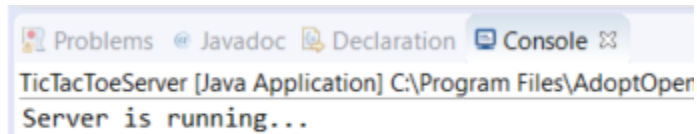


## Exercise 4 – Tic-Tac-Toe with a Thread pool

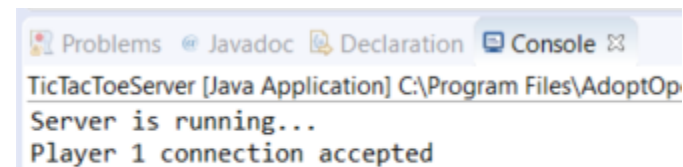
### Server Terminal Output

Starting server:



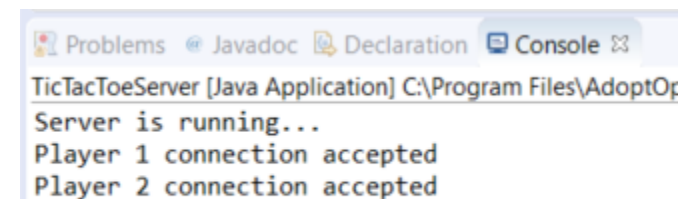
TicTacToeServer [Java Application] C:\Program Files\AdoptOpenJDK\jdk-11.0.10\bin\java.exe  
Server is running...

After connection of first client:



TicTacToeServer [Java Application] C:\Program Files\AdoptOpenJDK\jdk-11.0.10\bin\java.exe  
Server is running...  
Player 1 connection accepted

After connection of second client:



TicTacToeServer [Java Application] C:\Program Files\AdoptOpenJDK\jdk-11.0.10\bin\java.exe  
Server is running...  
Player 1 connection accepted  
Player 2 connection accepted

Connection with another two clients (Showing multiple game capability):



TicTacToeServer [Java Application] C:\Program Files\AdoptOpenJDK\jdk-11.0.10\bin\java.exe  
Server is running...  
Player 1 connection accepted  
Player 2 connection accepted  
Player 1 connection accepted  
Player 2 connection accepted

## X-Player Terminal Output

### Starting Client:

```
Problems Javadoc Declaration Console
TicTacToeClient [Java Application] C:\Program Files\AdoptOpenJDK\bin
|col 0|col 1|col 2
+-----+
row 0 |   |   |   |
+-----+
row 1 |   |   |   |
+-----+
row 2 |   |   |   |
+-----+
WELCOME TO THE GAME!
Please enter your name:
```

### Entering Name:

```
Problems Javadoc Declaration Console
TicTacToeClient [Java Application] C:\Program Files\AdoptOpenJDK\bin
|col 0|col 1|col 2
+-----+
row 0 |   |   |   |
+-----+
row 1 |   |   |   |
+-----+
row 2 |   |   |   |
+-----+
WELCOME TO THE GAME!
Please enter your name:
Mike
Waiting for opponent to connect
```

## O-Player Terminal Output

### Starting Client:

```
Problems Javadoc Declaration Console
TicTacToeClient [Java Application] C:\Program Files\AdoptOpenJDK\bin
|col 0|col 1|col 2
+-----+
row 0 |   |   |   |
+-----+
row 1 |   |   |   |
+-----+
row 2 |   |   |   |
+-----+
WELCOME TO THE GAME!
Please enter your name:
```

### Entering Name:

```
Problems Javadoc Declaration Console
TicTacToeClient [Java Application] C:\Program Files\AdoptOpenJDK\bin
|col 0|col 1|col 2
+-----+
row 0 |   |   |   |
+-----+
row 1 |   |   |   |
+-----+
row 2 |   |   |   |
+-----+
WELCOME TO THE GAME!
Please enter your name:
Judy
Waiting for opponent to connect
Waiting for opponent to make move
```

## Players turn to make move:

Mike what row should your next mark be placed in?  
1  
Mike what column should your next mark be placed in?  
1

	col 0	col 1	col 2
row 0			
row 1		X	
row 2			

Waiting for opponent to make move

## After opponent makes move:

	col 0	col 1	col 2
row 0			
row 1		X	
row 2			

Judy it is your turn to make a move.

Judy what row should your next mark be placed in?

## After opponent makes move:

	col 0	col 1	col 2
row 0			
row 1		X	
row 2	0		

Mike it is your turn to make a move.

Mike what row should your next mark be placed in?

