Networks Programming Assignment 1

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The code:

```
from socket import *
import sys

if len(sys.argv) <= 1:
    print('Usage : "python ProxyServer.py server_ip"\n[server_ip : It
is the IP Address Of Proxy Server')
    sys.exit(2)

# Create a server socket, bind it to a port and start listening
tcpSerSock = socket(AF_INET, SOCK_STREAM)

# Fill in start.
tcpSerSock.bind((sys.argv[1], 8888))
tcpSerSock.listen(5)
# Fill in end.

while 1:
    # Start receiving data from the client
    print('Ready to serve...')
    tcpCliSock, addr = tcpSerSock.accept()
    print('Received a connection from:', addr)

    # Fill in start.
    message = tcpCliSock.recv(4096).decode()
    # Fill in end.
    # print(message)

    # Extract the filename from the given message
    print(message.split()[1])
    filename = message.split()[1].partition("/")[2]
    # print(filename)
    fileExist = "false"
```

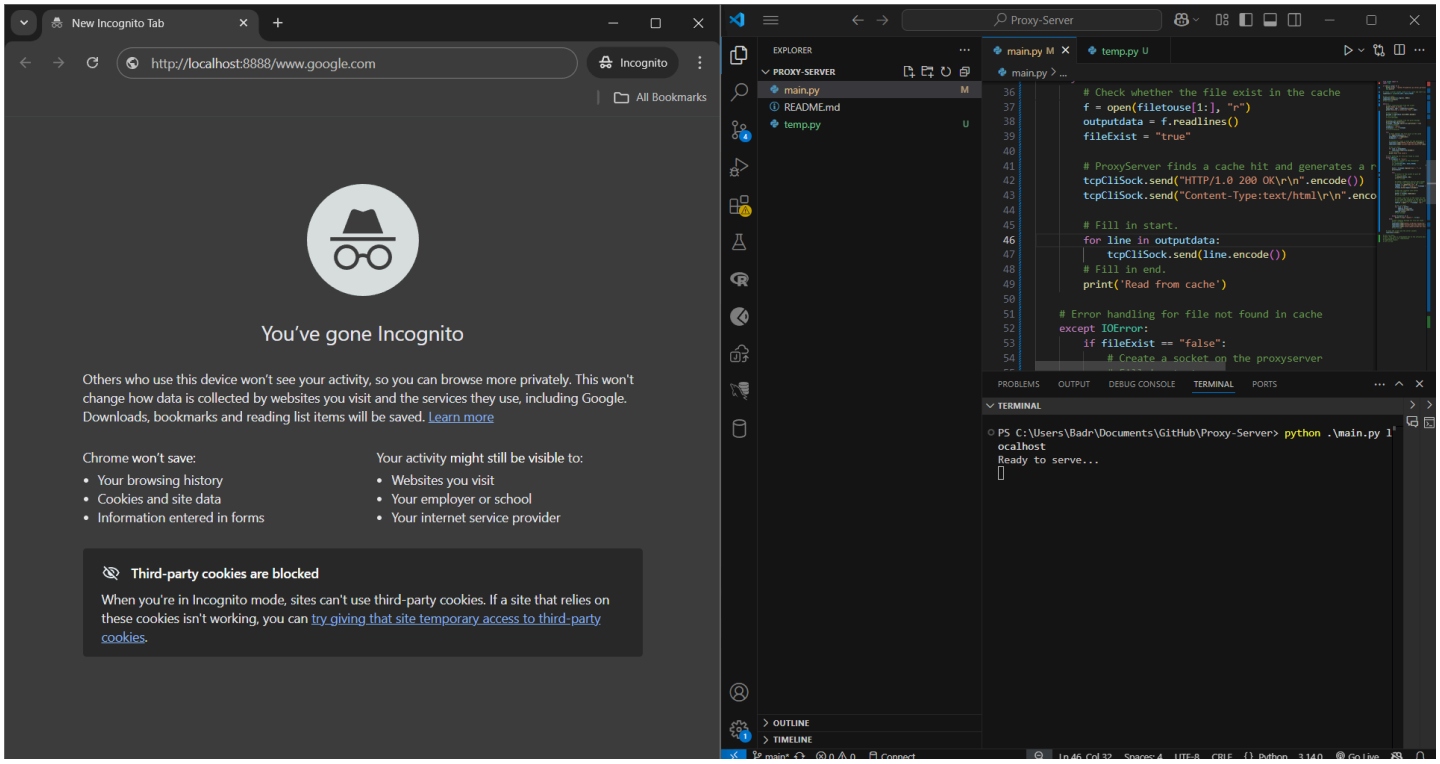
```
    filetouse = "/" + filename
    # print(filetouse)

    try:
        # Check whether the file exist in the cache
        f = open(filetouse[1:], "r")
        outputdata = f.readlines()
        fileExist = "true"

        # ProxyServer finds a cache hit and generates a response
message
        tcpCliSock.send("HTTP/1.0 200 OK\r\n".encode())
        tcpCliSock.send("Content-Type:text/html\r\n".encode())

        # Fill in start.
        for line in outputdata:
            tcpCliSock.send(line.encode())
        # Fill in end.
        print('Read from cache')

    # Error handling for file not found in cache
    except IOError:
        if fileExist == "false":
            # Create a socket on the proxyserver
            # Fill in start.
            c = socket(AF_INET, SOCK_STREAM)
            # Fill in end.

            hostn = filename.replace("www.", "", 1)
            print(hostn)

            try:
                # Connect to the socket to port 80
                # Fill in start.
                c.connect((hostn, 80))
                # Fill in end.

                # Create a temporary file on this socket and ask port
80
```

```
                # for the file requested by the client
                fileobj = c.makefile('rwb', 0)
                request = "GET " + "http://" + filename + "
HTTP/1.0\r\nHost: " + hostn + "\r\n\r\n"
                fileobj.write(request.encode())

                # Read the response into buffer
                # Fill in start.
                buffer = fileobj.readlines()
                # Fill in end.

                # Create a new file in the cache for the requested
file.
                # Also send the response in the buffer to client
socket
                # and the corresponding file in the cache
                tmpFile = open("./" + filename, "wb")

                # Fill in start.
                for line in buffer:
                    tmpFile.write(line)
                    tcpCliSock.send(line)
                tmpFile.close()
                # Fill in end.

            except Exception as e:
                print("Illegal request:", str(e))
        else:
            # HTTP response message for file not found
            # Fill in start.
            tcpCliSock.send("HTTP/1.0 404 Not Found\r\n".encode())

tcpCliSock.send("Content-Type:text/html\r\n\r\n".encode())
            tcpCliSock.send("<html><body><h1>404 Not
Found</h1></body></html>".encode())
            # Fill in end.

    # Close the client and the server sockets
    tcpCliSock.close()
```

