Testing

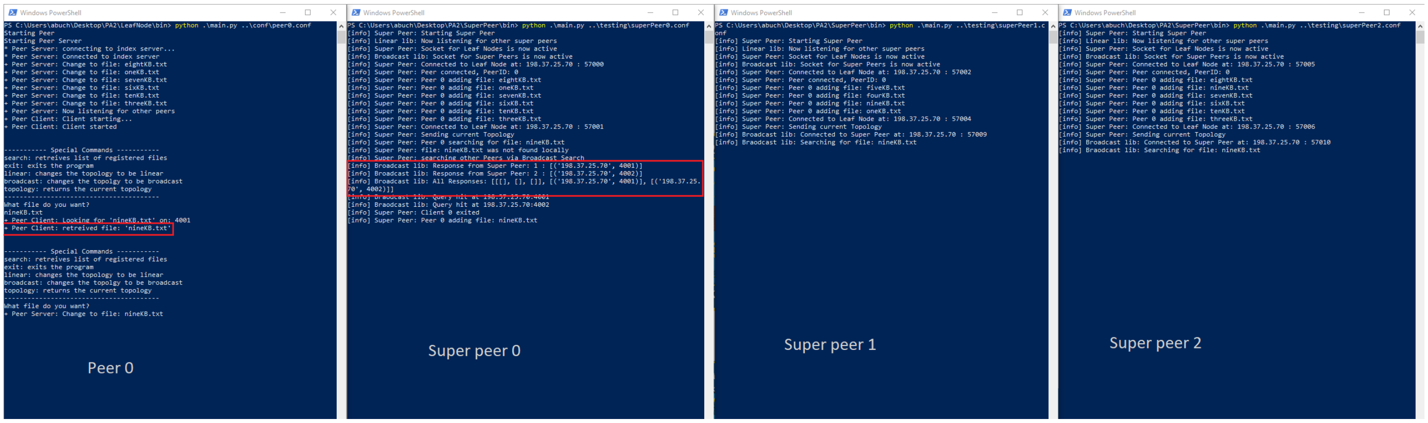
Alec Buchanan & Jason Lawrence

Oct 12, 2018

Tests

Test 1: Broadcast Multiple Query Hits

1. *Peer client 0* asks for nineKB.txt
2. *super peer 0* broad casts the query to all other super peers
3. *super peer 0* gathers all the query hits
4. *super peer 0* sends *Peer client 0* a list of query hits



```
PS C:\Users\abuch\Desktop\PA2\LeafNode\bin> 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: oneKB.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?
nineKB.txt
+ Peer Client: Looking for 'nineKB.txt' on: 4001
+ Peer Client: retreived file: 'nineKB.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: nineKB.txt
```

