

# Project Report on Matching Game Thread Synchronization Simulation

## Overview of Design and Implementation

### Project Description

*MatchingCards* is a card game simulation where each of six players attempts to match a target card set by a dealer, who is also a player. The game spans six rounds, with each player taking turns as the dealer. The simulation uses POSIX threads to represent players, with each thread handling the actions of one player per round.

### Technical Details

- **Programming Language:** C/C++
- **Concurrency:** Utilizes POSIX threads for simultaneous execution of player actions.
- **Synchronization:** Employs mutexes and condition variables to manage access to shared resources like the card deck and ensure orderly play.
- **Data Structures:** Includes arrays for player accounts and the deck of cards, and a structure to store player details.

### Game Flow

1. Initialize the deck of cards.
2. For each round:
  - One player acts as the dealer, shuffles the deck, and distributes cards.
  - Players sequentially attempt to match their hand with the target card.
  - Players log actions to a file, detailing every card drawn, discarded, or compared.

## Results from 5 Independent Runs

The program was executed with different random seeds, producing varied outcomes for each game simulation. Output files are found at the end of this report. Key observations from each trial are summarized below:

- **Trial 1:** Players displayed diverse strategies, with players 2 and 6 frequently winning rounds. The dynamics changed with each dealer rotation, demonstrating the randomness and effectiveness of the shuffling and dealing methods.
  - *Key Outcome:* Player 6 wins two consecutive rounds.
- **Trial 2:** This trial showcased the functionality of the discard and draw mechanisms, with several rounds extending due to no immediate matches.
  - *Key Outcome:* Player 3 managed to win two rounds by effectively drawing and matching the target card.
- **Trial 3:** Displayed robust error handling and synchronization, with no deadlocks or race conditions despite rapid state changes in game variables.
  - *Key Outcome:* Dealer changes led to interesting shifts in game dynamics, illustrating the role of the dealer in influencing game outcomes.
- **Trial 4:** The log files from this run provided clear insights into the sequence of actions, validating the logging mechanism's effectiveness in tracking game progress.
  - *Key Outcome:* Consistent logging format helped in debugging and understanding player behaviors during each round.
- **Trial 5:** Tested the system's performance under different seed values, confirming the system's stability and the random number generator's effectiveness in ensuring fair play.
  - *Key Outcome:* Varied winners and game scenarios emphasized the unpredictability and fairness of the game setup.

## Compilation and Execution Instructions

**To compile the program:** Navigate to the Project2 directory and run the following command:

```
g++ -o thread_game thread_game.cpp -lpthread
```

or use the makefile provided.

```
make
```

To run the game:

```
./thread_game [seed_value]
```

Replace [seed\_value] with an integer to use as the seed for random number generation. If omitted, the current system time is used as the seed.

## Conclusion

The *MatchingCards* simulation effectively demonstrates multi-threading, synchronization, and resource sharing in a competitive game environment. The implementation adheres to the project requirements, providing a robust platform for further enhancements like GUI integration or network play. The detailed logs and varied outcomes across different trials underscore the simulation's capability to handle dynamic, real-time decision-making and concurrency.

## Trials

### Results of Trial 1

```
1 -----
2 DEALER NUM: 1 THE TARGET CARD: 4
3 DEALER NUM: 1 DEALS 1 TO PLAYER NUM: 1
4 DEALER NUM: 1 DEALS 12 TO PLAYER NUM: 2
5 DEALER NUM: 1 DEALS 9 TO PLAYER NUM: 3
6 DEALER NUM: 1 DEALS 13 TO PLAYER NUM: 4
7 DEALER NUM: 1 DEALS 11 TO PLAYER NUM: 5
8 DEALER NUM: 1 DEALS 8 TO PLAYER NUM: 6
9 PLAYER 2: drew 7
10 PLAYER 2 HAND: <12, 7>
11 PLAYER 2: discards 7
12 PLAYER 2 HAND: <12>
13 8 5 12 4 10 2 8 7 7 8 3 2 10 6 12 10 1 9 5 5 5 3 6
14 6 4 12 9 2 9 11 10 1 3 2 11 13 1 13 3 4 13 6 7 11 7
15 PLAYER 3: drew 8
16 PLAYER 3 HAND: <9, 8>
17 PLAYER 3: discards 8
18 PLAYER 3 HAND: <9>
19 5 12 4 10 2 8 7 7 8 3 2 10 6 12 10 1 9 5 5 5 3 6 6
20 4 12 9 2 9 11 10 1 3 2 11 13 1 13 3 4 13 6 7 11 7 8
21 PLAYER 4: drew 5
22 PLAYER 4 HAND: <13, 5>
23 PLAYER 4: discards 5
24 PLAYER 4 HAND: <13>
25 12 4 10 2 8 7 7 8 3 2 10 6 12 10 1 9 5 5 5 3 6 6 4
26 12 9 2 9 11 10 1 3 2 11 13 1 13 3 4 13 6 7 11 7 8 5
27 PLAYER 5: drew 12
28 PLAYER 5 HAND: <11, 12>
29 PLAYER 5: discards 12
30 PLAYER 5 HAND: <11>
31 4 10 2 8 7 7 8 3 2 10 6 12 10 1 9 5 5 5 3 6 6 4 12
32 9 2 9 11 10 1 3 2 11 13 1 13 3 4 13 6 7 11 7 8 5 12
```

```

33 | PLAYER 6: drew 4
34 | PLAYER 6 HAND: <8, 4>
35 | PLAYER 6: wins round 1 with matching card 4
36 | PLAYER 2: lost round 1
37 | PLAYER 3: lost round 1
38 | PLAYER 4: lost round 1
39 | PLAYER 5: lost round 1
40 | -----
41 | DEALER NUM: 2 THE TARGET CARD: 7
42 | DEALER NUM: 2 DEALS 12 TO PLAYER NUM: 1
43 | DEALER NUM: 2 DEALS 11 TO PLAYER NUM: 2
44 | DEALER NUM: 2 DEALS 1 TO PLAYER NUM: 3
45 | DEALER NUM: 2 DEALS 1 TO PLAYER NUM: 4
46 | DEALER NUM: 2 DEALS 12 TO PLAYER NUM: 5
47 | DEALER NUM: 2 DEALS 6 TO PLAYER NUM: 6
48 | PLAYER 1: drew 7
49 | PLAYER 1 HAND: <12, 7>
50 | PLAYER 1: wins round 2 with matching card 7
51 | PLAYER 3: lost round 2
52 | PLAYER 4: lost round 2
53 | PLAYER 5: lost round 2
54 | PLAYER 6: lost round 2
55 | -----
56 | DEALER NUM: 3 THE TARGET CARD: 1
57 | DEALER NUM: 3 DEALS 8 TO PLAYER NUM: 1
58 | DEALER NUM: 3 DEALS 12 TO PLAYER NUM: 2
59 | DEALER NUM: 3 DEALS 2 TO PLAYER NUM: 3
60 | DEALER NUM: 3 DEALS 2 TO PLAYER NUM: 4
61 | DEALER NUM: 3 DEALS 7 TO PLAYER NUM: 5
62 | DEALER NUM: 3 DEALS 3 TO PLAYER NUM: 6
63 | PLAYER 1: drew 8
64 | PLAYER 1 HAND: <8, 8>
65 | PLAYER 1: discards 8
66 | PLAYER 1 HAND: <8>
67 | 4 1 6 5 13 8 13 9 13 5 6 7 12 13 2 9 1 7 3 12 6 7 11
68 | 5 5 6 11 5 4 10 11 10 10 8 3 8 4 9 10 11 2 3 7 12 8
69 | PLAYER 2: drew 4
70 | PLAYER 2 HAND: <12, 4>
71 | PLAYER 2: discards 4
72 | PLAYER 2 HAND: <12>
73 | 1 6 5 13 8 13 9 13 5 6 7 12 13 2 9 1 7 3 12 6 7 11 5
74 | 5 6 11 5 4 10 11 10 10 8 3 8 4 9 10 11 2 3 7 12 8 4
75 | PLAYER 4: drew 1
76 | PLAYER 4 HAND: <2, 1>
77 | PLAYER 4: wins round 3 with matching card 1
78 | PLAYER 1: lost round 3
79 | PLAYER 2: lost round 3
80 | PLAYER 5: lost round 3
81 | PLAYER 6: lost round 3
82 | -----
83 | DEALER NUM: 4 THE TARGET CARD: 7
84 | DEALER NUM: 4 DEALS 12 TO PLAYER NUM: 1
85 | DEALER NUM: 4 DEALS 2 TO PLAYER NUM: 2
86 | DEALER NUM: 4 DEALS 3 TO PLAYER NUM: 3
87 | DEALER NUM: 4 DEALS 10 TO PLAYER NUM: 4
88 | DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 5
89 | DEALER NUM: 4 DEALS 6 TO PLAYER NUM: 6

