

Game: Thirteen

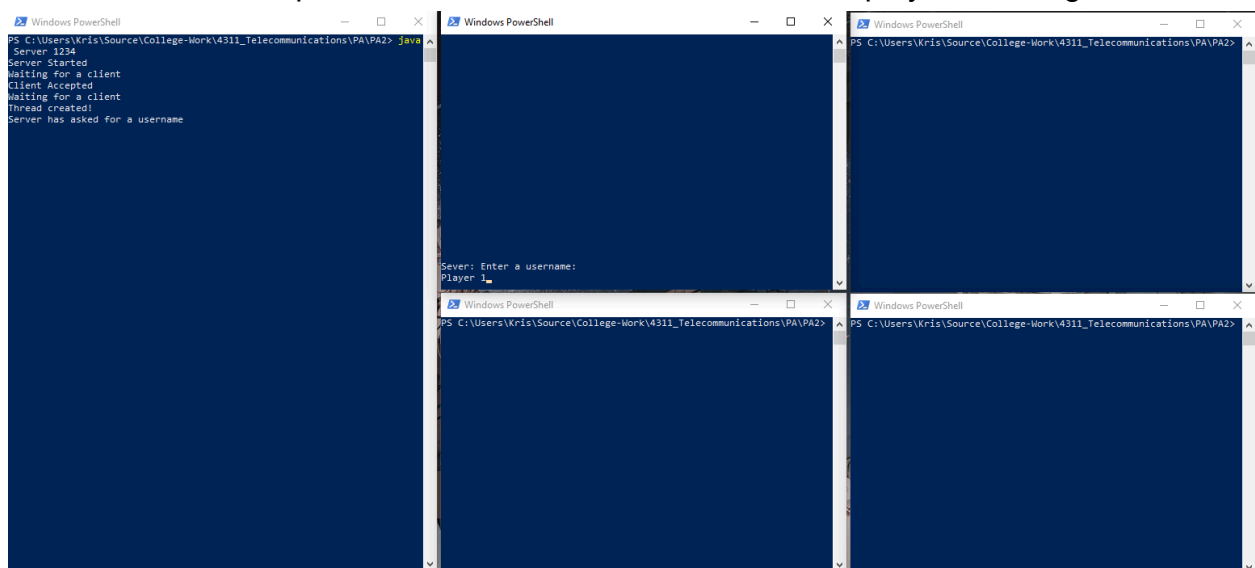
The game Thirteen is a card game played with a standard 52-card deck. The objective of the game is to exhaust all the cards in your hand by playing cards according to the rule set by the first card or set of cards played beforehand. A more comprehensive guide on how to play is found [here](#). There are a few differences between the ruleset in the wikipedia page and my own implementation, but that is due to how I personally learned the rules.

Notable rules include:

1. The lowest card in rotation must be played in the first played hand of the game.
2. “Bombs” or “chops” refer to the same type of hand, that is a hand that can beat a 2. Either of these can beat any kind of 2 in play as opposed to only certain types of “bombs” or “chops” being able to beat differing amounts of 2s.
3. 2s can be played in sequences.
4. The game ends when one person exhausts all of their cards.

Report:

1. Start the server listening on port number 1234
2. Server waits for the first Client to enter the game. It asks the user for their name and how many players are going to be playing [2-4] and waits for that amount of players to join.
3. Start a client, provide a username, and the number of players in the game.



4. Start another client and provide their username. Repeat this step until there are enough players to start the game.

The image shows four separate Windows PowerShell windows. The first window on the left displays the server's startup sequence, including messages like 'Server Started', 'Waiting for a client', 'Client Accepted', and 'Thread created!'. It also shows the server accepting three players into the game. The other three windows represent the clients. Each client window shows a prompt 'Server: Enter a username:' followed by a welcome message for Player 1, Player 2, and Player 3 respectively. The fourth window shows a prompt for Player 4.

5. The server sends the current state of the game to all players. This includes that player's unique hand, who's turn it currently is, and the current hand that the player needs to beat.