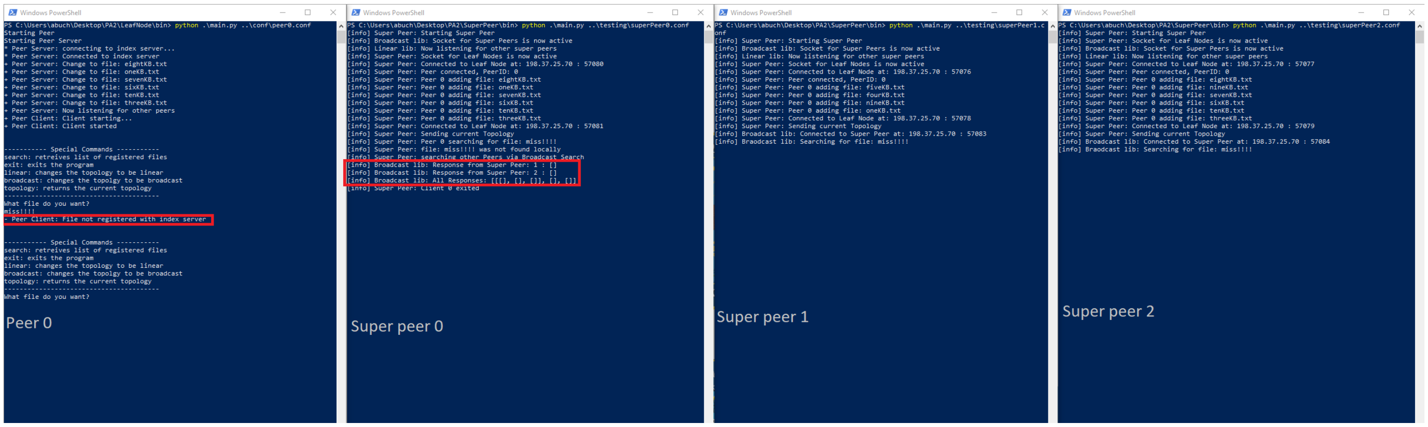
```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer0.conf
[info] Super Peer: Starting Super Peer
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57000
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57001
[info] Super Peer: Sending current Topology
[info] Super Peer: Peer 0 searching for file: nineKB.txt
[info] Super Peer: file: nineKB.txt was not found locally
[info] Super Peer: searching other Peers via Broadcast Search
[info] Broadcast lib: Response from Super Peer: 1 : [('198.37.25.70', 4001)]
[info] Broadcast lib: Response from Super Peer: 2 : [('198.37.25.70', 4002)]
[info] Broadcast lib: All Responses: [[[], [], []], [('198.37.25.70', 4001)], [('198.37.25.
70', 4002)]]
[info] Braodcast lib: Query hit at 198.37.25.70:4001
[info] Braodcast lib: Query hit at 198.37.25.70:4002
[info] Super Peer: Client 0 exited
[info] Super Peer: Peer 0 adding file: nineKB.txt
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer1.c
onf
[info] Super Peer: Starting Super Peer
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57002
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: fiveKB.txt
[info] Super Peer: Peer 0 adding file: fourKB.txt
[info] Super Peer: Peer 0 adding file: nineKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57004
[info] Super Peer: Sending current Topology
[info] Broadcast lib: Connected to Super Peer at: 198.37.25.70 : 57009
[info] Braodcast lib: Searching for file: nineKB.txt
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer2.conf
[info] Super Peer: Starting Super Peer
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57005
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: nineKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57006
[info] Super Peer: Sending current Topology
[info] Broadcast lib: Connected to Super Peer at: 198.37.25.70 : 57010
[info] Braodcast lib: Searching for file: nineKB.txt
```

Test 2: Broadcast Multiple Misses

1. *Peer client 0* asks for a non existent file
2. *super peer 0* broad casts the query to all other super peers
3. *super peer 0* gets no query hits
4. *super peer 0* sends *Peer client 0* an empty list



```
PS C:\Users\abuch\Desktop\PA2\LeafNode\bin> 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: oneKB.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?
miss!!!!
- 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?
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer0.conf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57080
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57081
[info] Super Peer: Sending current Topology
[info] Super Peer: Peer 0 searching for file: miss!!!!
[info] Super Peer: file: miss!!!! was not found locally
[info] Super Peer: searching other Peers via Broadcast Search
[info] Broadcast lib: Response from Super Peer: 1 : []
[info] Broadcast lib: Response from Super Peer: 2 : []
[info] Broadcast lib: All Responses: [[[], [], []], [], []]
[info] Super Peer: Client 0 exited
```

