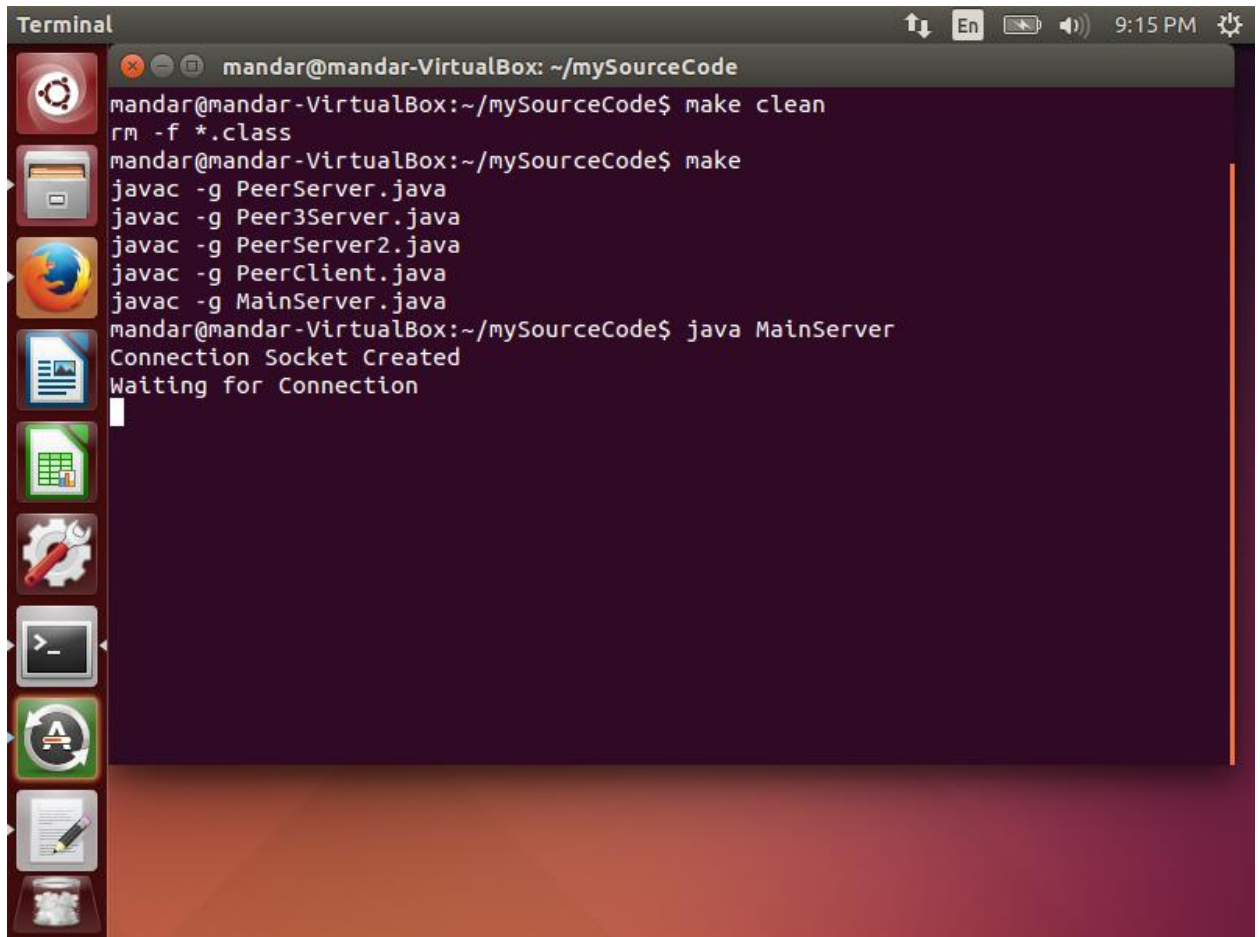


## Output File

- 1) Start MainServer on Peer1 (For my machine username is “mandar”. It is my Peer1)