The image shows four Windows PowerShell windows. The first window on the left shows the server sending the current state of the game to all players, including the current hand and whose turn it is. The other three windows show the client's perspective, displaying the hand they were dealt and the current state of the game. The hands are listed as follows: Player 1: (0) THREE of SPADES, (1) THREE of DIAMONDS, (2) FOUR of SPADES, (3) FIVE of DIAMONDS, (4) SIX of SPADES, (5) SEVEN of CLUBS, (6) SEVEN of DIAMONDS, (7) NINE of DIAMONDS, (8) TEN of CLUBS, (9) JACK of DIAMONDS, (10) QUEEN of HEARTS, (11) KING of HEARTS, (12) ACE of DIAMONDS, (99) Skip this round. Player 2: (0) THREE of CLUBS, (1) THREE of HEARTS, (2) FIVE of CLUBS, (3) FIVE of HEARTS, (4) SIX of CLUBS, (5) SIX of DIAMONDS, (6) SIX of HEARTS, (7) EIGHT of HEARTS, (8) TEN of SPADES, (9) JACK of CLUBS, (10) JACK of HEARTS, (11) QUEEN of SPADES, (12) TWO of HEARTS, (99) Skip this round. Player 3: (0) FOUR of CLUBS, (1) FOUR of DIAMONDS, (2) FIVE of SPADES, (3) EIGHT of SPADES, (4) EIGHT of CLUBS, (5) NINE of SPADES, (6) NINE of CLUBS, (7) NINE of HEARTS, (8) JACK of SPADES, (9) QUEEN of DIAMONDS, (10) KING of DIAMONDS, (11) ACE of SPADES, (12) TWO of CLUBS, (99) Skip this round. Player 4: (0) FOUR of HEARTS, (1) SEVEN of SPADES, (2) SEVEN of HEARTS, (3) EIGHT of DIAMONDS, (4) TEN of DIAMONDS, (5) TEN of HEARTS, (6) QUEEN of CLUBS, (7) KING of SPADES, (8) KING of CLUBS, (9) ACE of CLUBS, (10) ACE of HEARTS, (11) TWO of SPADES, (12) TWO of DIAMONDS, (99) Skip this round.

6. To play a hand, the player needs to type the number in brackets next to the card they wish to play. If they want to play a hand with multiple cards (sequence, pair, three-of-a-kind, etc.), then they separate bracketed numbers with spaces. For the first hand of the game, the lowest card in rotation (typically the 3 of Spades) must be played.

```
Windows PowerShell

-----
Hand:
[0] THREE of SPADES
[1] THREE of DIAMONDS
[2] FOUR of SPADES
[3] FIVE of DIAMONDS
[4] SIX of SPADES
[5] SEVEN of CLUBS
[6] SEVEN of DIAMONDS
[7] NINE of DIAMONDS
[8] TEN of CLUBS
[9] JACK of DIAMONDS
[10] QUEEN of HEARTS
[11] KING of HEARTS
[12] ACE of DIAMONDS
[99] Skip this round

-----

It is currently your turn
Player 1 can play anything
0 1_
```

7. The player with the lowest card in rotation is prompted to play a card. All signals from other clients are blocked as they're stuck in a cyclical barrier preventing input. Output is unblocked, and the status of the game can still be shared with all players.