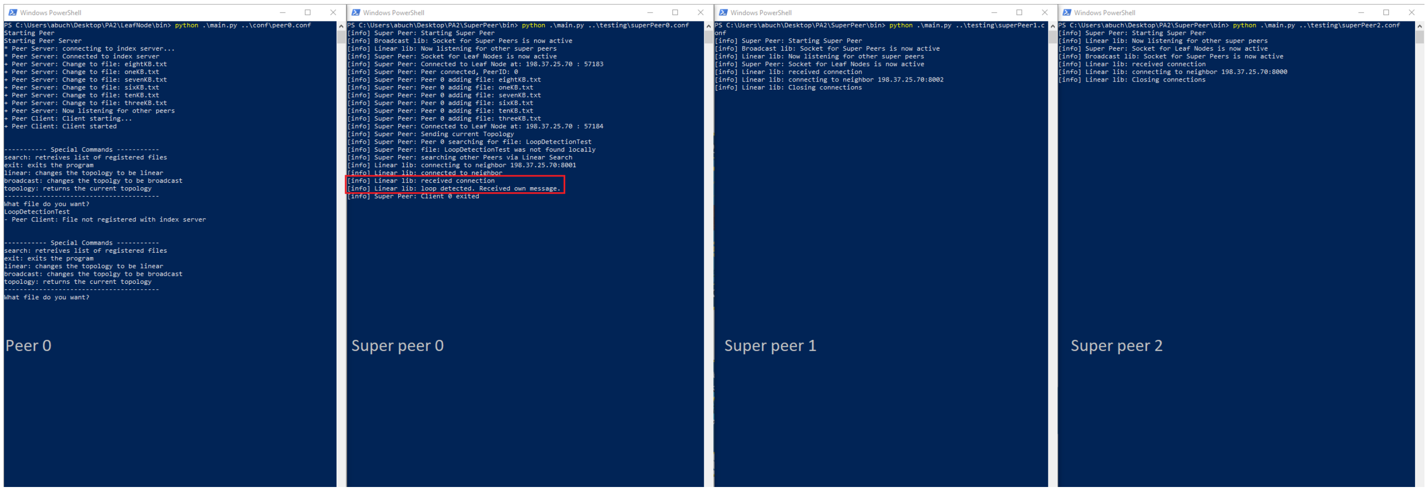
```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer1.c
onf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57076
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: fiveKB.txt
[info] Super Peer: Peer 0 adding file: fourKB.txt
[info] Super Peer: Peer 0 adding file: nineKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57078
[info] Super Peer: Sending current Topology
[info] Broadcast lib: Connected to Super Peer at: 198.37.25.70 : 57083
[info] Braodcast lib: Searching for file: miss!!!!
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer2.conf
[info] Super Peer: Starting Super Peer
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57077
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: nineKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57079
[info] Super Peer: Sending current Topology
[info] Broadcast lib: Connected to Super Peer at: 198.37.25.70 : 57084
[info] Braodcast lib: Searching for file: miss!!!!
```

Test 3: Linear Query In Loop

1. *Peer client 0* asks for file
2. *super peer 0* sends a query to *super peer 1*

3. *super peer 1* forwards the query to *super peer 2*
4. *super peer 2* forwards the query to *super peer 0*
5. *super peer 0* recognizes the query because of the message id and closes the connections
6. *super peer 0* sends *Peer client 0* an empty list



```
PS C:\Users\abuch\Desktop\PA2\LeafNode\bin> 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: oneKB.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?
LoopDetectionTest
- 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?
```

