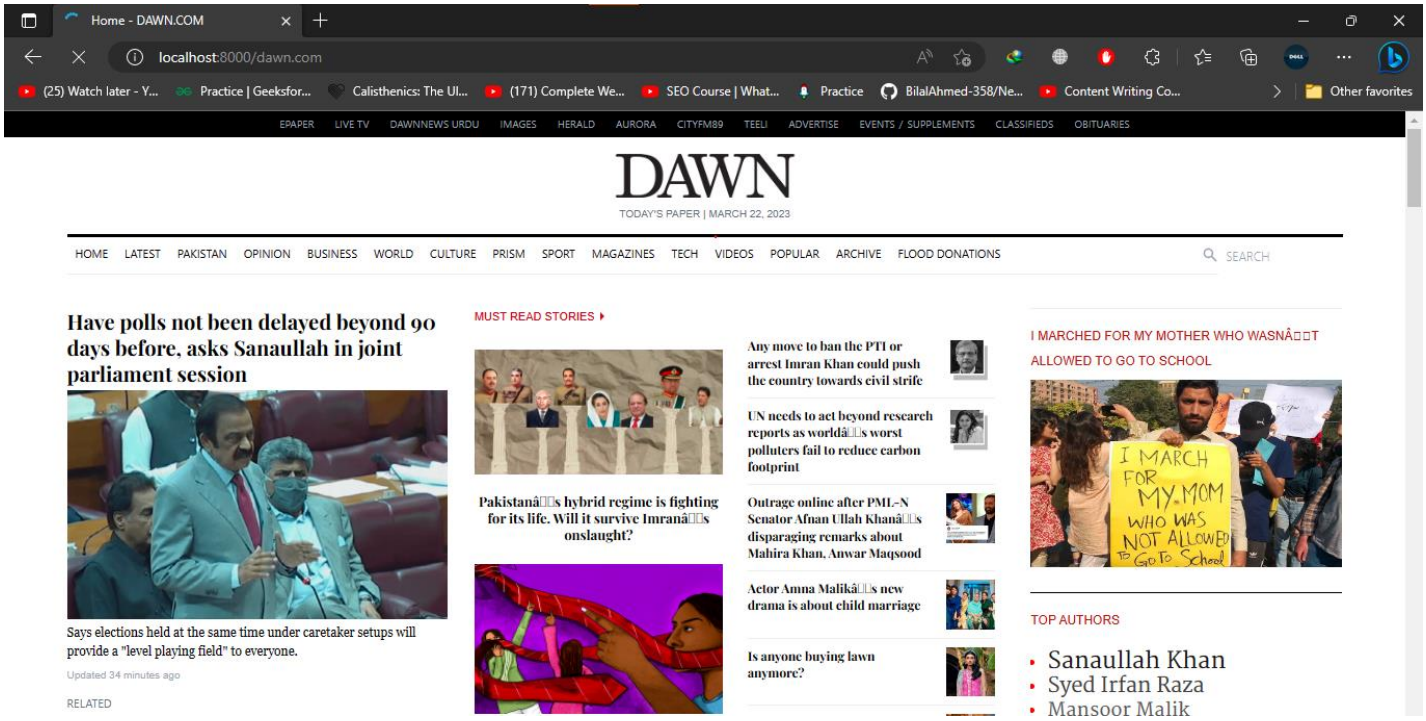
1. HTTP communications between client and server.
2. HTTPs communications between client and server.
3. Caching of popular content using at least two scheduling algorithms.
4. Content filtering (filtering rules should be configurable via admin console).

Solution:

i) Http communication:



ii) Https Communication:



iii) Caching using two scheduling algorithms:

We implemented two scheduling algorithms

i) FIFO

```
def fifo_cache_scheduling():
    entries = os.listdir(
        r"C:\Users\Bilal\Desktop\Compute Networks Assignment
02\cache")

    current_time = time.ctime()

    path = Path(r"C:\Users\Bilal\Desktop\Compute Networks
Assignment 02\cache")
    for entry in entries:
        filePath = Path.joinpath(path, entry)
        creation_time = os.path.getctime(filePath)
        creation_datetime =
datetime.datetime.fromtimestamp(creation_time)
        current_datetime = datetime.datetime.now()
        days_since_accessed = (current_datetime -
creation_datetime).days
        if days_since_accessed > 7:
            os.remove(filePath)
            print(str(filePath) + "Deleted due cache expiration.")
```

