

PROGRAMMING ASSIGNMENT 3 CS3205

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CS17B034

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CS17B005

Implementation

- Program consists of a main process and child process for the respective clients
- In the main process a Socket is created to listen to client requests when the connection is established with the client. we fork a child process and bind the client to a new Socket fd using accept routine
- Now we use this new socket to receive Client request
- It Parse the request using the functions in proxy_parse file. When Parsed if the command is not GET it displays a IMPLEMENTATION Error and If the Request is Invalid then it displays PARSE error
- Now the Server Address is obtained from the Parser. Socket is to send request to Server. A Server request is created using the Parser functions and is sent to Server.
- After the response from the server is forwarded to Client

Error Handling

```
subbu@subbu: ~/Networks/A3
subbu@subbu:~/Networks/A3$ ./prox 12358
Proxy Server Started
Client : 1
Client : 2
Client : 3
0
0
Client : 2 Job done in 1
0
Client : 3 Job done in 1
Client : 1 Job done in 1
^Z
[5]+  Stopped                  ./prox 12358
subbu@subbu:~/Networks/A3$ ./prox 12356
Socket Error: Address already in use
subbu@subbu:~/Networks/A3$ ./prox 12345
Socket Error: Address already in use
subbu@subbu:~/Networks/A3$ ./prox 12389
Proxy Server Started
Client : 1
invalid request line, method not 'GET': POST
-2
Not Implementation err

subbu@subbu:~/Networks/A3$ telnet localhost 12389
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
POST http://www.google.com/ HTTP/1.0
Not Implemented error
Connection closed by foreign host.
subbu@subbu:~/Networks/A3$
```



```
subbu@subbu:~/Networks/A3$ ./prox 1239
Proxy Server Started
Client : 1
invalid request line, unsupported version HTTP1.0
-1
parse err

subbu@subbu:~/Networks/A3$ telnet localhost 1239
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
GET http://www.google.com/ HTTP1.0
Parse Error
Connection closed by foreign host.
subbu@subbu:~/Networks/A3$
```

Single Client Request

- 2 clients requesting 2 GET requests one after another.

```
Activities Terminal Mar 10 12:12 AM
subbu@subbu: ~/Networks/A3
subbu@subbu:~/Networks/A3$ make clean
rm -f proxy *.o HTTP-proxy.o
subbu@subbu:~/Networks/A3$ make prox
gcc -I ./lib -c proxy_parse.c HTTP-proxy.c
gcc -g -o prox proxy_parse.o HTTP-proxy.c
subbu@subbu:~/Networks/A3$ ./prox
Input Error: Success
GETADDR error: Success
subbu@subbu:~/Networks/A3$ ./prox 3457
Proxy Server Started
Client : 1

```

```
subbu@subbu:~/Networks/A3$ telnet localhost 3457
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^'.
GET http://www.google.com/ HTTP/1.0
```

```
Activities Terminal Mar 10 12:12 AM
subbu@subbu: ~/Networks/A3
subbu@subbu:~/Networks/A3$ make clean
rm -f proxy *.o HTTP-proxy.o
subbu@subbu:~/Networks/A3$ make prox
gcc -I ./lib -c proxy_parse.c HTTP-proxy.c
gcc -g -o prox proxy_parse.o HTTP-proxy.c
subbu@subbu:~/Networks/A3$ ./prox
Input Error: Success
GETADDR error: Success
subbu@subbu:~/Networks/A3$ ./prox 3457
Proxy Server Started
Client : 1
0
Client : 1 Job done in 1

