

This is a demonstration of my straights card game.

You can start game by entering **./straights**, that is, executing executables. When you start game, you can also add seed, which is an optional argument. If you enter **./striaghts [seed]** (here, [] means optional), a game start with a specific randomly shuffled deck. It means that if you try another game with the same seed, then the randomly shuffled deck of the game is exactly the same. In other words, for a seed, a specific randomly shuffled deck is already determined. A seed can be any string, but the first letter must be number (0~9). If it not the case, then an error message is printed, and you need to run executables again.

Straights card game is played by four players. Each player can be human player or computer player. Therefore, as soon as executing a game, you should determine each player as human player or computer player. After entering **./straights [seed]**, You see **Is Player1 a human (h) or a computer (c)?**, and you should enter **h** or **c**, where h for human player and c for compute player. As you can expect, if you enter **h**, then player 1 becomes a human player, and if you enter c, then player 1 becomes a computer player. After that, **Is Player2 a human (h) or a computer (c)?** is printed. It is exactly the same process until you determine all players' type. Note that while you are determining player's type, you have to enter **h** or **c**. Otherwise, an error message is printed, and then the game immediately ends.

After that, 13 cards of a shuffled deck are distributed to each player. The player who has the card of 7S begins the game. Before the first player's turn, it is printed that:

**A new round begins. It's Player<sup>n</sup>'s turn to play.**

where the red **n** is the first player's number (1 or 2 or 3 or 4).

The order of players in terms of playing game is the increasing order. For example, if the first player is Player1, then the order of next player is Player2, Player3, Player4, Player1, Player2, Palyer3, Palyer4, Player1, ... For another example, if the first player is Player 3, then the order of next player is Player4, Player1, Player2, Player3, Player4, Player1, ... Note that since each player has 13 cards, each player has 13 turns in total during a game. You play the game as all human players. In other words, you directly play all human players' turn during the game.

Whenever it is a Human player's turn, the following is printed:

**Cards on the table:**

**Clubs:**

**Diamonds:**

**Hearts:**

**Spades:**

**Your Hand:**

**Legal Plays:**

with the exact information for each category.

For example, this is a part of the middle of a game. It is a human player's turn and the following is printed:

**Cards on the table:**

**Clubs: 6 7 8 9 T J Q K**

**Diamonds: 6 7 8 9**

**Hearts: 7 8**

**Spades: 6 7 8**

**Your Hand: JH AC 5C 3H 5D TH 4C 2S**

**Legal Plays: 5C 5D**

When it is a human player's turn, there are 5 commands available, and you should enter one of them. The first command is **play rs** where r means the rank of a card, and s indicates the suit of a card. Thus, r should be one of (A, 2, 3, 4, 5, 6, 7, 8, 9, T, J, Q, K) and s should be one of (C, D, H, S). This command means that the player do a legal play. Thus, as soon as you enter **play rs**, the card of **rs** in the player's hand moves to the appropriate place on the table. Note that **rs** must be a legal play card, so if the player does not have any legal play cards in the turn, you should not run this command. If you run **play rs** without any legal play cards in the turn, then **This is not a legal play.** is printed, and the program waits for a next command. If the player has a legal play card / legal paly cards in the turn, and you run **play rs** with a card that is not a legal play, then the same statement is printed, **This is not a legal play.**, and you need to enter a next command. If you successfully run **play rs**, then **Playern plays rs.** is printed, and then the play turn moves to the next player.

The second command is **discard rs** where **rs** has the same syntax as one of **play rs**. This command means that the player discards a card from the player's hand. Thus, as soon as you enter **discard rs**, the card of **rs** in the player hand moves to the player's discarded cards list. If the player has a legal play card / legal play cards in the turn, and you run **discard rs**, then **You have a legal play. You may not discard.** is printed, and then you need to enter a next command. If the player has no legal play card in the turn, and you run **discard rs** with a card that is not in the player's hand, then the program just waits for a next command, and no error message is

printed. If you successfully run **discard rs**, then **Player<sup>n</sup> discards rs.** is printed, and then the play turn moves to the next player.

The third command is **deck**. If you run **deck**, then all the players' initial 13 cards are printed on each row. For example,

**QH TC JD TD AC 5S QS 7C 2C 2S 6D 6H 7H**  
**7S 3S 6S 9S 8H KS AS 9H 4S 2D 9C 3H JH**  
**QD 8C JS 5H 4D 5D 5C KC 3C 7D 8S 9D JC**  
**3D TS AH 2H QC AD 6C TH 4H KH KD 4C 8D**

The fourth command is **exit**. If you run **exit**, then the game immediately ends (i.e. the program immediately terminates).

The last command is **ragequit**. If you run **ragequit**, then the human player becomes a computer player with the exact same card status, and then the game is going on. Unfortunately, I was struggling with this command, and I couldn't implement **ragequit**.