## Players turn to make move:

Judy what row should your next mark be placed in?  
2  
Judy what column should your next mark be placed in?  
0

	col 0	col 1	col 2
row 0			
row 1		X	
row 2	0		

Waiting for opponent to make move

## Players turn to make move:

Mike what row should your next mark be placed in?  
0  
Mike what column should your next mark be placed in?  
0

	col 0	col 1	col 2
row 0	X		
row 1		X	
row 2	0		

Waiting for opponent to make move

## After opponent makes move:

	col 0	col 1	col 2
row 0	X		
row 1		X	
row 2	0		

Judy it is your turn to make a move.

Judy what row should your next mark be placed in?

### After opponent makes move:

	col 0	col 1	col 2
row 0	X		
row 1		X	O
row 2	O		

Mike it is your turn to make a move.

Mike what row should your next mark be placed in?

### Players turn to make move:

Judy what row should your next mark be placed in?

1

Judy what column should your next mark be placed in?

2

	col 0	col 1	col 2
row 0	X		
row 1		X	O
row 2	O		

Waiting for opponent to make move

### Players turn to make move:

Mike what row should your next mark be placed in?

2

Mike what column should your next mark be placed in?

2

	col 0	col 1	col 2
row 0	X		
row 1		X	O
row 2	O		X

Mike is the winner!

### After opponent makes move:

	col 0	col 1	col 2
row 0	X		
row 1		X	O
row 2	O		X

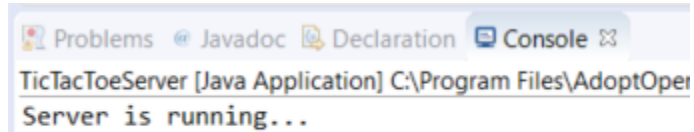
Mike is the winner!

**\*\*NOTE:** Invalid inputs from the user is handled by the program and prompts the user to reenter a valid selection. This feature was not shown in the screenshots but is implemented in the logic.

## Exercise 5 – Tic-Tac-Toe with GUI

### Server Terminal Output

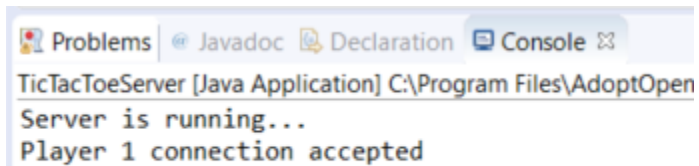
Starting server:



The screenshot shows the IDE's console window with tabs for Problems, Javadoc, Declaration, and Console. The console output for the application 'TicTacToeServer [Java Application]' at path 'C:\Program Files\AdoptOpen' shows the message 'Server is running...'.

```
TicTacToeServer [Java Application] C:\Program Files\AdoptOpen
Server is running...
```

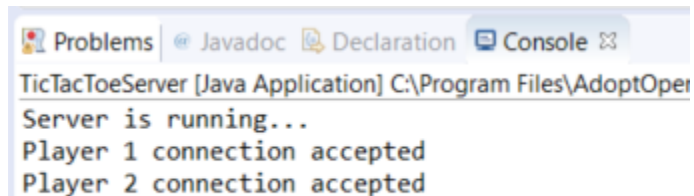
After connection of first client:



The screenshot shows the IDE's console window with the same tabs. The console output now includes an additional line: 'Player 1 connection accepted'.

```
TicTacToeServer [Java Application] C:\Program Files\AdoptOpen
Server is running...
Player 1 connection accepted
```

After connection of second client:



The screenshot shows the IDE's console window with the same tabs. The console output now includes two additional lines: 'Player 1 connection accepted' and 'Player 2 connection accepted'.

```
TicTacToeServer [Java Application] C:\Program Files\AdoptOpen
Server is running...
Player 1 connection accepted
Player 2 connection accepted
```

Connection with another two clients (Showing multiple game capability):

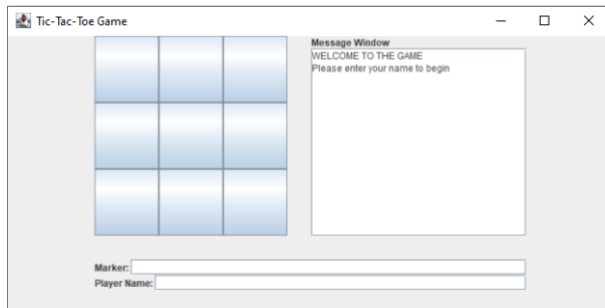


The screenshot shows the IDE's console window with the same tabs. The console output now includes four additional lines: 'Player 1 connection accepted', 'Player 2 connection accepted', 'Player 1 connection accepted', and 'Player 2 connection accepted'.