```

```

90 | PLAYER 1: drew 2
91 | PLAYER 1 HAND: <12, 2>
92 | PLAYER 1: discards 2
93 | PLAYER 1 HAND: <12>
94 | 7 7 6 5 5 9 8 1 13 9 12 12 11 13 5 2 3 1 11 11 4 7 6
95 | 3 4 10 2 5 12 6 13 8 10 4 9 3 7 4 13 8 8 11 10 8 2
96 | PLAYER 2: drew 7
97 | PLAYER 2 HAND: <2, 7>
98 | PLAYER 2: wins round 4 with matching card 7
99 | PLAYER 1: lost round 4
100 | PLAYER 3: lost round 4
101 | PLAYER 5: lost round 4
102 | PLAYER 6: lost round 4
103 | -----
104 | DEALER NUM: 5 THE TARGET CARD: 10
105 | DEALER NUM: 5 DEALS 12 TO PLAYER NUM: 1
106 | DEALER NUM: 5 DEALS 2 TO PLAYER NUM: 2
107 | DEALER NUM: 5 DEALS 4 TO PLAYER NUM: 3
108 | DEALER NUM: 5 DEALS 12 TO PLAYER NUM: 4
109 | DEALER NUM: 5 DEALS 6 TO PLAYER NUM: 5
110 | DEALER NUM: 5 DEALS 11 TO PLAYER NUM: 6
111 | PLAYER 1: drew 8
112 | PLAYER 1 HAND: <12, 8>
113 | PLAYER 1: discards 8
114 | PLAYER 1 HAND: <12>
115 | 12 3 7 13 2 8 10 2 11 7 10 12 10 1 3 13 5 7 6 7 2
116 | 11 4 8 2 4 3 6 11 9 9 9 13 5 5 1 4 3 5 8 5 13 8 6 8
117 | PLAYER 2: drew 12
118 | PLAYER 2 HAND: <2, 12>
119 | PLAYER 2: discards 12
120 | PLAYER 2 HAND: <2>
121 | 3 7 13 2 8 10 2 11 7 10 12 10 1 3 13 5 7 6 7 2 11 4
122 | 8 2 4 3 6 11 9 9 9 13 5 5 1 4 3 5 8 5 13 8 6 8 12
123 | PLAYER 3: drew 3
124 | PLAYER 3 HAND: <4, 3>
125 | PLAYER 3: discards 3
126 | PLAYER 3 HAND: <4>
127 | 7 13 2 8 10 2 11 7 10 12 10 1 3 13 5 7 6 7 2 11 4
128 | 8 2 4 3 6 11 9 9 9 13 5 5 1 4 3 5 8 5 13 8 6 8 12 3
129 | PLAYER 4: drew 7
130 | PLAYER 4 HAND: <12, 7>
131 | PLAYER 4: discards 7
132 | PLAYER 4 HAND: <12>
133 | 13 2 8 10 2 11 7 10 12 10 1 3 13 5 7 6 7 2 11 4 8
134 | 2 4 3 6 11 9 9 9 13 5 5 1 4 3 5 8 5 13 8 6 8 12 3 7
135 | PLAYER 6: drew 13
136 | PLAYER 6 HAND: <11, 13>
137 | PLAYER 6: discards 13
138 | PLAYER 6 HAND: <11>
139 | 2 8 10 2 11 7 10 12 10 1 3 13 5 7 6 7 2 11 4 8 2
140 | 4 3 6 11 9 9 9 13 5 5 1 4 3 5 8 5 13 8 6 8 12 3 7 13
141 | PLAYER 1: lost round 5
142 | PLAYER 2: lost round 5
143 | PLAYER 3: lost round 5
144 | PLAYER 4: lost round 5
145 | PLAYER 6: lost round 5
146 | -----

```

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147 DEALER NUM: 6 THE TARGET CARD: 12
148 DEALER NUM: 6 DEALS 13 TO PLAYER NUM: 1
149 DEALER NUM: 6 DEALS 11 TO PLAYER NUM: 2
150 DEALER NUM: 6 DEALS 3 TO PLAYER NUM: 3
151 DEALER NUM: 6 DEALS 13 TO PLAYER NUM: 4
152 DEALER NUM: 6 DEALS 3 TO PLAYER NUM: 5
153 DEALER NUM: 6 DEALS 8 TO PLAYER NUM: 6
154 PLAYER 1: drew 6
155 PLAYER 1 HAND: <13, 6>
156 PLAYER 1: discards 6
157 PLAYER 1 HAND: <13>
158 3 2 8 10 9 10 4 7 5 5 3 6 9 12 6 7 3 2 5 4 13 12
159 11 8 13 13 8 10 4 1 7 5 5 9 6 11 2 8 2 7 11 8 1 7 6
160 PLAYER 2: drew 3
161 PLAYER 2 HAND: <11, 3>
162 PLAYER 2: discards 3
163 PLAYER 2 HAND: <11>
164 2 8 10 9 10 4 7 5 5 3 6 9 12 6 7 3 2 5 4 13 12 11 8 13 13 8 10 4 1
165 7 5 5 9 6 11 2 8 2 7 11 8 1 7 6 3
166 PLAYER 3: drew 2
167 PLAYER 3 HAND: <3, 2>
168 PLAYER 3: discards 2
169 PLAYER 3 HAND: <3>
170 8 10 9 10 4 7 5 5 3 6 9 12 6 7 3 2 5 4 13 12 11 8 13 13 8 10 4 1 7
171 5 5 9 6 11 2 8 2 7 11 8 1 7 6 3 2
172 PLAYER 4: drew 8
173 PLAYER 4 HAND: <13, 8>
174 PLAYER 4: discards 8
175 PLAYER 4 HAND: <13>
176 10 9 10 4 7 5 5 3 6 9 12 6 7 3 2 5 4 13 12 11 8 13 13 8 10 4 1 7 5
177 5 9 6 11 2 8 2 7 11 8 1 7 6 3 2 8
178 PLAYER 5: drew 10
179 PLAYER 5 HAND: <3, 10>
180 PLAYER 5: discards 10
181 PLAYER 5 HAND: <3>
182 9 10 4 7 5 5 3 6 9 12 6 7 3 2 5 4 13 12 11 8 13 13 8 10 4 1 7 5 5 9
183 6 11 2 8 2 7 11 8 1 7 6 3 2 8 10
184 PLAYER 1: lost round 6
185 PLAYER 2: lost round 6
186 PLAYER 3: lost round 6
187 PLAYER 4: lost round 6
188 PLAYER 5: lost round 6

```

## Results of Trial 2

```

1 -----
2 DEALER NUM: 1 THE TARGET CARD: 2
3 DEALER NUM: 1 DEALS 11 TO PLAYER NUM: 1
4 DEALER NUM: 1 DEALS 6 TO PLAYER NUM: 2
5 DEALER NUM: 1 DEALS 12 TO PLAYER NUM: 3
6 DEALER NUM: 1 DEALS 10 TO PLAYER NUM: 4
7 DEALER NUM: 1 DEALS 10 TO PLAYER NUM: 5
8 DEALER NUM: 1 DEALS 11 TO PLAYER NUM: 6
9 PLAYER 2: drew 11
10 PLAYER 2 HAND: <6, 11>

