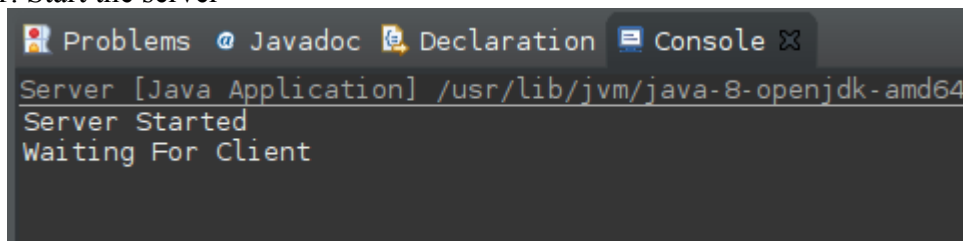To start the project I took what I already knew about BufferedReaders and buffered input streams and combined it with what I learned from the lab about setting up threads and sockets. Getting the server and client to connect and the server to continually accept clients was the easy part, the hardest part was figuring out how printwriter worked and how to actually read/write to the socket. Once I had that done the last part was to essentially do the same thing in server but take out the part that reads from the terminal and change how it sends the data out. I realized when creating the threads if I saved them in an array and added a getter for the threads printwriter I would be able to call on each specific clients socket to be able to write to each one individually, giving the program the ability to compare socket info and make sure the thread wasn't sending the information back to the client that initially sent it. Initially I ran into the problem of not being able to actually use the terminal to send stuff because the scanner would freak out and refuse to notice things, but when I changed that to a buffered reader that checked System.in rather than the socket, it finally worked. The only other hard part was being able to check for similarities in the Client_thread class that would make sure that it doesn't send information back to the client that sent it, but once I realized that I could use the socket information to do that, everything worked out
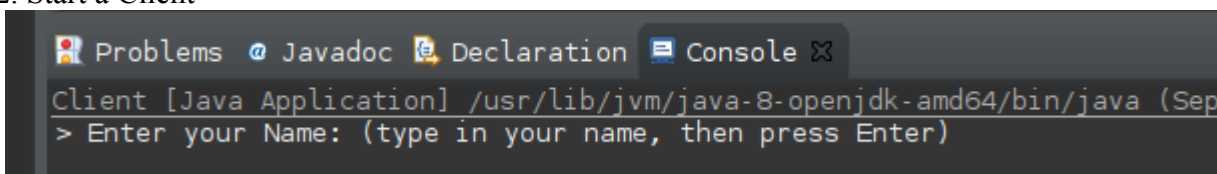
1. Start the server
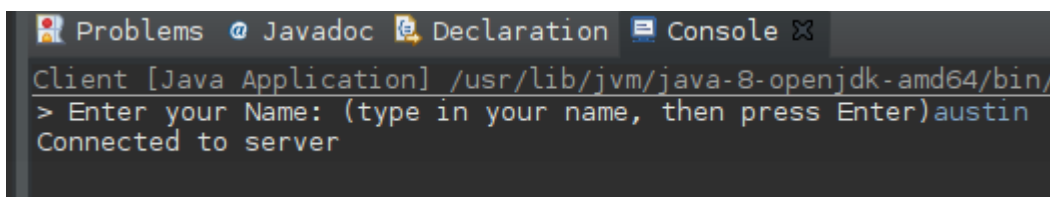
     the server is started and is waiting for a client

2. Start a Client
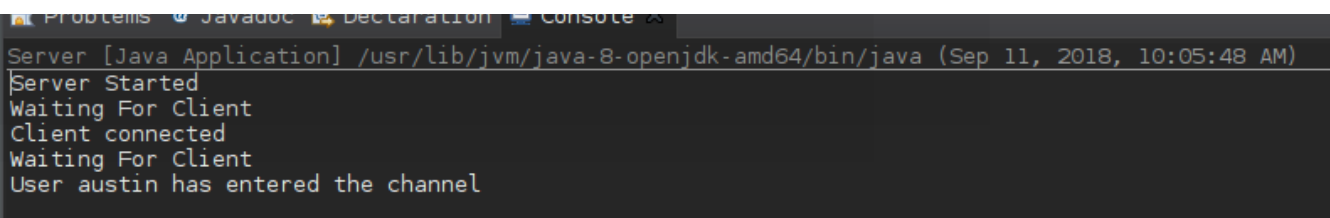
     enter the name

     the client shows it is connected in it's terminal

     same with the server

3. Connect another client and enter name

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:12:07 AM)
> Enter your Name: (type in your name, then press Enter) Dvorak
Connected to server
```

message in server:

```
Server [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:05:48 AM)
Server Started
Waiting For Client
Client connected
Waiting For Client
User austin has entered the channel
Client connected
Waiting For Client
User Dvorak has entered the channel
```

message in first client that the server broadcasted:

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:08:41 AM)
> Enter your Name: (type in your name, then press Enter)austin
Connected to server
User Dvorak has entered the channel
```

4. connect a third client

server

```
Server [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:05:48 AM)
Server Started
Waiting For Client
Client connected
Waiting For Client
User austin has entered the channel
Client connected
Waiting For Client
User Dvorak has entered the channel
Client connected
Waiting For Client
User third has entered the channel
```

first client

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:08:41 AM)
> Enter your Name: (type in your name, then press Enter)austin
Connected to server
User Dvorak has entered the channel
User third has entered the channel
```

second client

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/ja
> Enter your Name: (type in your name, then press Enter) Dvorak
Connected to server
User third has entered the channel
```

send a message in each client:

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/
> Enter your Name: (type in your name, then press Enter)austin
Connected to server
User Dvorak has entered the channel
User third has entered the channel
Hello
```

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:12:07 AM)
> Enter your Name: (type in your name, then press Enter) Dvorak
Connected to server
User third has entered the channel
austin > Hello
```

```
Server [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:05:48 AM)
Waiting For Client
Client connected
Waiting For Client
User austin has entered the channel
Client connected
Waiting For Client
User Dvorak has entered the channel
Client connected
Waiting For Client
User third has entered the channel
austin > Hello
```

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:12:07 AM)
> Enter your Name: (type in your name, then press Enter) Dvorak
Connected to server
User third has entered the channel
austin > Hello
hi
```

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:08:41 AM)
> Enter your Name: (type in your name, then press Enter)austin
Connected to server
User Dvorak has entered the channel
User third has entered the channel
Hello
Dvorak > hi
```

```
Client [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:14:59 AM)
> Enter your Name: (type in your name, then press Enter) third
Connected to server
austin > Hello
Dvorak > hi
```

```
Server [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (Sep 11, 2018, 10:05:48 AM)
Client connected
Waiting For Client
User austin has entered the channel
Client connected
Waiting For Client
User Dvorak has entered the channel
Client connected
Waiting For Client
User third has entered the channel
austin > Hello
Dvorak > hi
```

messages are only sent by the server to all other users in the channel and the terminal displays the messages