```

```
t-size:10pt"><div style="margin:19px auto;text-align:center" id="fll"><a href="/intl/en/ads/">AdvertisingPrograms</a><a href="http://www.google.co.in/services/">Business Solutions</a><a href="/intl/en/about.html">About Google</a><a href="http://www.google.com/setprefdomain?prefdom=IN&prev=http://www.google.co.in/&sig=K_ywUcZdPwaYQeYihR1YLhoc0tIYA%3D">Google.co.in</a></div></div><p style="font-size:8pt;color:#767676">&copy; 2020 - <a href="/intl/en/policies/privacy/">Privacy</a> - <a href="/intl/en/policies/terms/">Terms</a></p></span></center><script nonce="Qv7GZFrK3c9/mHslp0DPJA=">(function(){window.google.cdo={height:0,width:0};(function(){var a=window.innerWidth,b=window.innerHeight;if(!a||!b){var c=window.document,d="CSS1Compat"==c.compatMode?c.documentElement:c.body;a=d.clientWidth;b=d.clientHeight}a&&b&&(a!=google.cdo.width||b!=google.cdo.height)&&google.log("",""/client_204?&atyp=i&biw="+a+"&bih="+b+"&ei="+google.kEI;});call(this);});(function(){var u="/xjs/_/js/k/x3dxjs.hp.en.0EuLPigu6zs.0/m/x3dsb_he,d/am/x3dgAEBNgI/d/x3d1/rs/x3dACT90oHVjWcAH6SUvaGkbnvcPU9bG2l0WA";setTimeout(function(){var b=document;var a="SCRIPT";"application/xhtml+xml"===b.contentType&&(a=a.toLowerCase());a=b.createElement(a);a.src=u;google.timers&&google.timers.load&&google.tick&&google.tick("load","xjsls");document.body.appendChild(a),0);});(function(){window.google.xjsu="/xjs/_/js/k/x3dxjs.hp.en.0EuLPigu6zs.0/m/x3dsb_he,d/am/x3dgAEBNgI/d/x3d1/rs/x3dACT90oHVjWcAH6SUvaGkbnvcPU9bG2l0WA";})();function _DumpException(e){throw e;}function _F_installCss(c){(function(){google.spjs=false;google.snet=true;google.em=[];google.emw=false;google.pdt=0;})();(function(){var pmc='{x22d\x22:{},x22sb_he\x22:{x22agen\x22:true,x22cgen\x22:true,x22client\x22:{x22heirloom-hp\x22,x22dh\x22:true,x22dhqt\x22:true,x22ds\x22:{x22\x22,x22ffq1\x22:{x22en\x22,x22fl\x22:true,x22host\x22:{x22google.com\x22,x22isbh\x22:28,x22jsnnp\x22:true,x22msgs\x22:{x22c1bl\x22:{x22C1ear Search\x22,x22dym\x22:{x22did you mean\x22,x22lcky\x22:{x22I\\u0026#39;m Feeling Lucky\x22,x22lml\x22:{x22Learn more\x22,x22oskt\x22:{x22Input tools\x22,x22psrc\x22:{x22This search was removed from your \\u003Ca href\x22:{x22/history\\x22\\u003EWeb History\\u003C/a\\u003E\x22,x22psrl\x22:{x22Remove\x22,x22sbit\x22:{x22Search by image\x22,x22srch\x22:{x22Google Search\x22},x22ovr\x22:{},x22pq\x22:{x22\x22,x22refpd\x22:true,x22rfs\x22:[],x22sbpl\x22:16,x22sbpr\x22:16,x22scd\x22:10,x22stok\x22:{x222pk-ZvQAF96cxK6TTW2VLX57cuQ\x22,x22uhde\x22:false}}};google.pmc=JSON.parse(pmc);})();</script></body></html>Connection closed by foreign host.
subbu@subbu:~/Networks/A3$
```

```
Activities Terminal Mar 10 12:13 AM
subbu@subbu: ~/Networks/A3
subbu@subbu:~/Networks/A3$ make clean
rm -f proxy *.o HTTP-proxy.o
subbu@subbu:~/Networks/A3$ make prox
gcc -I ./lib -c proxy_parse.c HTTP-proxy.c
gcc -g -o prox proxy_parse.o HTTP-proxy.c
subbu@subbu:~/Networks/A3$ ./prox
Input Error: Success
GETADDR error: Success
subbu@subbu:~/Networks/A3$ ./prox 3457
Proxy Server Started
Client : 1
0
Client : 1 Job done in 1
Client : 2
0
Client : 2 Job done in 1