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```

11 | PLAYER 2: discards 11
12 | PLAYER 2 HAND: <6>
13 | 5 8 5 10 6 1 3 5 1 12 7 4 13 1 6 7 10 8 13 7 1 12 9 12 6 2 2 11 8 7
    | 8 9 4 3 2 5 3 9 9 13 3 4 13 4 11
14 | PLAYER 3: drew 5
15 | PLAYER 3 HAND: <12, 5>
16 | PLAYER 3: discards 5
17 | PLAYER 3 HAND: <12>
18 | 8 5 10 6 1 3 5 1 12 7 4 13 1 6 7 10 8 13 7 1 12 9 12 6 2 2 11 8 7 8
    | 9 4 3 2 5 3 9 9 13 3 4 13 4 11 5
19 | PLAYER 4: drew 8
20 | PLAYER 4 HAND: <10, 8>
21 | PLAYER 4: discards 8
22 | PLAYER 4 HAND: <10>
23 | 5 10 6 1 3 5 1 12 7 4 13 1 6 7 10 8 13 7 1 12 9 12 6 2 2 11 8 7 8 9
    | 4 3 2 5 3 9 9 13 3 4 13 4 11 5 8
24 | PLAYER 5: drew 5
25 | PLAYER 5 HAND: <10, 5>
26 | PLAYER 5: discards 5
27 | PLAYER 5 HAND: <10>
28 | 10 6 1 3 5 1 12 7 4 13 1 6 7 10 8 13 7 1 12 9 12 6 2 2 11 8 7 8 9 4
    | 3 2 5 3 9 9 13 3 4 13 4 11 5 8 5
29 | PLAYER 6: drew 10
30 | PLAYER 6 HAND: <11, 10>
31 | PLAYER 6: discards 10
32 | PLAYER 6 HAND: <11>
33 | 6 1 3 5 1 12 7 4 13 1 6 7 10 8 13 7 1 12 9 12 6 2 2 11 8 7 8 9 4 3
    | 2 5 3 9 9 13 3 4 13 4 11 5 8 5 10
34 | PLAYER 2: lost round 1
35 | PLAYER 3: lost round 1
36 | PLAYER 4: lost round 1
37 | PLAYER 5: lost round 1
38 | PLAYER 6: lost round 1
39 | -----
40 | DEALER NUM: 2 THE TARGET CARD: 5
41 | DEALER NUM: 2 DEALS 7 TO PLAYER NUM: 1
42 | DEALER NUM: 2 DEALS 11 TO PLAYER NUM: 2
43 | DEALER NUM: 2 DEALS 9 TO PLAYER NUM: 3
44 | DEALER NUM: 2 DEALS 4 TO PLAYER NUM: 4
45 | DEALER NUM: 2 DEALS 2 TO PLAYER NUM: 5
46 | DEALER NUM: 2 DEALS 12 TO PLAYER NUM: 6
47 | PLAYER 1: drew 4
48 | PLAYER 1 HAND: <7, 4>
49 | PLAYER 1: discards 4
50 | PLAYER 1 HAND: <7>
51 | 6 1 1 13 8 7 3 7 10 3 8 10 7 4 11 8 8 6 3 2 10 5 8 11 10 4 11 3 9 1
    | 12 9 2 9 13 12 6 13 5 5 1 13 5 5 4
52 | PLAYER 3: drew 6
53 | PLAYER 3 HAND: <9, 6>
54 | PLAYER 3: discards 6
55 | PLAYER 3 HAND: <9>
56 | 1 1 13 8 7 3 7 10 3 8 10 7 4 11 8 8 6 3 2 10 5 8 11 10 4 11 3 9 1
    | 12 9 2 9 13 12 6 13 5 5 1 13 5 5 4 6
57 | PLAYER 4: drew 1
58 | PLAYER 4 HAND: <4, 1>
59 | PLAYER 4: discards 1
60 | PLAYER 4 HAND: <4>

```

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61 1 13 8 7 3 7 10 3 8 10 7 4 11 8 8 6 3 2 10 5 8 11 10 4 11 3 9 1 12
    9 2 9 13 12 6 13 5 5 1 13 5 5 4 6 1
62 PLAYER 5: drew 1
63 PLAYER 5 HAND: <2, 1>
64 PLAYER 5: discards 1
65 PLAYER 5 HAND: <2>
66 13 8 7 3 7 10 3 8 10 7 4 11 8 8 6 3 2 10 5 8 11 10 4 11 3 9 1 12 9
    2 9 13 12 6 13 5 5 1 13 5 5 4 6 1 1
67 PLAYER 6: drew 13
68 PLAYER 6 HAND: <12, 13>
69 PLAYER 6: discards 13
70 PLAYER 6 HAND: <12>
71 8 7 3 7 10 3 8 10 7 4 11 8 8 6 3 2 10 5 8 11 10 4 11 3 9 1 12 9 2 9
    13 12 6 13 5 5 1 13 5 5 4 6 1 1 13
72 PLAYER 1: lost round 2
73 PLAYER 3: lost round 2
74 PLAYER 4: lost round 2
75 PLAYER 5: lost round 2
76 PLAYER 6: lost round 2
77 -----
78 DEALER NUM: 3 THE TARGET CARD: 6
79 DEALER NUM: 3 DEALS 8 TO PLAYER NUM: 1
80 DEALER NUM: 3 DEALS 12 TO PLAYER NUM: 2
81 DEALER NUM: 3 DEALS 13 TO PLAYER NUM: 3
82 DEALER NUM: 3 DEALS 2 TO PLAYER NUM: 4
83 DEALER NUM: 3 DEALS 11 TO PLAYER NUM: 5
84 DEALER NUM: 3 DEALS 11 TO PLAYER NUM: 6
85 PLAYER 1: drew 5
86 PLAYER 1 HAND: <8, 5>
87 PLAYER 1: discards 5
88 PLAYER 1 HAND: <8>
89 11 10 7 7 12 8 6 2 8 1 1 2 1 10 3 6 1 8 9 4 13 6 9 4 13 13 4 3 8 4
    3 5 13 9 3 5 10 5 7 1 10 5 12 1 5
90 PLAYER 2: drew 11
91 PLAYER 2 HAND: <12, 11>
92 PLAYER 2: discards 11
93 PLAYER 2 HAND: <12>
94 10 7 7 12 8 6 2 8 1 1 2 1 10 3 6 1 8 9 4 13 6 9 4 13 13 4 3 8 4 3 5
    13 9 3 5 10 5 7 1 10 5 12 1 5 11
95 PLAYER 4: drew 10
96 PLAYER 4 HAND: <2, 10>
97 PLAYER 4: discards 10
98 PLAYER 4 HAND: <2>
99 7 7 12 8 6 2 8 1 1 2 1 10 3 6 1 8 9 4 13 6 9 4 13 13 4 3 8 4 3 5 13
    9 3 5 10 5 7 1 10 5 12 1 5 11 10
100 PLAYER 5: drew 7
101 PLAYER 5 HAND: <11, 7>
102 PLAYER 5: discards 7
103 PLAYER 5 HAND: <11>
104 7 12 8 6 2 8 1 1 2 1 10 3 6 1 8 9 4 13 6 9 4 13 13 4 3 8 4 3 5 13 9
    3 5 10 5 7 1 10 5 12 1 5 11 10 7
105 PLAYER 6: drew 7
106 PLAYER 6 HAND: <11, 7>
107 PLAYER 6: discards 7
108 PLAYER 6 HAND: <11>
109 12 8 6 2 8 1 1 2 1 10 3 6 1 8 9 4 13 6 9 4 13 13 4 3 8 4 3 5 13 9 3
    5 10 5 7 1 10 5 12 1 5 11 10 7 7

```



```

110 | PLAYER 1: lost round 3
111 | PLAYER 2: lost round 3
112 | PLAYER 4: lost round 3
113 | PLAYER 5: lost round 3
114 | PLAYER 6: lost round 3
115 | -----
116 | DEALER NUM: 4 THE TARGET CARD: 11
117 | DEALER NUM: 4 DEALS 6 TO PLAYER NUM: 1
118 | DEALER NUM: 4 DEALS 11 TO PLAYER NUM: 2
119 | DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 3
120 | DEALER NUM: 4 DEALS 13 TO PLAYER NUM: 4
121 | DEALER NUM: 4 DEALS 4 TO PLAYER NUM: 5
122 | DEALER NUM: 4 DEALS 4 TO PLAYER NUM: 6
123 | PLAYER 1: drew 1
124 | PLAYER 1 HAND: <6, 1>
125 | PLAYER 1: discards 1
126 | PLAYER 1 HAND: <6>
127 | 3 13 8 1 3 1 10 4 1 10 10 11 4 2 3 8 10 12 9 13 7 11 8 5 7 5 5 6 9
    | 10 1 7 3 5 9 6 13 1 2 7 8 12 5 7 1
128 | PLAYER 2: drew 3
129 | PLAYER 2 HAND: <11, 3>
130 | PLAYER 2: wins round 4 with matching card 11
131 | PLAYER 1: lost round 4
132 | PLAYER 3: lost round 4
133 | PLAYER 5: lost round 4
134 | PLAYER 6: lost round 4
135 | -----
136 | DEALER NUM: 5 THE TARGET CARD: 13
137 | DEALER NUM: 5 DEALS 11 TO PLAYER NUM: 1
138 | DEALER NUM: 5 DEALS 11 TO PLAYER NUM: 2
139 | DEALER NUM: 5 DEALS 5 TO PLAYER NUM: 3
140 | DEALER NUM: 5 DEALS 9 TO PLAYER NUM: 4
141 | DEALER NUM: 5 DEALS 8 TO PLAYER NUM: 5
142 | DEALER NUM: 5 DEALS 13 TO PLAYER NUM: 6
143 | PLAYER 1: drew 7
144 | PLAYER 1 HAND: <11, 7>
145 | PLAYER 1: discards 7
146 | PLAYER 1 HAND: <11>
147 | 10 10 13 1 5 10 3 8 4 13 5 6 5 4 5 2 4 3 10 11 1 12 7 8 1 1 5 8 9
    | 10 1 9 1 6 3 12 7 6 1 7 3 2 7 4 7
148 | PLAYER 2: drew 10
149 | PLAYER 2 HAND: <11, 10>
150 | PLAYER 2: discards 10
151 | PLAYER 2 HAND: <11>
152 | 10 13 1 5 10 3 8 4 13 5 6 5 4 5 2 4 3 10 11 1 12 7 8 1 1 5 8 9 10 1
    | 9 1 6 3 12 7 6 1 7 3 2 7 4 7 10
153 | PLAYER 3: drew 10
154 | PLAYER 3 HAND: <5, 10>
155 | PLAYER 3: discards 10
156 | PLAYER 3 HAND: <5>
157 | 13 1 5 10 3 8 4 13 5 6 5 4 5 2 4 3 10 11 1 12 7 8 1 1 5 8 9 10 1 9
    | 1 6 3 12 7 6 1 7 3 2 7 4 7 10 10
158 | PLAYER 4: drew 13
159 | PLAYER 4 HAND: <9, 13>
160 | PLAYER 4: wins round 5 with matching card 13
161 | PLAYER 1: lost round 5
162 | PLAYER 2: lost round 5