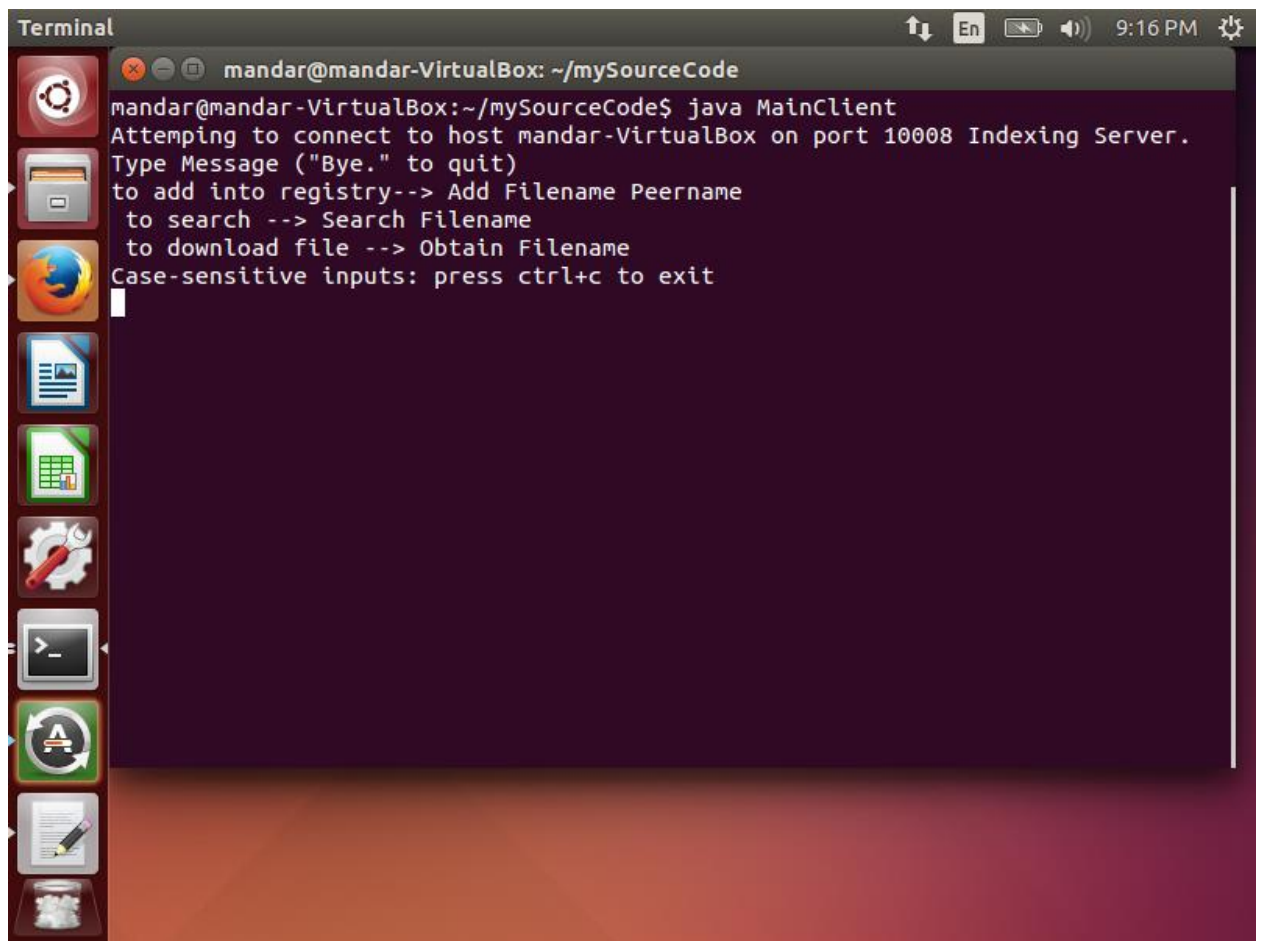


The screenshot shows a terminal window titled "Terminal" with a dark background. The prompt is "mandar@mandar-VirtualBox: ~/mySourceCode". The user has entered the following commands and received the following output:

```
mandar@mandar-VirtualBox:~/mySourceCode$ make clean
rm -f *.class
mandar@mandar-VirtualBox:~/mySourceCode$ make
javac -g PeerServer.java
javac -g Peer3Server.java
javac -g PeerServer2.java
javac -g PeerClient.java
javac -g MainServer.java
mandar@mandar-VirtualBox:~/mySourceCode$ java MainServer
Connection Socket Created
Waiting for Connection
```

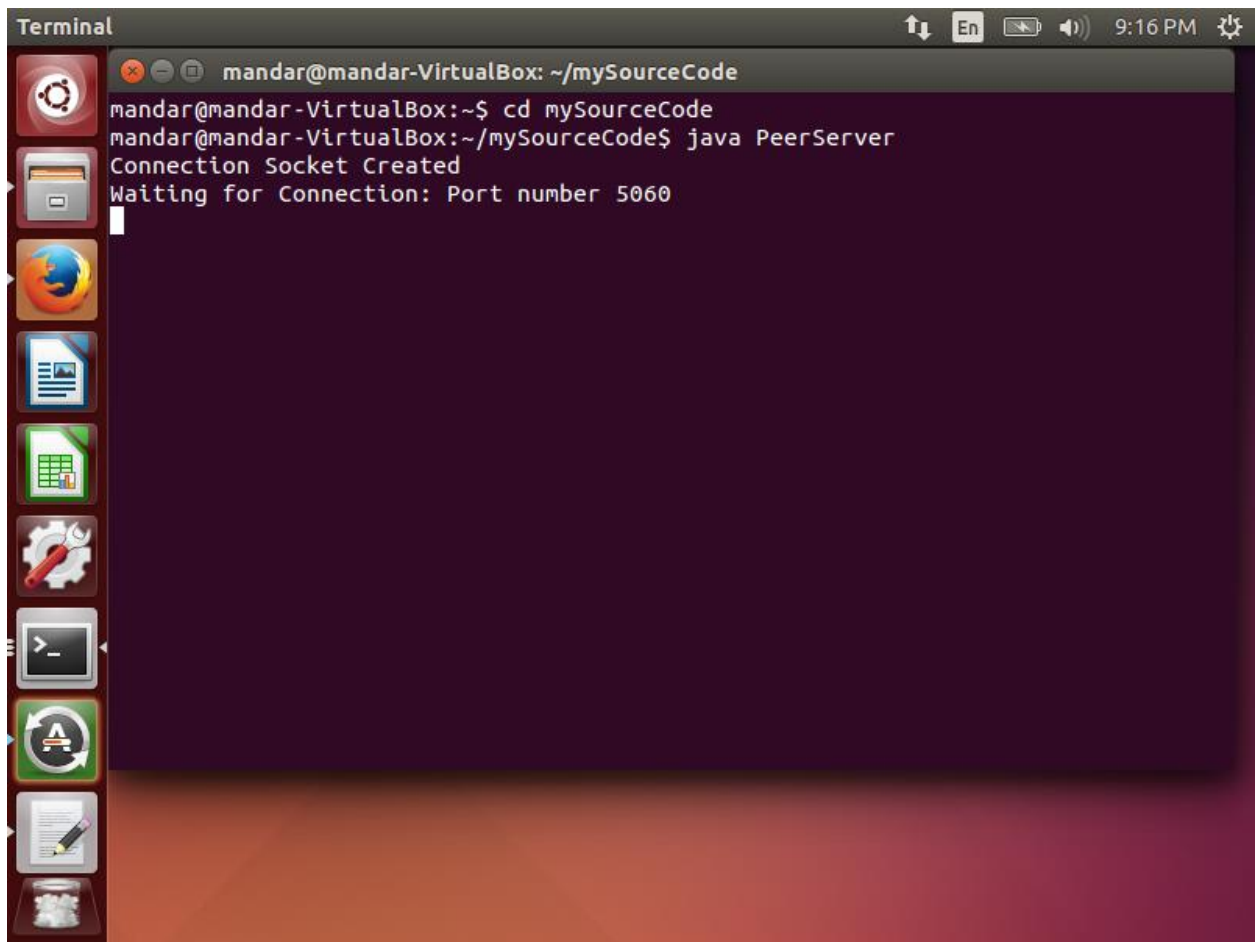
The terminal window has a sidebar on the left with various application icons, including a gear, a folder, a globe, a document, a spreadsheet, a wrench and screwdriver, a terminal icon, a circular arrow, a notepad, and a trash can. The top of the window shows system status icons like network, battery, and volume, along with the time "9:15 PM".

