Test mode

I implement a test mode for easier demonstration and tests. Without giving argument “test”, inputs will be accepted from std::cin. By giving an argument “test”, no matter where it is, we will enter the test mode and have to input a filename to give all inputs the program will need to reach a state. Then, the control will go back to you (i.e. std::cin).

Base version

First, let’s see the deck of cards we use in the basic version by running `./straights test` and input filename 0. We will see the deck of card is correct.

```
deck
8S KH 3D 9S 6H JH 9D KS 7H 9C 4H 7D 7C
9H TC 3C TS 5D TH 6C 2C 2D QH 4S QD JD
5H 8C KD 3S QS AS 7S AD 6D 5S 5C JS 8D
```

Inputs in file 0 is:

Then, let’s see the correctness of legal play:

By running ./straights 20866008 test,

```
A new round begins. It's Player2's turn to play.
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades:
Your hand: 7H 9H 6S 8S 7S TH 6H 7D KC 4D 5D QC KH
Legal plays: 7S
deck
JD JH 8C 3D QS TS 5S 7C 8D 2D 3C JS QH
7H 9H 6S 8S 7S TH 6H 7D KC 4D 5D QC KH
KS 2S KD 2H TC 6D QD AS 5H 5C JC AC AH
4S 6C 3S 3H 4H 9C 2C 9D TD AD 4C 9S 8H
```

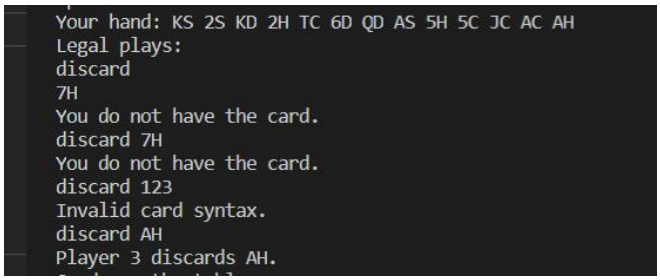
Here we see that indeed Player2 has 7S and the round begins from Player 2, and the only legal play for Player2 is 7S, even though he has 7H, which must be legal in any other turns. You can try any inputs other than 7S, and you will always get an error message and it will let you input again. You also can not discard.

```
play 9H
This is not a legal play.
play 7H
This is not a legal play.
play 5S
You do not have the card.
discard 7S
You have a legal play. You may not discard.
play 123
Invalid card syntax.
dfbvkjf
Invalid command.
```

By playing 7S, game successfully turns to Player3, and we can see 7S on the table, and Player3 does not have any legal plays, which are all correct.

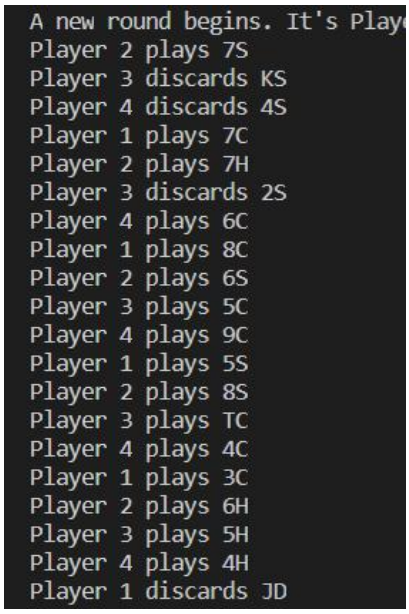
```
play 7S
Player 2 plays 7S
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades: 7S
Your hand: KS 2S KD 2H TC 6D QD AS 5H 5C JC AC AH
Legal plays:
```

Also, you are not able to play any cards, or discard any cards that do not belong to you.



Thus, this basically shows the robustness of features: deck, legal play, discard.

Then, let's see the turning system, by running ./straights 20866008 test and input 1.



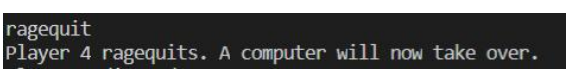
The order follows 23412341234..., where Player2 plays first because he has 7S, which is correct and the same as the provided sample.

Then, we see whether the deck is shuffled and reshuffled in a right way:

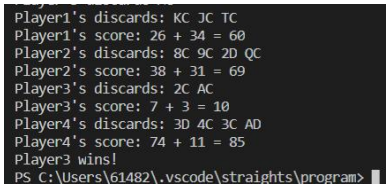
Run ./a.exe 1111 test and input 2, this is the last turn of the first round, and you will see the deck. Then you discard your only card AH, and input "deck" again, you will see the cards are shuffled, which is saved in file 2.1. Then, you can rerun it in the same way, the deck is reshuffled in an exactly same way, which ensures that the shuffling is repeatable.

Then, rerun any files command files provided by me, and input "quit" will end the game immediately.

Then, rerun ./a.exe 1111 test and input 2, and then input "ragequit", Player4 will be replaced by a computer player (because you are Player4).



Then, since you are the only human player, the computer players will finish the game.