```

```

163 PLAYER 3: lost round 5
164 PLAYER 6: lost round 5
165 -----
166 DEALER NUM: 6 THE TARGET CARD: 13
167 DEALER NUM: 6 DEALS 4 TO PLAYER NUM: 1
168 DEALER NUM: 6 DEALS 9 TO PLAYER NUM: 2
169 DEALER NUM: 6 DEALS 12 TO PLAYER NUM: 3
170 DEALER NUM: 6 DEALS 1 TO PLAYER NUM: 4
171 DEALER NUM: 6 DEALS 1 TO PLAYER NUM: 5
172 DEALER NUM: 6 DEALS 12 TO PLAYER NUM: 6
173 PLAYER 1: drew 2
174 PLAYER 1 HAND: <4, 2>
175 PLAYER 1: discards 2
176 PLAYER 1 HAND: <4>
177 5 10 1 5 9 4 3 3 5 1 7 5 8 13 1 2 7 13 9 8 10 4 5 7 10 7 8 5 1 6 8
    7 1 10 4 11 7 6 10 10 3 3 6 10 2
178 PLAYER 2: drew 5
179 PLAYER 2 HAND: <9, 5>
180 PLAYER 2: discards 5
181 PLAYER 2 HAND: <9>
182 10 1 5 9 4 3 3 5 1 7 5 8 13 1 2 7 13 9 8 10 4 5 7 10 7 8 5 1 6 8 7
    1 10 4 11 7 6 10 10 3 3 6 10 2 5
183 PLAYER 3: drew 10
184 PLAYER 3 HAND: <12, 10>
185 PLAYER 3: discards 10
186 PLAYER 3 HAND: <12>
187 1 5 9 4 3 3 5 1 7 5 8 13 1 2 7 13 9 8 10 4 5 7 10 7 8 5 1 6 8 7 1
    10 4 11 7 6 10 10 3 3 6 10 2 5 10
188 PLAYER 4: drew 1
189 PLAYER 4 HAND: <1, 1>
190 PLAYER 4: discards 1
191 PLAYER 4 HAND: <1>
192 5 9 4 3 3 5 1 7 5 8 13 1 2 7 13 9 8 10 4 5 7 10 7 8 5 1 6 8 7 1 10
    4 11 7 6 10 10 3 3 6 10 2 5 10 1
193 PLAYER 5: drew 5
194 PLAYER 5 HAND: <1, 5>
195 PLAYER 5: discards 5
196 PLAYER 5 HAND: <1>
197 9 4 3 3 5 1 7 5 8 13 1 2 7 13 9 8 10 4 5 7 10 7 8 5 1 6 8 7 1 10 4
    11 7 6 10 10 3 3 6 10 2 5 10 1 5
198 PLAYER 1: lost round 6
199 PLAYER 2: lost round 6
200 PLAYER 3: lost round 6
201 PLAYER 4: lost round 6
202 PLAYER 5: lost round 6

```

### Results of Trial 3

```

1 -----
2 DEALER NUM: 1 THE TARGET CARD: 13
3 DEALER NUM: 1 DEALS 2 TO PLAYER NUM: 1
4 DEALER NUM: 1 DEALS 1 TO PLAYER NUM: 2
5 DEALER NUM: 1 DEALS 13 TO PLAYER NUM: 3
6 DEALER NUM: 1 DEALS 2 TO PLAYER NUM: 4
7 DEALER NUM: 1 DEALS 4 TO PLAYER NUM: 5

```

```

8 DEALER NUM: 1 DEALS 9 TO PLAYER NUM: 6
9 PLAYER 2: drew 3
10 PLAYER 2 HAND: <1, 3>
11 PLAYER 2: discards 3
12 PLAYER 2 HAND: <1>
13 12 8 13 6 7 9 12 1 5 5 10 6 8 6 7 4 1 8 7 11 10 3 3 8 4 13 11 2 7 5
    10 6 2 9 1 5 4 12 11 9 10 12 11 3 3
14 PLAYER 3: drew 12
15 PLAYER 3 HAND: <13, 12>
16 PLAYER 3: wins round 1 with matching card 13
17 PLAYER 2: lost round 1
18 PLAYER 4: lost round 1
19 PLAYER 5: lost round 1
20 PLAYER 6: lost round 1
21 -----
22 DEALER NUM: 2 THE TARGET CARD: 2
23 DEALER NUM: 2 DEALS 6 TO PLAYER NUM: 1
24 DEALER NUM: 2 DEALS 1 TO PLAYER NUM: 2
25 DEALER NUM: 2 DEALS 9 TO PLAYER NUM: 3
26 DEALER NUM: 2 DEALS 7 TO PLAYER NUM: 4
27 DEALER NUM: 2 DEALS 3 TO PLAYER NUM: 5
28 DEALER NUM: 2 DEALS 11 TO PLAYER NUM: 6
29 PLAYER 1: drew 9
30 PLAYER 1 HAND: <6, 9>
31 PLAYER 1: discards 9
32 PLAYER 1 HAND: <6>
33 10 1 8 5 11 12 2 4 8 4 11 2 13 1 8 6 4 12 5 3 3 12 4 10 3 12 13 13
    7 5 9 1 10 2 7 8 10 5 6 3 7 11 6 9 9
34 PLAYER 3: drew 10
35 PLAYER 3 HAND: <9, 10>
36 PLAYER 3: discards 10
37 PLAYER 3 HAND: <9>
38 1 8 5 11 12 2 4 8 4 11 2 13 1 8 6 4 12 5 3 3 12 4 10 3 12 13 13 7 5
    9 1 10 2 7 8 10 5 6 3 7 11 6 9 9 10
39 PLAYER 4: drew 1
40 PLAYER 4 HAND: <7, 1>
41 PLAYER 4: discards 1
42 PLAYER 4 HAND: <7>
43 8 5 11 12 2 4 8 4 11 2 13 1 8 6 4 12 5 3 3 12 4 10 3 12 13 13 7 5 9
    1 10 2 7 8 10 5 6 3 7 11 6 9 9 10 1
44 PLAYER 5: drew 8
45 PLAYER 5 HAND: <3, 8>
46 PLAYER 5: discards 8
47 PLAYER 5 HAND: <3>
48 5 11 12 2 4 8 4 11 2 13 1 8 6 4 12 5 3 3 12 4 10 3 12 13 13 7 5 9 1
    10 2 7 8 10 5 6 3 7 11 6 9 9 10 1 8
49 PLAYER 6: drew 5
50 PLAYER 6 HAND: <11, 5>
51 PLAYER 6: discards 5
52 PLAYER 6 HAND: <11>
53 11 12 2 4 8 4 11 2 13 1 8 6 4 12 5 3 3 12 4 10 3 12 13 13 7 5 9 1
    10 2 7 8 10 5 6 3 7 11 6 9 9 10 1 8 5
54 PLAYER 1: lost round 2
55 PLAYER 3: lost round 2
56 PLAYER 4: lost round 2
57 PLAYER 5: lost round 2
58 PLAYER 6: lost round 2