2) Start MainClient on Peer1:



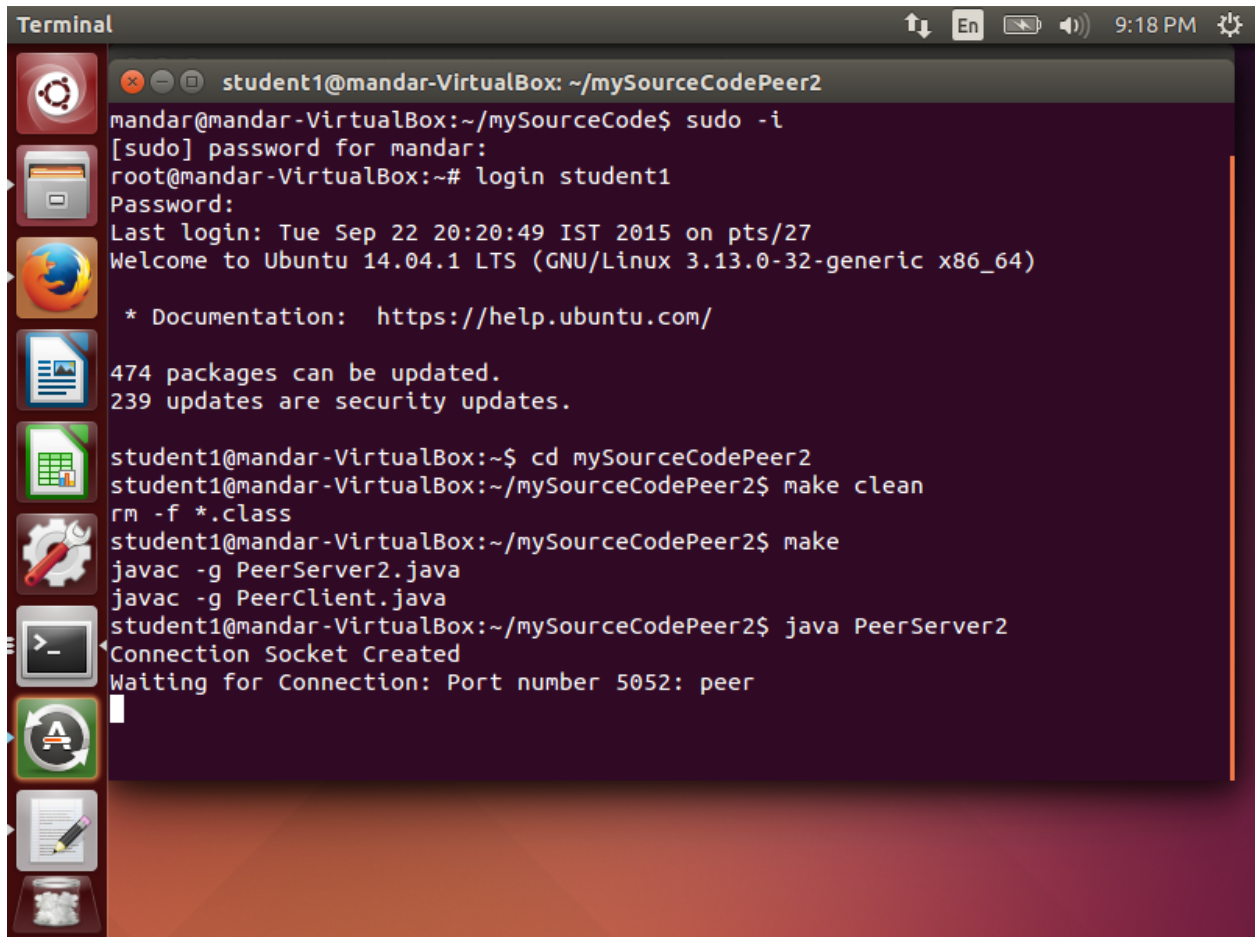
```
Terminal
mandar@mandar-VirtualBox: ~/mySourceCode
mandar@mandar-VirtualBox:~/mySourceCode$ java MainClient
Attempting to connect to host mandar-VirtualBox on port 10008 Indexing Server.
Type Message ("Bye." to quit)
to add into registry--> Add Filename Peername
to search --> Search Filename
to download file --> Obtain Filename
Case-sensitive inputs: press ctrl+c to exit
```

3) Start PeerServer on Peer1:

A screenshot of a Linux terminal window titled "Terminal". The window has a dark background and a light-colored title bar. On the left side, there is a vertical dock with several application icons, including a terminal icon, a file manager, a web browser, a spreadsheet, a settings gear, and others. The terminal content shows the user "mandar" at the "mandar-VirtualBox" machine, in the directory "~/mySourceCode". The user enters the command "cd mySourceCode", followed by "java PeerServer". The output of the command is "Connection Socket Created" and "Waiting for Connection: Port number 5060". The terminal window also shows system status icons in the top right corner, including network, battery, and time (9:16 PM).

```
Terminal
mandar@mandar-VirtualBox: ~/mySourceCode
mandar@mandar-VirtualBox:~$ cd mySourceCode
mandar@mandar-VirtualBox:~/mySourceCode$ java PeerServer
Connection Socket Created
Waiting for Connection: Port number 5060
```

4) Start PeerServer2 on Peer2 by sudo login:



The image shows a terminal window titled "Terminal" with a dark background. The window has a title bar with standard Linux window controls and system status icons (network, volume, battery, and time 9:18 PM). The terminal content shows the following sequence of commands and output:

```
student1@mandar-VirtualBox: ~/mySourceCodePeer2
mandar@mandar-VirtualBox:~/mySourceCode$ sudo -i
[sudo] password for mandar:
root@mandar-VirtualBox:~# login student1
Password:
Last login: Tue Sep 22 20:20:49 IST 2015 on pts/27
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic x86_64)

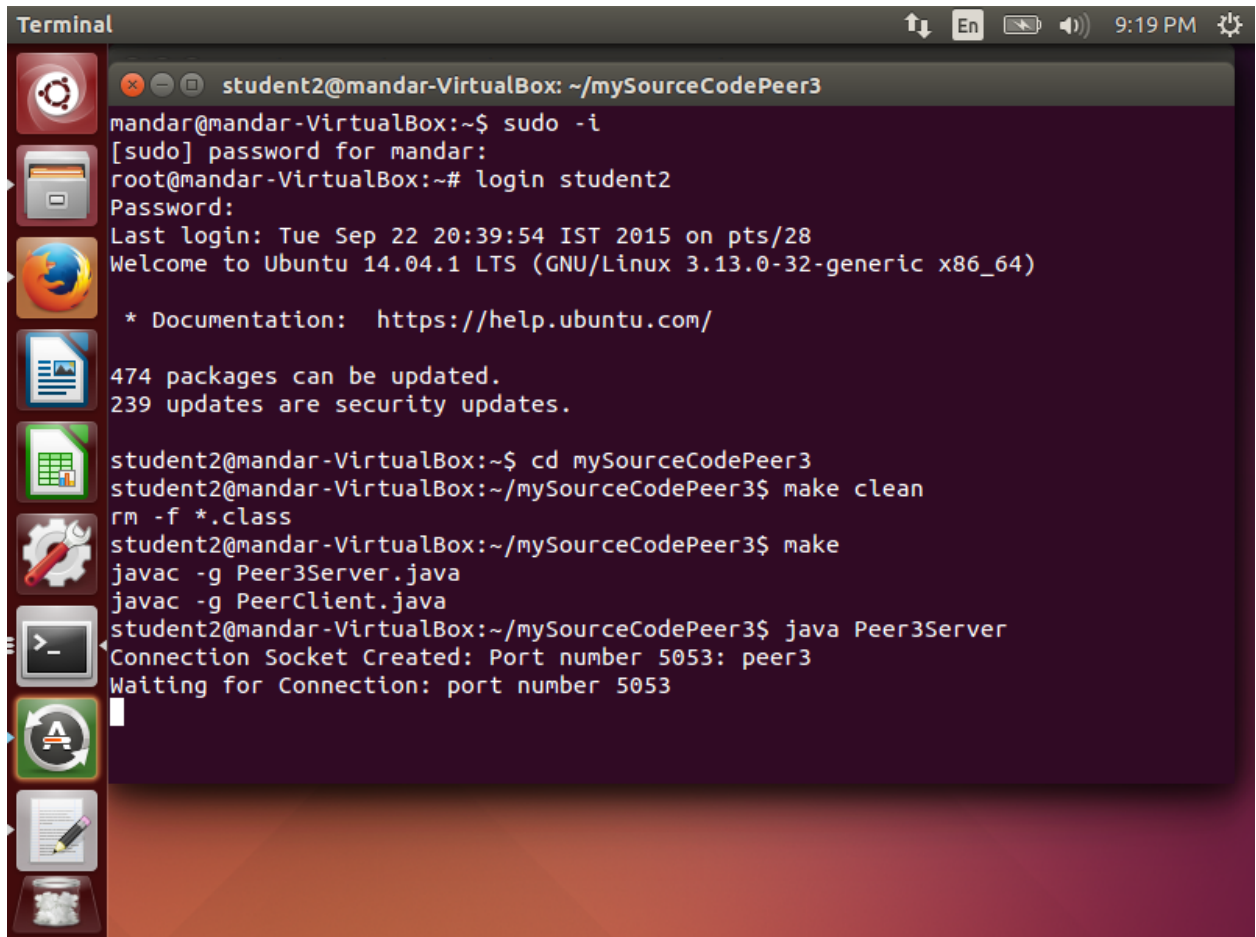
 * Documentation:  https://help.ubuntu.com/

474 packages can be updated.
239 updates are security updates.

student1@mandar-VirtualBox:~$ cd mySourceCodePeer2
student1@mandar-VirtualBox:~/mySourceCodePeer2$ make clean
rm -f *.class
student1@mandar-VirtualBox:~/mySourceCodePeer2$ make
javac -g PeerServer2.java
javac -g PeerClient.java
student1@mandar-VirtualBox:~/mySourceCodePeer2$ java PeerServer2
Connection Socket Created
Waiting for Connection: Port number 5052: peer
```

