Manual

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1. Setup

1.1 Windows 10

Windows 10 was the operating system used to build and test the peer and index server.

1.2 Python 3.7

The peer and index server were both built and tested using python 3.7 on Windows 10.

1.2.1 Downloading

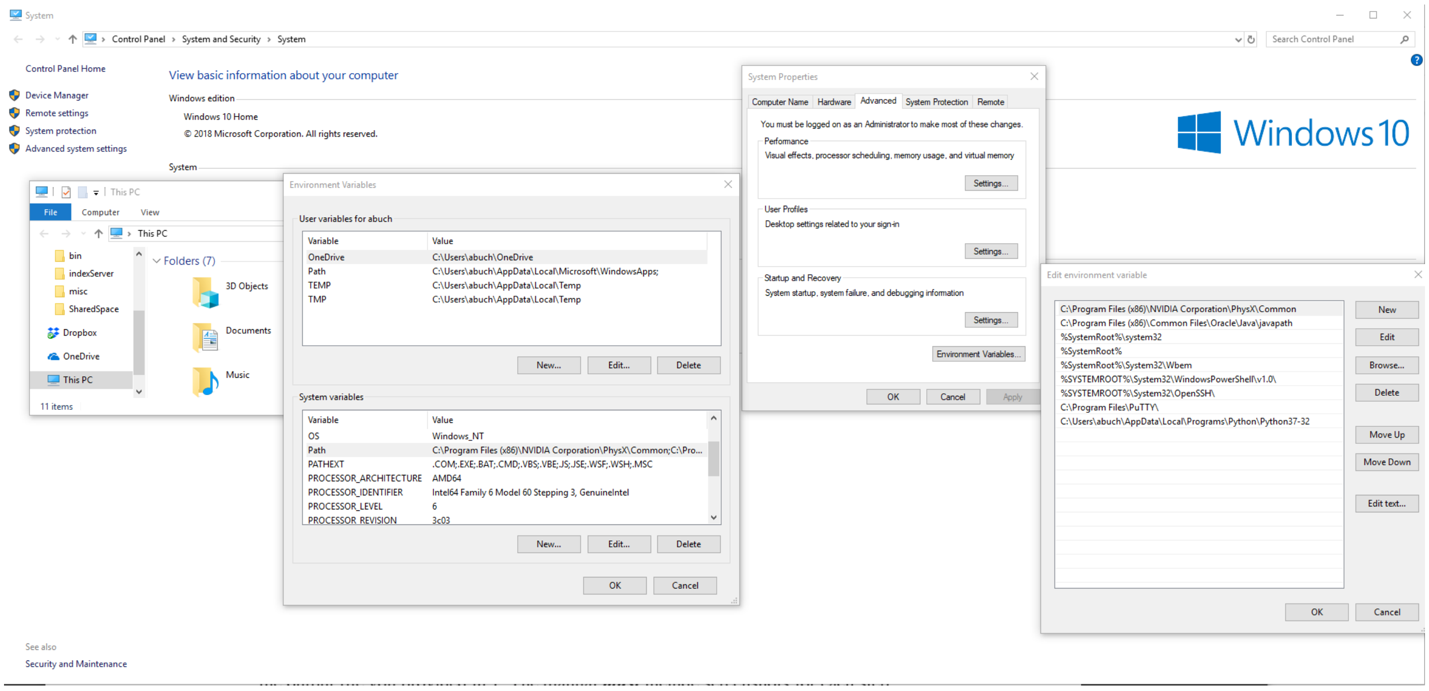
Python 3.7 can be downloaded from their website at: https://www.python.org/downloads/ (https://www.python.org/downloads/)

1.2.2 Configuration and Installation

1. Run the python 3.7 installer and follow the on screen instructions
2. record the directory that the python.exe was saved in
3. Add the python directory to the global PATH variable

Note: How to add to PATH variable

1. open file explorer
2. right click *This PC*
3. *properties*
4. *Advanced system settings*
5. *Environment Variables*
6. *System variables*
7. click *path*
8. click edit
9. add python.exe directory to PATH



You must be logged on as an Administrator to make most of these changes.