```

```
<a style="font-size:11px" href="pages.php?pages=Mjc">Website Credits</a>
</div>
<!-- ##### -->
</div>
</body>
</html>
<script>$(function){$.bxslider({
  auto: true,
  autoControls: true,
  captions: true,
});

function change_tab(id)
{
  document.getElementById("page_content").innerHTML=document.getElementById(id+"_desc").innerHTML;
  document.getElementById("page1").className="notselected";
  document.getElementById("page2").className="notselected";
  document.getElementById("page3").className="notselected";
  document.getElementById(id).className="selected";
}

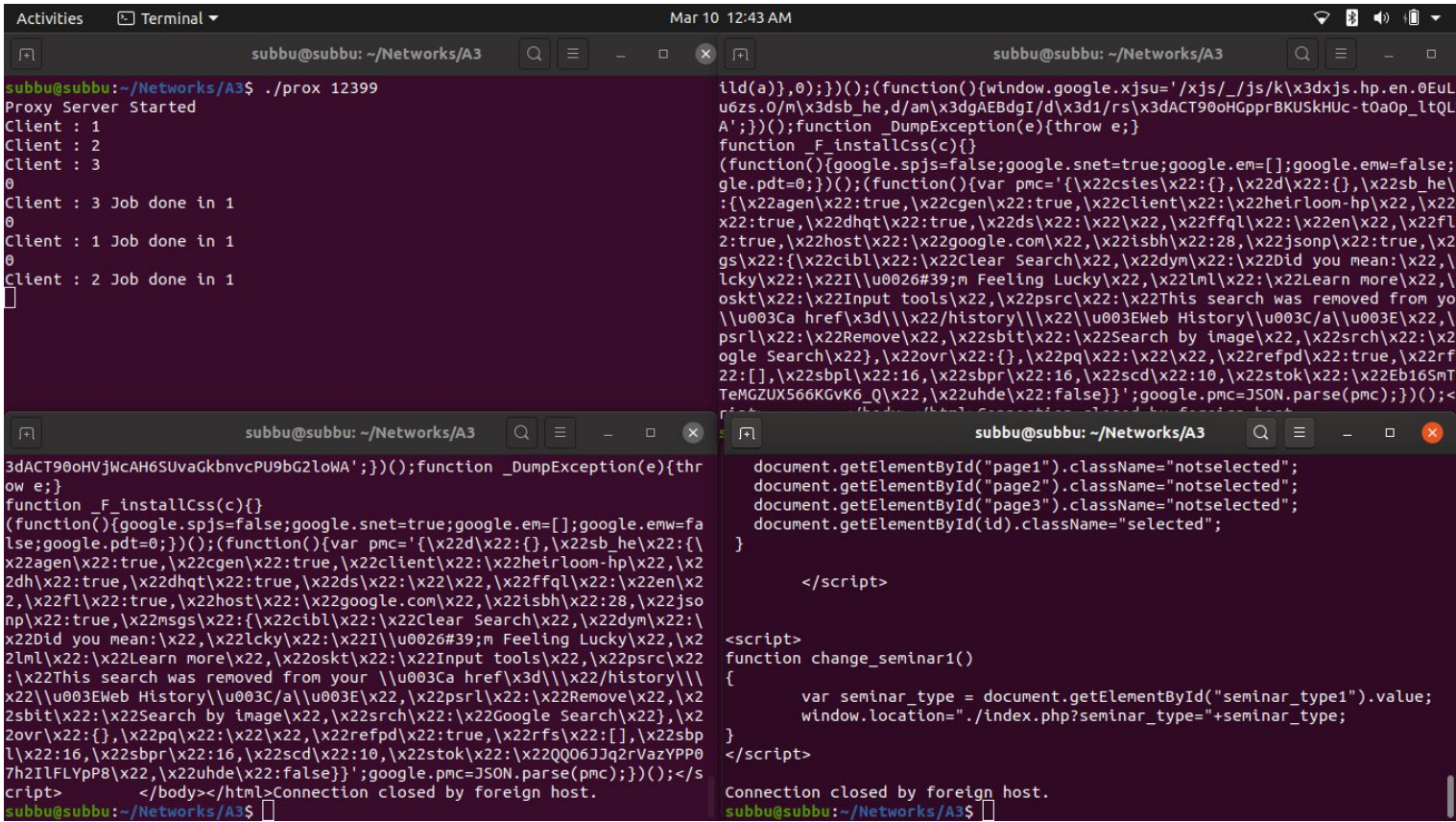
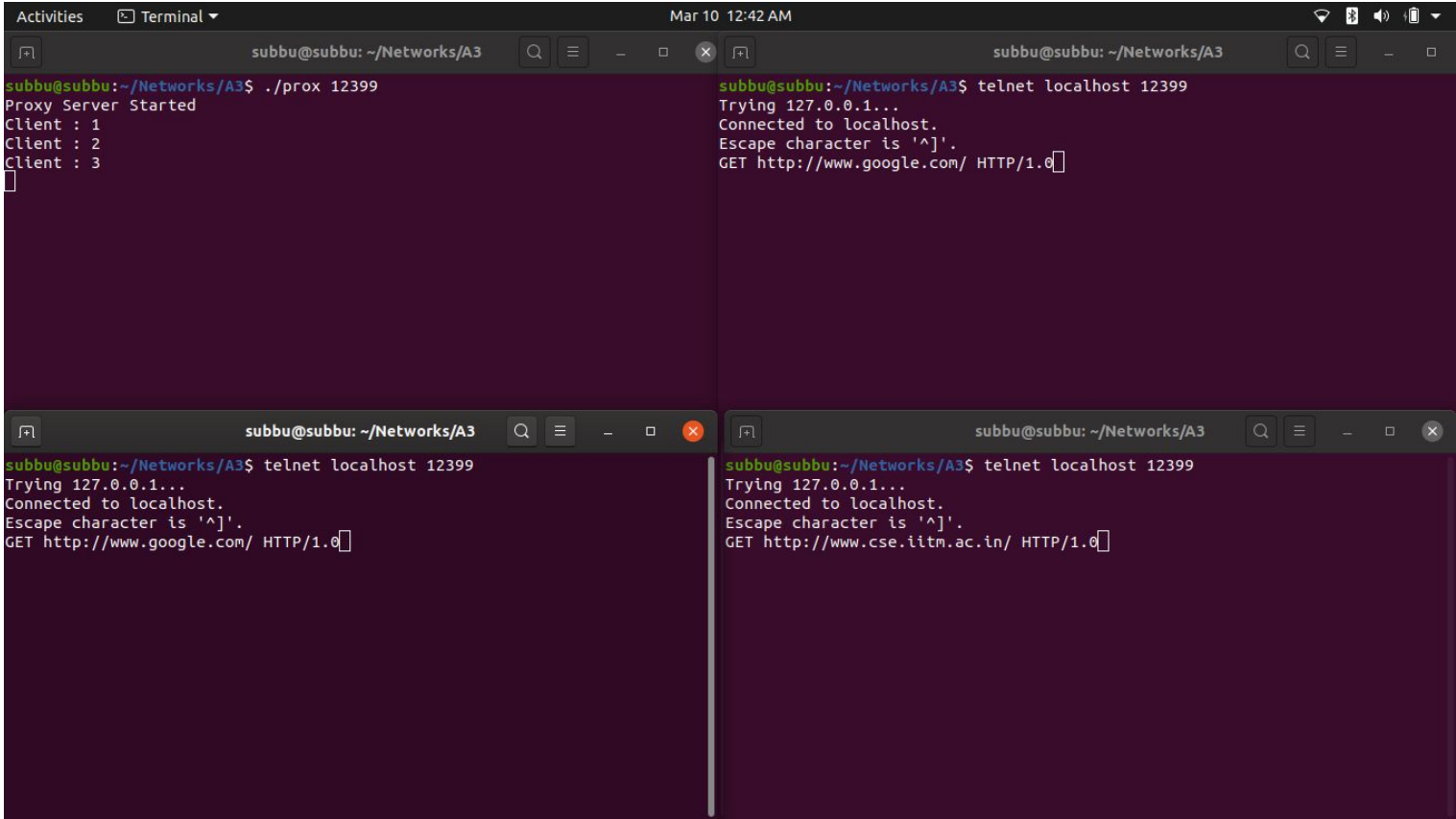
</script>

<script>
function change_seminar1()
{
  var seminar_type = document.getElementById("seminar_type1").value;
  window.location="/index.php?seminar_type="+seminar_type;
}
</script>

Connection closed by foreign host.
subbu@subbu:~/Networks/A3$
```


