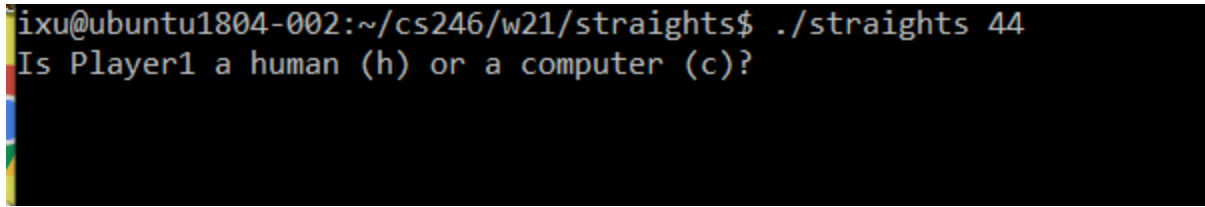


CS246 Final Project Demo – Straights

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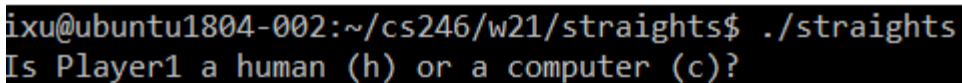
After the compilation process, call the executable with a random seed as the command line argument. Note that the seed is optional user is not required to give this argument. After calling the executable, user will be prompted to invite players, input “h” for human player and “c” for computer player. Note that this program assumes that the inputted player type is a valid input, giving an invalid input will lead to unknown behaviour.

Below shows how users can provide a random seed.



```
ixu@ubuntu1804-002:~/cs246/w21/straights$ ./straights 44  
Is Player1 a human (h) or a computer (c)?
```

The program runs fine without the command line argument too.



```
ixu@ubuntu1804-002:~/cs246/w21/straights$ ./straights  
Is Player1 a human (h) or a computer (c)?
```

Note that at this point, giving the command “quit” will not terminate the game, pressing control d will end the program but it will play the game by itself and ends automatically when there is a winner.

Now suppose that the user inputs “c” for all 4 players, then the game will run by itself and stops when there is a winner.

As shown below, the program automatically finds the player with the 7 of spade and commands the player to play this card. At the beginning of each round, the empty game table will be displayed. For each turn, the player’s hand of cards will be displayed along with legal plays for the turn. After the player plays the cards the current game table will be printed again with the card just played being displayed.

And as shown below, for the player with the 7 of spade, who starts game, the only legal play is the 7 of spade.

```

ixu@ubuntu1804-004:~/cs246/w21/straights$ ./straights 44
Is Player1 a human (h) or a computer (c)?
c
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 Player1's turn to play
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades:
Your hand: 3D KD 2H 9C 4C 5C 9S 7S 7D QS 3H TS AD
Legal plays: 7S
Player1 plays 7S.
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades: 7

```

After the player with the 7 of spade starts the game, other players then play in the order 1-> 2 -> 3 -> 4 until at least one player cumulated a score above 80.

As shown below when a round ends (which is when none of the players have any cards left in their hand), if no player has scored over 80, a new round begins automatically.

```

A new round begins. It's Player3's turn to play
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades:
Your hand: 7C 8H 4C 6C 4S AH 7S 8C QC 5H QH 6D 9D
Legal plays: 7S
Player3 plays 7S.
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades: 7
Your hand: 9C 5S JC QS 2D 3H 2H AS 4H 9H AD TC JD
Legal plays:
Player4 plays Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades: 7
Your hand: 4D 3S 5D KS TD 7D 8S 3C AC TH 5C TS QD
Legal plays: 7D 8S
Player1 plays 7D.

```

When at least one player scored over 80 the game ends by itself and prints the result as below. The player with the lowest score is the winner.

```
Player1's score: 50 + 26 = 76
Player2's discards: JH 2S
Player2's score: 22 + 13 = 35
Player3's discards: 8H 4S AH 8C QC QH
Player3's score: 45 + 45 = 90
Player4's discards: 9C 5S JC QS 2D 3H 2H AS 9H AD TC
Player4's score: 23 + 65 = 88
Player2 wins!
ixu@ubuntu1804-004:~/cs246/w21/straights$
```

Note when all players are computer players, since the program runs by itself and does not take in any commands, user cannot give commands such as deck, quit, ragequit, or discard.

