

2nd approach execution manual

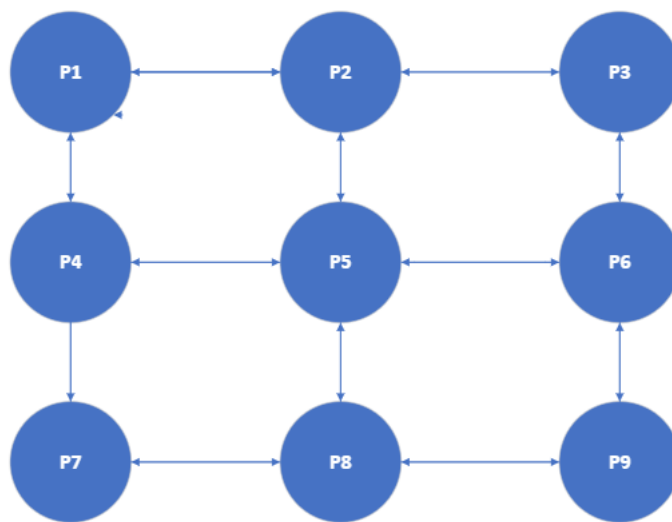
I. Introduction :

In this document we'll present the execution of the Gnutella Peer-2-Peer application (which is our second approach for this project work [using rmi registry]).

We will run the program with different topologies:

- + Mesh topology with 9 peers : 3×3
- + Star topology
- + Two different machines connected to the same network
 - ⇒ To change the topology we simply edit the config file

II. Execution process for the first topology : Mesh 3×3



In the config file:

```
src > ≡ config.properties
1  # Peer details
2  peerid.1.ip=127.0.0.1
3  peerid.1.port=8001
4  peerid.2.ip=127.0.0.1
5  peerid.2.port=8002
6  peerid.3.ip=127.0.0.1
7  peerid.3.port=8003
8  peerid.4.ip=127.0.0.1
9  peerid.4.port=8004
10 peerid.5.ip=127.0.0.1
11 peerid.5.port=8005
12 peerid.6.ip=127.0.0.1
13 peerid.6.port=8006
14 peerid.7.ip=127.0.0.1
15 peerid.7.port=8007
16 peerid.8.ip=127.0.0.1
17 peerid.8.port=8008
18 peerid.9.ip=127.0.0.1
19 peerid.9.port=8009
27  # Neighbor details
28  #3X3 Mesh
29  peerid.1.neighbors=peerid.2,peerid.4
30  peerid.2.neighbors=peerid.1,peerid.3,peerid.5
31  peerid.3.neighbors=peerid.2,peerid.6
32  peerid.4.neighbors=peerid.1,peerid.5,peerid.7
33  peerid.5.neighbors=peerid.2,peerid.4,peerid.6,peerid.8
34  peerid.6.neighbors=peerid.3,peerid.5,peerid.9
35  peerid.7.neighbors=peerid.4,peerid.8
36  peerid.8.neighbors=peerid.5,peerid.7,peerid.9
37  peerid.9.neighbors=peerid.6,peerid.8
```

First, since we have 9 peers, we'll open 9 command line interfaces "CMD" from the path of the source code. (we worked with VS code so we opened 9 terminals)

Then we run the Peer.java class using the command java Peer. For all 9 peers, we enter the peer ID, Port, and its equivalent shared directory. (That we already created so that every peer (student) has its own files)

Student 1:

OUTPUTDEBUG CONSOLETERMINAL

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
1
Enter the port
8001
Session for peer id: 1 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer1
Peer 1 acting as server on 127.0.0.1:8001
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ^ x

student1
student2
student3
student4
student5
student6
student7
student8
student9

Student 2:

OUTPUTDEBUG CONSOLETERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! <https://aka.ms/PSWindows>

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
2
Enter the port
8002
Session for peer id: 2 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer2
Peer 2 acting as server on 127.0.0.1:8002
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ^ x

student1
student2
student3
student4
student5
student6
student7
student8
student9

Student 3:

OUTPUTDEBUG CONSOLETERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! <https://aka.ms/PSWindows>

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
3
Enter the port
8003
Session for peer id: 3 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer3
Peer 3 acting as server on 127.0.0.1:8003
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ^ v ^ x
student1
student2
student3
student4
student5
student6
student7
student8
student9

Student 4:

OUTPUTDEBUG CONSOLETERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! <https://aka.ms/PSWindows>

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
4
Enter the port
8004
Session for peer id: 4 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer4
Peer 4 acting as server on 127.0.0.1:8004
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ^ v ^ x
student1
student2
student3
student4
student5
student6
student7
student8
student9

Student 5:

OUTPUTDEBUG CONSOLETERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! <https://aka.ms/PSWindows>

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
5
Enter the port
8005
Session for peer id: 5 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer5
Peer 5 acting as server on 127.0.0.1:8005
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ^ v ^ x
student1
student2
student3
student4
student5
student6
student7
student8
student9

