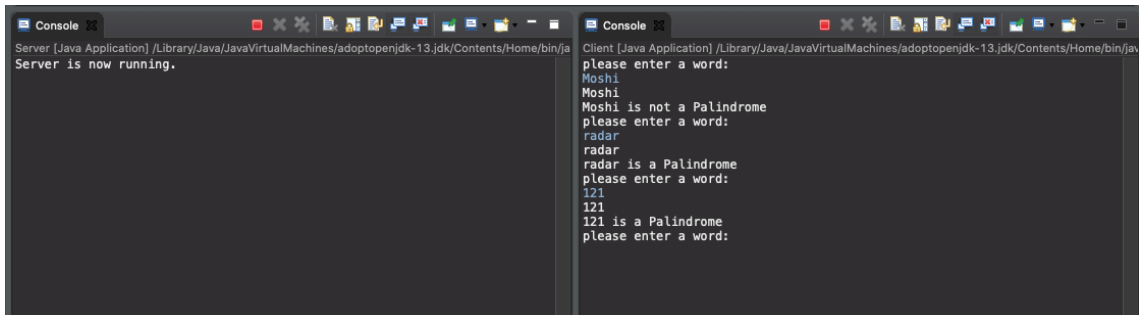**Course:** ENSF 607 – Fall 2020
Lab#: 06
Student Name: Nathan Jack
Due Date: November 9th, 2020

Exercise 1:

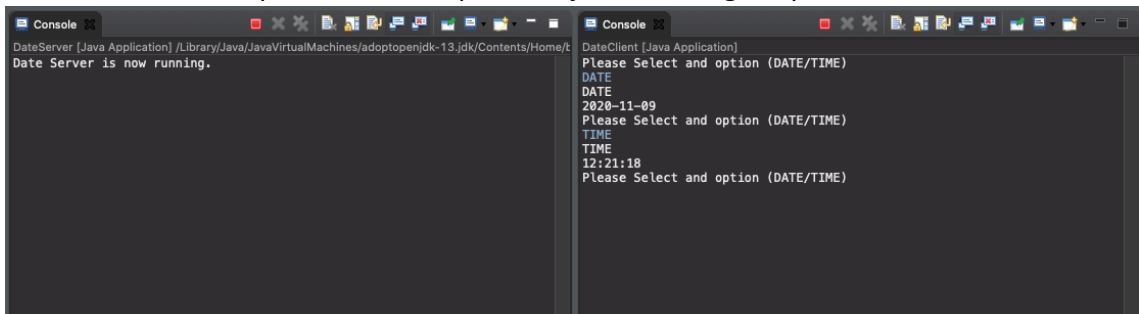See below for example console output. See java files in git repo for details.

```
Console
Server [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home/bin/ja
Server is now running.
```

```
Console
Client [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home/bin/jav
please enter a word:
Moshi
Moshi
Moshi is not a Palindrome
please enter a word:
radar
radar
radar is a Palindrome
please enter a word:
121
121
121 is a Palindrome
please enter a word:
```

Exercise 2:

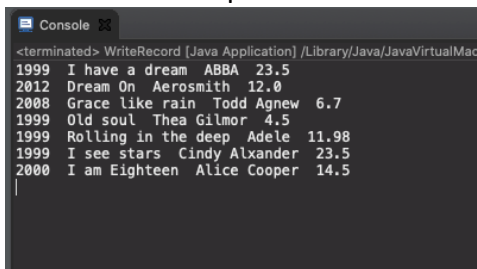See below for example console output. See java files in git repo for details.

```
Console
DateServer [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home/b
Date Server is now running.
```

```
Console
DateClient [Java Application]
Please Select and option (DATE/TIME)
DATE
DATE
2020-11-09
Please Select and option (DATE/TIME)
TIME
TIME
12:21:18
Please Select and option (DATE/TIME)
```

Exercise 3:

See below for example console output. See java files in git repo for details.