Multiple Client Requests

- Client 1 requesting GET http://www.google.com/ HTTP/1.0
- Client 2 requesting GET http://www.cse.iitm.ac.in/ HTTP/1.0
- Client 3 requesting GET http://www.google.com/ HTTP/1.0



Summary

- We used fork to create multiple processes for handling many clients simultaneously.
- This way of using proxy we can hide our IP and other info from remote servers.
- Saving frequently requested data proxies can improve the performance and reduce load on remote servers.
- We used socket programming functions like
 1. `accept` : It'll return to you a *brand new socket file descriptor* to use for this single connection and the original one is still listening for more new connections.
 2. `send/recv` : to send and receive data
 3. `bind` : used to establish connection.

```
subbu@subbu: ~/Networks/A3
subbu@subbu: ~/Networks/A3
subbu@subbu:~/Networks/A3$ python proxy_tester.py prox 6666
Binary: prox
Running on port 6666
Proxy Server Started
### Testing: http://www.mit.edu/
Client : 1
Request is GET http://www.mit.edu/ HTTP/1.0
Connection: close

Server Request CREATING
Sending req to server
Server Request sent
Client : 1 Job done in 0
http://www.mit.edu/: [PASSED]

### Testing: HTTP://WWW.stanford.edu/
Client : 2
Request is GET HTTP://WWW.stanford.edu/ HTTP/1.0
Connection: close

Server Request CREATING
Sending req to server
Server Request sent
Client : 2 Job done in 0
Proxy: Set-Cookie: wordpress_google_apps_login=ddf1a51a5d8da22aff0a380ddcc0bb79; path=/; secure
Direct: Set-Cookie: wordpress_google_apps_login=1c88cf99b2b8672af9b08a0b1b35adf4; path=/; secure
HTTP://WWW.stanford.edu/: [FAILED]

### Testing: http://sns.cs.princeton.edu/
Client : 2
Request is GET http://sns.cs.princeton.edu/ HTTP/1.0
Connection: close

Server Request CREATING
```

```
subbu@subbu: ~/Networks/A3
subbu@subbu: ~/Networks/A3
subbu@subbu:~/Networks/A3$ python proxy_tester.py prox 6666
Binary: prox
Running on port 6666
Proxy Server Started
### Testing: http://www.mit.edu/
Client : 1
Request is GET http://www.mit.edu/ HTTP/1.0
Connection: close

Server Request CREATING
Sending req to server
Server Request sent
Client : 1 Job done in 0
http://www.mit.edu/: [PASSED]

### Testing: HTTP://WWW.stanford.edu/
Client : 2
Request is GET HTTP://WWW.stanford.edu/ HTTP/1.0
Connection: close

Server Request CREATING
Sending req to server
Server Request sent
Client : 2 Job done in 0
Proxy: Set-Cookie: wordpress_google_apps_login=ddf1a51a5d8da22aff0a380ddcc0bb79; path=/; secure
Direct: Set-Cookie: wordpress_google_apps_login=1c88cf99b2b8672af9b08a0b1b35adf4; path=/; secure
HTTP://WWW.stanford.edu/: [FAILED]

### Testing: http://sns.cs.princeton.edu/
Client : 2
Request is GET http://sns.cs.princeton.edu/ HTTP/1.0
Connection: close

Server Request CREATING
Sending req to server
Server Request sent
Client : 2 Job done in 0
http://sns.cs.princeton.edu/: [PASSED]

### Testing: http://yuba.stanford.edu/vns/
Client : 3
Request is GET http://yuba.stanford.edu/vns/ HTTP/1.0
Connection: close

Server Request CREATING
Sending req to server
Server Request sent
Client : 3 Job done in 0
http://yuba.stanford.edu/vns/: [PASSED]

### Testing: http://yuba.stanford.edu/vns/images/su.gif
Client : 3
Request is GET http://yuba.stanford.edu/vns/images/su.gif HTTP/1.0
Connection: close

Server Request CREATING
Sending req to server
Server Request sent
Client : 3 Job done in 0
http://yuba.stanford.edu/vns/images/su.gif: [PASSED]

Summary:
4 of 5 tests passed.
subbu@subbu:~/Networks/A3$
```

Proxy Tester compares the cookie number at different instances while testing the Reply from Server So the error in the above Figure