The terminal window also features a vertical dock on the left side with icons for various applications, including a web browser, file manager, and terminal.

5) Start Peer3Server on Peer3 using sudo login:



The image shows a terminal window titled "Terminal" with a dark background. The window has a title bar with standard Linux window controls and system status icons (network, volume, battery, and time 9:19 PM). The terminal content shows a user named "student2" logging into a virtual machine named "mandar-VirtualBox". The user runs "sudo -i" to become root, then "login student2" to switch to the student2 user. The terminal displays the Ubuntu login banner for Ubuntu 14.04.1 LTS. The user then navigates to the directory "~/mySourceCodePeer3" and runs "make clean" followed by "make". The "make" command compiles "Peer3Server.java" and "PeerClient.java". Finally, the user runs "java Peer3Server", which outputs "Connection Socket Created: Port number 5053: peer3" and "Waiting for Connection: port number 5053".

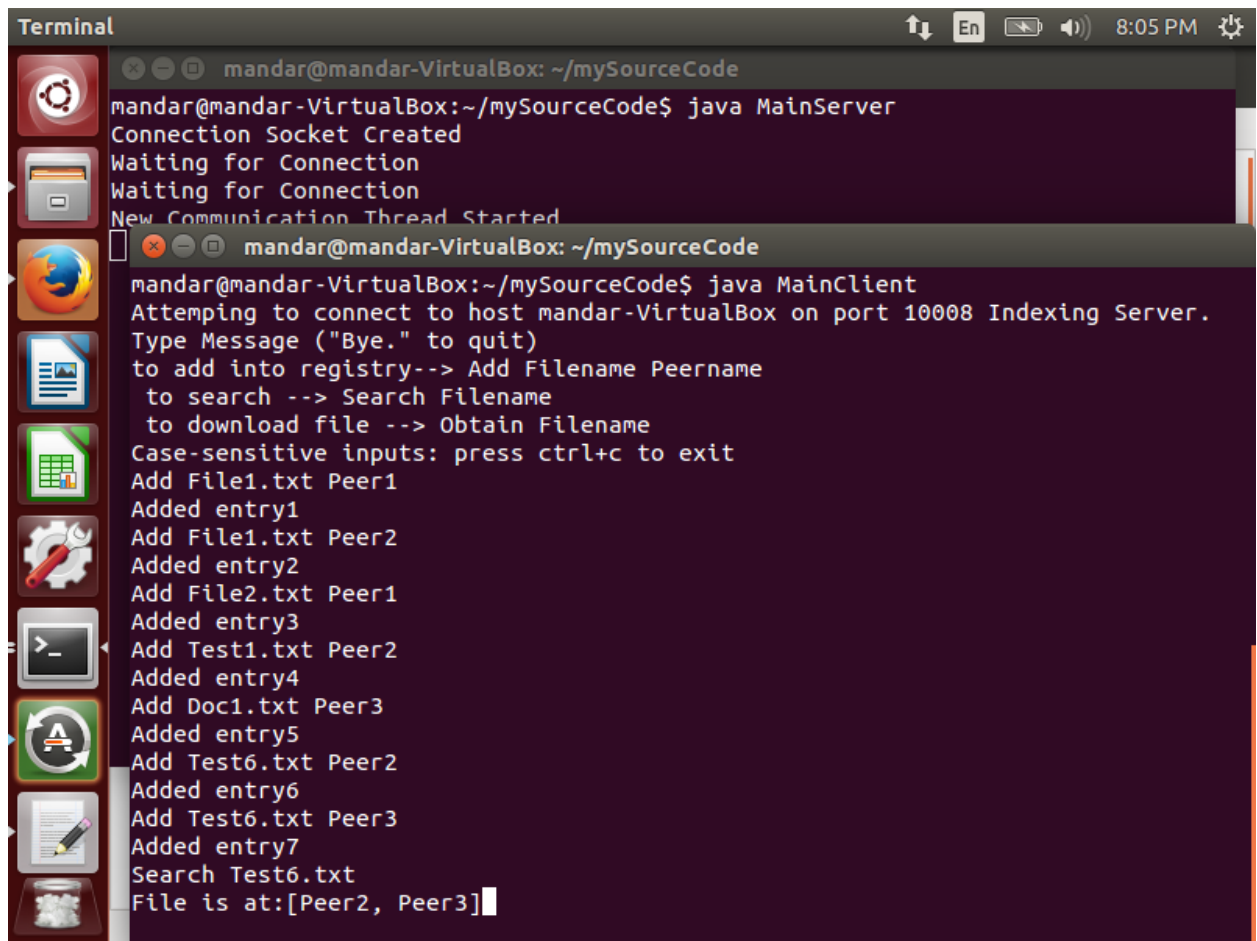
```
student2@mandar-VirtualBox: ~/mySourceCodePeer3
mandar@mandar-VirtualBox:~$ sudo -i
[sudo] password for mandar:
root@mandar-VirtualBox:~# login student2
Password:
Last login: Tue Sep 22 20:39:54 IST 2015 on pts/28
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

474 packages can be updated.
239 updates are security updates.

student2@mandar-VirtualBox:~$ cd mySourceCodePeer3
student2@mandar-VirtualBox:~/mySourceCodePeer3$ make clean
rm -f *.class
student2@mandar-VirtualBox:~/mySourceCodePeer3$ make
javac -g Peer3Server.java
javac -g PeerClient.java
student2@mandar-VirtualBox:~/mySourceCodePeer3$ java Peer3Server
Connection Socket Created: Port number 5053: peer3
Waiting for Connection: port number 5053
```

