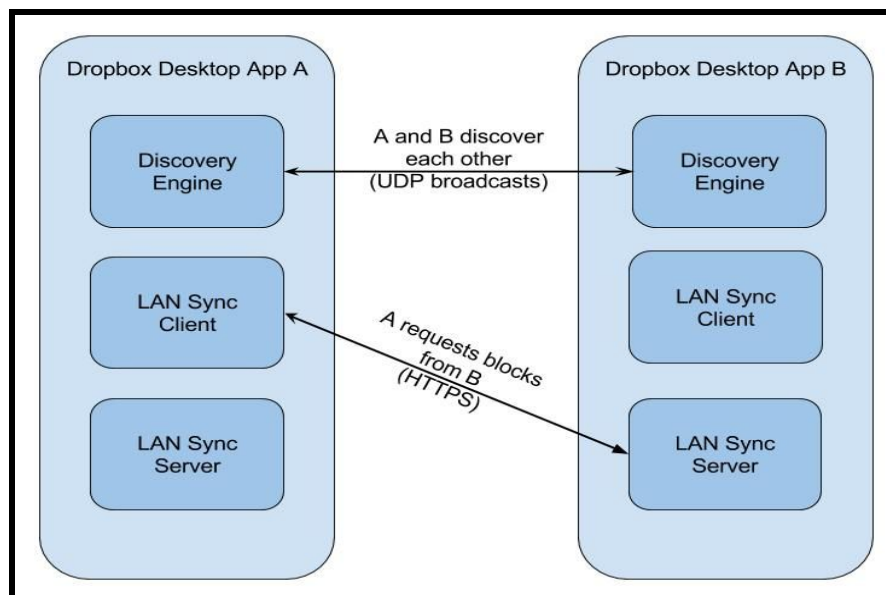


# **REPORT**

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## **Application Level File Sharing Protocol**