Visual effects, processor scheduling, memory usage, and virtual memory

Desktop settings related to your sign-in

System startup, system failure, and debugging information

Environment Variables

User variables for abuch

Variable	Value
OneDrive	C:\Users\abuch\OneDrive
Path	C:\Users\abuch\AppData\Local\Microsoft\WindowsApps;
TEMP	C:\Users\abuch\AppData\Local\Temp
TMP	C:\Users\abuch\AppData\Local\Temp

System variables

Variable	Value
OS	Windows_NT
Path	C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common;C:\Pro...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64
PROCESSOR_IDENTIFIER	Intel64 Family 6 Model 60 Stepping 3, GenuineIntel
PROCESSOR_LEVEL	6
PROCESSOR_REVISION	3c03

Edit environment variable

```
C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common
C:\Program Files (x86)\Common Files\Oracle\Java\javapath
%SystemRoot%\system32
%SystemRoot%
%SystemRoot%\System32\Wbem
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\
%SYSTEMROOT%\System32\OpenSSH\
C:\Program Files\PuTTY\
C:\Users\abuch\AppData\Local\Programs\Python\Python37-32
```

1.3 Peer

1.3.1 Installation

1. Download peer
2. unzip peer if compressed

1.3.2 Configuration

The configuration file is *todo.conf* located in *\todo\conf*. The order of which variables go on which lines is important:

1. PEER_SERVER_PORT = Port for the peer server to listen on

2. P2P_PORT = The port that the peer server registers the peer on

3. INDEX_SERVER_IP = IP address of the index server

4. INDEX_SERVER_PORT = Port of the index server

5. LOCAL_SHARED_FILE_SPACE = Directory of shared file space

```
PEER_SERVER_PORT = 4000
P2P_PORT = 4000
INDEX_SERVER_IP =  198.37.25.70
INDEX_SERVER_PORT = 5000
LOCAL_SHARED_FILE_SPACE = C:\Users\abuch\Documents\classes\CS550\bin\LeafNode\SharedSpace\SharedSpace0
```

1.4 Index Server

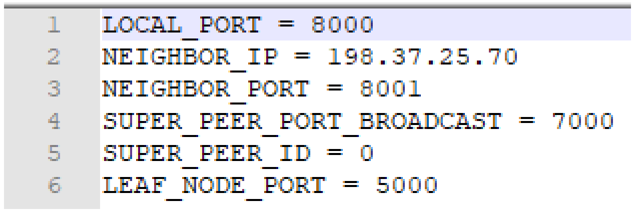
1.4.1 Installation

1. Download index server
2. unzip index server if compressed

1.4.2 Configuration

The configuration file is *todo.conf* located in *\todo\conf*. The order of which variables are placed on which lines are important:

1 LOCAL_PORT = The port to listen for linear topology queries on
2 NEIGHBOR_IP = The neighbor ip address for linear topologies
3 NEIGHBOR_PORT = The neighbor super peer port for linear topology
4 SUPER_PEER_PORT_BROADCAST = Super peer
5 SUPER_PEER_ID = Super peer id
6 LEAF_NODE_PORT = Port to listen for leaf nodes on



```
1  LOCAL_PORT = 8000
2  NEIGHBOR_IP = 198.37.25.70
3  NEIGHBOR_PORT = 8001
4  SUPER_PEER_PORT_BROADCAST = 7000
5  SUPER_PEER_ID = 0
6  LEAF_NODE_PORT = 5000
```