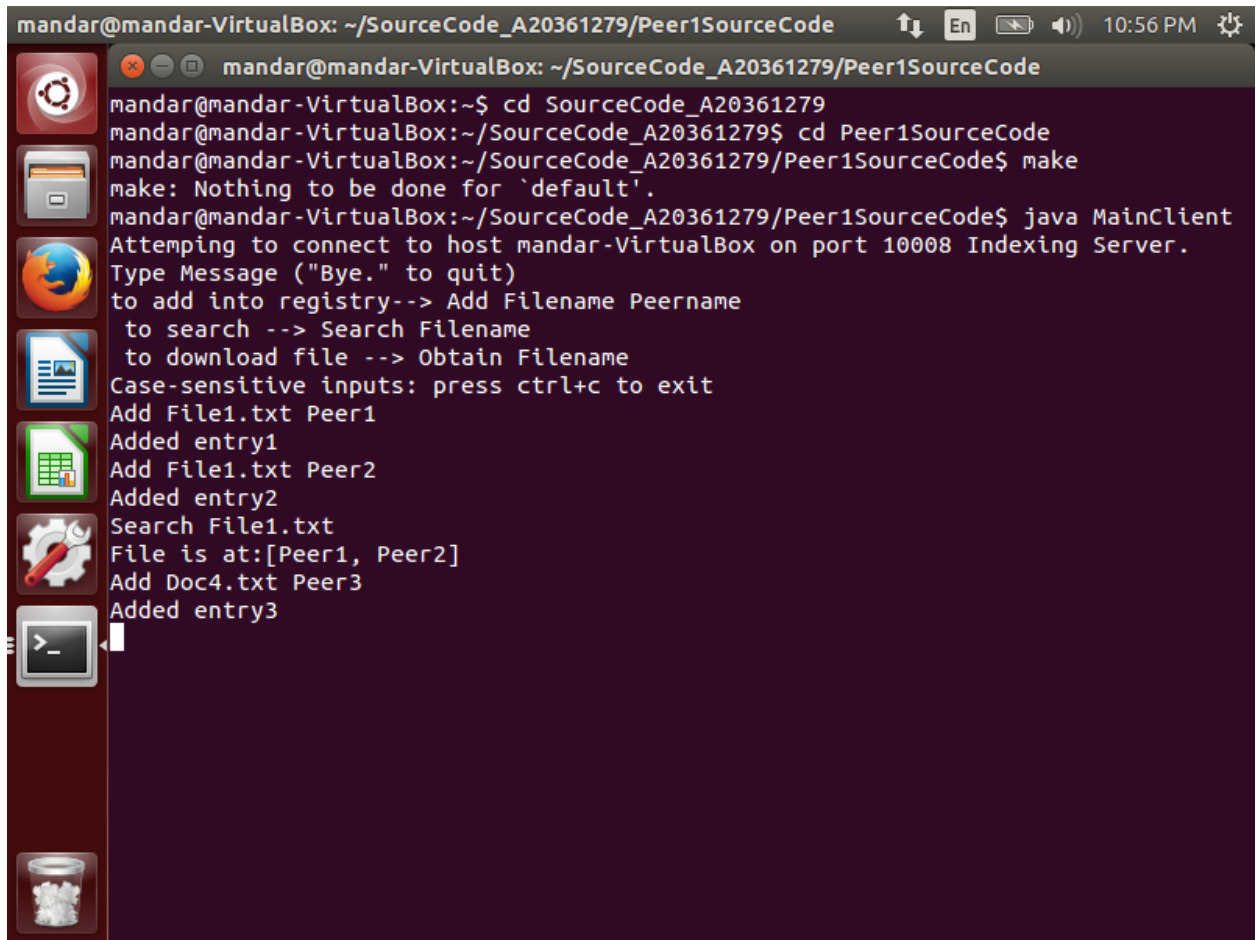
- 6) Adding files to registry and Searching. Test6.txt with peer2 and peer3. Search returns both Peer2 and Peer3.



```
Terminal
mandar@mandar-VirtualBox: ~/mySourceCode
mandar@mandar-VirtualBox:~/mySourceCode$ java MainServer
Connection Socket Created
Waiting for Connection
Waiting for Connection
New Communication Thread Started

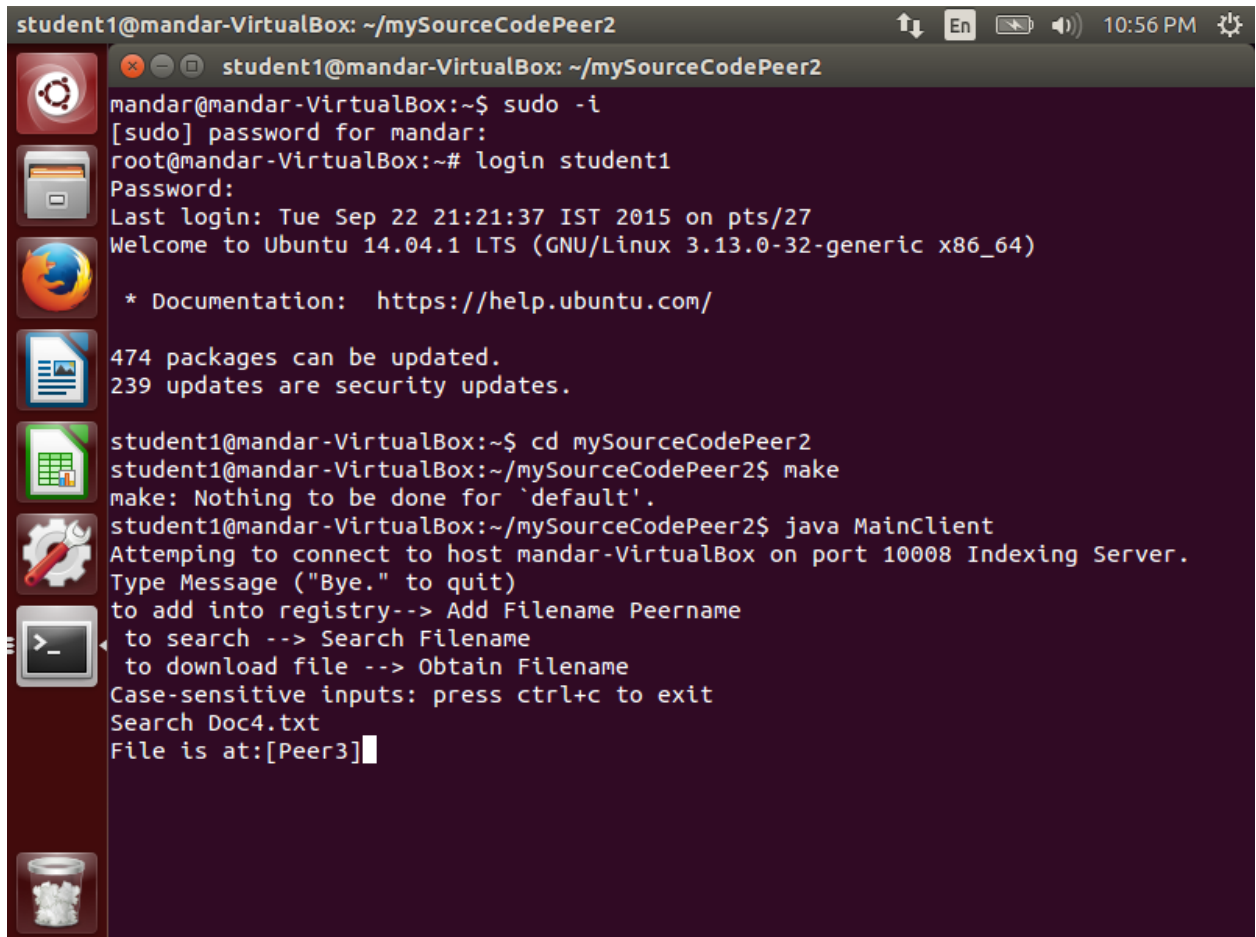
mandar@mandar-VirtualBox: ~/mySourceCode
mandar@mandar-VirtualBox:~/mySourceCode$ java MainClient
Attempting to connect to host mandar-VirtualBox on port 10008 Indexing Server.
Type Message ("Bye." to quit)
to add into registry--> Add Filename Peername
to search --> Search Filename
to download file --> Obtain Filename
Case-sensitive inputs: press ctrl+c to exit
Add File1.txt Peer1
Added entry1
Add File1.txt Peer2
Added entry2
Add File2.txt Peer1
Added entry3
Add Test1.txt Peer2
Added entry4
Add Doc1.txt Peer3
Added entry5
Add Test6.txt Peer2
Added entry6
Add Test6.txt Peer3
Added entry7
Search Test6.txt
File is at:[Peer2, Peer3]
```