If you run other command beyond the given five command, then an error message is printed, and then the program waits for a next command. For example, if you enter hello, then it is printed that

**Invalid command: "hello"**

When it is a computer player's turn, it is automatically played. A computer player has only two options. If the computer player has a legal play card / legal play cards, then it always plays the first legal play card. If the computer player has no legal play card, then it discards the first card in its hand.

If the last player plays the last turn (13<sup>th</sup> turn), each player's discarded cards, and point is printed. For example,

**Player1's discards: KC KD**

**Player1's score:  $0 + 26 = 26$**

**Player2's discards:**

**Player2's score:  $0 + 0 = 0$**

**Player3's discards: AS KS QC**

**Player3's score:  $0 + 26 = 26$**

**Player4's discards: QD 2S**

**Player4's score:  $0 + 14 = 14$**

If no one has the point over 79, the new game starts, and each player's point is accumulated. If a player has the accumulated point over 79 after a game, then at that moment, the player with the lowest point becomes winner. If two or more player have the same lowest point, then all of them become winner. Once the winner(s) is/are determined, then **Player $\color{red}{n}$  wins!** is printed, and then the game end (i.e. the program terminates).

For example,

**Player1's discards: JS**

**Player1's score:  $11 + 11 = 22$**

**Player2's discards: 3S KH AS 2D KS QS**

**Player2's score:  $44 + 44 = 88$**

**Player3's discards: KD 2S**

**Player3's score:  $15 + 15 = 30$**

**Player4's discards: TS AD**

**Player4's score:  $11 + 11 = 22$**

**Player1 wins!**

**Player4 wins!**

I intentionally set that the shuffled deck (52 cards) are always the same for every game in a program in order to implement clearly. Therefore, for every game, every player always has the same 13 cards. Hence, if all players are computer players, then the result of each game is always the same.

Finally, the following are some normal parts of my straights card game.

Is Player1 a human (h) or a computer (c)?

h

Is Player2 a human (h) or a computer (c)?

c

Is Player3 a human (h) or a computer (c)?

c

Is Player4 a human (h) or a computer (c)?

c

A new round begins. It's Player3's turn to play.

Player3 plays 7S.

Player4 plays 7C.

Cards on the table:

Clubs: 7

Diamonds:

Hearts:

Spades: 7

Your Hand: 8H 5S QD 5C QS AH 6H QH 9H KD 3D 2D 4D

Legal Plays:

>play 8H

This is not a legal play.

>discard KS

>discard KD

Player1 discards KD.

Player2 plays 6C.

Player3 plays 6S.

Player4 plays 7D.

Cards on the table:

Clubs: 6 7

Diamonds: 7

Hearts:

Spades: 6 7

Your Hand: 8H 5S QD 5C QS AH 6H QH 9H 3D 2D 4D

Legal Plays: 5S 5C

>discard QS

You have a legal play. You may not discard.

>play QC

This is not a legal play.

>hello

Invalid command: "hello"

>deck

8H 5S QD 5C QS AH 6H QH 9H KD 3D 2D 4D

JH JD 2H 6C 7H 8S QC 5D 8D AD JC 4H 9S

4S 4C 2C AS 6S 9C 7S 8C 3C 9D TC KH 5H

3S TH TS KS JS 7C 2S 7D 6D TD KC AC 3H

>play 5S

Player1 plays 5S.

.....

Cards on the table:

Clubs: 3 4 5 6 7 8 9 T J Q K

Diamonds: 3 4 5 6 7 8 9 T J Q K

Hearts: 2 3 4 5 6 7 8 9 T J Q K

Spades: A 2 3 4 5 6 7 8

Your Hand: QS 2D

Legal Plays: 2D

>play 2D

Player1 plays 2D.

Player2 plays AD.

Player3 plays 2C.

Player4 plays AC.

Cards on the table:

Clubs: A 2 3 4 5 6 7 8 9 T J Q K

Diamonds: A 2 3 4 5 6 7 8 9 T J Q K

Hearts: 2 3 4 5 6 7 8 9 T J Q K

Spades: A 2 3 4 5 6 7 8

Your Hand: QS

Legal Plays:

>play QS

This is not a legal play.

>discard XX

>play XX

This is not a legal play.

>ragequit

I couldn't implement ragequit... Please enter another command...

>discard QS

Player1 discards QS.

Player2 plays 9S.

Player1's discards: AH QS

Player1's score:  $64 + 13 = 77$

Player2's discards:

Player2's score:  $38 + 0 = 38$

Player3's discards:

Player3's score:  $13 + 0 = 13$

Player4's discards: TS KS JS

Player4's score:  $76 + 34 = 110$

Player3 wins!