Peer Chat
A Simple Chat Application implemented in Java Swing
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How to run the software
- Download PeerChatServer.java and PeerChatClient.java
- enter javac PeerChatServer.java in terminal
- enter javac PeerChatClient.java in terminal
- enter java PeerChatServer in terminal (Started Server)
- enter java PeerChatClient in terminal (Started Client)
- enter java PeerChatClient again so that there are now two clients connected to server

Precuations
- Make sure that PeerChatServer is already started before running the Clients
- The software is tested only in Ubuntu/Linux.
- If port **8888** is used by some other application please change it.

How it works?
The PeerChatServer acts only as the server. Start atleast two peerChatClient files to start communication with each other along with the Server file running.
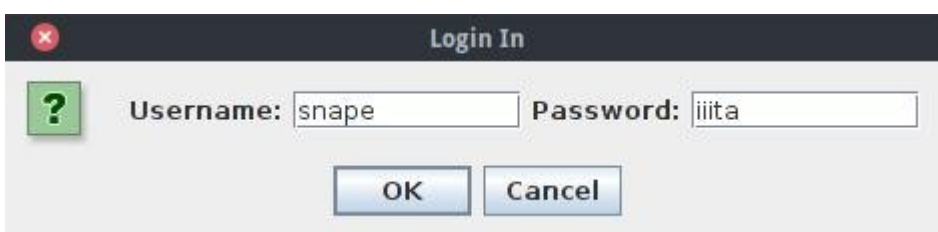
How to connect to server?

When this screen pops up enter localhost.
Optional: If you are using two diffrent computers enter the ip address of the server.
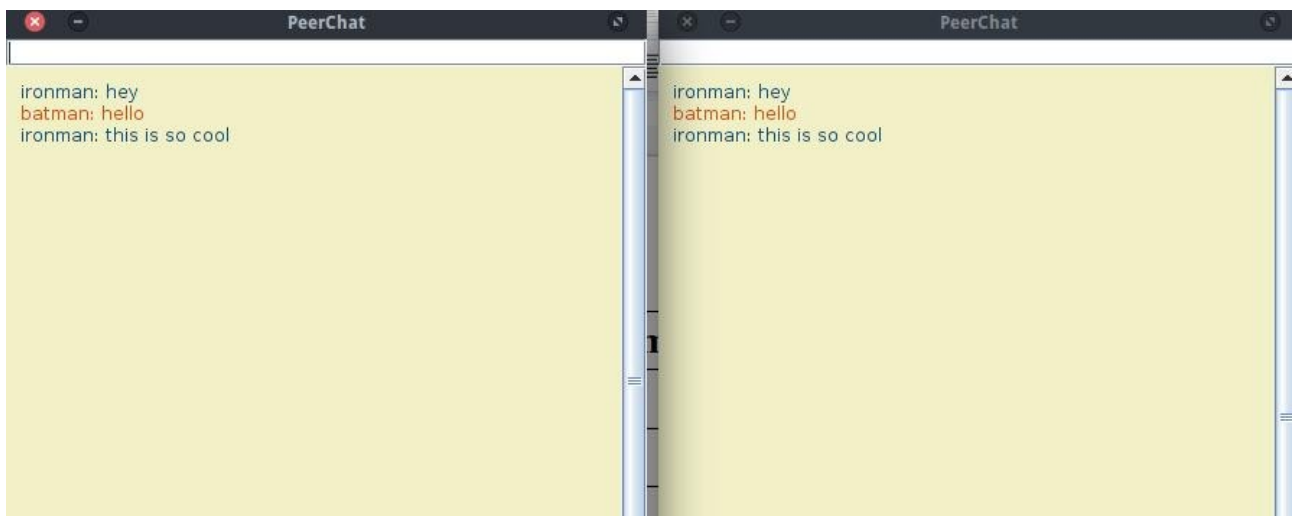
How to login?

The following login credentials can be used to login to the system

Username	Password
snape	iiita
potter	malfoy
jonsnow	iiita
hulk	iiita
ironman	tonystark
batman	darkknight

Once logged in the clients can send messages to each other.