7) Entry added Doc4.txt Peer3 by Client on Peer1



```
mandar@mandar-VirtualBox: ~/SourceCode_A20361279/Peer1SourceCode
mandar@mandar-VirtualBox:~$ cd SourceCode_A20361279
mandar@mandar-VirtualBox:~/SourceCode_A20361279$ cd Peer1SourceCode
mandar@mandar-VirtualBox:~/SourceCode_A20361279/Peer1SourceCode$ make
make: Nothing to be done for `default'.
mandar@mandar-VirtualBox:~/SourceCode_A20361279/Peer1SourceCode$ java MainClient
Attempting to connect to host mandar-VirtualBox on port 10008 Indexing Server.
Type Message ("Bye." to quit)
to add into registry--> Add Filename Peername
to search --> Search Filename
to download file --> Obtain Filename
Case-sensitive inputs: press ctrl+c to exit
Add File1.txt Peer1
Added entry1
Add File1.txt Peer2
Added entry2
Search File1.txt
File is at:[Peer1, Peer2]
Add Doc4.txt Peer3
Added entry3
```

8) Client on peer2 asks for Doc4.txt in parallel. Location is returned.



```
student1@mandar-VirtualBox: ~/mySourceCodePeer2
mandar@mandar-VirtualBox:~$ sudo -i
[sudo] password for mandar:
root@mandar-VirtualBox:~# login student1
Password:
Last login: Tue Sep 22 21:21:37 IST 2015 on pts/27
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

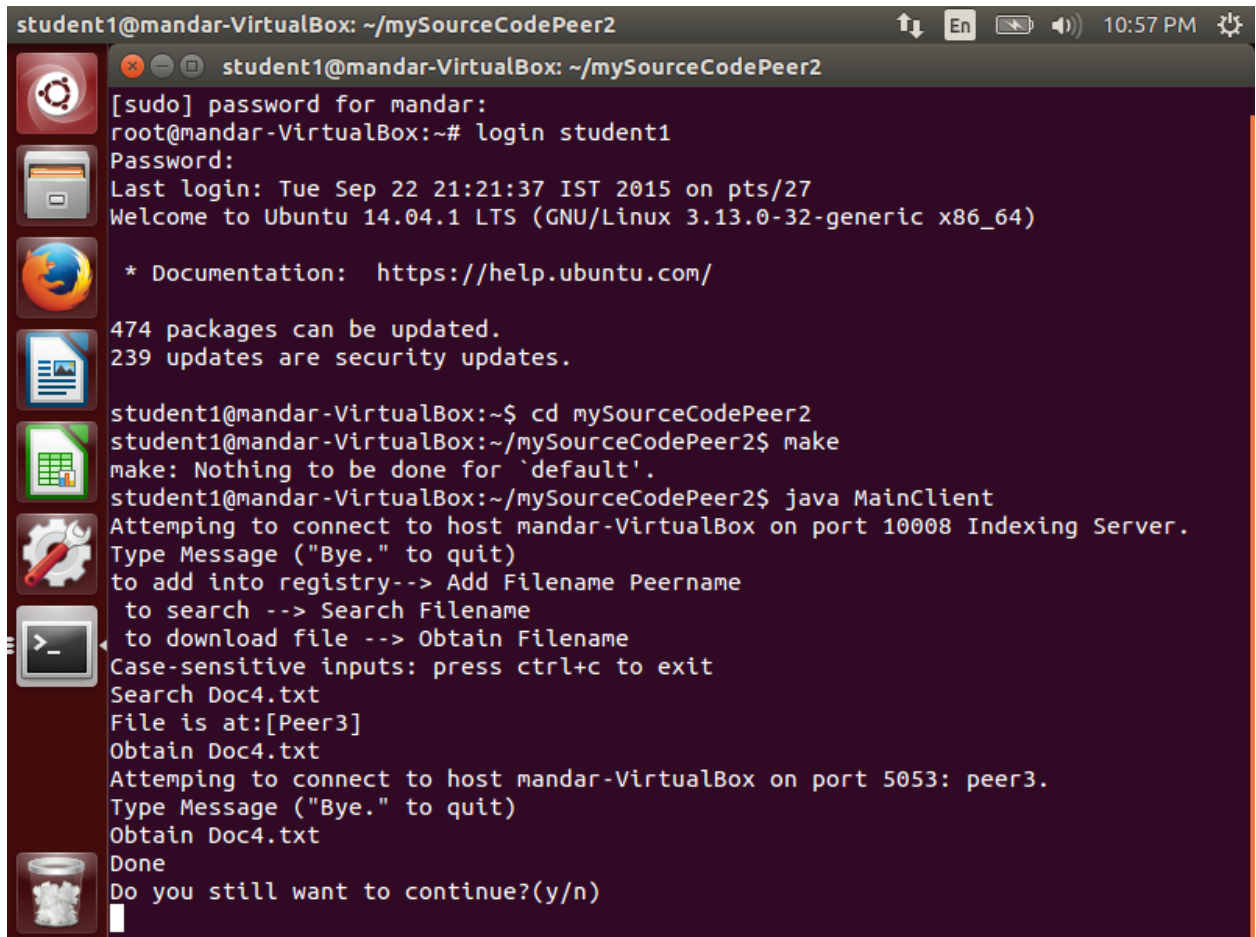
474 packages can be updated.
239 updates are security updates.

student1@mandar-VirtualBox:~$ cd mySourceCodePeer2
student1@mandar-VirtualBox:~/mySourceCodePeer2$ make
make: Nothing to be done for 'default'.
student1@mandar-VirtualBox:~/mySourceCodePeer2$ java MainClient
Attempting to connect to host mandar-VirtualBox on port 10008 Indexing Server.
Type Message ("Bye." to quit)
to add into registry--> Add Filename Peername
to search --> Search Filename
to download file --> Obtain Filename
Case-sensitive inputs: press ctrl+c to exit
Search Doc4.txt
File is at:[Peer3]
```