Student 6:

OUTPUT

DEBUG CONSOLE

TERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! <https://aka.ms/PSWindows>

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
6
Enter the port
8006
Session for peer id: 6 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer6
Peer 6 acting as server on 127.0.0.1:8006
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ▾ ^ ×

student1

student2

student3

student4

student5

student6

student7

student8

student9

Student 7:

OUTPUT

DEBUG CONSOLE

TERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! <https://aka.ms/PSWindows>

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
7
Enter the port
8007
Session for peer id: 7 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer7
Peer 7 acting as server on 127.0.0.1:8007
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ▾ ^ ×

student1

student2

student3

student4

student5

student6

student7

student8

student9

Student 8:

OUTPUT

DEBUG CONSOLE

TERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! <https://aka.ms/PSWindows>

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
Enter the peerid
8
Enter the port
8008
Session for peer id: 8 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer8
Peer 8 acting as server on 127.0.0.1:8008
***** Main Menu *****
1. Search File
2. Exit

Select your choice
█

+ ▾ ^ ×

student1

student2

student3

student4

student5

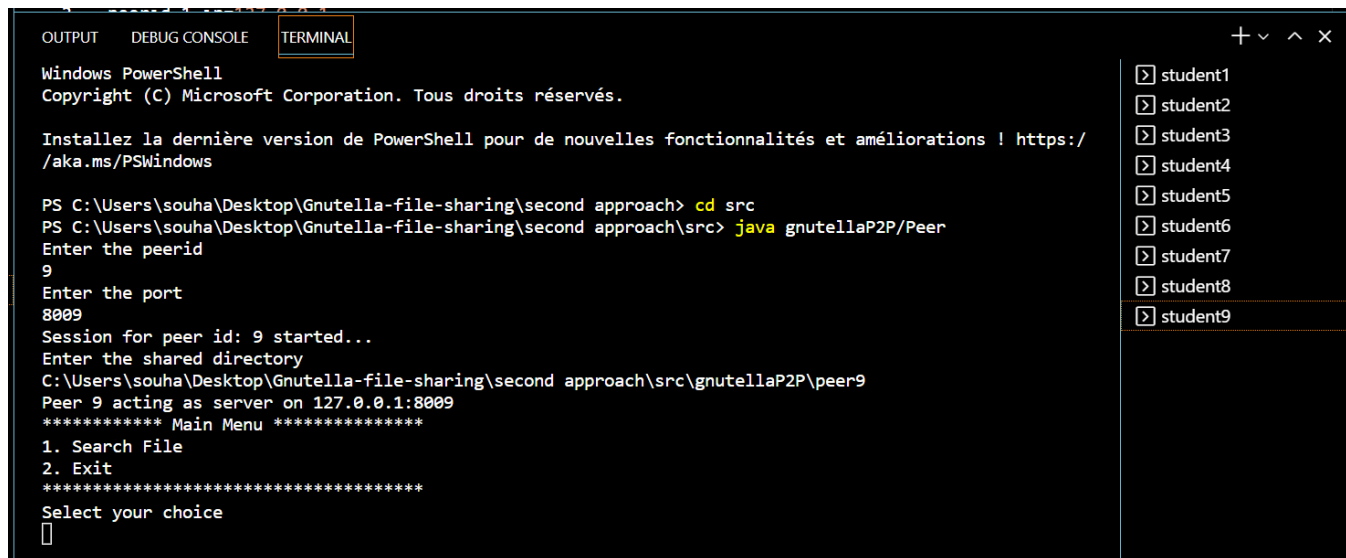
student6

student7

student8

student9

Student 9:



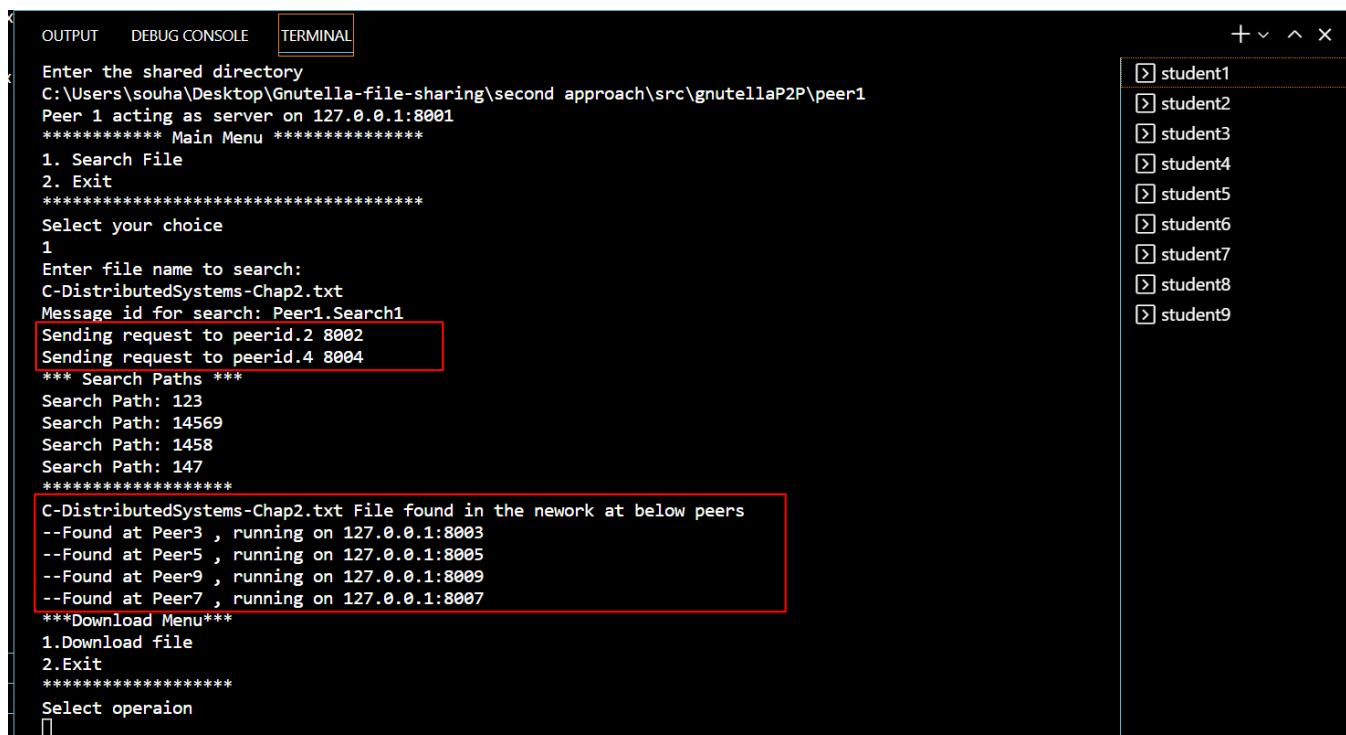
```
Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! https://aka.ms/PSWindows

PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach> cd src
PS C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src> java gnutellaP2P/Peer
9
Enter the peerid
9
Enter the port
8009
Session for peer id: 9 started...
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer9
Peer 9 acting as server on 127.0.0.1:8009
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
1
```

Now student1 wants to search for the chap2 of the course “distributed systems” which we added to student3, 5, 7, 9 directories.

*- The search result in Peer1's CMD : student1



```
Enter the shared directory
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer1
Peer 1 acting as server on 127.0.0.1:8001
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
1
Enter file name to search:
C-DistributedSystems-Chap2.txt
Message id for search: Peer1.Search1
Sending request to peerid.2 8002
Sending request to peerid.4 8004
*** Search Paths ***
Search Path: 123
Search Path: 14569
Search Path: 1458
Search Path: 147
*****
C-DistributedSystems-Chap2.txt File found in the network at below peers
--Found at Peer3 , running on 127.0.0.1:8003
--Found at Peer5 , running on 127.0.0.1:8005
--Found at Peer9 , running on 127.0.0.1:8009
--Found at Peer7 , running on 127.0.0.1:8007
***Download Menu***
1.Download file
2.Exit
*****
Select operation
1
```

After asking his neighbors 2 and 4, it's clear that the file was found at peer 3, 5, 7 and 9.

*- The search result in Peer2's CMD : student2

```
Peer 2 acting as server on 127.0.0.1:8002
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 2: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
Outgoing Request from peer 2: Sending request to peerid.3 8003
Outgoing Request from peer 2: Sending request to peerid.5 8005
Incoming Request to peer 2: From - 5 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
HitQuery: Send following result back to 1
--Found at Peer3 on localhost:8003
█
```

*- The search result in Peer3's CMD : student3

```
Peer 3 acting as server on 127.0.0.1:8003
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 3: From - 2 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File Found in the current peer
Outgoing Request from peer 3: Sending request to peerid.6 8006
Incoming Request to peer 3: From - 6 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
HitQuery: Send following result back to 2
--Found at Peer3 on localhost:8003
█
```

*- The search result in Peer4's CMD : student4

```
Peer 4 acting as server on 127.0.0.1:8004
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 4: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
Outgoing Request from peer 4: Sending request to peerid.5 8005
Outgoing Request from peer 4: Sending request to peerid.7 8007
HitQuery: Send following result back to 1
--Found at Peer5 on localhost:8005
--Found at Peer9 on localhost:8009
--Found at Peer7 on localhost:8007
█
```