```

```

59 -----
60 DEALER NUM: 3 THE TARGET CARD: 10
61 DEALER NUM: 3 DEALS 6 TO PLAYER NUM: 1
62 DEALER NUM: 3 DEALS 11 TO PLAYER NUM: 2
63 DEALER NUM: 3 DEALS 5 TO PLAYER NUM: 3
64 DEALER NUM: 3 DEALS 10 TO PLAYER NUM: 4
65 DEALER NUM: 3 DEALS 13 TO PLAYER NUM: 5
66 DEALER NUM: 3 DEALS 10 TO PLAYER NUM: 6
67 PLAYER 1: drew 9
68 PLAYER 1 HAND: <6, 9>
69 PLAYER 1: discards 9
70 PLAYER 1 HAND: <6>
71 8 3 12 13 9 11 10 3 4 7 1 3 5 2 13 12 1 11 2 12 5 10 7 9 5 11 9 2 4
    1 4 6 7 1 5 12 3 3 4 8 8 6 8 8 9
72 PLAYER 2: drew 8
73 PLAYER 2 HAND: <11, 8>
74 PLAYER 2: discards 8
75 PLAYER 2 HAND: <11>
76 3 12 13 9 11 10 3 4 7 1 3 5 2 13 12 1 11 2 12 5 10 7 9 5 11 9 2 4 1
    4 6 7 1 5 12 3 3 4 8 8 6 8 8 9 8
77 PLAYER 4: drew 3
78 PLAYER 4 HAND: <10, 3>
79 PLAYER 4: wins round 3 with matching card 10
80 PLAYER 1: lost round 3
81 PLAYER 2: lost round 3
82 PLAYER 5: lost round 3
83 PLAYER 6: lost round 3
84 -----
85 DEALER NUM: 4 THE TARGET CARD: 13
86 DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 1
87 DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 2
88 DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 3
89 DEALER NUM: 4 DEALS 1 TO PLAYER NUM: 4
90 DEALER NUM: 4 DEALS 9 TO PLAYER NUM: 5
91 DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 6
92 PLAYER 1: drew 8
93 PLAYER 1 HAND: <5, 8>
94 PLAYER 1: discards 8
95 PLAYER 1 HAND: <5>
96 3 11 12 7 2 3 1 1 2 3 8 11 9 4 5 13 10 3 4 7 8 8 11 6 8 4 10 13 12
    1 10 12 6 4 12 2 10 3 9 9 11 8 7 9 8
97 PLAYER 2: drew 3
98 PLAYER 2 HAND: <5, 3>
99 PLAYER 2: discards 3
100 PLAYER 2 HAND: <5>
101 11 12 7 2 3 1 1 2 3 8 11 9 4 5 13 10 3 4 7 8 8 11 6 8 4 10 13 12 1
    10 12 6 4 12 2 10 3 9 9 11 8 7 9 8 3
102 PLAYER 3: drew 11
103 PLAYER 3 HAND: <5, 11>
104 PLAYER 3: discards 11
105 PLAYER 3 HAND: <5>
106 12 7 2 3 1 1 2 3 8 11 9 4 5 13 10 3 4 7 8 8 11 6 8 4 10 13 12 1 10
    12 6 4 12 2 10 3 9 9 11 8 7 9 8 3 11
107 PLAYER 5: drew 12
108 PLAYER 5 HAND: <9, 12>
109 PLAYER 5: discards 12
110 PLAYER 5 HAND: <9>

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111 7 2 3 1 1 2 3 8 11 9 4 5 13 10 3 4 7 8 8 11 6 8 4 10 13 12 1 10 12
    6 4 12 2 10 3 9 9 11 8 7 9 8 3 11 12
112 PLAYER 6: drew 7
113 PLAYER 6 HAND: <5, 7>
114 PLAYER 6: discards 7
115 PLAYER 6 HAND: <5>
116 2 3 1 1 2 3 8 11 9 4 5 13 10 3 4 7 8 8 11 6 8 4 10 13 12 1 10 12 6
    4 12 2 10 3 9 9 11 8 7 9 8 3 11 12 7
117 PLAYER 1: lost round 4
118 PLAYER 2: lost round 4
119 PLAYER 3: lost round 4
120 PLAYER 5: lost round 4
121 PLAYER 6: lost round 4
122 -----
123 DEALER NUM: 5 THE TARGET CARD: 3
124 DEALER NUM: 5 DEALS 13 TO PLAYER NUM: 1
125 DEALER NUM: 5 DEALS 5 TO PLAYER NUM: 2
126 DEALER NUM: 5 DEALS 3 TO PLAYER NUM: 3
127 DEALER NUM: 5 DEALS 6 TO PLAYER NUM: 4
128 DEALER NUM: 5 DEALS 10 TO PLAYER NUM: 5
129 DEALER NUM: 5 DEALS 6 TO PLAYER NUM: 6
130 PLAYER 1: drew 9
131 PLAYER 1 HAND: <13, 9>
132 PLAYER 1: discards 9
133 PLAYER 1 HAND: <13>
134 5 8 3 9 10 8 10 7 10 11 11 9 1 11 13 3 11 2 4 4 7 3 12 8 7 8 8 1 11
    4 3 9 12 12 4 8 8 9 1 12 2 7 2 12 9
135 PLAYER 2: drew 5
136 PLAYER 2 HAND: <5, 5>
137 PLAYER 2: discards 5
138 PLAYER 2 HAND: <5>
139 8 3 9 10 8 10 7 10 11 11 9 1 11 13 3 11 2 4 4 7 3 12 8 7 8 8 1 11 4
    3 9 12 12 4 8 8 9 1 12 2 7 2 12 9 5
140 PLAYER 3: drew 8
141 PLAYER 3 HAND: <3, 8>
142 PLAYER 3: wins round 5 with matching card 3
143 PLAYER 1: lost round 5
144 PLAYER 2: lost round 5
145 PLAYER 4: lost round 5
146 PLAYER 6: lost round 5
147 -----
148 DEALER NUM: 6 THE TARGET CARD: 10
149 DEALER NUM: 6 DEALS 1 TO PLAYER NUM: 1
150 DEALER NUM: 6 DEALS 3 TO PLAYER NUM: 2
151 DEALER NUM: 6 DEALS 4 TO PLAYER NUM: 3
152 DEALER NUM: 6 DEALS 4 TO PLAYER NUM: 4
153 DEALER NUM: 6 DEALS 8 TO PLAYER NUM: 5
154 DEALER NUM: 6 DEALS 7 TO PLAYER NUM: 6
155 PLAYER 1: drew 2
156 PLAYER 1 HAND: <1, 2>
157 PLAYER 1: discards 2
158 PLAYER 1 HAND: <1>
159 9 2 3 11 1 7 12 11 11 9 12 5 8 10 7 13 6 8 3 12 5 2 8 7 5 1 6 9 4
    11 10 8 9 11 3 4 3 8 10 9 8 12 12 9 2
160 PLAYER 2: drew 9
161 PLAYER 2 HAND: <3, 9>
162 PLAYER 2: discards 9

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163 | PLAYER 2 HAND: <3>
164 | 2 3 11 1 7 12 11 11 9 12 5 8 10 7 13 6 8 3 12 5 2 8 7 5 1 6 9 4 11
    | 10 8 9 11 3 4 3 8 10 9 8 12 12 9 2 9
165 | PLAYER 3: drew 2
166 | PLAYER 3 HAND: <4, 2>
167 | PLAYER 3: discards 2
168 | PLAYER 3 HAND: <4>
169 | 3 11 1 7 12 11 11 9 12 5 8 10 7 13 6 8 3 12 5 2 8 7 5 1 6 9 4 11 10
    | 8 9 11 3 4 3 8 10 9 8 12 12 9 2 9 2
170 | PLAYER 4: drew 3
171 | PLAYER 4 HAND: <4, 3>
172 | PLAYER 4: discards 3
173 | PLAYER 4 HAND: <4>
174 | 11 1 7 12 11 11 9 12 5 8 10 7 13 6 8 3 12 5 2 8 7 5 1 6 9 4 11 10 8
    | 9 11 3 4 3 8 10 9 8 12 12 9 2 9 2 3
175 | PLAYER 5: drew 11
176 | PLAYER 5 HAND: <8, 11>
177 | PLAYER 5: discards 11
178 | PLAYER 5 HAND: <8>
179 | 1 7 12 11 11 9 12 5 8 10 7 13 6 8 3 12 5 2 8 7 5 1 6 9 4 11 10 8 9
    | 11 3 4 3 8 10 9 8 12 12 9 2 9 2 3 11
180 | PLAYER 1: lost round 6
181 | PLAYER 2: lost round 6
182 | PLAYER 3: lost round 6