a. Below is me putting input for Player 1, forgetting that it's Player 2's turn.

```
Windows PowerShell
[1] FIVE of DIAMONDS
[2] SIX of SPADES
[3] SEVEN of CLUBS
[4] SEVEN of DIAMONDS
[5] NINE of DIAMONDS
[6] TEN of CLUBS
[7] JACK of DIAMONDS
[8] QUEEN of HEARTS
[9] KING of HEARTS
[10] ACE of DIAMONDS
[99] Skip this round

-----

It is currently Player 2's turn
Current hand to beat: [KING of SPADES, KING of CLUBS]
99
9
??
hello???
oh its not my turn lmao

-----

Player 4 has played [KING of SPADES, KING of CLUBS]
Hand:
[0] FIVE of CLUBS
[1] FIVE of HEARTS
[2] SIX of CLUBS
[3] SIX of DIAMONDS
[4] SIX of HEARTS
[5] EIGHT of HEARTS
[6] TEN of SPADES
[7] QUEEN of SPADES
[8] TWO of HEARTS
[99] Skip this round

-----

It is currently your turn
Current hand to beat: [KING of SPADES, KING of CLUBS]

-----

Player 4 has played [KING of SPADES, KING of CLUBS]
Hand:
[0] FIVE of SPADES
[1] EIGHT of SPADES
[2] EIGHT of CLUBS
[3] NINE of SPADES
[4] NINE of CLUBS
[5] NINE of HEARTS
[6] JACK of SPADES
[7] QUEEN of DIAMONDS
[8] KING of DIAMONDS
[9] ACE of SPADES
[10] TWO of CLUBS
[99] Skip this round

-----

It is currently Player 2's turn
Current hand to beat: [KING of SPADES, KING of CLUBS]

-----

Player 4 has played [KING of SPADES, KING of CLUBS]
Hand:
[0] FOUR of HEARTS
[1] EIGHT of DIAMONDS
[2] TEN of DIAMONDS
[3] TEN of HEARTS
[4] QUEEN of CLUBS
[5] ACE of CLUBS
[6] ACE of HEARTS
[7] TWO of SPADES
[8] TWO of DIAMONDS
[99] Skip this round

-----

It is currently Player 2's turn
Current hand to beat: [KING of SPADES, KING of CLUBS]
```

- ```
PS C:\Users\Aris\Source\College-Work\4311_Telecommunications\PA2> java -jar .\GameApp.jar
Server 1234
Server Started
Waiting for a client
Client accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 1 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 2 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 3 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 4 into the game
Player 1: Played [THREE of SPADES, THREE of DIAMONDS] in the first round

Windows PowerShell
Player 1 has played [THREE of SPADES, THREE of DIAMONDS]

Hand:
(0) FOUR of SPADES
(1) FIVE of DIAMONDS
(2) SIX of SPADES
(3) SEVEN of CLUBS
(4) SEVEN of DIAMONDS
(5) NINE of DIAMONDS
(6) TEN of CLUBS
(7) JACK of DIAMONDS
(8) QUEEN of HEARTS
(9) KING of HEARTS
(10) ACE of DIAMONDS
[99] Skip this round

It is currently Player 2's turn
Current hand to beat: [THREE of SPADES, THREE of DIAMONDS]

Windows PowerShell
Player 1 has played [THREE of SPADES, THREE of DIAMONDS]

Hand:
(0) FOUR of CLUBS
(1) FOUR of DIAMONDS
(2) FIVE of SPADES
(3) EIGHT of SPADES
(4) EIGHT of DIAMONDS
(5) NINE of SPADES
(6) NINE of CLUBS
(7) NINE of HEARTS
(8) JACK of SPADES
(9) QUEEN of DIAMONDS
(10) KING of DIAMONDS
(11) ACE of SPADES
(12) TWO of CLUBS
[99] Skip this round

It is currently Player 2's turn
Current hand to beat: [THREE of SPADES, THREE of DIAMONDS]

Windows PowerShell
Player 1 has played [THREE of SPADES, THREE of DIAMONDS]

Hand:
(0) THREE of CLUBS
(1) THREE of HEARTS
(2) FIVE of CLUBS
(3) FIVE of HEARTS
(4) SIX of CLUBS
(5) SIX of DIAMONDS
(6) SIX of HEARTS
(7) EIGHT of HEARTS
(8) TEN of SPADES
(9) JACK of CLUBS
(10) JACK of HEARTS
(11) QUEEN of SPADES
(12) TWO of HEARTS
[99] Skip this round

It is currently your turn
Current hand to beat: [THREE of SPADES, THREE of DIAMONDS]
0 1
```

```
PS C:\Users\Aris\Source\College-Work\4311_Telecommunications\PA2> java -jar .\GameApp.jar
Server 1234
Server Started
Waiting for a client
Client accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 1 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 2 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 3 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 4 into the game
Player 1: Played [THREE of SPADES, THREE of DIAMONDS] in the first round

Windows PowerShell
Player 1 has played [THREE of SPADES, THREE of DIAMONDS]

Hand:
(0) FOUR of SPADES
(1) FIVE of DIAMONDS
(2) SIX of SPADES
(3) SEVEN of CLUBS
(4) SEVEN of DIAMONDS
(5) NINE of DIAMONDS
(6) TEN of CLUBS
(7) JACK of DIAMONDS
(8) QUEEN of HEARTS
(9) KING of HEARTS
(10) ACE of DIAMONDS
[99] Skip this round

It is currently Player 2's turn
Current hand to beat: [THREE of SPADES, THREE of DIAMONDS]

Windows PowerShell
Player 1 has played [THREE of SPADES, THREE of DIAMONDS]

Hand:
(0) FOUR of CLUBS
(1) FOUR of DIAMONDS
(2) FIVE of SPADES
(3) EIGHT of SPADES
(4) EIGHT of DIAMONDS
(5) NINE of SPADES
(6) NINE of CLUBS
(7) NINE of HEARTS
(8) JACK of SPADES
(9) QUEEN of DIAMONDS
(10) KING of DIAMONDS
(11) ACE of SPADES
(12) TWO of CLUBS
[99] Skip this round

It is currently Player 2's turn
Current hand to beat: [THREE of SPADES, THREE of DIAMONDS]

Windows PowerShell
Player 1 has played [THREE of SPADES, THREE of DIAMONDS]

Hand:
(0) THREE of CLUBS
(1) THREE of HEARTS
(2) FIVE of CLUBS
(3) FIVE of HEARTS
(4) SIX of CLUBS
(5) SIX of DIAMONDS
(6) SIX of HEARTS
(7) EIGHT of HEARTS
(8) TEN of SPADES
(9) JACK of CLUBS
(10) JACK of HEARTS
(11) QUEEN of SPADES
(12) TWO of HEARTS
[99] Skip this round

It is currently your turn
Current hand to beat: [THREE of SPADES, THREE of DIAMONDS]
0 1
```