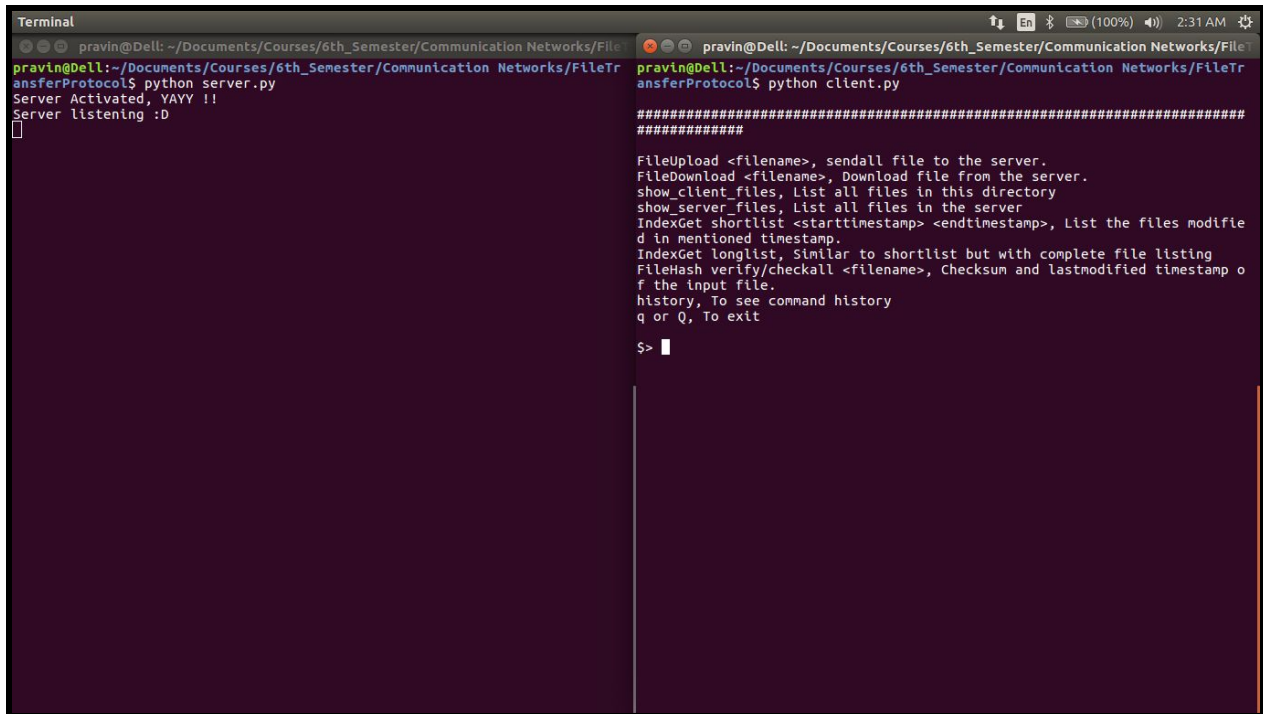


We have created a secure file sharing service to avoid risks and safely hold and transfer files. Above is the diagram of the basic architecture that run on the desktop app: the discovery engine, the server, and the client. The discovery engine is responsible for finding machines on the network.

The server handles requests from other machines on the network and client is responsible for requesting blocks from the network.

File sharing is public or private sharing of data in a network with separate levels of accessibility. Depending on the accessibility permissions, file sharing allows a

selected number of people to read, view or edit the files, based on the permissions given to the user.



```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
[ ]

pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python client.py

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

S> [ ]
```

**FileHash verify <filename>**

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTr
ansferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38954
$> FileHash verify a.txt
Hashed
█

pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTr
ansferProtocol$ python client.py

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modifie
d in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp o
f the input file.
history, To see command history
q or Q, To exit

$> FileHash verify a.txt
Hash Value (Server) = 74be16979710d4c4e7c6647856088456
Hash Value (Client) = 74be16979710d4c4e7c6647856088456

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modifie
d in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp o
f the input file.
history, To see command history
q or Q, To exit

$> █
```

## FileHash checkall

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTr
ansferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38972
$> FileHash checkall
server.py
example.txt
server_orig.py
client.py
README.md
ProblemStatement.pdf
a.txt
Hashed
█

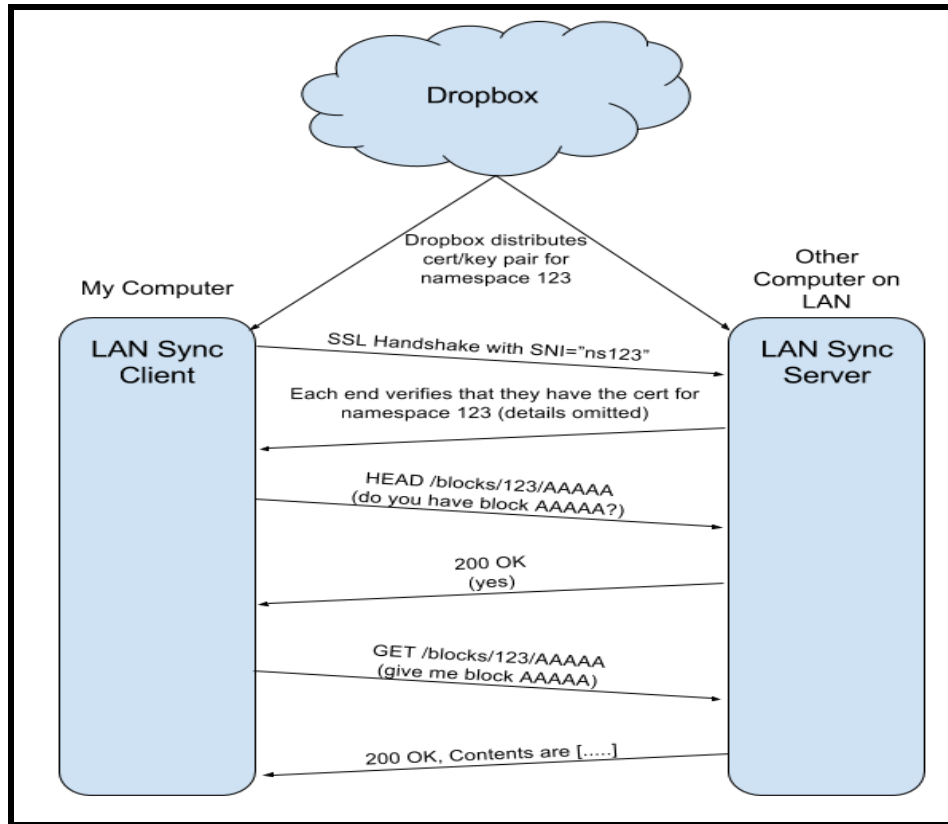
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTr
ansferProtocol$ python client.py
history, To see command history
q or Q, To exit

$> FileHash checkall
Filename = ProblemStatement.pdf
Hash Value (Server) = 911c71afe6a3fc415fbaad51a223d241
Hash Value (Client) = 4e72af2cb549216ee69357c282e0f807
Filename = ProblemStatement.pdf
Hash Value (Server) = 911c71afe6a3fc415fbaad51a223d241
Hash Value (Client) = 8c73ce313bf6360b957f94f17def3462
Filename = a.txt
Hash Value (Server) = f4ecbd0844b90779d52a6fa79f2cc7ad
Hash Value (Client) = 60ff5c3279335149895f532eec0948c7
Filename = client.py
Hash Value (Server) = 13e7ba1aef4487d2f8e9d883de534b96
Hash Value (Client) = 63d566045357b1784713d4a867afcdff
Filename = server_orig.py
Hash Value (Server) = 691e11f7f73f5ef7eb24a6f856c07815
Hash Value (Client) = 8599309e5532044122f395017eb65165
Filename = server.py
Hash Value (Server) = b13df637a735145b0daff5abb6cf2a01
Hash Value (Client) = 3bccf54357f305548762115bb1432e26
Filename = README.md
Hash Value (Server) = bc6cf532fdf8deca1c11abccd6033f46
Hash Value (Client) = 44145231f20215db55c50a512e566037

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modifie
d in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp o
f the input file.
history, To see command history
q or Q, To exit

$> █
```