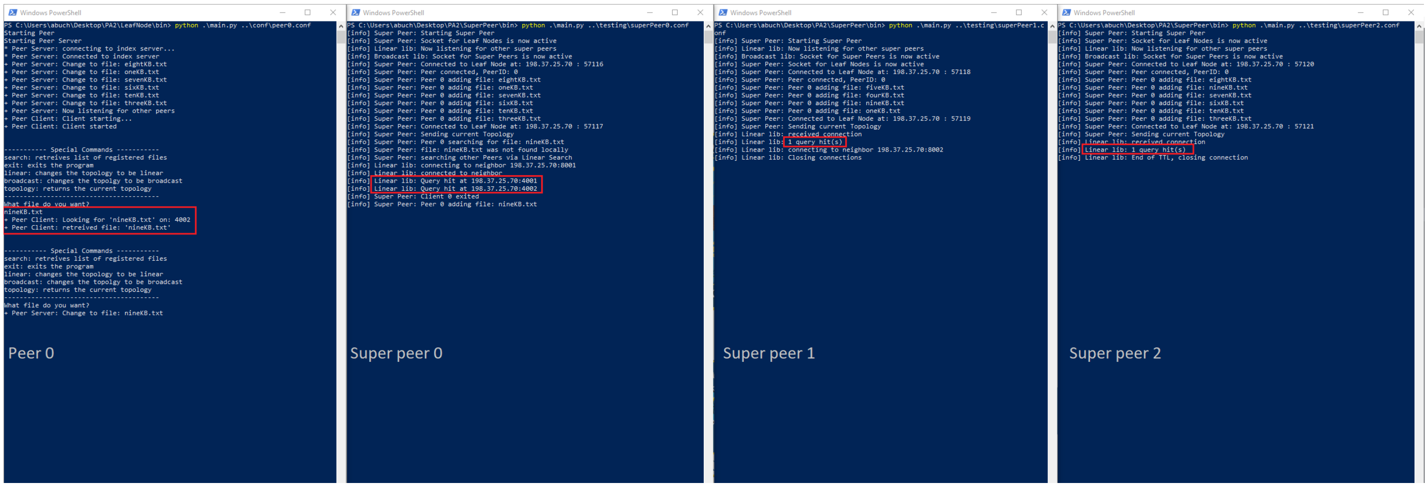
```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer0.conf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57183
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57184
[info] Super Peer: Sending current Topology
[info] Super Peer: Peer 0 searching for file: LoopDetectionTest
[info] Super Peer: file: LoopDetectionTest was not found locally
[info] Super Peer: searching other Peers via Linear Search
[info] Linear lib: connecting to neighbor 198.37.25.70:8001
[info] Linear lib: connected to neighbor
[info] Linear lib: received connection
[info] Linear lib: loop detected. Received own message.
[info] Super Peer: Client 0 exited
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer1.c
onf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Linear lib: received connection
[info] Linear lib: connecting to neighbor 198.37.25.70:8002
[info] Linear lib: Closing connections
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer2.conf
[info] Super Peer: Starting Super Peer
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: received connection
[info] Linear lib: connecting to neighbor 198.37.25.70:8000
[info] Linear lib: Closing connections
```

Test 4: Linear Multiple Query Hits

1. *Peer client 0* asks for file
2. *super peer 0* sends a query to *super peer 1*
3. *super peer 1* registers a query hit and sends it to *super peer 0*
4. *super peer 1* forwards the query to *super peer 2*
5. *super peer 2* registers a query hit and sends it to *super peer 1*
6. *super peer 1* forwards the query hit to *super peer 0*
7. *super peer 0* gets all of the query hits
8. *super peer 0* sends *Peer client 0* all the query hits



```
PS C:\Users\abuch\Desktop\PA2\LeafNode\bin> 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: oneKB.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?
nineKB.txt
+ Peer Client: Looking for 'nineKB.txt' on: 4002
+ Peer Client: retreived file: 'nineKB.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: nineKB.txt
```