Then, by running ./a.exe 1020 test and input 3, the game will be quickly finished by 4 computer players, so that we can review their operations to check the correctness of computer players' behaviour. The result should be totally the same as the provided example executable. Also, the game ends when at least one player reaches 80, and the player with the lowest score wins.

```
Player 1 discards TH
Player1's discards: 3C JS 4C AH QS KS TH
Player1's score: 15 + 54 = 69
Player2's discards: KC AC
Player2's score: 39 + 14 = 53
Player3's discards: QC KH 9H 2C JH
Player3's score: 12 + 47 = 59
Player4's discards: QH
Player4's score: 19 + 12 = 31
A new round begins. It's Player2's turn to play.
```

```
Player1's discards: KH TH
Player1's score: 69 + 23 = 92
Player2's discards: 9H 3D 2H JC TC AC 4D AH
Player2's score: 53 + 41 = 94
Player3's discards: 3C 3H 4C 9C 2C JH QC
Player3's score: 59 + 44 = 103
Player4's discards: 4H 5D 2D KD KC QH AD
Player4's score: 31 + 50 = 81
Player4 wins!
PS C:\Users\61482\.vscode\straights\program>
```

(The last two rounds)

Bonus version

1. Change of player numbers:

Run ./a.exe bonus test 1000 and input 4, then you will find you can change the number of players.

```
How many player will be in the game? Please input from 2 to 13 (inclusive).
```

Inputting an arbitrary number between 2 and 13 will work.

After finish adding players, you will be given the house rule of the game:

```
Game will start. The house rule you set is:
First card will be played: 7S
The rank that must be legal: 7
The definition of adjacent cards: in the same suit, ranks have difference 1
The players will be: c c c c c c c
The deck of cards will be played with is:
AC 2C 3C 4C 5C 6C
7C 8C 9C TC JC QC
KC AD 2D 3D 4D 5D
6D 7D 8D 9D TD JD
QD KD AH 2H 3H 4H
5H 6H 7H 8H 9H TH
JH QH KH AS 2S 3S
4S 5S 6S 7S 8S 9S
TS JS QS KS
Are you sure to play under the rule? Input y to proceed, input n to reset.
```

You will find that except the number of players, other rules are as default. The cards will be distributed evenly so extra cards are randomly abandoned in each round. See this by running ./a.exe bonus test 1000 and input 5,

```
Your hand: 5D 3C 4C KD 7H 4D QC 7C
Legal plays: 7H 7C
deck
5D 3C 4C KD 7H 4D QC 7C
JS 5S 8D 4H 2H 3H QH JH
2C KC AC KS 8S 5H 6H 6D
9S 7D 3D 2D JD 9D 9C 8H
KH 4S QD AH TH 6C 3S TC
5C 8C AS 7S TD 6S JC QS
```

There are 6 players in this game, and the cards we play in this round is like what “deck” demonstrates, and we have less cards for each player. I finish the round, then we find different cards are abandoned in this round. This game state can be obtained by rerun ./a.exe bonus test 1000 and input 6, or you can finish the game in person and check.

```
Spades: 7S 6S
Your hand: 8C 8H 4H 9D 2D 2H QH 6C
Legal plays: 8C 6C
deck
8C 8H 4H 9D 2D 2H QH 6C
5S 3D 6D 8D TS 8S 3C JH
2S 7S 7H JC 4D KH 5H JS
AD 5D 5C AC 2C TC AS TD
```

2. Change of deck of cards

Run ./a.exe bonus test 1000 and input 7, and you will get this:

```
c
What cards do you want to play with? Input (OK) to finish.
```

You can input any cards that you want to play with in this game, and input OK to finish. Note that you will not be allowed to input cards less than the number of players, or cards that are not from the standard deck. However, you are able to select many same cards.

```
4D
6S
OK
Game will start. The house rule you set is:
First card will be played: 7S
The rank that must be legal: 7
The definition of adjacent cards: in the same suit, ranks have difference 1
The players will be: h c c c
The deck of cards will be played with is:
AS AC 4C
6H 8S KS
5C TC TC
TC TC 4D
6S
```

After finishing, you can see the change through the house rule information.

3. Change of other house rules:

Run ./a.exe bonus and you will see the interface

```
PS C:\Users\61482\.vscode\straights\program> ./a.exe bonus
Options:
1. Change the number of players.
2. Change the cards that will be played with.
3. Change the score at which the game is over.
4. Other house rules.
What changes do you want to implement? Input the corresponding order numbers and OK to implement the changes.
```

You are able to change all the rule that you want to change by inputting 1, 2, 3, 4 optionally. For example, you can change all by inputting

1

2

3

4

OK, or you can just input

1

3

4

OK. However, inputs must be in order. Inputting 3 1 2 will not be allowed because when you want to change cards, the game does not have any information about the number of players, so the game will be forced to have default number of player (i.e. 4 players).

You can run ./a.exe bonus test 1000 and input 9 to get a game like this:

```
Game will start. The house rule you set is:
First card will be played: 6D
The rank that must be legal: 6
The definition of adjacent cards: in the same suit, ranks have difference 3
The players will be: c h
The deck of cards will be played with is:
AS AH
3C 6D

Are you sure to play under the rule? Input y to proceed, input n to reset.
```

You can either input “y” to try this game, or input “n” to reset the house rules.

4. Save the game:

A human player may input “save” and then input a file name to save the game state. Then the game can be continued by running with a flag “test” and then input that file name to.

```
Diamonds:
Hearts:
Spades:
Your hand: 6D AS
Legal plays: 6D
save
What is the name of the saving file?
saved
```

```
Hearts:
Spades:
Your hand: 6D AS
Legal plays: 6D
save
What is the name of the saving file?
```

Note that the seed should remain the same, so a random game can not use this feature properly.