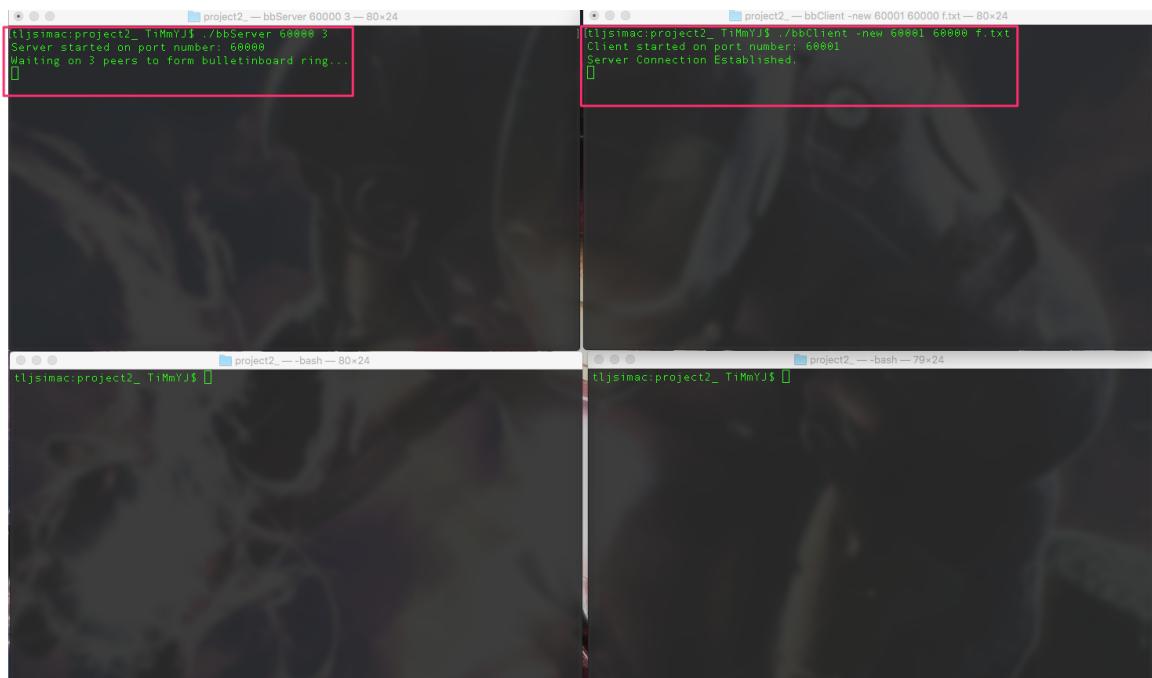


startServer.png



connectToServer.png

The image shows two terminal windows side-by-side. The left window is titled 'project2 ---bash -- 80x24' and contains the following text:

```
(tljsimac:project2_ TiMmYJ$ ./bbServer 60000
Server started on port number: 60000
Waiting on 3 peers to form bulletinboard ring...
Shutting Down Gracefully...
tljsimac:project2_ TiMmYJ$
```

The right window is also titled 'project2 ---bash -- 80x24' and contains:

```
(tljsimac:project2_ TiMmYJ$ ./bbClient -new 60001 60000 f.txt
Client started on port number: 60001
Server Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return):
```

A red box highlights the server's message 'Waiting on 3 peers to form bulletinboard ring...' and the client's prompt 'Option (example, enter 0 then hit return):'.

ringEstablishedTokenWinner.png

This screenshot is similar to the previous one but includes a message exchange. The left window shows the server starting up and waiting for peers. The right window shows the client connecting and receiving the message 'Yay I Win, I have the first Token'.

The left window's text is identical to the previous screenshot.

The right window's text is identical to the previous screenshot, except it includes the message 'Yay I Win, I have the first Token'.

A red box highlights the client's message 'Yay I Win, I have the first Token'.

newBulletinMessage.png

```

[1]: [project2 --bash -- 80x24]
tljsimac:project2_ TiMmYJ$ ./bbServer 60000
Server started on port number: 60000
Waiting on 3 peers to form bulletinboard ring...
Shuting Down Gracefully...
tljsimac:project2_ TiMmYJ$ 

[2]: [project2 --bbClient -new 60001 60000 f.txt -- 80x24]
tljsimac:project2_ TiMmYJ$ ./bbClient -new 60001 60000 f.txt
Client started on port number: 60001
Server Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 0
[+]Enter your message below, when you are finish hit enter then ctrl-d for the end of file character:
This is a bulletinboard message
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 0

[3]: [project2 --bbClient -new 60002 60000 f.txt -- 80x24]
tljsimac:project2_ TiMmYJ$ ./bbClient -new 60002 60000 f.txt
Client started on port number: 60002
Server Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 1
Message number to read:1
The message is:
    This is a bulletinboard message
end of message
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 0

[4]: [project2 --bbClient -new 60003 60000 f.txt -- 79x24]
tljsimac:project2_ TiMmYJ$ ./bbClient -new 60003 60000 f.txt
Client started on port number: 60003
Server Connection Established.
Yay I Win, I have the first Token
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 0