Write Record output:

```
Console
<terminated> WriteRecord [Java Application] /Library/Java/JavaVirtualMac
1999  I have a dream  ABBA  23.5
2012  Dream On  Aerosmith  12.0
2008  Grace like rain  Todd Agnew  6.7
1999  Old soul  Thea Gilmor  4.5
1999  Rolling in the deep  Adele  11.98
1999  I see stars  Cindy Alxander  23.5
2000  I am Eighteen  Alice Cooper  14.5
```

Read Record output Using mySongs.ser and AllSongs.ser:

```
Console
<terminated> ReadRecord [Java Application] /Library/Java/JavaVirtu
1999  I have a dream  ABBA  23.5
2012  Dream On  Aerosmith  12.0
2008  Grace like rain  Todd Agnew  6.7
1999  Old soul  Thea Gilmor  4.5
1999  Rolling in the deep  Adele  11.98
1999  I see stars  Cindy Alxander  23.5
2000  I am Eighteen  Alice Cooper  14.5
End of file.
1999  I have a dream  ABBA  23.5
2000  S.O.S.  ABBA  14.5
2013  Waterloo  ABBA  30.0
2012  Dream On  Aerosmith  12.0
2008  Grace like rain  Todd Agnew  6.7
1999  Old soul  Thea Gilmor  4.5
1988  Honey Bunny  Adam Gilmor  6.7
2000  Poison Arrow  ABC  7.95
1988  How Long?  Ace  12.45
1991  Straight From the Heart  Bryan Adams  9.9
1999  Rolling in the deep  Adele  11.98
1999  I see stars  Cindy Alxander  23.5
2000  I am Eighteen  Alice Cooper  14.5
2013  Waterloo  ABBA  30.0
2012  Smile  Lily Allen  12.0
2008  Tear in your hand  Tori Amos  6.7
1999  Crash about to happen  Brett Anderson  4.5
1988  O Superman  Laurie Anderson  6.7
2000  Do-Re-Mi  Julie Andrews  7.95
End of file.
```

Exercise 4/5:

See below for example console output. See java files in git repo for details.

Games are Player 1 vs Player 2 and Player 3 vs Player 4.

```
Console
TicTacToeServer [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home/bin/java  (Nov. 9, 2020, 12:31:59 p.m.)
Tic Tac Toe Server is Running...
Connecting to player...
Player 1 connected

Connecting to player...
Player 2 connected

Connecting to player...
Player 3 connected

Connecting to player...
Player 4 connected
```

```
Console                                              Console
TicTacToeClient [Java Application]                   TicTacToeClient [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home

Please enter the name of the player: 1               Please enter the name of the player: 2
Waiting For Opponent                                 Waiting For Opponent
        |col 0|col 1|col 2                                   |col 0|col 1|col 2
    +-----+-----+-----+                                  +-----+-----+-----+
row 0 |     |     |     |                             row 0 |     |     |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 1 |     |     |     |                             row 1 |     |  X  |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 2 |     |     |     |                             row 2 |     |     |     |
    +-----+-----+-----+                                  +-----+-----+-----+
```

```
Console                                              Console
TicTacToeClient [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/   TicTacToeClient [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home

Please enter the name of the player: 3               Please enter the name of the player: 4
Waiting For Opponent                                 Waiting For Opponent
        |col 0|col 1|col 2                                   |col 0|col 1|col 2
    +-----+-----+-----+                                  +-----+-----+-----+
row 0 |     |     |     |                             row 0 |     |     |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 1 |     |     |     |                             row 1 |     |  X  |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 2 |     |     |     |                             row 2 |     |     |     |
    +-----+-----+-----+                                  +-----+-----+-----+
```