Awesome Features
- Secure communication with JCE(DES/ECB/PKCS5)
- Group chat
- Validation of sign in details in Server side
- Simple to use GUI
- Cross Platform (Windows, MAC, Linux)

Wireshark Traces

1)

Connecting to the server

```
0000   00 00 00 00 00 00 00 00   00 00 00 00 08 00 45 00    ........ ......E.
0010   00 3e 23 e0 40 00 40 06   18 d8 7f 00 00 01 7f 00    .>#.@.@. ........
0020   00 01 22 b8 99 82 b0 80   e7 7b 4d eb e3 e1 80 18    ..".....  .{M.....
0030   01 56 fe 32 00 00 01 01   08 0a 00 b1 d7 df 00 b1    .V.2.... ........
0040   d7 df 48 41 4e 44 53 48   41 4b 45 0a                ..HANDSH AKE.
```

Sending and recieving (Eg: JonSnow sending "How are r you")

```
0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E.
0010  00 4f 23 e1 40 00 40 06  18 c6 7f 00 00 01 7f 00   .O#.@.@. ........
0020  00 01 22 b8 99 82 b0 80  e7 85 4d eb e3 ec 80 18   .."..... ..M.....
0030  01 56 fe 43 00 00 01 01  08 0a 00 b2 bc a0 00 b2   .V.C.... ........
0040  bc 9f 53 54 52 45 41 4d  20 6a 6f 6e 73 6e 6f 77   ..STREAM jonsnow
0050  3a 20 68 6f 77 20 72 20  79 6f 75 27 0a            : how r  you'.
```

2) Multiple Clients
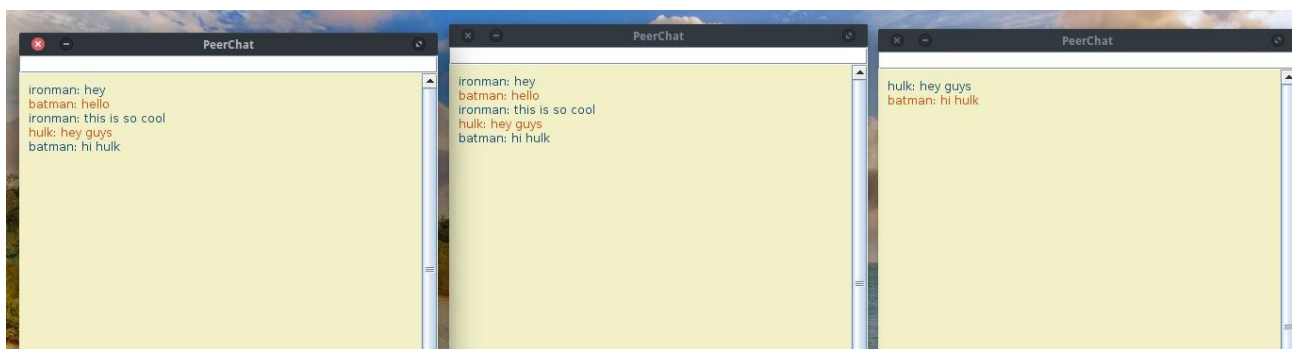
Sending Login Credentials

```
0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E.
0010  00 3e b1 7a 40 00 40 06  8b 3d 7f 00 00 01 7f 00   .>.z@.@. .=......
0020  00 01 99 f4 22 b8 79 09  5c f6 f9 08 60 34 80 18   ...."y. \...`4..
0030  01 56 fe 32 00 00 01 01  08 0a 00 bd f9 53 00 bd   .V.2.... .....S..
0040  f0 7c 68 75 6c 6b 69 69  69 74 61 0a               .|hulkii ita.
```

Correct login, hanshake completed

```
        Source port: ddi-tcp-1 (8888)
0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E.
0010  00 3e 8d ac 40 00 40 06  af 0b 7f 00 00 01 7f 00   .>..@.@. ........
0020  00 01 22 b8 99 f4 f9 08  60 34 79 09 5d 00 80 18   .."..... `4y.]...
0030  01 56 fe 32 00 00 01 01  08 0a 00 bd f9 53 00 bd   .V.2.... .....S..
0040  f9 53 48 41 4e 44 53 48  41 4b 45 0a               .SHANDSH AKE.
```