9) Client on Peer2 requests for Doc4.txt from Peer3

- Client Side Screen output.



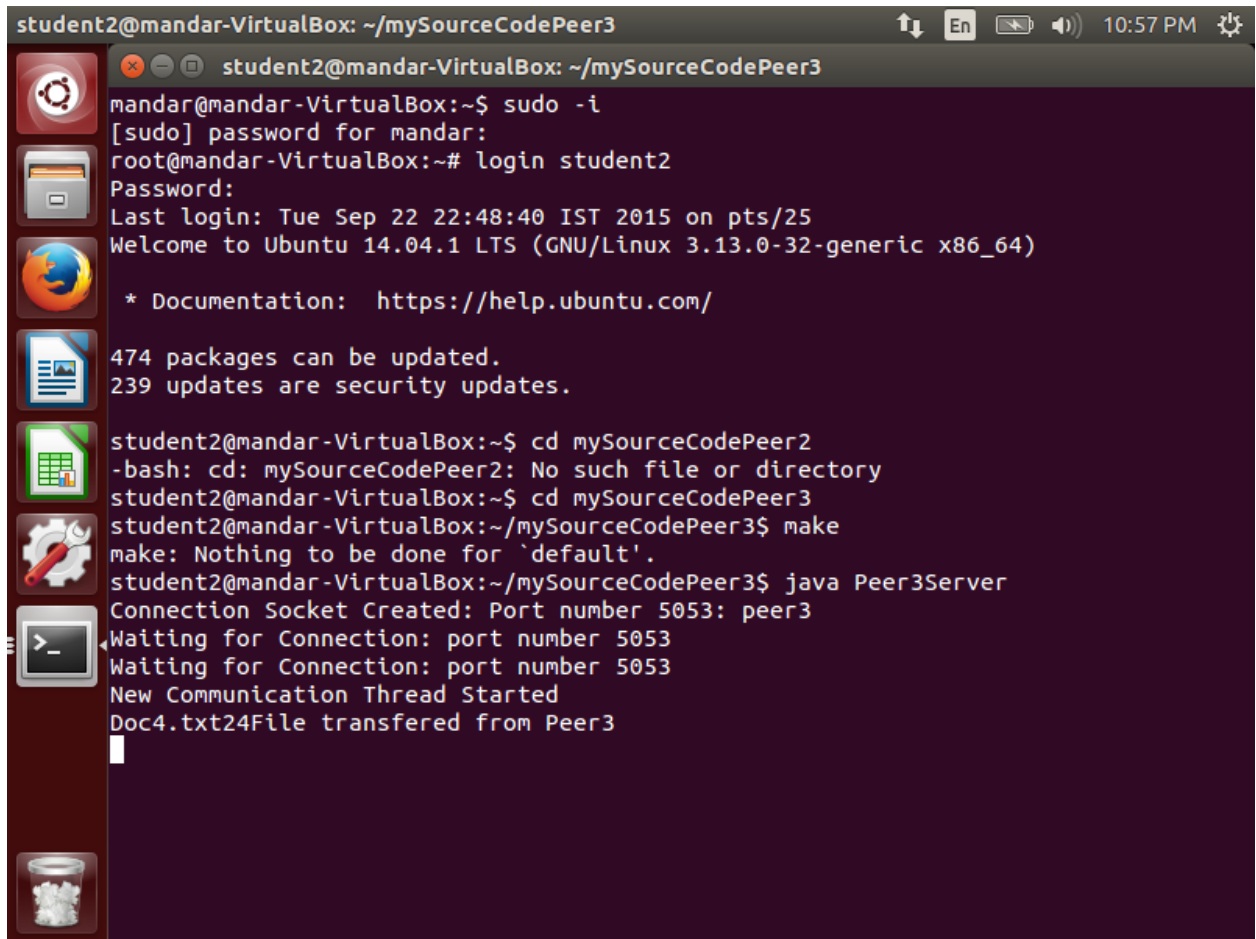
```
student1@mandar-VirtualBox: ~/mySourceCodePeer2
[sudo] password for mandar:
root@mandar-VirtualBox:~# login student1
Password:
Last login: Tue Sep 22 21:21:37 IST 2015 on pts/27
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

474 packages can be updated.
239 updates are security updates.

student1@mandar-VirtualBox:~$ cd mySourceCodePeer2
student1@mandar-VirtualBox:~/mySourceCodePeer2$ make
make: Nothing to be done for `default'.
student1@mandar-VirtualBox:~/mySourceCodePeer2$ java MainClient
Attempting to connect to host mandar-VirtualBox on port 10008 Indexing Server.
Type Message ("Bye." to quit)
to add into registry--> Add Filename Peername
to search --> Search Filename
to download file --> Obtain Filename
Case-sensitive inputs: press ctrl+c to exit
Search Doc4.txt
File is at:[Peer3]
Obtain Doc4.txt
Attempting to connect to host mandar-VirtualBox on port 5053: peer3.
Type Message ("Bye." to quit)
Obtain Doc4.txt
Done
Do you still want to continue?(y/n)
```