Below Player 1 and 2's game has finished while 3 and 4 are still playing.

```
Console
TicTacToeServer [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home/bin/java  (Nov. 9, 2020, 12:31:59 p.m.)
Player 1 connected
Connecting to player...
Player 2 connected

Connecting to player...
Player 3 connected

Connecting to player...
Player 4 connected

THE GAME IS OVER: 1 and 2 Disconnecting
```

```
Console                                              Console
<terminated> TicTacToeClient [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13    <terminated> TicTacToeClient [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/C
row 0 |     |  X  |     |                             row 0 |     |  X  |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 1 |     |  X  |     |                             row 1 |     |  X  |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 2 |  0  |  X  |  0  |                             row 2 |  0  |  X  |  0  |
    +-----+-----+-----+                                  +-----+-----+-----+

THE GAME IS OVER: 1 is the winner!                   THE GAME IS OVER: 1 is the winner!
Game Ended...                                        Game Ended...
```

```
Console                                              Console
TicTacToeClient [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/   TicTacToeClient [Java Application] /Library/Java/JavaVirtualMachines/adoptopenjdk-13.jdk/Contents/Home
        |col 0|col 1|col 2                             row 0 |     |     |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 0 |     |     |     |                             row 1 |     |  X  |     |
    +-----+-----+-----+                                  +-----+-----+-----+
row 1 |     |  X  |     |                             row 2 |     |     |  0  |
    +-----+-----+-----+                                  +-----+-----+-----+
row 2 |     |     |  0  |
    +-----+-----+-----+                               Your Move
                                                     3, enter the row for your next X
```

For the GUI example the same server can be used and instead a TicTacToeGUI Client is launched. In an ideal world where I had more time to work on this, the client would work for both display types, and it would implement a GUI or a Console output class interface on user choice. For now there are two separate clients.

NOTE: The GUI I created uses an eclipse SWT resource manager. This package can be found in the git repo for this lab. You should be able to run this GUI without specifying a class path for the SWT Composite components. If for some reason the GUI will not launch and the errors are specific to the GUI constructor, please follow the link below to update your build settings to include the proper class path.
https://www.oreilly.com/library/view/eclipse-cookbook/0596007108/ch08s04.html
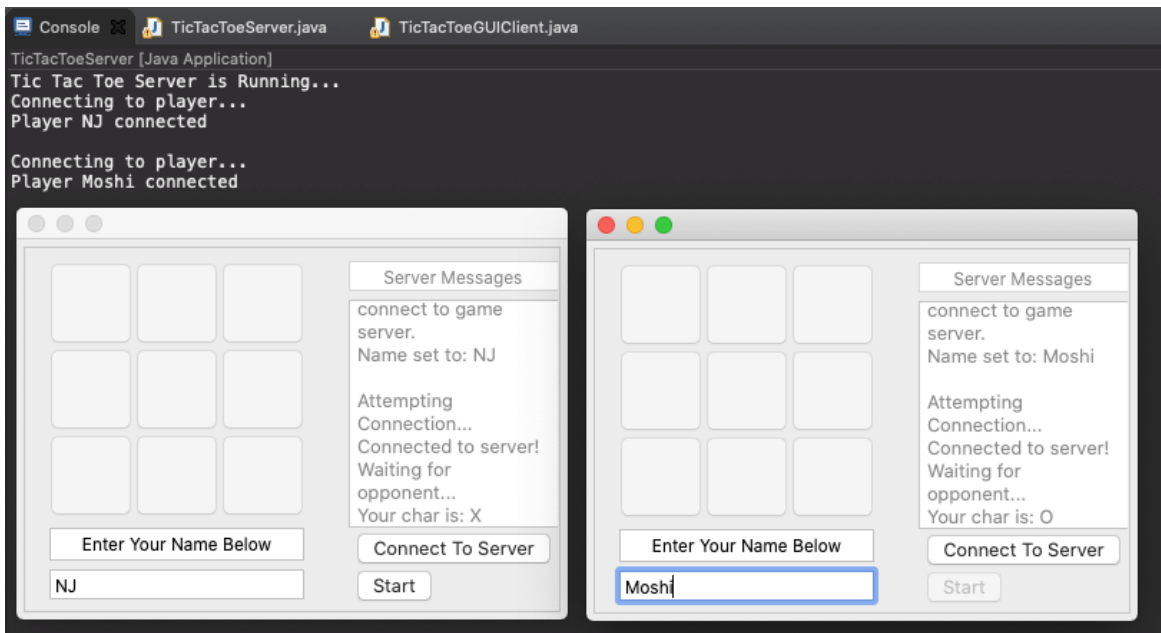