183 | PLAYER 4: lost round 6
184 | PLAYER 5: lost round 6

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## Results of Trial 4

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1 | -----
2 | DEALER NUM: 1 THE TARGET CARD: 6
3 | DEALER NUM: 1 DEALS 7 TO PLAYER NUM: 1
4 | DEALER NUM: 1 DEALS 1 TO PLAYER NUM: 2
5 | DEALER NUM: 1 DEALS 11 TO PLAYER NUM: 3
6 | DEALER NUM: 1 DEALS 3 TO PLAYER NUM: 4
7 | DEALER NUM: 1 DEALS 2 TO PLAYER NUM: 5
8 | DEALER NUM: 1 DEALS 7 TO PLAYER NUM: 6
9 | PLAYER 2: drew 13
10 | PLAYER 2 HAND: <1, 13>
11 | PLAYER 2: discards 13
12 | PLAYER 2 HAND: <1>
13 | 4 12 2 13 9 2 8 11 5 10 13 6 3 10 10 5 6 8 7 1 7 9 12 10 9 1 3 12 6
    | 8 4 1 11 5 11 4 4 13 5 3 9 2 8 12 13
14 | PLAYER 3: drew 4
15 | PLAYER 3 HAND: <11, 4>
16 | PLAYER 3: discards 4
17 | PLAYER 3 HAND: <11>
18 | 12 2 13 9 2 8 11 5 10 13 6 3 10 10 5 6 8 7 1 7 9 12 10 9 1 3 12 6 8
    | 4 1 11 5 11 4 4 13 5 3 9 2 8 12 13 4
19 | PLAYER 4: drew 12
20 | PLAYER 4 HAND: <3, 12>
21 | PLAYER 4: discards 12
22 | PLAYER 4 HAND: <3>
23 | 2 13 9 2 8 11 5 10 13 6 3 10 10 5 6 8 7 1 7 9 12 10 9 1 3 12 6 8 4
    | 1 11 5 11 4 4 13 5 3 9 2 8 12 13 4 12

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24 | PLAYER 5: drew 2
25 | PLAYER 5 HAND: <2, 2>
26 | PLAYER 5: discards 2
27 | PLAYER 5 HAND: <2>
28 | 13 9 2 8 11 5 10 13 6 3 10 10 5 6 8 7 1 7 9 12 10 9 1 3 12 6 8 4 1
    | 11 5 11 4 4 13 5 3 9 2 8 12 13 4 12 2
29 | PLAYER 6: drew 13
30 | PLAYER 6 HAND: <7, 13>
31 | PLAYER 6: discards 13
32 | PLAYER 6 HAND: <7>
33 | 9 2 8 11 5 10 13 6 3 10 10 5 6 8 7 1 7 9 12 10 9 1 3 12 6 8 4 1 11
    | 5 11 4 4 13 5 3 9 2 8 12 13 4 12 2 13
34 | PLAYER 2: lost round 1
35 | PLAYER 3: lost round 1
36 | PLAYER 4: lost round 1
37 | PLAYER 5: lost round 1
38 | PLAYER 6: lost round 1
39 | -----
40 | DEALER NUM: 2 THE TARGET CARD: 4
41 | DEALER NUM: 2 DEALS 5 TO PLAYER NUM: 1
42 | DEALER NUM: 2 DEALS 7 TO PLAYER NUM: 2
43 | DEALER NUM: 2 DEALS 13 TO PLAYER NUM: 3
44 | DEALER NUM: 2 DEALS 11 TO PLAYER NUM: 4
45 | DEALER NUM: 2 DEALS 3 TO PLAYER NUM: 5
46 | DEALER NUM: 2 DEALS 10 TO PLAYER NUM: 6
47 | PLAYER 1: drew 12
48 | PLAYER 1 HAND: <5, 12>
49 | PLAYER 1: discards 12
50 | PLAYER 1 HAND: <5>
51 | 10 7 2 3 4 13 4 1 6 9 12 2 8 6 12 8 12 9 5 1 13 4 6 13 13 2 13 8 12
    | 10 10 5 11 1 7 9 9 3 11 2 5 8 4 2 12
52 | PLAYER 3: drew 10
53 | PLAYER 3 HAND: <13, 10>
54 | PLAYER 3: discards 10
55 | PLAYER 3 HAND: <13>
56 | 7 2 3 4 13 4 1 6 9 12 2 8 6 12 8 12 9 5 1 13 4 6 13 13 2 13 8 12 10
    | 10 5 11 1 7 9 9 3 11 2 5 8 4 2 12 10
57 | PLAYER 4: drew 7
58 | PLAYER 4 HAND: <11, 7>
59 | PLAYER 4: discards 7
60 | PLAYER 4 HAND: <11>
61 | 2 3 4 13 4 1 6 9 12 2 8 6 12 8 12 9 5 1 13 4 6 13 13 2 13 8 12 10
    | 10 5 11 1 7 9 9 3 11 2 5 8 4 2 12 10 7
62 | PLAYER 5: drew 2
63 | PLAYER 5 HAND: <3, 2>
64 | PLAYER 5: discards 2
65 | PLAYER 5 HAND: <3>
66 | 3 4 13 4 1 6 9 12 2 8 6 12 8 12 9 5 1 13 4 6 13 13 2 13 8 12 10 10
    | 5 11 1 7 9 9 3 11 2 5 8 4 2 12 10 7 2
67 | PLAYER 6: drew 3
68 | PLAYER 6 HAND: <10, 3>
69 | PLAYER 6: discards 3
70 | PLAYER 6 HAND: <10>
71 | 4 13 4 1 6 9 12 2 8 6 12 8 12 9 5 1 13 4 6 13 13 2 13 8 12 10 10 5
    | 11 1 7 9 9 3 11 2 5 8 4 2 12 10 7 2 3
72 | PLAYER 1: lost round 2
73 | PLAYER 3: lost round 2

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74 | PLAYER 4: lost round 2
75 | PLAYER 5: lost round 2
76 | PLAYER 6: lost round 2
77 | -----
78 | DEALER NUM: 3 THE TARGET CARD: 10
79 | DEALER NUM: 3 DEALS 8 TO PLAYER NUM: 1
80 | DEALER NUM: 3 DEALS 10 TO PLAYER NUM: 2
81 | DEALER NUM: 3 DEALS 3 TO PLAYER NUM: 3
82 | DEALER NUM: 3 DEALS 11 TO PLAYER NUM: 4
83 | DEALER NUM: 3 DEALS 13 TO PLAYER NUM: 5
84 | DEALER NUM: 3 DEALS 13 TO PLAYER NUM: 6
85 | PLAYER 1: drew 2
86 | PLAYER 1 HAND: <8, 2>
87 | PLAYER 1: discards 2
88 | PLAYER 1 HAND: <8>
89 | 12 13 13 8 10 12 9 1 12 5 7 3 10 2 8 9 7 4 1 2 3 10 12 12 3 8 12 4
    | 6 6 9 11 7 5 5 4 13 2 1 2 6 4 9 2 2
90 | PLAYER 2: drew 12
91 | PLAYER 2 HAND: <10, 12>
92 | PLAYER 2: wins round 3 with matching card 10
93 | PLAYER 1: lost round 3
94 | PLAYER 4: lost round 3
95 | PLAYER 5: lost round 3
96 | PLAYER 6: lost round 3
97 | -----
98 | DEALER NUM: 4 THE TARGET CARD: 11
99 | DEALER NUM: 4 DEALS 3 TO PLAYER NUM: 1
100 | DEALER NUM: 4 DEALS 10 TO PLAYER NUM: 2
101 | DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 3
102 | DEALER NUM: 4 DEALS 6 TO PLAYER NUM: 4
103 | DEALER NUM: 4 DEALS 12 TO PLAYER NUM: 5
104 | DEALER NUM: 4 DEALS 2 TO PLAYER NUM: 6
105 | PLAYER 1: drew 2
106 | PLAYER 1 HAND: <3, 2>
107 | PLAYER 1: discards 2
108 | PLAYER 1 HAND: <3>
109 | 7 7 13 12 12 9 7 9 10 13 9 8 8 1 12 2 13 12 6 10 2 4 3 6 2 2 3 13 1
    | 5 12 5 9 4 8 4 3 4 8 2 10 1 11 13 2
110 | PLAYER 2: drew 7
111 | PLAYER 2 HAND: <10, 7>
112 | PLAYER 2: discards 7
113 | PLAYER 2 HAND: <10>
114 | 7 13 12 12 9 7 9 10 13 9 8 8 1 12 2 13 12 6 10 2 4 3 6 2 2 3 13 1 5
    | 12 5 9 4 8 4 3 4 8 2 10 1 11 13 2 7
115 | PLAYER 3: drew 7
116 | PLAYER 3 HAND: <5, 7>