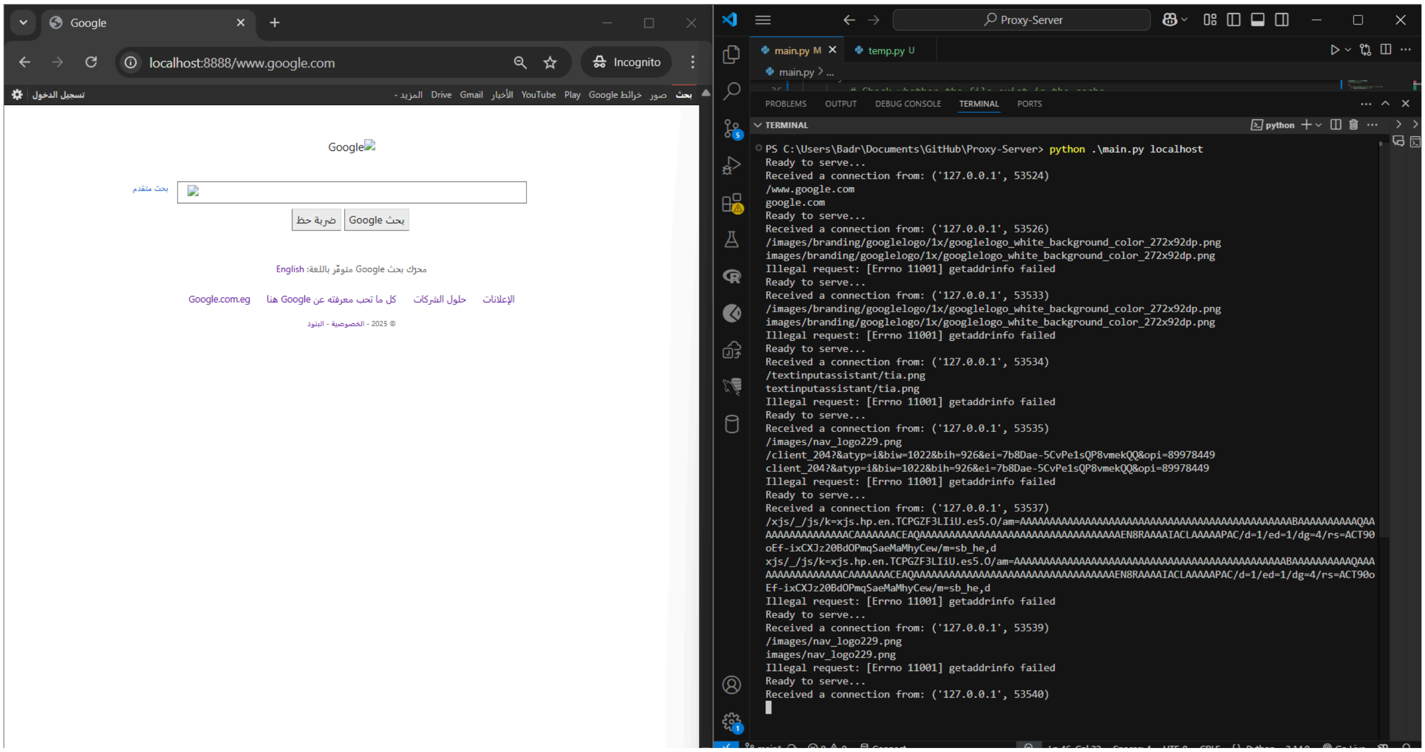
```
# Fill in start.
# Fill in end.
```

The screenshots:

Starting the proxy server without accessing any sites yet



First time accessing a site (google), resulting in a miss



Accessing the site again, resulting in a hit as shown