GUIs may be launched before the server is live. Attempts to connect are met with a server error message in the server message window. After connecting to the server, the X player is given the option to start the game. At which point their game board enables and allows input.
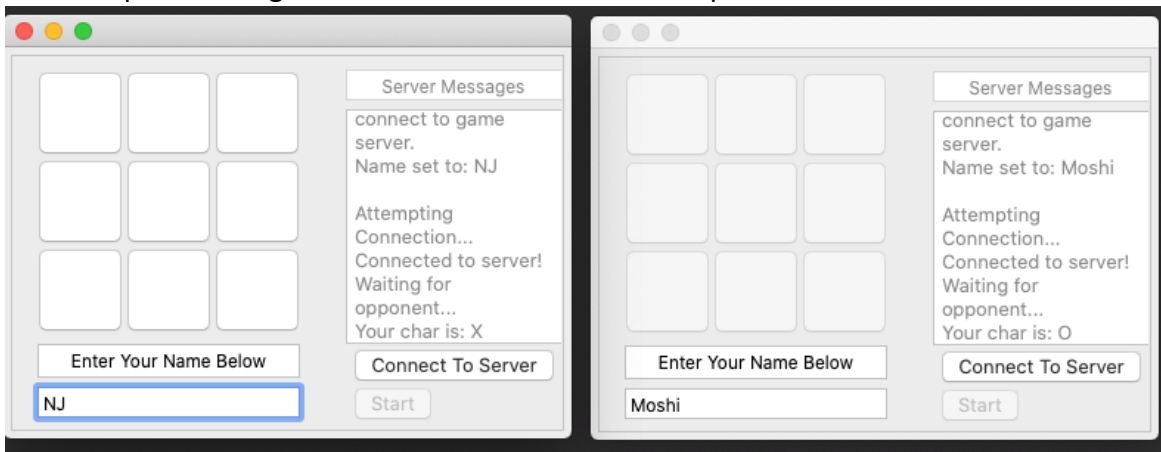
Every time a tile is selected it is disabled from play on the other players screen. When it is not a player's turn their entire grid is disabled.
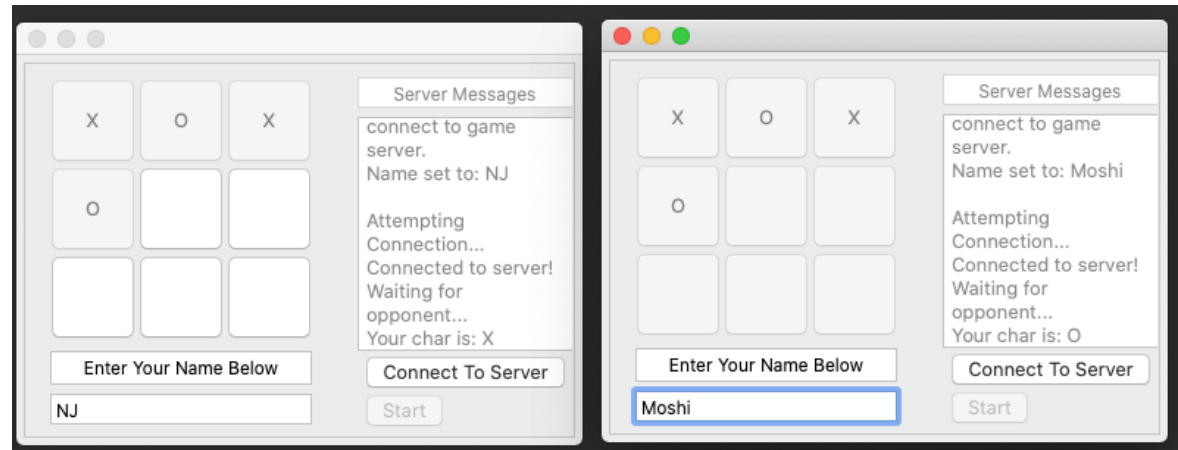
Finally, when a winning move is played a message is displayed to both players and both boards are disabled. Sockets are closed when the GUI is exited.