Some of the file sharing systems include :

**Peer-to-peer** networking involves computer hardware and software to communicate without the need for a central server which is the major difference between client-server and peer-to-peer file sharing system. It includes sharing of digital files over a p2p network where the files are located on one's computer and shared with other members rather than on the main server.

## FileDownload <filename>

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38464
$> FileDownload a.txt
Data sent
Got connected from 127.0.0.1 : 38466
$> FileHash verify a.txt
Hashed
█

pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python client.py

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> FileDownload a.txt
-rw-rw-r-- 1 32 2019-03-21 02:36 a.txt

Data downloaded
Hash Value (Server) = 74be16979710d4c4e7c6647856088456
Hash Value (Client) = 74be16979710d4c4e7c6647856088456

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> █
```

## FileUpload <filename>

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38416
$> FileUpload a.txt
Data received
Got connected from 127.0.0.1 : 38418
$> FileHash verify a.txt
Hashed
█

pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python client.py

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> FileUpload a.txt
Data uploaded
-rw-rw-r-- 1 32 2019-03-21 02:31 a.txt

Hash Value (Server) = 74be16979710d4c4e7c6647856088456
Hash Value (Client) = 74be16979710d4c4e7c6647856088456

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> █
```



## show\_client\_files

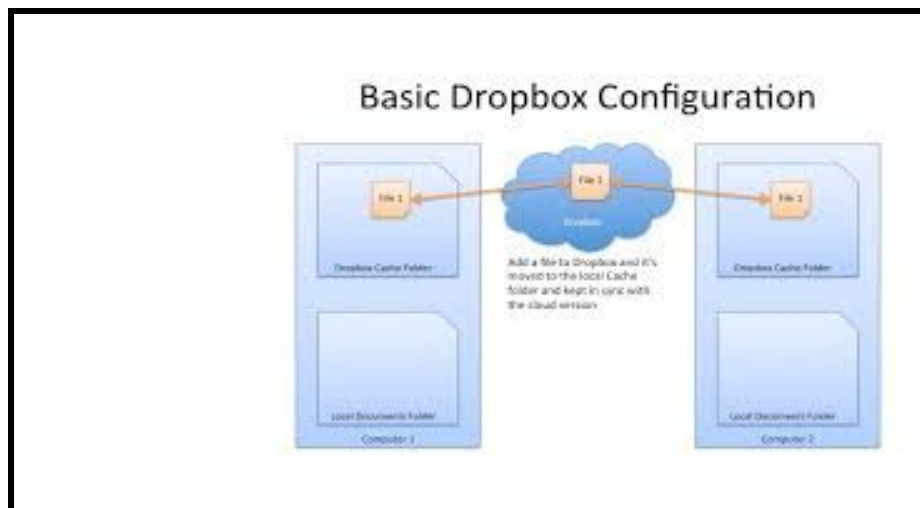
```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D

#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> show_client_files
server.py
example.txt
server_orig.py
client.py
README.md
ProblemStatement.pdf
a.txt
a.txtd41d8cd98f00b204e9800998ecf8427e

#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$>
```