*- The search result in Peer5's CMD : student5

```
Peer 5 acting as server on 127.0.0.1:8005
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 5: From - 4 Search locally and send request to neighbours for msg id- Peer1.Search1
Incoming Request to peer 5: From - 2 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
Local Search: File Found in the current peer
Outgoing Request from peer 5: Sending request to peerid.2 8002
Outgoing Request from peer 5: Sending request to peerid.6 8006
Outgoing Request from peer 5: Sending request to peerid.8 8008
HitQuery: Send following result back to 4
--Found at Peer5 on localhost:8005
--Found at Peer9 on localhost:8009
█
```

*- The search result in Peer6's CMD : student6

```
Peer 6 acting as server on 127.0.0.1:8006
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 6: From - 5 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
Incoming Request to peer 6: From - 3 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
Outgoing Request from peer 6: Sending request to peerid.3 8003
Outgoing Request from peer 6: Sending request to peerid.9 8009
HitQuery: Send following result back to 5
--Found at Peer9 on localhost:8009
█
```

*- The search result in Peer7's CMD : student7

```
Peer 7 acting as server on 127.0.0.1:8007
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 7: From - 4 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File Found in the current peer
Outgoing Request from peer 7: Sending request to peerid.8 8008
HitQuery: Send following result back to 4
--Found at Peer7 on localhost:8007
Incoming Request to peer 7: From - 8 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
█
```

*- The search result in Peer8's CMD : student8

```
Peer 8 acting as server on 127.0.0.1:8008
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 8: From - 5 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
Incoming Request to peer 8: From - 7 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
Outgoing Request from peer 8: Sending request to peerid.7 8007
Outgoing Request from peer 8: Sending request to peerid.9 8009
HitQuery: Send following result back to 5
Incoming Request to peer 8: From - 9 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
█
```

*- The search result in Peer9's CMD : student9

```
Peer 9 acting as server on 127.0.0.1:8009
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 9: From - 6 Search locally and send request to neighbours for msg id- Peer1.Search1
Incoming Request to peer 9: From - 8 Duplicate Request - Already searched in this peer- with message id - Peer1.Search1
Local Search: File Found in the current peer
Outgoing Request from peer 9: Sending request to peerid.8 8008
HitQuery: Send following result back to 6
--Found at Peer9 on localhost:8009
█
```

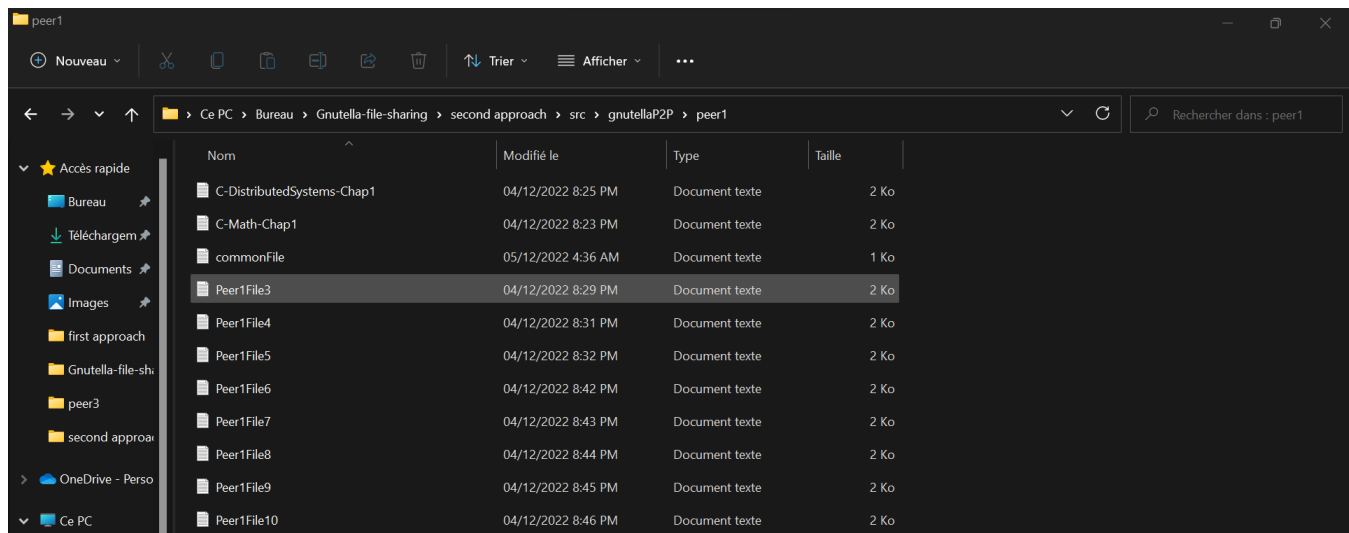

*- The download result in Peer1's CMD : student1

We select the peer id that we want to download the file from:

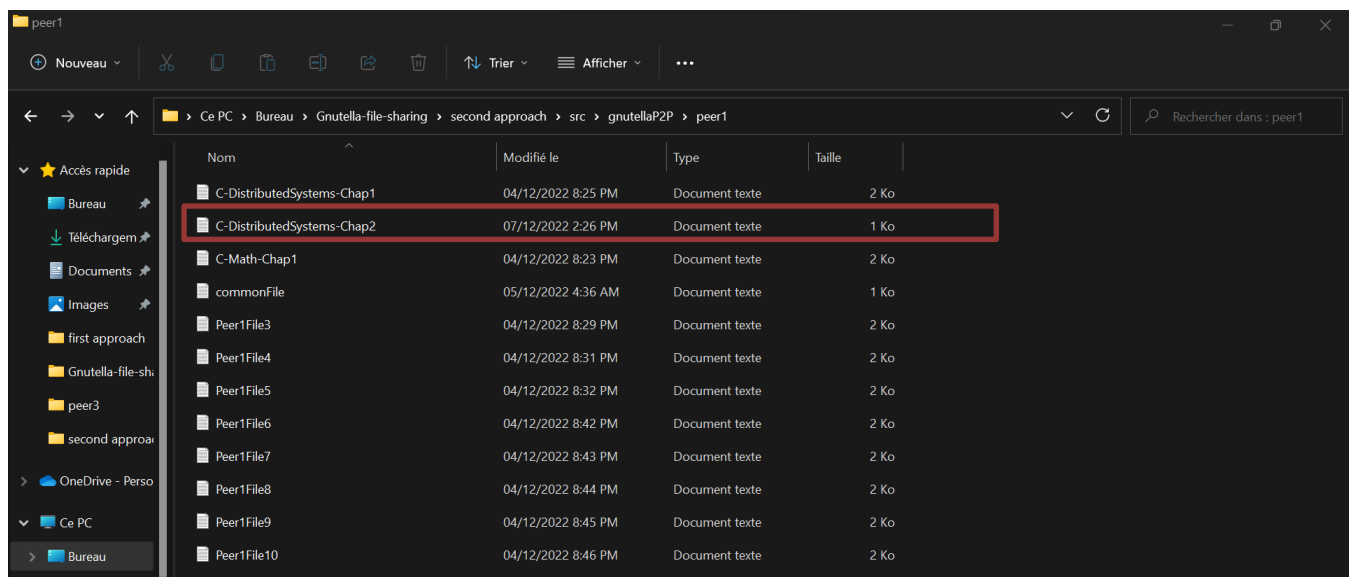
```
***Download Menu***
1.Download file
2.Exit
*****
Select operation
1
Enter peer id to connect and download the file
3
Downloading from localhost:8003
"C-DistributedSystems-Chap2.txt" downloaded to path: C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnu
tellaP2P\peer1
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
█
```

Peer1 directory:

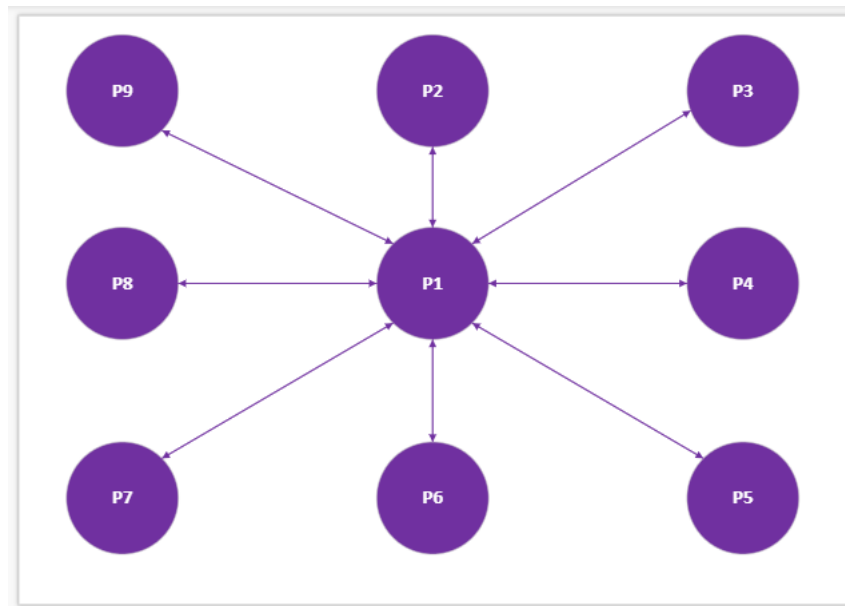
Before:



After:



III. Execution process for the second topology :



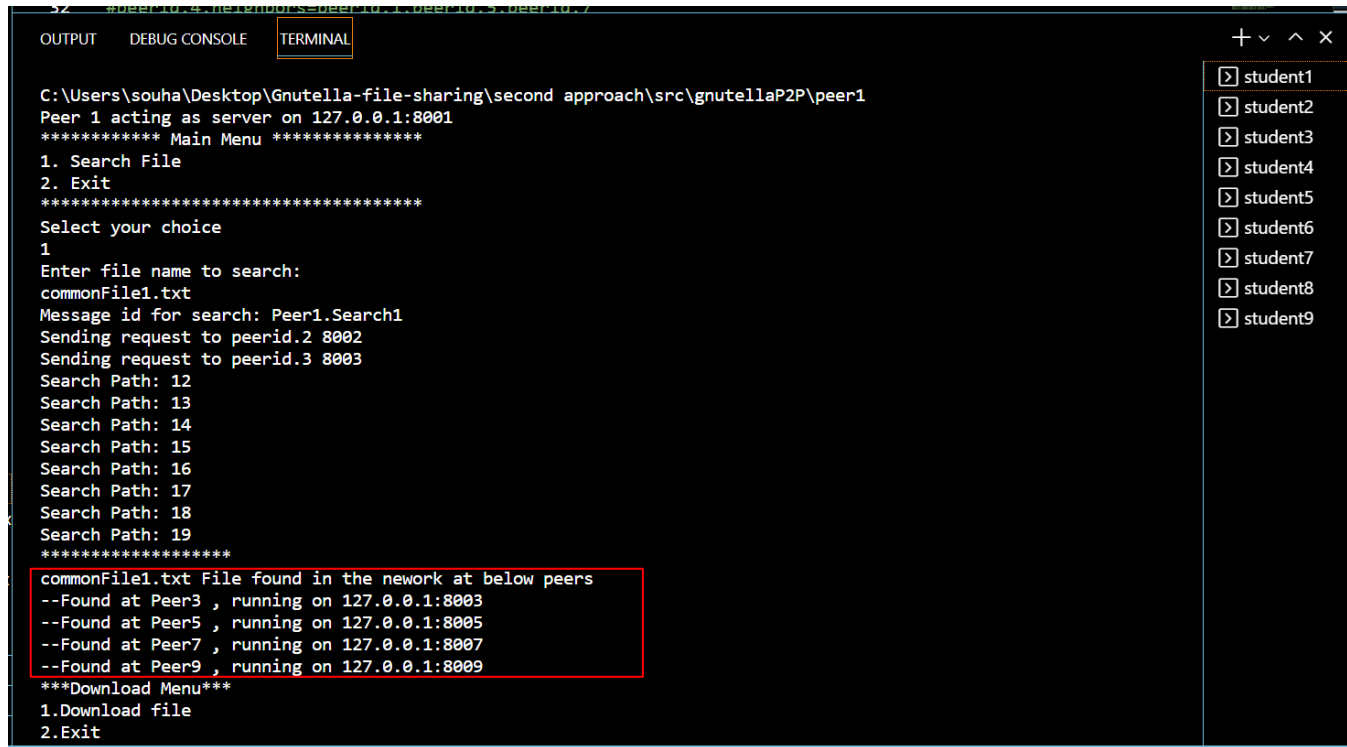
Config file:

```
39 #6 star network
40 peerid.1.neighbors=peerid.2,peerid.3,peerid.4,peerid.5,peerid.6,peerid.7,peerid.8,peerid.9
41 peerid.2.neighbors=peerid.1
42 peerid.3.neighbors=peerid.1
43 peerid.4.neighbors=peerid.1
44 peerid.5.neighbors=peerid.1
45 peerid.6.neighbors=peerid.1
46 peerid.7.neighbors=peerid.1
47 peerid.8.neighbors=peerid.1
48 peerid.9.neighbors=peerid.1
49
```

First, we do the same process defined in the first execution where we open 9 terminals corresponding to 9 peers and we initialize then by defining their ID, port and shared directory.

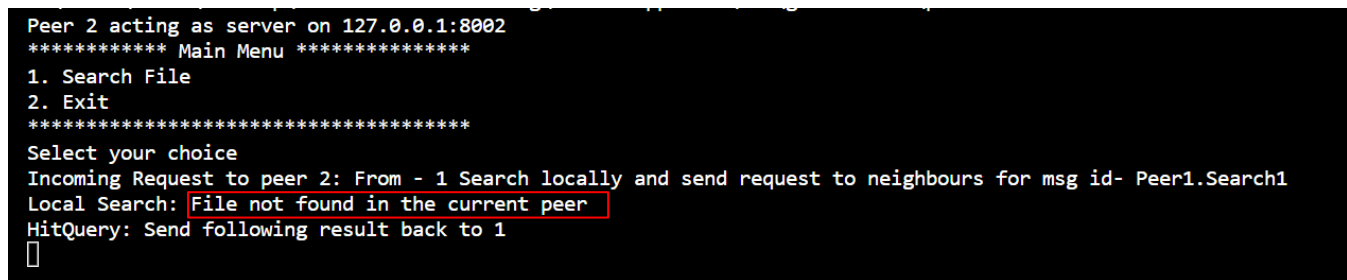
Then, we choose search file : student1 is searching for commonFile1.txt

