

CS550 Advanced Operating Systems
Programming Assignment 3
Output

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The output generated at every step of execution is explained below with screen shots .

a. IndexingServer Initialization:

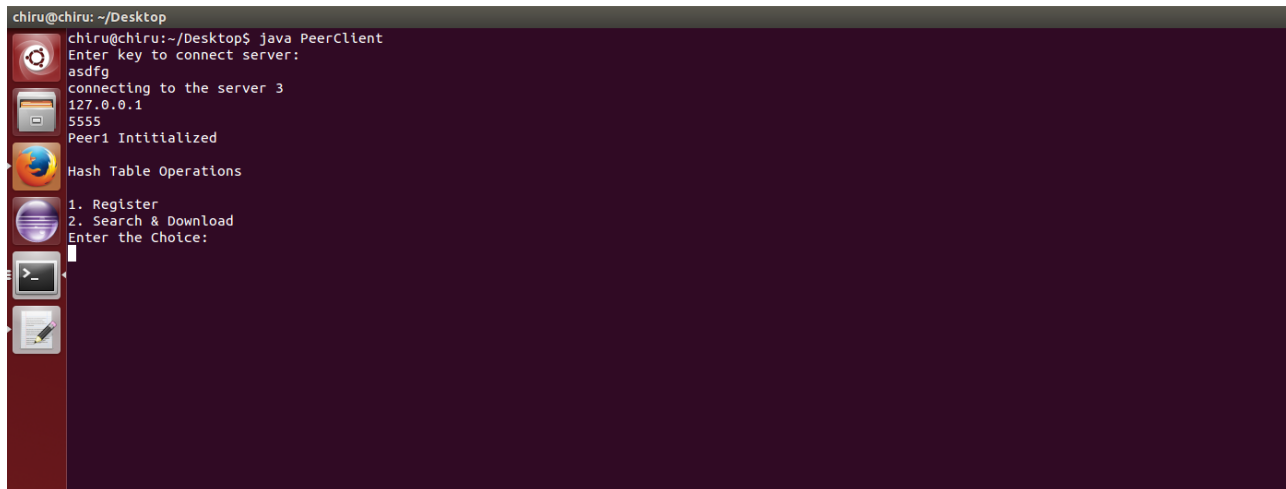
When a server is started , And client connected to the server .Here we have give port in server code. Server awaits requests and created a thread to the peer. And All the 8 indexing servers should be initiated.Here,we are connecting to the server port 5555.

A terminal window with a dark purple background and a red sidebar on the left containing icons for a gear, a folder, a globe, a sphere, a terminal, and a notepad. The terminal text is as follows:

```
chiru@chiru: ~/Desktop
chiru@chiru:~$ cd Desktop
chiru@chiru:~/Desktop$ javac IndexingServer.java
Note: IndexingServer.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.
chiru@chiru:~/Desktop$ java IndexingServer
Enter The port of tthe server:
5555
```

b. PeerClient Connections:

When a Client connects it to the server it does by the selecting the node to connect to and multiple clients can connect to a single indexing server. In the figure below, one client connect to the server at port 5555.

A terminal window with a dark purple background and a red sidebar on the left containing icons for a gear, a folder, a globe, a purple sphere, a terminal, and a notepad. The terminal text shows the execution of a Java program named PeerClient. The user enters 'asdfg' as a key to connect to server 3 at 127.0.0.1 on port 5555. The program outputs 'Peer1 Intitialized' and 'Hash Table Operations'. It then presents a menu with '1. Register' and '2. Search & Download', followed by a prompt 'Enter the Choice:' with a cursor on a new line.

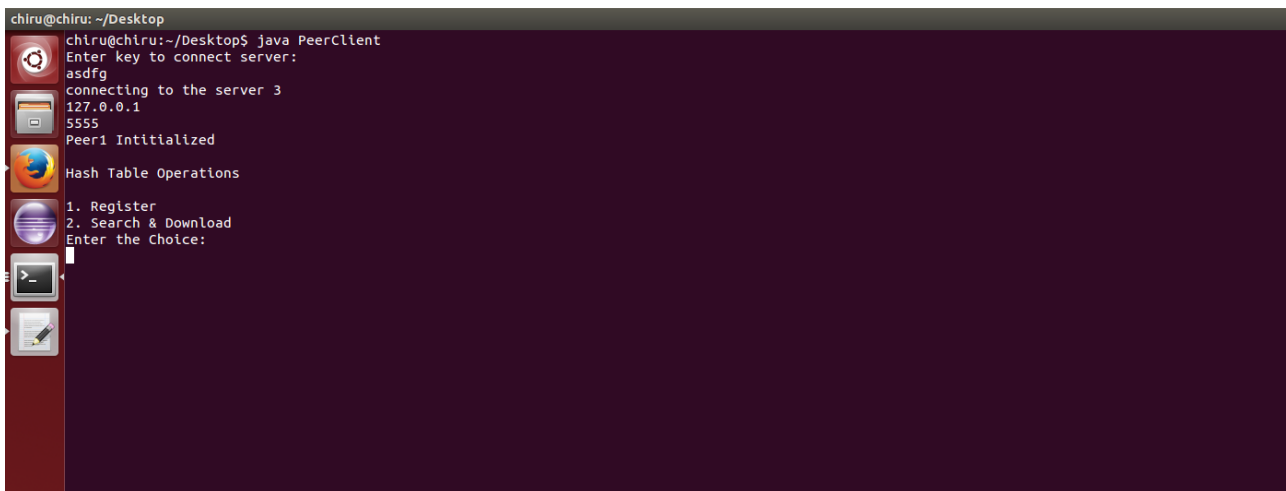
```
chiru@chiru: ~/Desktop
chiru@chiru:~/Desktop$ java PeerClient
Enter key to connect server:
asdfg
connecting to the server 3
127.0.0.1
5555
Peer1 Intitialized
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:

```

c. Client Operations:

The Client connected to indexing server does Register the files, Search the file in all eight indexing server(Decentralized Indexing Server) and select the file location server and Download the file from that selected Peer Server .