## show\_server\_files

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTr
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTr
ansferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38494
$> show_server_files
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modifie
d in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp o
f the input file.
history, To see command history
q or Q, To exit

$> show_server_files
server.py
example.txt
server_orig.py
client.py
README.md
ProblemStatement.pdf
a.txt
a.txt41d8cd98f00b204e9800998ecf8427e
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modifie
d in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp o
f the input file.
history, To see command history
q or Q, To exit

$>
```

## IndexGet longlist

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTr
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTr
ansferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38950
$> IndexGet longlist
#####
IndexGet longlist
total 120
-rw-rw-r-- 1 32 2019-03-21 02:36 a.txt
-rw-rw-r-- 1 5362 2019-03-21 02:43 client.py
-rw-rw-r-- 1 0 2019-03-21 02:34 example.txt
-rw-rw-r-- 1 90102 2019-03-18 19:48 ProblemStatement.pdf
-rw-rw-r-- 1 1159 2019-03-18 19:48 README.md
-rw-rw-r-- 1 3947 2019-03-18 22:34 server_orig.py
-rw-rw-r-- 1 8520 2019-03-21 03:36 server.py
a.txt: ASCII text, with no line terminators
client.py: Python script, ASCII text executable
example.txt: empty
ProblemStatement.pdf: PDF document, version 1.4
README.md: ASCII text
server_orig.py: Python script, ASCII text executable
server.py: Python script, ASCII text executable
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modifie
d in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp o
f the input file.
history, To see command history
q or Q, To exit

$>
```

## IndexGet shortlist <starttimestamp> <endtimestamp>

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 39582
$> IndexGet shortlist 2019-03-15 15:10 2019-03-20 10:20
IndexGet shortlist 2019-03-15 15:10 2019-03-20 10:20
-rw-rw-r-- 1 90102 2019-03-18 19:48 ProblemStatement.pdf ProblemStatement.pdf: PDF document, version 1.4
-rw-rw-r-- 1 1159 2019-03-18 19:48 README.md README.md: ASCII text
-rw-rw-r-- 1 3947 2019-03-18 22:34 server_orig.py server_orig.py: Python script, ASCII text executable

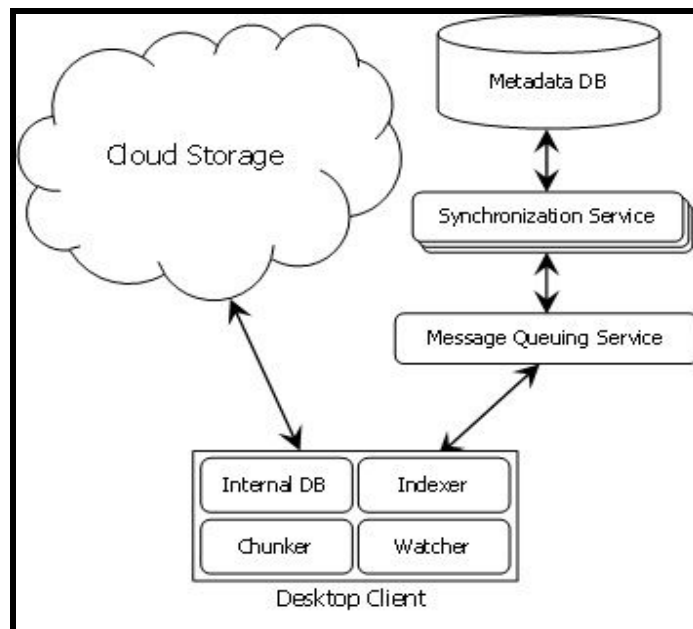
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python client.py