117 | PLAYER 3: discards 7
118 | PLAYER 3 HAND: <5>
119 | 13 12 12 9 7 9 10 13 9 8 8 1 12 2 13 12 6 10 2 4 3 6 2 2 3 13 1 5
    | 12 5 9 4 8 4 3 4 8 2 10 1 11 13 2 7 7
120 | PLAYER 5: drew 13
121 | PLAYER 5 HAND: <12, 13>
122 | PLAYER 5: discards 13
123 | PLAYER 5 HAND: <12>
124 | 12 12 9 7 9 10 13 9 8 8 1 12 2 13 12 6 10 2 4 3 6 2 2 3 13 1 5 12 5
    | 9 4 8 4 3 4 8 2 10 1 11 13 2 7 7 13
125 | PLAYER 6: drew 12

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126 | PLAYER 6 HAND: <2, 12>
127 | PLAYER 6: discards 12
128 | PLAYER 6 HAND: <2>
129 | 12 9 7 9 10 13 9 8 8 1 12 2 13 12 6 10 2 4 3 6 2 2 3 13 1 5 12 5 9
    | 4 8 4 3 4 8 2 10 1 11 13 2 7 7 13 12
130 | PLAYER 1: lost round 4
131 | PLAYER 2: lost round 4
132 | PLAYER 3: lost round 4
133 | PLAYER 5: lost round 4
134 | PLAYER 6: lost round 4
135 | -----
136 | DEALER NUM: 5 THE TARGET CARD: 7
137 | DEALER NUM: 5 DEALS 2 TO PLAYER NUM: 1
138 | DEALER NUM: 5 DEALS 2 TO PLAYER NUM: 2
139 | DEALER NUM: 5 DEALS 4 TO PLAYER NUM: 3
140 | DEALER NUM: 5 DEALS 9 TO PLAYER NUM: 4
141 | DEALER NUM: 5 DEALS 3 TO PLAYER NUM: 5
142 | DEALER NUM: 5 DEALS 6 TO PLAYER NUM: 6
143 | PLAYER 1: drew 13
144 | PLAYER 1 HAND: <2, 13>
145 | PLAYER 1: discards 13
146 | PLAYER 1 HAND: <2>
147 | 12 2 9 8 12 9 3 10 13 10 7 12 5 8 13 12 7 12 4 2 12 7 1 2 12 1 2 7
    | 3 1 13 8 8 5 6 4 2 2 9 13 10 11 4 13 13
148 | PLAYER 2: drew 12
149 | PLAYER 2 HAND: <2, 12>
150 | PLAYER 2: discards 12
151 | PLAYER 2 HAND: <2>
152 | 2 9 8 12 9 3 10 13 10 7 12 5 8 13 12 7 12 4 2 12 7 1 2 12 1 2 7 3 1
    | 13 8 8 5 6 4 2 2 9 13 10 11 4 13 13 12
153 | PLAYER 3: drew 2
154 | PLAYER 3 HAND: <4, 2>
155 | PLAYER 3: discards 2
156 | PLAYER 3 HAND: <4>
157 | 9 8 12 9 3 10 13 10 7 12 5 8 13 12 7 12 4 2 12 7 1 2 12 1 2 7 3 1
    | 13 8 8 5 6 4 2 2 9 13 10 11 4 13 13 12 2
158 | PLAYER 4: drew 9
159 | PLAYER 4 HAND: <9, 9>
160 | PLAYER 4: discards 9
161 | PLAYER 4 HAND: <9>
162 | 8 12 9 3 10 13 10 7 12 5 8 13 12 7 12 4 2 12 7 1 2 12 1 2 7 3 1 13
    | 8 8 5 6 4 2 2 9 13 10 11 4 13 13 12 2 9
163 | PLAYER 6: drew 8
164 | PLAYER 6 HAND: <6, 8>
165 | PLAYER 6: discards 8
166 | PLAYER 6 HAND: <6>
167 | 12 9 3 10 13 10 7 12 5 8 13 12 7 12 4 2 12 7 1 2 12 1 2 7 3 1 13 8
    | 8 5 6 4 2 2 9 13 10 11 4 13 13 12 2 9 8
168 | PLAYER 1: lost round 5
169 | PLAYER 2: lost round 5
170 | PLAYER 3: lost round 5
171 | PLAYER 4: lost round 5
172 | PLAYER 6: lost round 5
173 | -----
174 | DEALER NUM: 6 THE TARGET CARD: 12
175 | DEALER NUM: 6 DEALS 12 TO PLAYER NUM: 1
176 | DEALER NUM: 6 DEALS 6 TO PLAYER NUM: 2

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177 DEALER NUM: 6 DEALS 2 TO PLAYER NUM: 3
178 DEALER NUM: 6 DEALS 8 TO PLAYER NUM: 4
179 DEALER NUM: 6 DEALS 2 TO PLAYER NUM: 5
180 DEALER NUM: 6 DEALS 2 TO PLAYER NUM: 6
181 PLAYER 1: drew 13
182 PLAYER 1 HAND: <12, 13>
183 PLAYER 1: wins round 6 with matching card 12
184 PLAYER 2: lost round 6
185 PLAYER 3: lost round 6
186 PLAYER 4: lost round 6
187 PLAYER 5: lost round 6

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## Results of Trial 5

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1 -----
2 DEALER NUM: 1 THE TARGET CARD: 7
3 DEALER NUM: 1 DEALS 4 TO PLAYER NUM: 1
4 DEALER NUM: 1 DEALS 3 TO PLAYER NUM: 2
5 DEALER NUM: 1 DEALS 1 TO PLAYER NUM: 3
6 DEALER NUM: 1 DEALS 11 TO PLAYER NUM: 4
7 DEALER NUM: 1 DEALS 7 TO PLAYER NUM: 5
8 DEALER NUM: 1 DEALS 5 TO PLAYER NUM: 6
9 PLAYER 2: drew 1
10 PLAYER 2 HAND: <3, 1>
11 PLAYER 2: discards 1
12 PLAYER 2 HAND: <3>
13 6 9 12 8 11 3 2 3 9 6 8 10 2 11 6 12 5 8 7 4 1 4 9 12 8 10 6 9 5 2
14 4 13 1 13 3 13 10 11 10 12 5 2 7 13 1
15 PLAYER 3: drew 6
16 PLAYER 3 HAND: <1, 6>
17 PLAYER 3: discards 6
18 PLAYER 3 HAND: <1>
19 9 12 8 11 3 2 3 9 6 8 10 2 11 6 12 5 8 7 4 1 4 9 12 8 10 6 9 5 2 4
20 13 1 13 3 13 10 11 10 12 5 2 7 13 1 6
21 PLAYER 4: drew 9
22 PLAYER 4 HAND: <11, 9>
23 PLAYER 4: discards 9
24 PLAYER 4 HAND: <11>
25 12 8 11 3 2 3 9 6 8 10 2 11 6 12 5 8 7 4 1 4 9 12 8 10 6 9 5 2 4 13
26 1 13 3 13 10 11 10 12 5 2 7 13 1 6 9
27 PLAYER 5: drew 12
28 PLAYER 5 HAND: <7, 12>
29 PLAYER 5: wins round 1 with matching card 7
30 PLAYER 2: lost round 1
31 PLAYER 3: lost round 1
32 PLAYER 4: lost round 1
33 PLAYER 6: lost round 1
34 -----
35 DEALER NUM: 2 THE TARGET CARD: 5
36 DEALER NUM: 2 DEALS 11 TO PLAYER NUM: 1
37 DEALER NUM: 2 DEALS 11 TO PLAYER NUM: 2
38 DEALER NUM: 2 DEALS 13 TO PLAYER NUM: 3
39 DEALER NUM: 2 DEALS 4 TO PLAYER NUM: 4
40 DEALER NUM: 2 DEALS 8 TO PLAYER NUM: 5
41 DEALER NUM: 2 DEALS 4 TO PLAYER NUM: 6

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39 | PLAYER 1: drew 2
40 | PLAYER 1 HAND: <11, 2>
41 | PLAYER 1: discards 2
42 | PLAYER 1 HAND: <11>
43 | 2 7 8 8 5 9 3 8 6 10 1 1 9 6 10 12 1 12 13 12 9 13 6 7 9 12 7 11 1
    | 10 3 10 1 2 5 4 9 11 3 6 2 5 13 6 2
44 | PLAYER 3: drew 2
45 | PLAYER 3 HAND: <13, 2>
46 | PLAYER 3: discards 2
47 | PLAYER 3 HAND: <13>
48 | 7 8 8 5 9 3 8 6 10 1 1 9 6 10 12 1 12 13 12 9 13 6 7 9 12 7 11 1 10