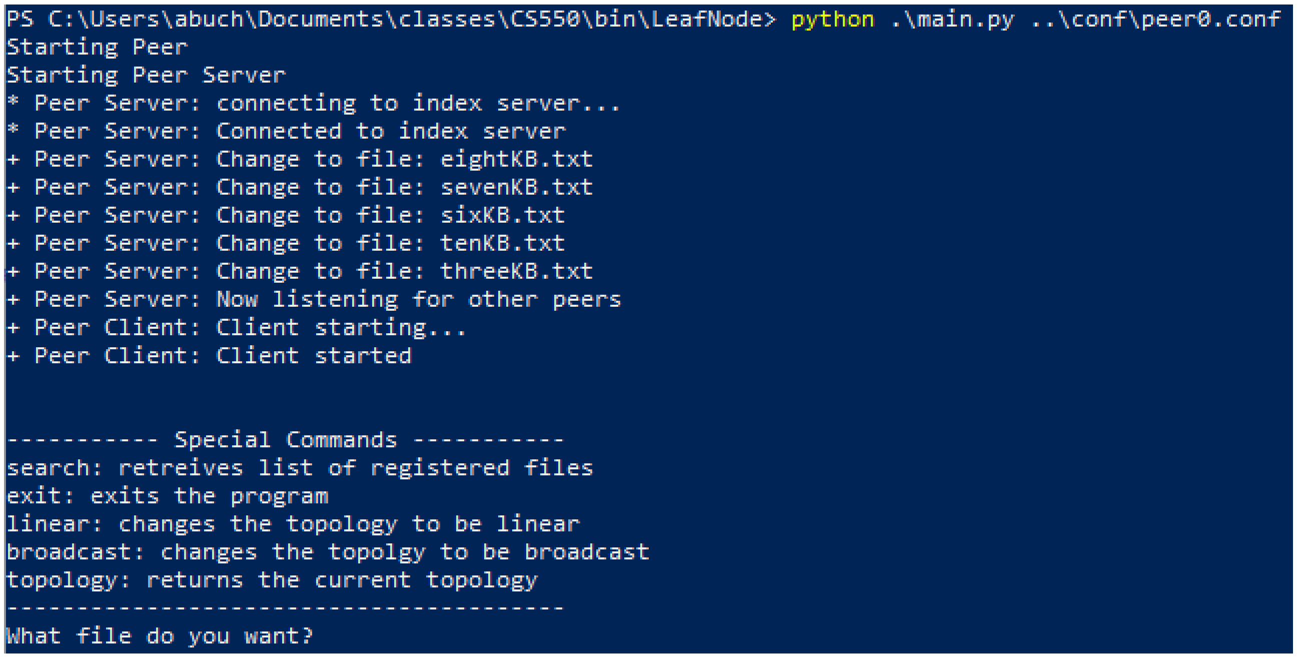
2. Execution

2.1 Peer

1. make sure peer is properly configured
2. `python <bin directory>\main.py ..\conf\peer0.conf`
3. Enter data as prompted

Special Commands:
search: retreives list of registered files on the local index server
exit: exits the program
linear: changes the topology to be linear
broadcast: changes the topology to be broadcast
topology: returns the current topology

Notice: The super peer needs to know what topology to use. Using the commands above tells the super peer what topology to use.



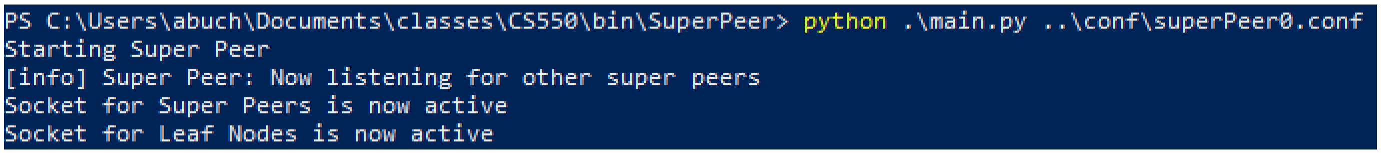
```
PS C:\Users\abuch\Documents\classes\CS550\bin\LeafNode> python .\main.py ..\conf\peer0.conf
Starting Peer
Starting Peer Server
* Peer Server: connecting to index server...
* Peer Server: Connected to index server
+ Peer Server: Change to file: eightKB.txt
+ Peer Server: Change to file: sevenKB.txt
+ Peer Server: Change to file: sixKB.txt
+ Peer Server: Change to file: tenKB.txt
+ Peer Server: Change to file: threeKB.txt
+ Peer Server: Now listening for other peers
+ Peer Client: Client starting...
+ Peer Client: Client started


----------- Special Commands -----------
search: retreives list of registered files
exit: exits the program
linear: changes the topology to be linear
broadcast: changes the topolgy to be broadcast
topology: returns the current topology
----------------------------------------
What file do you want?
```