In the figure below, it displays operations Register, search and Download. And select the choice.

This is an identical screenshot to the one above, showing the same terminal window with the PeerClient program output and the menu options: '1. Register' and '2. Search & Download'.

d. Register operation :

When a client does a Register operation , the file is hashed and a node(indexingserver) is selected and file-File Details(key-value pair) is registered at the hash table on that indexing server. and successful register returns Success .

```
chiru@chiru: ~/Desktop
chiru@chiru:~/Desktop$ java PeerClient
Enter key to connect server:
asdfg
connecting to the server 3
127.0.0.1
5555
Peer1 Intitialized

Hash Table Operations

1. Register
2. Search & Download
Enter the Choice:
1
Register:
Enter The file name
cts.txt
Success
```

Register operation also returns “Success” on storing the File and filevaluea in Hash table, In case if the connect to the server on which the operation is made is lost .

e.Replication

1.Peerclient

When a client does a Register operation , the file is hashed and a node(indexingserver) is selected and file-File Details(key-value pair) is registred at the hash table on that indexing server. and successful register returns Success. Then,Peerclient will send the File to the next peerserver (neighbor node) and neighbor peer will register the file in indexing server.

```
chiru@chiru: ~/Desktop
chiru@chiru:~/Desktop$ java PeerClient
Enter key to connect server:
asdfg
connecting to the server 3
127.0.0.1
5555
Peer1 Intitialized

Hash Table Operations

1. Register
2. Search & Download
Enter the Choice:
1
Register:
Enter The file name
cts.txt
Success
Peer1 sending file....
Sending...
Do you want to continue (Type y or n)

```

2.Peer server Initilization

When a Peer server is started , And client connected to the server to send replica data or download file .Here we have give port in server code. Server awaits requests and created a thread to the peer. And All the 8 peer servers should be initiated. Here,we are connecting to the server port 6666.

```
chiru@chiru: ~/Desktop
chiru@chiru:~$ cd Desktop
chiru@chiru:~/Desktop$ javac PeerServer1.java
Note: PeerServer1.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.
chiru@chiru:~/Desktop$ java PeerServer1
Enter The port of the server:
6666
```

Now, Depends on client request, it will do upload replica file or send the file to the client. Here, replica file uploaded in peerserver.

```
chiru@chiru: ~/Desktop
chiru@chiru:~$ cd Desktop
chiru@chiru:~/Desktop$ javac PeerServer1.java
Note: PeerServer1.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.
chiru@chiru:~/Desktop$ java PeerServer1
Enter The port of the server:
6666
I m the Client server:
java.net.BindException: Address already in use
connected
file downloaded
-----
```

f. Search operation:

The client does the get operation by selecting 2 on the users console and gets a value for the file information by entering the File Name. And it returns file information.

```
chiru@chiru: ~/Desktop
chiru@chiru:~/Desktop$ java PeerClient
Enter key to connect server:
asdfg
connecting to the server 3
127.0.0.1
5555
Peer1 Intitialized
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:
1
Register:
Enter The file name
cts.txt
Success
Peer1 sending file....
Sending....
Do you want to continue (Type y or n)
y
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:
```

Now, Select choice 2.

```

chiru@chiru: ~/Desktop
chiru@chiru:~/Desktop$ java PeerClient
Enter key to connect server:
asdfg
connecting to the server 3
127.0.0.1
5555
Peer1 Initialized
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:
1
Register:
Enter The file name
cts.txt
Success
Peer1 sending file....
Sending...
Do you want to continue (Type y or n)
y
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:
2
Enter filename to be search:
cts.txt
Value = 127.0.0.1 5555 cts.txt

```

g.DOWNLOAD operation

After Getting the File information, Peer client will connect to the peerserver(Fileinfo) and download the file.

Text file:

```

chiru@chiru: ~/Desktop
chiru@chiru:~/Desktop$ java PeerClient
Enter key to connect server:
asdfg
connecting to the server 3
127.0.0.1
5555
Peer1 Initialized
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:
1
Register:
Enter The file name
cts.txt
Success
Peer1 sending file....
Sending...
Do you want to continue (Type y or n)
y
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:
2
Enter filename to be search:
cts.txt
Value = 127.0.0.1 5555 cts.txt
127.0.0.1
5555
cts.txt
connecting
file downloaded
-----

```

Binary File:

```
chiru@chiru: ~/Desktop
chiru@chiru:~/Desktop$ java PeerClient
Enter key to connect server:
asdfg
connecting to the server 3
127.0.0.1
5555
Peer1 Intitalized
Hash Table Operations
1. Register
2. Search & Download
Enter the Choice:
1
Register:
Enter The file name
f1.bin
Success
Peer1 sending file....
Sending...
Do you want to continue (Type y or n)
```

If the file that is searched for is not at any of the indexing servers that client is connected to, “Invalid Key” message is returned to the client.

```
Enter key
sada
Value = Invalid Key
Do you want to continue (Type y or n)
```

h.Exit Client

If the client exits or shuts down connection by enter ‘n’ on the console .

i.List of 8 servers

The Following sequence in config file.

```
127.0.0.1 2222
127.0.0.1 3333
127.0.0.1 4444
127.0.0.1 5555
127.0.0.1 6666
127.0.0.1 7777
127.0.0.1 8888
127.0.0.1 9999
```

For replication, Each node will connect to the next node and send the file to the next node. Whenever neighbor node connects to the index server, it will register all the files in his Directory.