***- The search result in Peer1's CMD : student1**



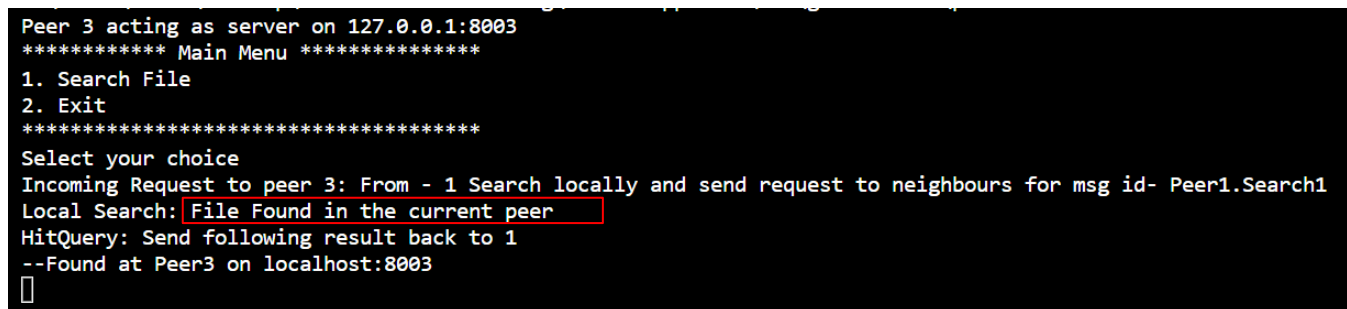
```
C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP2P\peer1
Peer 1 acting as server on 127.0.0.1:8001
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
1
Enter file name to search:
commonFile1.txt
Message id for search: Peer1.Search1
Sending request to peerid.2 8002
Sending request to peerid.3 8003
Search Path: 12
Search Path: 13
Search Path: 14
Search Path: 15
Search Path: 16
Search Path: 17
Search Path: 18
Search Path: 19
*****
commonFile1.txt File found in the network at below peers
--Found at Peer3 , running on 127.0.0.1:8003
--Found at Peer5 , running on 127.0.0.1:8005
--Found at Peer7 , running on 127.0.0.1:8007
--Found at Peer9 , running on 127.0.0.1:8009
***Download Menu***
1.Download file
2.Exit
```

***- The search result in Peer2's CMD : student2**



```
Peer 2 acting as server on 127.0.0.1:8002
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 2: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
HitQuery: Send following result back to 1
█
```

***- The search result in Peer3's CMD : student3**



```
Peer 3 acting as server on 127.0.0.1:8003
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 3: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File Found in the current peer
HitQuery: Send following result back to 1
--Found at Peer3 on localhost:8003
█
```

*- The search result in Peer4's CMD : student4

```
Peer 4 acting as server on 127.0.0.1:8004
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 4: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
HitQuery: Send following result back to 1
█
```

*- The search result in Peer5's CMD : student5

```
Peer 5 acting as server on 127.0.0.1:8005
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 5: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File Found in the current peer
HitQuery: Send following result back to 1
--Found at Peer5 on localhost:8005
█
```

*- The search result in Peer6's CMD : student6

```
Peer 6 acting as server on 127.0.0.1:8006
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 6: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
HitQuery: Send following result back to 1
█
```

*- The search result in Peer7's CMD : student7

```
Peer 7 acting as server on 127.0.0.1:8007
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 7: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File Found in the current peer
HitQuery: Send following result back to 1
--Found at Peer7 on localhost:8007
█
```

*- The search result in Peer8's CMD : student8

```
Peer 8 acting as server on 127.0.0.1:8008
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 8: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File not found in the current peer
HitQuery: Send following result back to 1
█
```