```

readBulletinboard.png

```

[1]: [project2 --bash -- 80x24]
tljsimac:project2_ TiMmYJ$ ./bbServer 60000
Server started on port number: 60000
Waiting on 3 peers to form bulletinboard ring...
Shuting Down Gracefully...
tljsimac:project2_ TiMmYJ$ 

[2]: [project2 --bbClient -new 60001 60000 f.txt -- 80x24]
tljsimac:project2_ TiMmYJ$ ./bbClient -new 60001 60000 f.txt
Client started on port number: 60001
Server Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 0
[+]Enter your message below, when you are finish hit enter then ctrl-d for the end of file character:
This is a bulletinboard message
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 0

[3]: [project2 --bbClient -new 60002 60000 f.txt -- 80x24]
tljsimac:project2_ TiMmYJ$ ./bbClient -new 60002 60000 f.txt
Client started on port number: 60002
Server Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter 0 then hit return): 2
The valid range is from 1 to 2
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

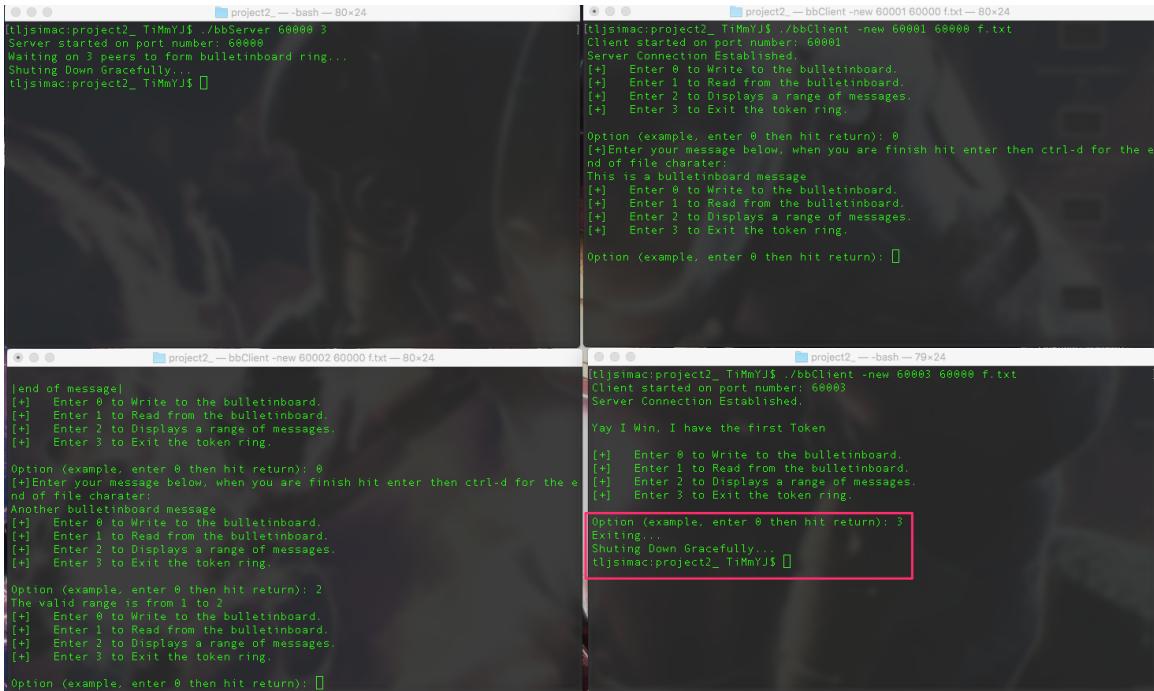
Option (example, enter 0 then hit return): 0

[4]: [project2 --bbClient -new 60003 60000 f.txt -- 79x24]
tljsimac:project2_ TiMmYJ$ ./bbClient -new 60003 60000 f.txt
Client started on port number: 60003
Server Connection Established.
Yay I Win, I have the first Token
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

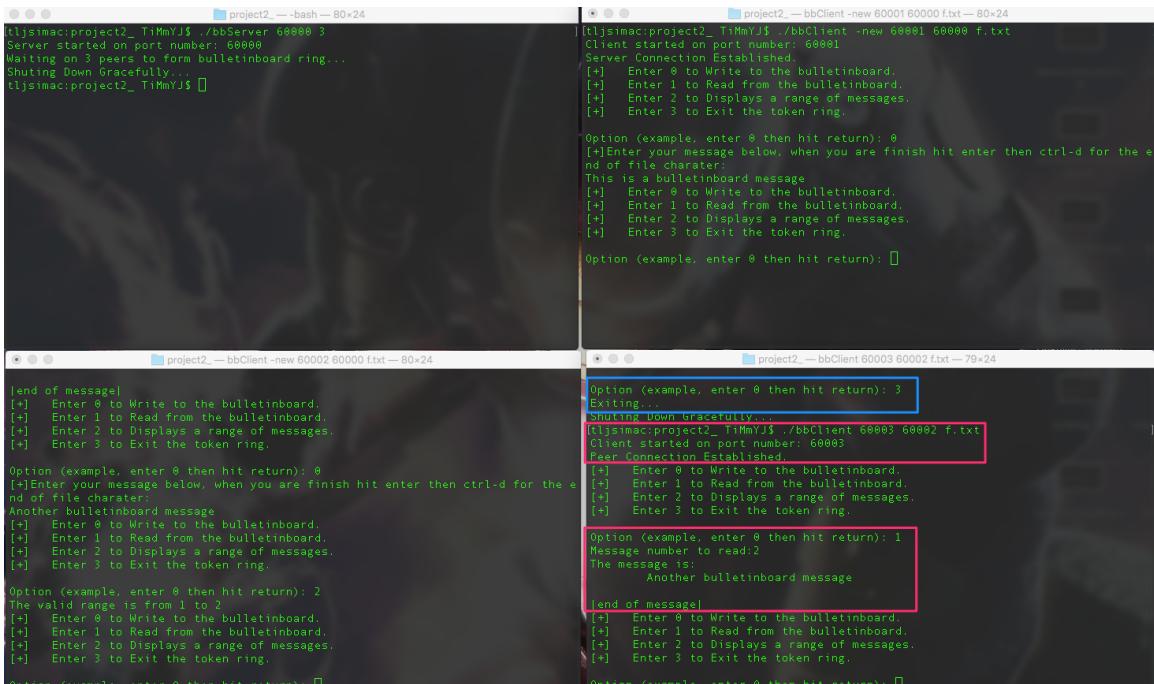
Option (example, enter 0 then hit return): 0