- Server side Screen output after transferring Doc4.txt to peer2



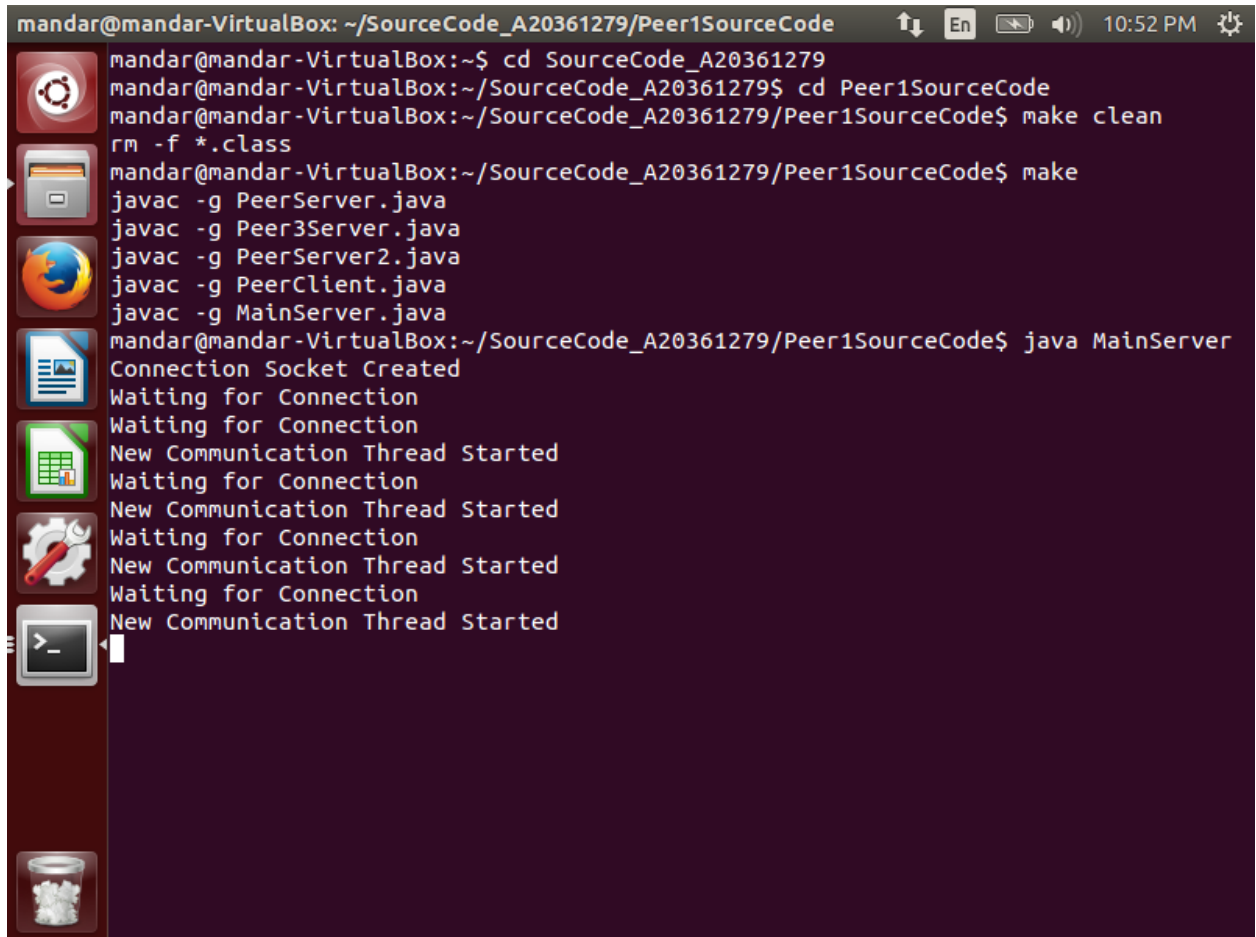
```
student2@mandar-VirtualBox: ~/mySourceCodePeer3
mandar@mandar-VirtualBox:~$ sudo -i
[sudo] password for mandar:
root@mandar-VirtualBox:~# login student2
Password:
Last login: Tue Sep 22 22:48:40 IST 2015 on pts/25
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

474 packages can be updated.
239 updates are security updates.

student2@mandar-VirtualBox:~$ cd mySourceCodePeer2
-bash: cd: mySourceCodePeer2: No such file or directory
student2@mandar-VirtualBox:~$ cd mySourceCodePeer3
student2@mandar-VirtualBox:~/mySourceCodePeer3$ make
make: Nothing to be done for `default'.
student2@mandar-VirtualBox:~/mySourceCodePeer3$ java Peer3Server
Connection Socket Created: Port number 5053: peer3
Waiting for Connection: port number 5053
Waiting for Connection: port number 5053
New Communication Thread Started
Doc4.txt24File transfered from Peer3
```

10) Server with multiple threads running:



A terminal window titled "mandar@mandar-VirtualBox: ~/SourceCode\_A20361279/Peer1SourceCode" with a system clock of 10:52 PM. The terminal shows the following commands and output:

```
mandar@mandar-VirtualBox:~$ cd SourceCode_A20361279
mandar@mandar-VirtualBox:~/SourceCode_A20361279$ cd Peer1SourceCode
mandar@mandar-VirtualBox:~/SourceCode_A20361279/Peer1SourceCode$ make clean
rm -f *.class
mandar@mandar-VirtualBox:~/SourceCode_A20361279/Peer1SourceCode$ make
javac -g PeerServer.java
javac -g Peer3Server.java
javac -g PeerServer2.java
javac -g PeerClient.java
javac -g MainServer.java
mandar@mandar-VirtualBox:~/SourceCode_A20361279/Peer1SourceCode$ java MainServer
Connection Socket Created
Waiting for Connection
Waiting for Connection
New Communication Thread Started
Waiting for Connection
New Communication Thread Started
Waiting for Connection
New Communication Thread Started
Waiting for Connection
New Communication Thread Started
```

The terminal window includes a sidebar with icons for various applications: a red gear icon, a folder icon, a Firefox browser icon, a document icon, a spreadsheet icon, a settings icon, a terminal icon, and a trash can icon.