*- The search result in Peer9's CMD : student9

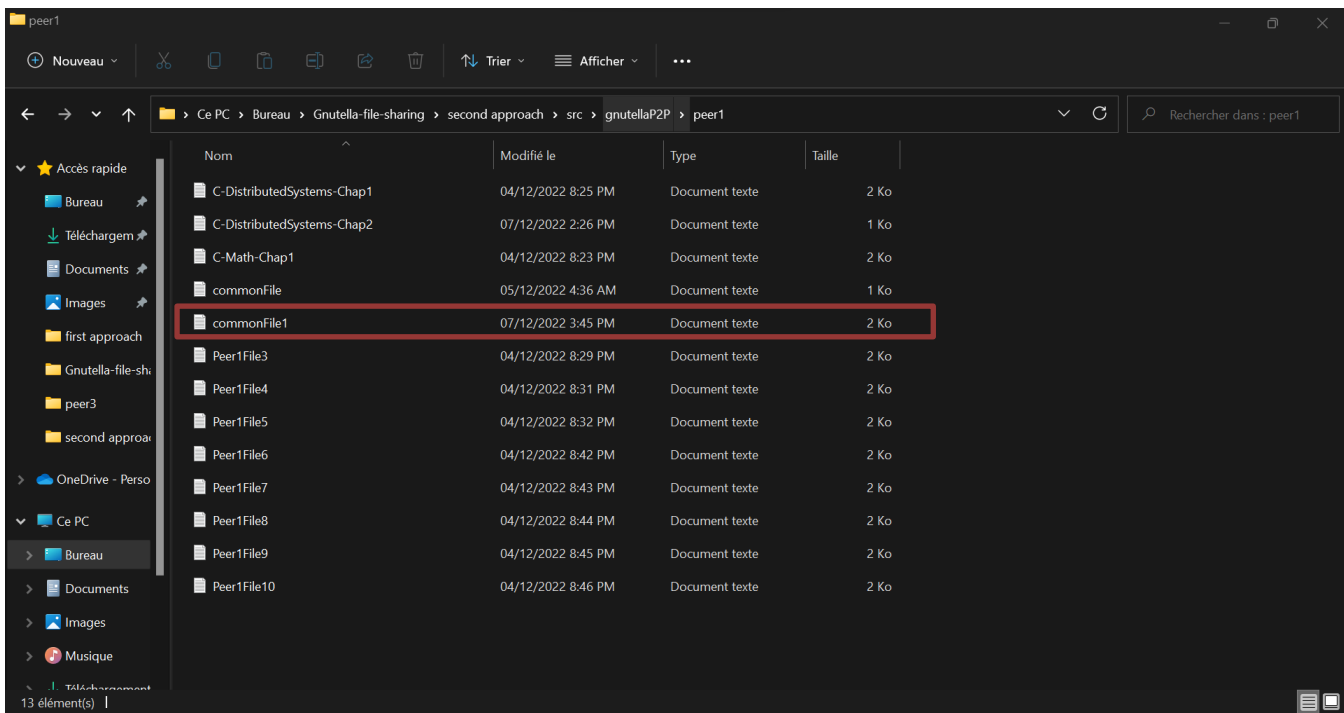
```
Peer 9 acting as server on 127.0.0.1:8009
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
Incoming Request to peer 9: From - 1 Search locally and send request to neighbours for msg id- Peer1.Search1
Local Search: File Found in the current peer
HitQuery: Send following result back to 1
--Found at Peer9 on localhost:8009
█
```

⇒ For the star topology, only one request from peer1 to all the other peers will be executed which is clear in the captures above.

*- The download result in Peer1's CMD : student1

```
Found at Peer9 y running on 127.0.0.1:8009
***Download Menu***
1.Download file
2.Exit
*****
Select operation
1
Enter peer id to connect and download the file
7
Downloading from localhost:8007
"commonFile1.txt" downloaded to path: C:\Users\souha\Desktop\Gnutella-file-sharing\second approach\src\gnutellaP
2P\peer1
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
█
```

Peer1 Directory:



IV. Execution process for two different machines :

Machines must be connected to the same network.

We change the config file:

```
1  # Peer details
2  peerid.1.ip=192.168.43.140
3  peerid.1.port=8001
4  peerid.2.ip=192.168.43.215
5  peerid.2.port=8002
6  
7
8
9  peerid.1.neighbors=peerid.2
```

Peer 1: @ip: 192.168.43.140

```
C:\Windows\System32\cmd.exe - java gnutellaP2P/Peer
C:\Users\Lenovo\Desktop\P2PGnutella-master\P2PGnutella-master\src>java gnutellaP2P/Peer
Enter the peerid
1
Enter the port
8001
Session for peer id: 1 started...
Enter the shared directory
C:\Users\Lenovo\Desktop\TPs_RT4\shared
Peer 1 acting as server on 127.0.0.1:8001
***** Main Menu *****
1. Search File
2. Exit
*****
Select your choice
1
Enter file name to search:
Peer2File2.txt
Message id for search: Peer1.Search1
Sending request to peerid.2 8002
*** Search Paths ***
Search Path: 12
*****
Peer2File2.txt File found in the network at below peers
--Found at Peer2 , running on 127.0.0.1:8002
***Download Menu***
1.Download file
2.Exit
*****
Select operation
1
Enter peer id to connect and download the file
2
Downloading from localhost:8002
```

Peer2: @ip: 192.168.43.215

```
PS C:\Users\souha\Desktop\P2PGnutella-master\src> java gnutellaP2P/Peer
Enter the peerid
2
Enter the port
8002
Session for peer id: 2 started...
Enter the shared directory
C:\Users\souha\Desktop\P2PGnutella-master\src\gnutellaP2P\peer2
--Found at Peer2 on localhost:8002
█
```