Sending message

```
259 3248.597048( 127.0.0.1        127.0.0.1        TCP      88 ddi-tcp-1 > 39412 [PSH, ACK] Seq=91 Ack=50 Win=43776 Len=22 TSval=12462375 TSecr=124623
260 3248.597196( 127.0.0.1        127.0.0.1        TCP      66 39412 > ddi-tcp-1 [ACK] Seq=50 Ack=113 Win=43776 Len=0 TSval=12462375 TSecr=12462375
```

```
        Source port: ddi-tcp-1 (8888)
0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E.
0010  00 4a 8d b0 40 00 40 06  ae fb 7f 00 00 01 7f 00   .J..@.@. ........
0020  00 01 22 b8 99 f4 f9 08  60 82 79 09 5d 26 80 18   .."..... `.y.]&..
0030  01 56 fe 3e 00 00 01 01  08 0a 00 be 29 27 00 be   .V.>.... ....)'..
0040  29 27 53 54 52 45 41 4d  20 68 75 6c 6b 3a 20 68   )'STREAM hulk: h
0050  65 79 20 67 75 79 73 0a                            ey guys.
```

3)Messages are not encrypted as they are visible through wireshark. The message from hulk "**hey guys**" is visible in the packet.

```
259 3248.597048( 127.0.0.1          127.0.0.1          TCP    88 ddi-tcp-1 > 39412 [PSH, ACK] Seq=91 Ack=50 Win=43776 Len=22 TSval=12462375 TSecr=1246237
260 3248.597196( 127.0.0.1          127.0.0.1          TCP    66 39412 > ddi-tcp-1 [ACK] Seq=50 Ack=113 Win=43776 Len=0 TSval=12462375 TSecr=12462375

    Source port: ddi-tcp-1 (8888)
0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E.
0010  00 4a 8d b0 40 00 40 06  ae fb 7f 00 00 01 7f 00   .J..@.@. ........
0020  00 01 22 b8 99 f4 f9 08  60 82 79 09 5d 26 80 18   .."..... `.y.]&..
0030  01 56 fe 3e 00 00 01 01  08 0a 00 be 29 27 00 be   .V.>.... ....)'..
0040  29 27 53 54 52 45 41 4d  20 68 75 6c 6b 3a 20 68   )'STREAM  hulk: h
0050  65 79 20 67 75 79 73 0a                            ey guys.
```

4)

After implementing JCE for encrypting the messages. The messages are not visible as they are encrypted.

```
270 3011.174170( 127.0.0.1                127.0.0.1                  TCP            91 39418
277 3611.183107( 127.0.0.1                127.0.0.1                  TCP           113 ddi-t
278 3611.183193( 127.0.0.1                127.0.0.1                  TCP            66 39418

    Source port: ddi-tcp-1 (8888)
0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E.
0010  00 63 dd 24 40 00 40 06  5f 6e 7f 00 00 01 7f 00   .c.$@.@. _n......
0020  00 01 22 b8 99 fa 6e 96  a7 31 bc d8 07 c2 80 18   .."...n. .1......
0030  01 56 fe 57 00 00 01 01  08 0a 00 bf 8b 3e 00 bf   .V.W.... .....>..
0040  8b 3b c2 8b 70 c2 a8 c2  a1 74 14 c3 82 54 07 c3   .;..p... .t...T..
0050  b3 c2 81 2b c2 ab c2 90  c3 98 2f 43 c3 b1 68 52   ...+.... ../C..hR
0060  c2 81 6a 70 79 c2 b0 c3  8a 13 77 5e 4e c2 bb 77   ..jpy... ..w^N..w
0070  0a                                                 .
```

```
276 3611.174170( 127.0.0.1                127.0.0.1                  TCP            91 39418 >
277 3611.183107( 127.0.0.1                127.0.0.1                  TCP           113 ddi-tcp-
278 3611.183193( 127.0.0.1                127.0.0.1                  TCP            66 39418 >

    Source port: 39418 (39418)
0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E.
0010  00 4d 7c 54 40 00 40 06  c0 54 7f 00 00 01 7f 00   .M|T@.@. .T......
0020  00 01 99 fa 22 b8 bc d8  07 a9 6e 96 a7 31 80 18   ...."... ..n..1..
0030  01 56 fe 41 00 00 01 01  08 0a 00 bf 8b 3b 00 bf   .V.A.... .....;..
0040  88 48 c3 a5 4e 51 56 c2  8c 15 c3 9e c3 95 c2 85   .H..NQV. ........
0050  c2 ab 11 c3 9a 76 76 20  c3 9b 0a                  .....vv  ...
```