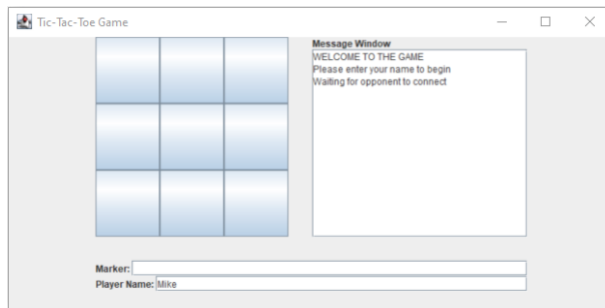
```
TicTacToeServer [Java Application] C:\Program Files\AdoptOp
Server is running...
Player 1 connection accepted
Player 2 connection accepted
Player 1 connection accepted
Player 2 connection accepted
```

## X-Player Terminal Output

### Starting Client:



### Entering Name:

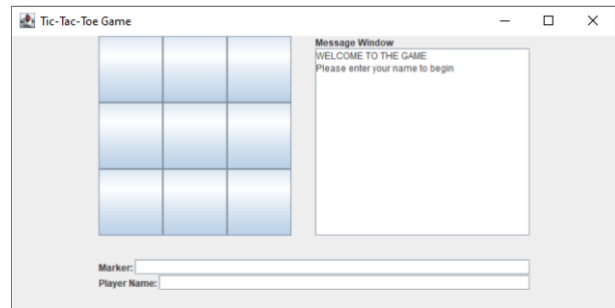


### Players turn to make move:

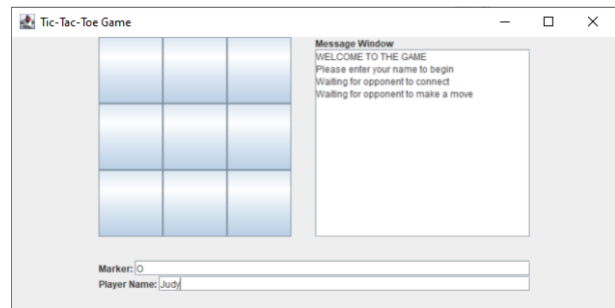


## O-Player Terminal Output

### Starting Client:



### Entering Name:



### After opponent makes move:



After opponent makes move:



Players turn to make move:



Players turn to make move:



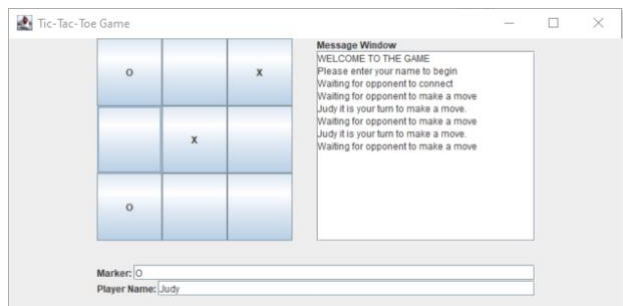
After opponent makes move:



After opponent makes move:



Players turn to make move:



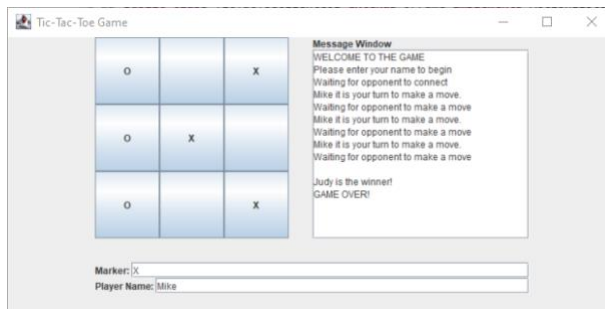
## Players turn to make move:



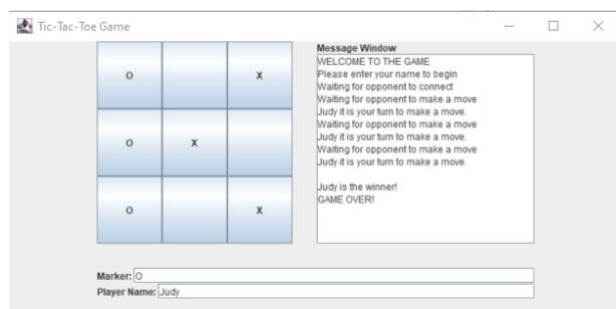
## After opponent makes move:



## After opponent makes move:



## Players turn to make move:



**\*\*NOTE:** Invalid selections such as choosing a space that is already taken is handled in this program. A message will be displayed to the player who selected an invalid move to select an open space.