    | 3 10 1 2 5 4 9 11 3 6 2 5 13 6 2 2
49 | PLAYER 4: drew 7
50 | PLAYER 4 HAND: <4, 7>
51 | PLAYER 4: discards 7
52 | PLAYER 4 HAND: <4>
53 | 8 8 5 9 3 8 6 10 1 1 9 6 10 12 1 12 13 12 9 13 6 7 9 12 7 11 1 10 3
    | 10 1 2 5 4 9 11 3 6 2 5 13 6 2 2 7
54 | PLAYER 5: drew 8
55 | PLAYER 5 HAND: <8, 8>
56 | PLAYER 5: discards 8
57 | PLAYER 5 HAND: <8>
58 | 8 5 9 3 8 6 10 1 1 9 6 10 12 1 12 13 12 9 13 6 7 9 12 7 11 1 10 3
    | 10 1 2 5 4 9 11 3 6 2 5 13 6 2 2 7 8
59 | PLAYER 6: drew 8
60 | PLAYER 6 HAND: <4, 8>
61 | PLAYER 6: discards 8
62 | PLAYER 6 HAND: <4>
63 | 5 9 3 8 6 10 1 1 9 6 10 12 1 12 13 12 9 13 6 7 9 12 7 11 1 10 3 10
    | 1 2 5 4 9 11 3 6 2 5 13 6 2 2 7 8 8
64 | PLAYER 1: lost round 2
65 | PLAYER 3: lost round 2
66 | PLAYER 4: lost round 2
67 | PLAYER 5: lost round 2
68 | PLAYER 6: lost round 2
69 | -----
70 | DEALER NUM: 3 THE TARGET CARD: 2
71 | DEALER NUM: 3 DEALS 12 TO PLAYER NUM: 1
72 | DEALER NUM: 3 DEALS 4 TO PLAYER NUM: 2
73 | DEALER NUM: 3 DEALS 11 TO PLAYER NUM: 3
74 | DEALER NUM: 3 DEALS 1 TO PLAYER NUM: 4
75 | DEALER NUM: 3 DEALS 7 TO PLAYER NUM: 5
76 | DEALER NUM: 3 DEALS 7 TO PLAYER NUM: 6
77 | PLAYER 1: drew 6
78 | PLAYER 1 HAND: <12, 6>
79 | PLAYER 1: discards 6
80 | PLAYER 1 HAND: <12>
81 | 10 9 9 9 3 1 9 12 1 2 7 8 10 1 11 12 7 5 2 12 8 2 1 2 8 5 2 3 6 6
    | 10 3 5 10 13 13 9 6 8 8 6 13 4 8 6
82 | PLAYER 2: drew 10
83 | PLAYER 2 HAND: <4, 10>
84 | PLAYER 2: discards 10
85 | PLAYER 2 HAND: <4>
86 | 9 9 9 3 1 9 12 1 2 7 8 10 1 11 12 7 5 2 12 8 2 1 2 8 5 2 3 6 6 10 3
    | 5 10 13 13 9 6 8 8 6 13 4 8 6 10
87 | PLAYER 4: drew 9
88 | PLAYER 4 HAND: <1, 9>

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89 PLAYER 4: discards 9
90 PLAYER 4 HAND: <1>
91 9 9 3 1 9 12 1 2 7 8 10 1 11 12 7 5 2 12 8 2 1 2 8 5 2 3 6 6 10 3 5
    10 13 13 9 6 8 8 6 13 4 8 6 10 9
92 PLAYER 5: drew 9
93 PLAYER 5 HAND: <7, 9>
94 PLAYER 5: discards 9
95 PLAYER 5 HAND: <7>
96 9 3 1 9 12 1 2 7 8 10 1 11 12 7 5 2 12 8 2 1 2 8 5 2 3 6 6 10 3 5
    10 13 13 9 6 8 8 6 13 4 8 6 10 9 9
97 PLAYER 6: drew 9
98 PLAYER 6 HAND: <7, 9>
99 PLAYER 6: discards 9
100 PLAYER 6 HAND: <7>
101 3 1 9 12 1 2 7 8 10 1 11 12 7 5 2 12 8 2 1 2 8 5 2 3 6 6 10 3 5 10
    13 13 9 6 8 8 6 13 4 8 6 10 9 9 9
102 PLAYER 1: lost round 3
103 PLAYER 2: lost round 3
104 PLAYER 4: lost round 3
105 PLAYER 5: lost round 3
106 PLAYER 6: lost round 3
107 -----
108 DEALER NUM: 4 THE TARGET CARD: 10
109 DEALER NUM: 4 DEALS 12 TO PLAYER NUM: 1
110 DEALER NUM: 4 DEALS 7 TO PLAYER NUM: 2
111 DEALER NUM: 4 DEALS 6 TO PLAYER NUM: 3
112 DEALER NUM: 4 DEALS 5 TO PLAYER NUM: 4
113 DEALER NUM: 4 DEALS 2 TO PLAYER NUM: 5
114 DEALER NUM: 4 DEALS 2 TO PLAYER NUM: 6
115 PLAYER 1: drew 8
116 PLAYER 1 HAND: <12, 8>
117 PLAYER 1: discards 8
118 PLAYER 1 HAND: <12>
119 11 8 1 10 10 7 9 12 7 6 9 7 6 8 3 5 9 3 10 5 9 10 6 6 9 13 6 9 1 1
    2 8 13 3 2 2 8 8 12 9 1 4 13 9 8
120 PLAYER 2: drew 11
121 PLAYER 2 HAND: <7, 11>
122 PLAYER 2: discards 11
123 PLAYER 2 HAND: <7>
124 8 1 10 10 7 9 12 7 6 9 7 6 8 3 5 9 3 10 5 9 10 6 6 9 13 6 9 1 1 2 8
    13 3 2 2 8 8 12 9 1 4 13 9 8 11
125 PLAYER 3: drew 8
126 PLAYER 3 HAND: <6, 8>
127 PLAYER 3: discards 8
128 PLAYER 3 HAND: <6>
129 1 10 10 7 9 12 7 6 9 7 6 8 3 5 9 3 10 5 9 10 6 6 9 13 6 9 1 1 2 8
    13 3 2 2 8 8 12 9 1 4 13 9 8 11 8
130 PLAYER 5: drew 1
131 PLAYER 5 HAND: <2, 1>
132 PLAYER 5: discards 1
133 PLAYER 5 HAND: <2>
134 10 10 7 9 12 7 6 9 7 6 8 3 5 9 3 10 5 9 10 6 6 9 13 6 9 1 1 2 8 13
    3 2 2 8 8 12 9 1 4 13 9 8 11 8 1
135 PLAYER 6: drew 10
136 PLAYER 6 HAND: <2, 10>
137 PLAYER 6: wins round 4 with matching card 10
138 PLAYER 1: lost round 4

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139 PLAYER 2: lost round 4
140 PLAYER 3: lost round 4
141 PLAYER 5: lost round 4
142 -----
143 DEALER NUM: 5 THE TARGET CARD: 8
144 DEALER NUM: 5 DEALS 3 TO PLAYER NUM: 1
145 DEALER NUM: 5 DEALS 2 TO PLAYER NUM: 2
146 DEALER NUM: 5 DEALS 8 TO PLAYER NUM: 3
147 DEALER NUM: 5 DEALS 8 TO PLAYER NUM: 4
148 DEALER NUM: 5 DEALS 13 TO PLAYER NUM: 5
149 DEALER NUM: 5 DEALS 6 TO PLAYER NUM: 6
150 PLAYER 1: drew 13
151 PLAYER 1 HAND: <3, 13>
152 PLAYER 1: discards 13
153 PLAYER 1 HAND: <3>
154 8 5 10 7 1 6 2 10 5 9 11 5 1 9 6 9 11 10 13 9 1 8 9 9 1 1 2 7 10 6
    7 8 3 2 3 9 6 12 9 8 12 4 2 8 13
155 PLAYER 2: drew 8
156 PLAYER 2 HAND: <2, 8>
157 PLAYER 2: wins round 5 with matching card 8
158 PLAYER 1: lost round 5
159 PLAYER 3: lost round 5
160 PLAYER 4: lost round 5
161 PLAYER 6: lost round 5
162 -----
163 DEALER NUM: 6 THE TARGET CARD: 8
164 DEALER NUM: 6 DEALS 5 TO PLAYER NUM: 1
165 DEALER NUM: 6 DEALS 2 TO PLAYER NUM: 2
166 DEALER NUM: 6 DEALS 2 TO PLAYER NUM: 3
167 DEALER NUM: 6 DEALS 10 TO PLAYER NUM: 4
168 DEALER NUM: 6 DEALS 9 TO PLAYER NUM: 5
169 DEALER NUM: 6 DEALS 9 TO PLAYER NUM: 6
170 PLAYER 1: drew 8
171 PLAYER 1 HAND: <5, 8>
172 PLAYER 1: wins round 6 with matching card 8
173 PLAYER 2: lost round 6
174 PLAYER 3: lost round 6
175 PLAYER 4: lost round 6
176 PLAYER 5: lost round 6

```