```

rangeOfMessagesOnBulletinboard.png



exitRing.png



joinExistingRing.png

The image shows four terminal windows (labeled 1 through 4) illustrating the operation of a bulletinboard system (bbServer and bbClient).

**Terminal 1 (Server):**

```
[t]lsimac:project2_ TiMmYJ$ ./bbServer 60000 3
Server started on port number: 60000
Waiting on 3 peers to form bulletinboard ring...
Shutting Down Gracefully...
[t]lsimac:project2_ TiMmYJ$ 
```

**Terminal 2 (Client 1):**

```
[t]lsimac:project2_ TiMmYJ$ ./bbClient -new 60001 60000 f.txt
Client started on port number: 60001
Server Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter @ then hit return): 8
[+]Enter your message below, when you are finish hit enter then ctrl-d for the end of file character:
This is a bulletinboard message
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

[t]lsimac:project2_ TiMmYJ$ 
```

**Terminal 3 (Client 2):**

```
[t]lsimac:project2_ TiMmYJ$ ./bbClient 60003 60002 f.txt
Client started on port number: 60003
Peer Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter @ then hit return): 1
Message number to read:2
The message is:
Another bulletinboard message

[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

[t]lsimac:project2_ TiMmYJ$ 
```

**Terminal 4 (Client 3):**

```
[t]lsimac:project2_ TiMmYJ$ ./bbClient 60004 60003 f.txt
Client started on port number: 60004
Peer Connection Established.
[+] Enter 0 to Write to the bulletinboard.
[+] Enter 1 to Read from the bulletinboard.
[+] Enter 2 to Displays a range of messages.
[+] Enter 3 to Exit the token ring.

Option (example, enter @ then hit return): 3
[+]Enter your message below, when you are finish hit enter then ctrl-d for the end of file character:
Exiting...
Shuting Down Gracefully...
[t]lsimac:project2_ TiMmYJ$ 
```

allPeersExit.png