#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> IndexGet shortlist 2019-03-15 15:10 2019-03-20 10:20
IndexGet shortlist 2019-03-15 15:10 2019-03-20 10:20
-rw-rw-r-- 1 90102 2019-03-18 19:48 ProblemStatement.pdf ProblemStatement.pdf: PDF document, version 1.4
-rw-rw-r-- 1 1159 2019-03-18 19:48 README.md README.md: ASCII text
-rw-rw-r-- 1 3947 2019-03-18 22:34 server_orig.py server_orig.py: Python script, ASCII text executable

#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$>
```





# History

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38954
$> FileHash verify a.txt
Hashed
$> FileHash verify a.txt
Hash Value (Server) = 74be16979710d4c4e7c6647856088456
Hash Value (Client) = 74be16979710d4c4e7c6647856088456
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> history
FileHash verify a.txt
history
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$>
```

# Quit

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 38954
$> FileHash verify a.txt
Hashed
Got connected from 127.0.0.1 : 38968
$> q
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$

pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$
$> FileHash verify a.txt
Hash Value (Server) = 74be16979710d4c4e7c6647856088456
Hash Value (Client) = 74be16979710d4c4e7c6647856088456
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> history
FileHash verify a.txt
history
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> q
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$
```

Although, File transfer system (FTP) is the most common file transfer protocol. FTP is used to access or edit files among a set number of users with a password. The users can then gain access to the files shared from an FTP server site. Many FTP sites offer public file sharing or allow users to view or download files using a public password.

## Bonus 1 (IndexGet shortlist <starttimestamp> <endtimestamp> extension)

```

pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol
pravin@Dell:~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 40096
$> IndexGet shortlist 2018-03-12 10:10 2019-04-25 12:10 .py
list 2018-03-12 10:10 2019-04-25 12:10 .py
IndexGet shortlist 2018-03-12 10:10 2019-04-25 12:10 .py
IndexGet shortlist 2018-03-12 10:10 2019-04-25 12:10 .py
-rw-rw-r-- 1 6087 2019-03-21 23:38 client.py client.py: Python script, ASCII text executable
-rw-rw-r-- 1 3947 2019-03-18 22:34 server_orig.py server_orig.py: Python script, ASCII text executable
-rw-rw-r-- 1 6696 2019-03-21 18:23 server.py server.py: Python script, ASCII text executable
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet show_client_files <starttimestamp> <endtimestamp> .extension, Bonus 1
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit
$> IndexGet shortlist 2018-03-12 10:10 2019-04-25 12:10 .py
IndexGet shortlist 2018-03-12 10:10 2019-04-25 12:10 .py
-rw-rw-r-- 1 6087 2019-03-21 23:38 client.py client.py: Python script, ASCII text executable
-rw-rw-r-- 1 3947 2019-03-18 22:34 server_orig.py server_orig.py: Python script, ASCII text executable
-rw-rw-r-- 1 6696 2019-03-21 18:23 server.py server.py: Python script, ASCII text executable
#####
FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet show_client_files <starttimestamp> <endtimestamp> .extension, Bonus 1
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit
$>

```

## Bonus 2 (IndexGet longlist extension)

```
Terminal
pravin@Dell: ~/Documents/Courses/6th_Semester/Communication Networks/FileTransferProtocol$ python server.py
Server Activated, YAYY !!
Server listening :D
Got connected from 127.0.0.1 : 40330
$> IndexGet longlist .pyIndexGet longlist .py

show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet show_client_files <starttimestamp> <endtimestamp> .extension, Bonus 1
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$> IndexGet longlist .py
IndexGet longlist .py
-rw-rw-r-- 1 7007 2019-03-22 00:28 client.py , client.py: Python script, ASCII text executable

-rw-rw-r-- 1 3947 2019-03-18 22:34 server_orig.py , server_orig.py: Python script, ASCII text executable

-rw-rw-r-- 1 6696 2019-03-21 18:23 server.py , server.py: Python script, ASCII text executable

#####

FileUpload <filename>, sendall file to the server.
FileDownload <filename>, Download file from the server.
show_client_files, List all files in this directory
show_server_files, List all files in the server
IndexGet shortlist <starttimestamp> <endtimestamp>, List the files modified in mentioned timestamp.
IndexGet show_client_files <starttimestamp> <endtimestamp> .extension, Bonus 1
IndexGet longlist, Similar to shortlist but with complete file listing
FileHash verify/checkall <filename>, Checksum and lastmodified timestamp of the input file.
history, To see command history
q or Q, To exit

$>
```