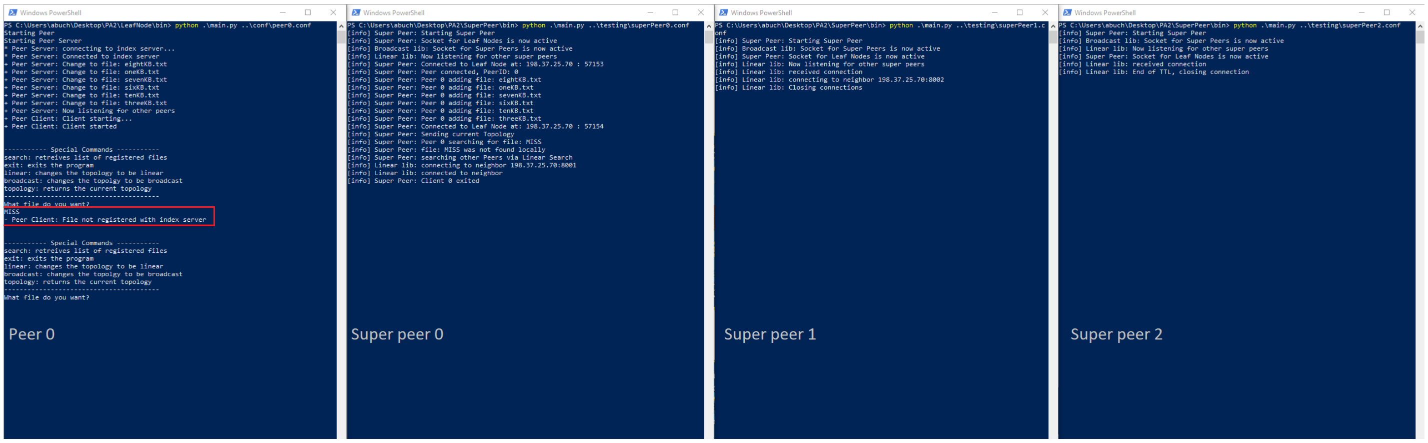
```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer0.conf
[info] Super Peer: Starting Super Peer
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Linear lib: Now listening for other super peers
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57116
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57117
[info] Super Peer: Sending current Topology
[info] Super Peer: Peer 0 searching for file: nineKB.txt
[info] Super Peer: file: nineKB.txt was not found locally
[info] Super Peer: searching other Peers via Linear Search
[info] Linear lib: connecting to neighbor 198.37.25.70:8001
[info] Linear lib: connected to neighbor
[info] Linear lib: Query hit at 198.37.25.70:4001
[info] Linear lib: Query hit at 198.37.25.70:4002
[info] Super Peer: Client 0 exited
[info] Super Peer: Peer 0 adding file: nineKB.txt
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer1.c
onf
[info] Super Peer: Starting Super Peer
[info] Linear lib: Now listening for other super peers
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57118
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: fiveKB.txt
[info] Super Peer: Peer 0 adding file: fourKB.txt
[info] Super Peer: Peer 0 adding file: nineKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57119
[info] Super Peer: Sending current Topology
[info] Linear lib: received connection
[info] Linear lib: 1 query hit(s)
[info] Linear lib: connecting to neighbor 198.37.25.70:8002
[info] Linear lib: Closing connections
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer2.conf
[info] Super Peer: Starting Super Peer
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Linear lib: Now listening for other super peers
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57120
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: nineKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57121
[info] Super Peer: Sending current Topology
[info] Linear lib: received connection
[info] Linear lib: 1 query hit(s)
[info] Linear lib: End of TTL, closing connection
```

Test 5: Linear Multiple Misses

1. *Peer client 0* asks for file
2. *super peer 0* sends a query to *super peer 1*
3. *super peer 1* forwards the query to *super peer 2*
4. *super peer 0* does not get any query hits before connection is closed
5. *super peer 0* sends *Peer client 0* an empty list



```
PS C:\Users\abuch\Desktop\PA2\LeafNode\bin> 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: oneKB.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?
MISS
- 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?
```

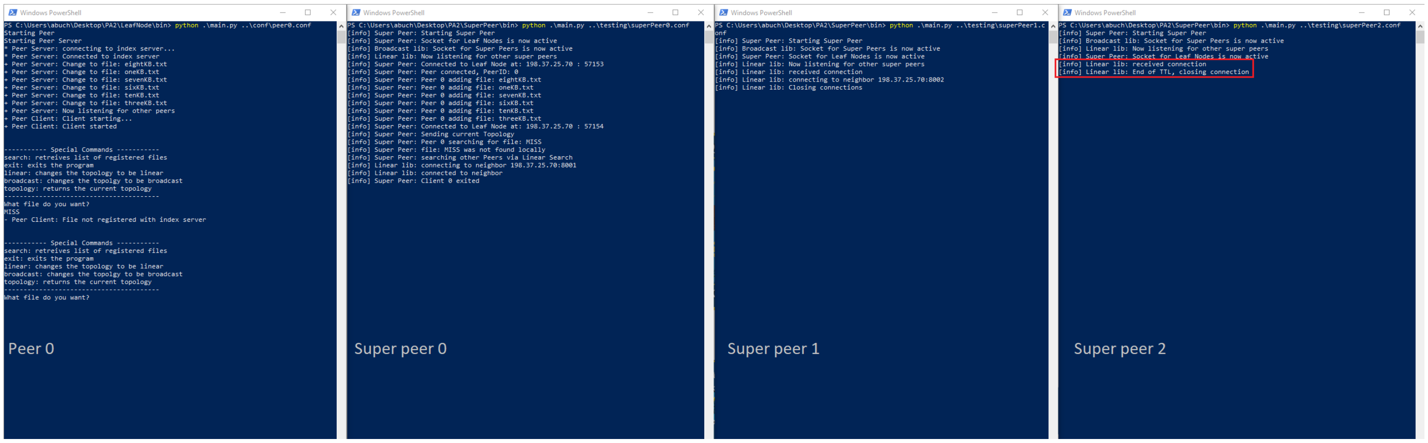
```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer0.conf
[info] Super Peer: Starting Super Peer
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57153
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57154
[info] Super Peer: Sending current Topology
[info] Super Peer: Peer 0 searching for file: MISS
[info] Super Peer: file: MISS was not found locally
[info] Super Peer: searching other Peers via Linear Search
[info] Linear lib: connecting to neighbor 198.37.25.70:8001
[info] Linear lib: connected to neighbor
[info] Super Peer: Client 0 exited
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer1.c
onf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Linear lib: Now listening for other super peers
[info] Linear lib: received connection
[info] Linear lib: connecting to neighbor 198.37.25.70:8002
[info] Linear lib: Closing connections
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer2.conf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Linear lib: received connection
[info] Linear lib: End of TTL, closing connection
```

