

# Verification

The functions 1~5 has been introduced in the previous project document. The previous file has been attached in this project folder.

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## 1) Run Peer

Command: `java Peer`

Peer Output:

```
dhcp24:program Devin$ cd Peer1
dhcp24:Peer1 Devin$ javac Peer.java
dhcp24:Peer1 Devin$ javac PeerI.java
dhcp24:Peer1 Devin$ java Peer
start Peer ...
RMI registry at port 1101.
Bind Succussfully.

-----
The menu options for user:
1.Set loop times for test (now is: 1)
2.Query files
3.Calculate the average responce time of latest query
4.Obtain files
5.Set a timer to call Search (So as to run with other peer simultaneously)
6.Set TTR (now is :60)
7.Set push/pull mode. (now: None)
8Simply modify file (change last-modify-time to now).
9.Show master copy and cached copy on this peer.
10.Fresh menu
11.Exit
-----
Please select a option number:
█
```

We also start other 9 Peers. The Peer outputs are similar. So there we ignore their outputs.

---

## 2) Push

Command: `option 7(switch to push model)`

Peer Output:

```
-----
Please select a option number:
7
Please select a option mode: 1.Push 2.Pull 3.None
1
7.Set push/pull mode. (now: Push)
```

The state in the menu has changed to Push. Then we should change all the 10 peers in to Push state as this process.

Command: option 2(Peer1)  
file name: g7.txt

Peer Output:

```
Please select a option number:
2
Please enter the file name:
g7.txt

Please select a option number:
messge 01-1 hit!
```

01-1 hit! shows that the file has been found.

Command: option 4 (download the file)

Peer Output:

```
Please select a option number:
4
Please enter the file name:
g7.txt
There are all address of the peers keeping file g7.txt:
1. rmi://127.0.0.1:1107/Peer Time: 2017-03-20 04:23:49 (Origin)

You can choose one to download the file: (Or you can enter 0 to cancel)
```

The list shows the peers who have the queried file. And this time we display the last modified time and the file type(Origin or Cached) and also it belong to which peer.

Command: option 2&option 4(Peer2)(to test if peer1 has the file"g7.txt")  
(Peer2~10 are all white background)  
file name: g7.txt

Peer Output:

```
Please select a option number:
messge 02-2 hit!
4
Please enter the file name:
g7.txt
There are all address of the peers keeping file g7.txt:
1. rmi://127.0.0.1:1101/Peer Time: 2017-03-20 04:23:49 (Cached copy)
2. rmi://127.0.0.1:1107/Peer Time: 2017-03-20 04:23:49 (Origin)
```

We can see from this list that there are two download resources, in Peer7 it is Origin and in Peer1 it is Cached.

Command: option 9(Peer1)

Peer Output:

```
-----
Please select a option number:
9
----The information for master copy:
a5.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:53:56
a6.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:04
a9.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:36
a10.txt     VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:46
a8.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:26
.DS_Store   VersionNo: 1      Last-Modify-Time: 2017-03-20 03:30:53
a7.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:16
a4.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:56
a1.txt      VersionNo: 1      Last-Modify-Time: 2017-03-13 01:30:42
a2.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:30
a3.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:46
----The information for cached copy:
g7.txt      VersionNo: 1      Last-Modify-Time: 2017-03-20 04:23:49 (VALID)
Please press enter to return to the menu.
```

Use option 9 we can check the version state of all the files in a Peer(above is Peer1). Then we can see the file we just download "g7.txt" is in the list of Cached copy, and its state is VALID. So we can search it out in other peers.

Command: option 8&option 9(Only can modify in Peer7)

Peer Output:

```
-----
Please select a option number:
8
Please enter the file name of master copy:
g7.txt
Change last modify time to 2017-03-20 05:25:35 Successfully!

-----
Please select a option number:
9
----The information for master copy:
g1.txt      VersionNo: 1      Last-Modify-Time: 2017-03-13 01:30:42
g10.txt     VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:46
g7.txt      VersionNo: 2      Last-Modify-Time: 2017-03-20 05:25:35
g6.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:04
g5.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:53:56
g3.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:46
g2.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:30
g4.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:56
g9.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:36
.DS_Store   VersionNo: 1      Last-Modify-Time: 2017-03-20 03:43:00
g8.txt      VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:26
----The information for cached copy:
No cached copy
Please press enter to return to the menu.
```

We can see the Version of file "g7.txt" has been modified to 2. Meanwhile the output of Peer1 (all the peers who download this file) also changed, they will receive a notice that the previous file has been invalid.

Peer1 Output:

```
3:49 (Origin)
Please select a option number:
an enter 0 to cancel)
Invalidation Notice: The file g7.txt is invalid now.
```

Peer Output: (option 9 state)

```
----The information for cached copy:
g7.txt VersionNo: 1 Last-Modify-Time: 2017-03-20 04:23:49 (INVALID)
Please press enter to return to the menu.
an enter 0 to cancel)
```

Now the file "g7.txt" in Peer1 is invalid, so we cannot search it out from other Peers.

Command: option 2&option 4(Peer2)

Peer Output:

```
=====
Please select a option number:
messge 02-3 hit!
4
Please enter the file name:
g7.txt
There are all address of the peers keeping file g7.txt:
1. rmi://127.0.0.1:1107/Peer Time: 2017-03-20 05:25:35 (Origin)
```

Now in the list, resource from Peer1 is disappear, because the file has turn to invalid.