2.2 Super Peer

```
python <super-peer-bin>\main.py ..\conf\superPeer0.conf
```

The server will start and wait for connections. Any configuration will be done through the conf file.



```
PS C:\Users\abuch\Documents\classes\CS550\bin\SuperPeer> python .\main.py ..\conf\superPeer0.conf
Starting Super Peer
[info] Super Peer: Now listening for other super peers
Socket for Super Peers is now active
Socket for Leaf Nodes is now active
```

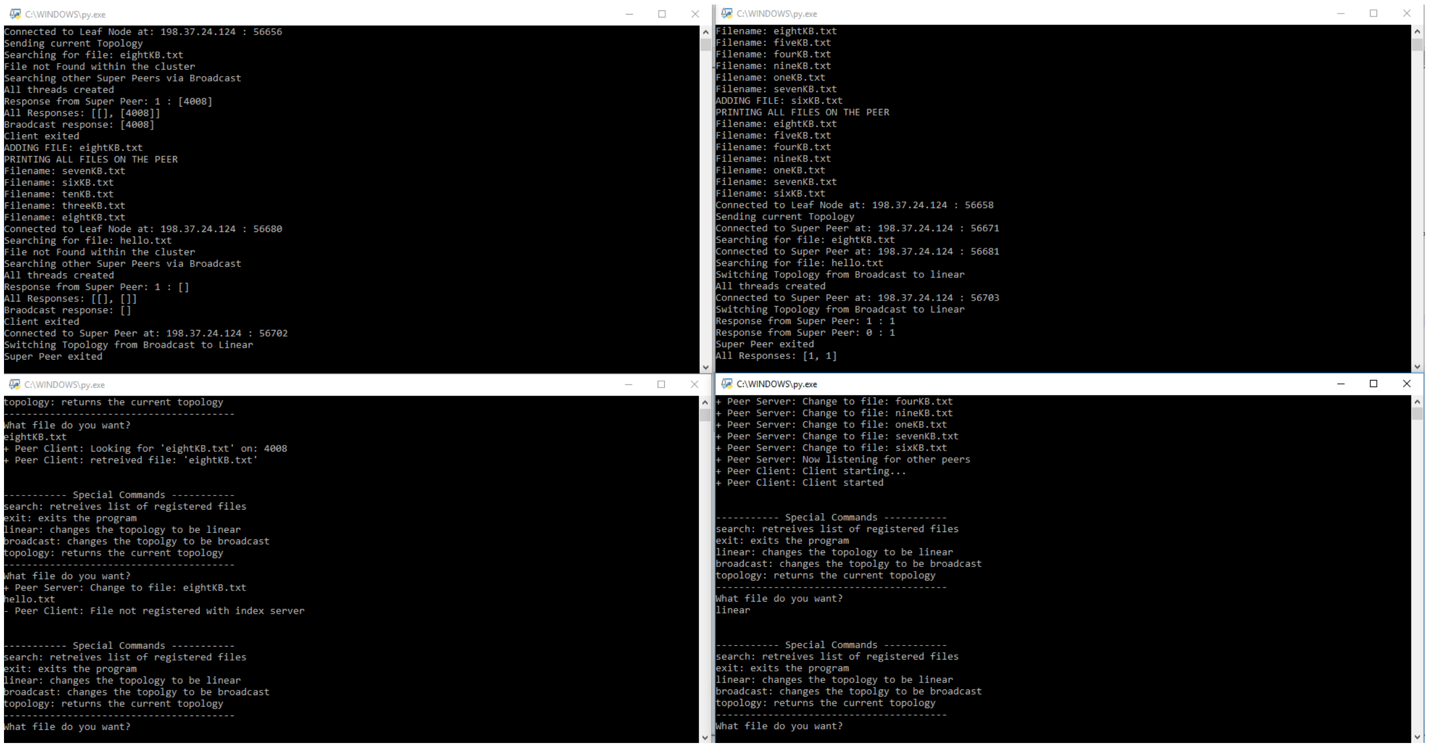
3. Test Case

3.1 Test 1

This test is used to show that files can be found using linear topology and broadcast topology.