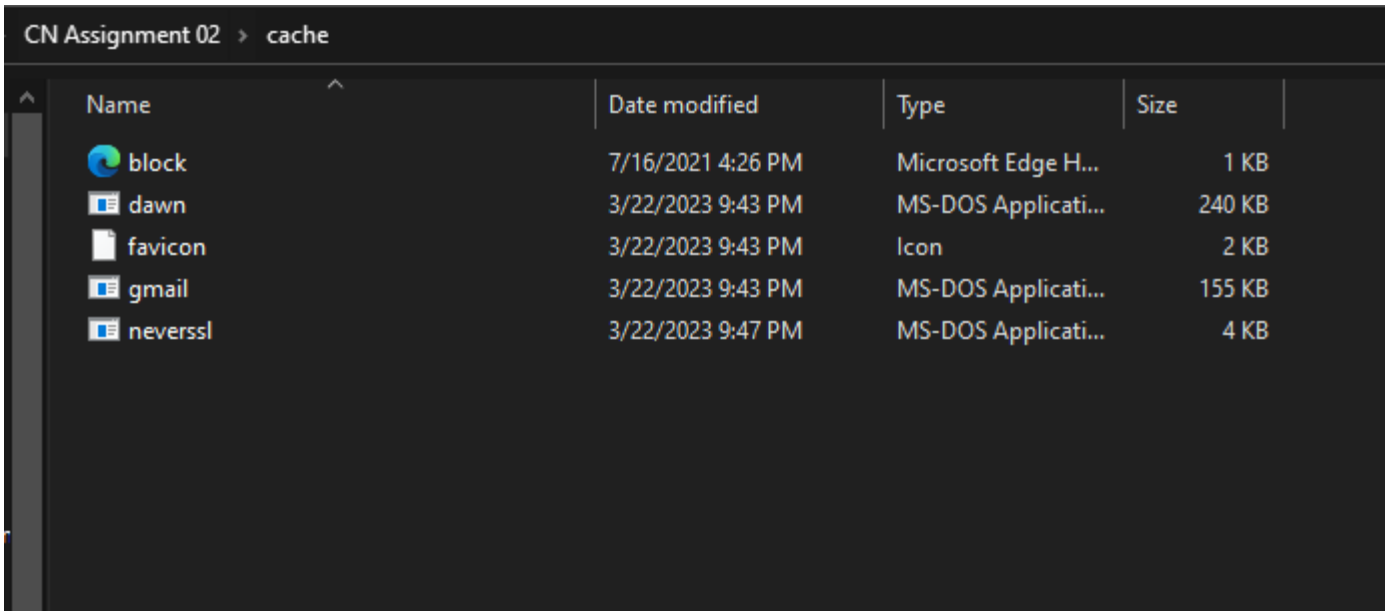
ii) Least Recently Used

```
def LeastRecentlyUsedScheduling():
    entries = os.listdir(
        r"C:\Users\Bilal\Desktop\Compute Networks Assignment
02\cache")

    current_time = time.ctime()

    path = Path(r"C:\Users\Bilal\Desktop\Compute Networks
Assignment 02\cache")
    for entry in entries:
        filePath = Path.joinpath(path, entry)
        last_accessed_time = os.path.getatime(filePath)
        creation_datetime =
datetime.datetime.fromtimestamp(last_accessed_time)
        current_datetime = datetime.datetime.now()
        days_since_accessed = (current_datetime -
creation_datetime).days
        if days_since_accessed > 7:
            os.remove(filePath)
            print(str(filePath) + "Deleted due cache expiration.")
```

Items being fetched from cache shown on server command line

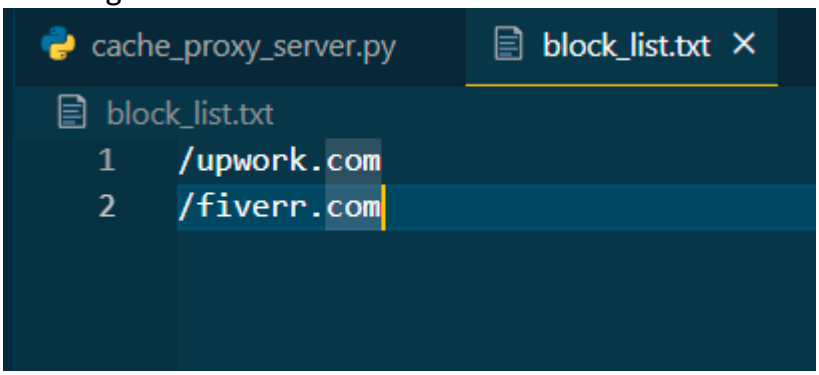
```
PS C:\Users\Bilal\Desktop\Compute Networks Assignment
02> python .\cache_proxy_server.py 8000
Server started at port number: 8000 ...
Fetched successfully from cache.
Fetched successfully from cache.
```

Cache folder holding cached files

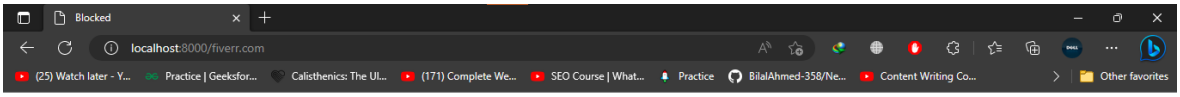


iv) Content filtering:

Entering the names of the websites to be blocked



Verification from browser



SITE BLOCKED

The site you are trying to access is blocked by the service provider