Test 6: Linear TTL Expires

1. *Peer client 0* asks for file
2. *super peer 0* sends a query to *super peer 1*
3. *super peer 1* forwards the query to *super peer 2*
4. *super peer 1* recognizes that the TTL is 0 and closes the connections
5. *super peer 0* sends *Peer client 0* an empty list



```
PS C:\Users\abuch\Desktop\PA2\LeafNode\bin> 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: oneKB.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?
MISS
- 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?
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer0.conf
[info] Super Peer: Starting Super Peer
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57153
[info] Super Peer: Peer connected, PeerID: 0
[info] Super Peer: Peer 0 adding file: eightKB.txt
[info] Super Peer: Peer 0 adding file: oneKB.txt
[info] Super Peer: Peer 0 adding file: sevenKB.txt
[info] Super Peer: Peer 0 adding file: sixKB.txt
[info] Super Peer: Peer 0 adding file: tenKB.txt
[info] Super Peer: Peer 0 adding file: threeKB.txt
[info] Super Peer: Connected to Leaf Node at: 198.37.25.70 : 57154
[info] Super Peer: Sending current Topology
[info] Super Peer: Peer 0 searching for file: MISS
[info] Super Peer: file: MISS was not found locally
[info] Super Peer: searching other Peers via Linear Search
[info] Linear lib: connecting to neighbor 198.37.25.70:8001
[info] Linear lib: connected to neighbor
[info] Super Peer: Client 0 exited
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer1.c
onf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Linear lib: Now listening for other super peers
[info] Linear lib: received connection
[info] Linear lib: connecting to neighbor 198.37.25.70:8002
[info] Linear lib: Closing connections
```

```
PS C:\Users\abuch\Desktop\PA2\SuperPeer\bin> python .\main.py ..\testing\superPeer2.conf
[info] Super Peer: Starting Super Peer
[info] Broadcast lib: Socket for Super Peers is now active
[info] Linear lib: Now listening for other super peers
[info] Super Peer: Socket for Leaf Nodes is now active
[info] Linear lib: received connection
[info] Linear lib: End of TTL, closing connection
```

Known Issues

Issue 1: Socket errors

Not every socket operation (ex. socket.recv, socket.socket, socket.send) is wrapped in a try and except in the broadcast library. In non ideal conditions this could result in a connection thread crashing. Adding try and except statements around socket operations could resolve this issue.

Issue 2: Linear message ID data struct

The current data structure to store message IDs in the linear library is an array. The array is slow and it shows in the results when sending 200 queries. A tree based data structure could change the time complexity from O(n) to O(logn).

Issue 3: Message backup in linear topology library

The function that forwards query hits in the linear library could have an issue with it. The supposed issue has never been a problem during testing, but is there logically. The code assumes only one message is in the socket receive buffer when it is read. This is dangerous. In a situation where there are multiple messages, messages could go unread or errors could be thrown. To solve this the socket.recv size could be set to the size of the query hit object, or a receive-acknowledge protocol could be used.