Steps

1. Verify the topology is set to Broadcast
2. Peer request file that is registered under a different super peer and print a message acknowledging the download and all queryhits
3. Switch topologies to linear topology
4. Peer request file that is registered under a different super peer and print a message acknowledging the download and all query hits



```
Connected to Leaf Node at: 198.37.24.124 : 56656
Sending current Topology
Searching for file: eightKB.txt
File not Found within the cluster
Searching other Super Peers via Broadcast
All threads created
Response from Super Peer: 1 : [4008]
All Responses: [[], [4008]]
Braodcast response: [4008]
Client exited
ADDING FILE: eightKB.txt
PRINTING ALL FILES ON THE PEER
Filename: sevenKB.txt
Filename: sixKB.txt
Filename: tenKB.txt
Filename: threeKB.txt
Filename: eightKB.txt
Connected to Leaf Node at: 198.37.24.124 : 56680
Searching for file: hello.txt
File not Found within the cluster
Searching other Super Peers via Broadcast
All threads created
Response from Super Peer: 1 : []
All Responses: [[], []]
Braodcast response: []
Client exited
Connected to Super Peer at: 198.37.24.124 : 56702
Switching Topology from Broadcast to Linear
Super Peer exited
```

```
Filename: eightKB.txt
Filename: fiveKB.txt
Filename: fourKB.txt
Filename: nineKB.txt
Filename: oneKB.txt
Filename: sevenKB.txt
ADDING FILE: sixKB.txt
PRINTING ALL FILES ON THE PEER
Filename: eightKB.txt
Filename: fiveKB.txt
Filename: fourKB.txt
Filename: nineKB.txt
Filename: oneKB.txt
Filename: sevenKB.txt
Filename: sixKB.txt
Connected to Leaf Node at: 198.37.24.124 : 56658
Sending current Topology
Connected to Super Peer at: 198.37.24.124 : 56671
Searching for file: eightKB.txt
Connected to Super Peer at: 198.37.24.124 : 56681
Searching for file: hello.txt
Switching Topology from Broadcast to linear
All threads created
Connected to Super Peer at: 198.37.24.124 : 56703
Switching Topology from Broadcast to Linear
Response from Super Peer: 1 : 1
Response from Super Peer: 0 : 1
Super Peer exited
All Responses: [1, 1]
```

```
topology: returns the current topology
----------------------------------------
What file do you want?
eightKB.txt
+ Peer Client: Looking for 'eightKB.txt' on: 4008
+ Peer Client: retreived file: 'eightKB.txt'


----------- Special Commands -----------
search: retreives list of registered files
exit: exits the program
linear: changes the topology to be linear
broadcast: changes the topolgy to be broadcast
topology: returns the current topology
----------------------------------------
What file do you want?
+ Peer Server: Change to file: eightKB.txt
hello.txt
- Peer Client: File not registered with index server


----------- Special Commands -----------
search: retreives list of registered files
exit: exits the program
linear: changes the topology to be linear
broadcast: changes the topolgy to be broadcast
topology: returns the current topology
----------------------------------------
What file do you want?
```

```
+ Peer Server: Change to file: fourKB.txt
+ Peer Server: Change to file: nineKB.txt
+ Peer Server: Change to file: oneKB.txt
+ Peer Server: Change to file: sevenKB.txt
+ Peer Server: Change to file: sixKB.txt
+ Peer Server: Now listening for other peers
+ Peer Client: Client starting...
+ Peer Client: Client started


----------- Special Commands -----------
search: retreives list of registered files
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linear: changes the topology to be linear
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topology: returns the current topology
----------------------------------------
What file do you want?
linear


----------- Special Commands -----------
search: retreives list of registered files
exit: exits the program
linear: changes the topology to be linear
broadcast: changes the topolgy to be broadcast
topology: returns the current topology
----------------------------------------
What file do you want?
```

3.2 More Tests

Check test.pdf for more information on testing