### 3) Pull

Before we start Pull test, we should restart all the peers and change the model to Pull.

Command: option 7 (All Peers)

Peer Output: (take Peer1's as example)

```
Please select a option number:
7
Please select a option mode: 1.Push 2.Pull 3.None
2

-----
The menu options for user:
1.Set loop times for test (now is: 1)
2.Query files
3.Calculate the average response time of latest query
4.Obtain files
5.Set a timer to call Search (So as to run with other peer simultaneously)
6.Set TTR (now is :60)
7.Set push/pull mode. (now: Pull)
8Simply modify file (change last-modify-time to now).
9.Show master copy and cached copy on this peer.
10.Fresh menu
11.Exit
-----
```

We can see the model has been changed to Pull model, so we repeat the process which we did in Push model above.

Command: option 2

filename: f6.txt

Peer Output:

```
Please select a option number:
2
Please enter the file name:
f6.txt

-----
messge 01-1 hit!
```

Command: option 4

filename: f6.txt

Peer Output:

```
Please select a option number:
messge 01-1 hit!
4
Please enter the file name:
f6.txt
There are all address of the peers keeping file f6.txt:
1. rmi://127.0.0.1:1106/Peer Time: 2017-01-26 06:54:04 (Origin)

You can choose one to download the file: (Or you can enter 0 to cancel)
```

We can see the queried file is in Peer6 and is a original file.

Command: option 2&option 4(Peer2)(to test if peer1 has the file"f6.txt")  
(Peer2~10 are all white background)  
file name: f6.txt

Peer Output:

```
-----
Please select a option number:
messge 02-1 hit!
4
Please enter the file name:
f6.txt
There are all address of the peers keeping file f6.txt:
1. rmi://127.0.0.1:1101/Peer Time: 2017-01-26 06:54:04 (Cached copy)
2. rmi://127.0.0.1:1106/Peer Time: 2017-01-26 06:54:04 (Origin)
```

Now we can see if Peer2 want to download the file, there are two resources: Peer1 and Peer6.  
Peer1's file is Cached copy, and Peer6's is Origin.

Command: option 9(Peer1)

Peer Output:

```
-----
Please select a option number:
9
----The information for master copy:
a5.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:53:56
a6.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:54:04
a9.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:54:36
a10.txt     VersionNo: 1    Last-Modify-Time: 2017-01-26 06:54:46
a8.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:54:26
.DS_Store   VersionNo: 1    Last-Modify-Time: 2017-03-20 03:30:53
a7.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:54:16
a4.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:52:56
a1.txt      VersionNo: 1    Last-Modify-Time: 2017-03-13 01:30:42
a2.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:52:30
a3.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:52:46
----The information for cached copy:
f6.txt      VersionNo: 1    Last-Modify-Time: 2017-01-26 06:54:04 (VALID)
TTR: 60 Refresh Time: 2017-03-20 06:03:14
```

Use option 9 we can check the version state of all the files in a Peer(above is Peer1). Then we can see the file we just download "f6.txt" is in the list of Cached copy, and its state is VALID. So we can search it out in other peers.

Command: option 8&option 9(Only can modify in Peer6)

Peer Output:

```
-----
Please select a option number:
8
Please enter the file name of master copy:
f6.txt
Change last modify time to 2017-03-20 06:05:51 Successfully!
-----
```



```

-----
Please select a option number:
9
----The information for master copy:
f4.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:56
f10.txt         VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:46
.DS_Store       VersionNo: 1      Last-Modify-Time: 2017-03-20 03:40:58
f1.txt          VersionNo: 1      Last-Modify-Time: 2017-03-13 01:30:42
f2.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:30
f3.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:52:46
f9.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:36
f5.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:53:56
f8.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:26
f6.txt          VersionNo: 2      Last-Modify-Time: 2017-03-20 06:05:51
f7.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:16
----The information for cached copy:
No cached copy

```

We can see the Version of file “f6.txt” has been modified to 2. And a while later, Peer1 receive a notice that f6.txt is invalid. That is because of using Pull model, the system will check if the number of last modified time to now exceed the TTR in every 2sec. If yes, mark this file as TTR expired, and check the file which been marked as TTR expired every 30sec, to confirm if it is still valid. If the file no longer valid, show the notice in the peer that this file is invalid. TTR is the refresh time.

Peer1 Output:

```

Please press enter to return to the menu.
Pull Notice: the file f6.txt is now invalid.

```

Peer Output: (option 9 state)

```

----The information for cached copy:
f6.txt          VersionNo: 1      Last-Modify-Time: 2017-01-26 06:54:04 (INVALID)
TTR: 60 Refresh Time: 2017-03-20 06:05:14
Please press enter to return to the menu.

```

Now the file “f6.txt” in Peer1 is invalid, so we cannot search it out from other Peers.

**Command: option 2&option 4(Peer2)**

Peer Output:

```

-----
Please select a option number:
messge 02-2 hit!
4
Please enter the file name:
f6.txt
There are all address of the peers keeping file f6.txt:
1. rmi://127.0.0.1:1106/Peer Time: 2017-03-20 06:05:51 (Origin)

```

Now in the list, resource from Peer1 is disappear, because the file has turn to invalid.