- The game continues until one player exhausts all the cards in their hand, after which they are declared the winner and the game ends.

```
PS C:\Users\Krisi\Source\College-Work\4311_Telecommunications\PA1\PA2> java
Server 1234
Server Started
Waiting for a client
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 1 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 2 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 3 into the game
Client Accepted
Waiting for a client
Thread created!
Server has asked for a username
Server has accepted Player 4 into the game
Player 1: Played [THREE of SPADES, THREE of DIAMONDS] in the first round
Player 2: Played [THREE of CLUBS, THREE of HEARTS]
Player 3: Played [FOUR of CLUBS, FOUR of DIAMONDS]
Player 4: Played [SEVEN of SPADES, SEVEN of HEARTS]
Player 1: Skipped
Player 2: Played [JACK of CLUBS, JACK of HEARTS]
Player 3: Skipped
Player 4: Played [KING of SPADES, KING of CLUBS]
Player 1: Skipped
Player 2: Played [FOUR of HEARTS] in the first round
Player 3: Skipped
Player 4: Played [EIGHT of HEARTS]
Player 1: Played [JACK of SPADES]
Player 2: Played [QUEEN of CLUBS]
Player 3: Played [TWO of HEARTS]
Player 4: Skipped
Player 1: Skipped
Player 2: Played [FIVE of CLUBS, FIVE of HEARTS] in the first round
Player 3: Played [EIGHT of SPADES, EIGHT of CLUBS]
Player 4: Played [TEN of DIAMONDS, TEN of HEARTS]
Player 1: Skipped
Player 2: Skipped
Player 3: Skipped
Player 4: Played [EIGHT of DIAMONDS] in the first round
Player 1: Played [NINE of DIAMONDS]
Player 2: Played [QUEEN of SPADES]
Player 3: Played [TWO of CLUBS]
Player 4: Played [TWO of DIAMONDS]
Player 1: Skipped
Player 2: Skipped
Player 3: Skipped
Player 4: Played [ACE of CLUBS, ACE of HEARTS] in the first round
Player 1: Skipped
Player 2: Skipped
Player 3: Skipped
Player 4: Played [TWO of SPADES] in the first round
```

Player 4 can play anything

Player 4 has played [TWO of SPADES]  
Player 4 has won the game!

Player 4 can play anything

Player 4 has played [TWO of SPADES]  
Player 4 has won the game!

Player 4 can play anything

Player 4 has played [TWO of SPADES]  
Player 4 has won the game!

### Known Bugs:

- There is currently a bug that kills the OutputStream of a Client during startup, seemingly at random. Input can still be gained from the Client, but with no way to see their hand, it becomes impossible to play a game without guessing what hand the player has.
- Input from the clients isn't *fully* blocked. If you attempt to input something when it isn't your turn, instead of dropping the input, it instead buffers it and uses it whenever the thread is unblocked.