Run the executables again, this time I will demonstrate how the program runs with no seed provided and with human players involved.

```
ixu@ubuntu1804-004:~/cs246/w21/straights$ ./straights
Is Player1 a human (h) or a computer (c)?
h
Is Player2 a human (h) or a computer (c)?
h
Is Player3 a human (h) or a computer (c)?
h
Is Player4 a human (h) or a computer (c)?
h
A new round begins. It's Player4's turn to play
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades:
Your hand: AD 6D TS 9C 8S 2H KS 4D 5D QC 7S 6S 5S
Legal plays: 7S
```

With human players, the program again automatically prompts the player with 7 of spade to start the game; however, the difference from computer player is that it waits for the user's command to play the card.

Again here the program requires that the command is valid otherwise it will cause unknown behaviours. Below shows the user inputs the command "play 7S", which plays the card. Again the state of the game table is being displayed after each turn. Since this time all players are human the program again waits for a command from user. As shown below, now the next player can choose from the set of legal plays displayed.

```

Legal plays: 7S
play 7S
Player4 plays 7S.
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades: 7
Your hand: 9H 3H KH 7C 3S 8H 5C QH 8D TH 2D TD 3C
Legal plays: KH 7C
play 7C
Player1 plays 7C.
Cards on the table:
Clubs: 7
Diamonds:
Hearts:
Spades: 7
Your hand: 6H JH 7D 5H 2S 4C JC KD 8C 7H JS AS QD
Legal plays: 7D KD 8C 7H

```

User can input the command deck during his turn to see the deck of cards used for this round of game. You can see that each row shows the hand of cards dealt to each player in order.

```

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

```

At this point user can also give the command quit to quit the game. However, instead of terminating the game directly, it still tries to determine the winner. In this demonstration, since we did not finish a round, all players have score 0;

```

quit
Player1's discards:
Player1's score: 0 + 0 = 0
Player2's discards:
Player2's score: 0 + 0 = 0
Player3's discards:
Player3's score: 0 + 0 = 0
Player4's discards:
Player4's score: 0 + 0 = 0
Player1 wins!
Player2 wins!
Player3 wins!
Player4 wins!
ixu@ubuntu1804-004:~/cs246/w21/straights$

```

Now starts the game again with the random seed 15, this time create a combination of human and computer players. For this particular demonstration a computer player had the 7 of spade, and then it automatically plays that card. Then the program waits for the human player to give commands.

As shown below there is a legal play for human player Player2, if I try to discard that card a message will be generated to inform the player that he must play the legal play.

```
ixu@ubuntu1804-004:~/cs246/w21/straight$ ./straight 15
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)?
h
Is Player4 a human (h) or a computer (c)?
c
A new round begins. It's Player2's turn to play
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades:
Your hand: 3C AH KD JC 9D TD 5C 8C 4D 2C 3H 3D 7S
Legal plays: 7S
Player2 plays 7S.
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades: 7
Your hand: AD JH 6C 5H QH 3S 2D TS JD QC 6D 6S 2H
Legal plays: 6S
discard
You have a legal play. You may not discard.
```

Then user can continue to play by giving the command “play 6S” to play the legal play, and the computer player Player4 plays automatically afterward.

```
discard
You have a legal play. You may not discard.
play 6S
Player3 plays 6S.
Cards on the table:
Clubs:
Diamonds:
Hearts:
Spades: 6 7
Your hand: 9H 4C KC 5S TC 8S 9S QS 8D 4H 7D JS AC
Legal plays: KC 5S 8S 7D
Player4 plays KC.
Cards on the table:
Clubs: K
Diamonds:
Hearts:
Spades: 6 7
```

When it is a human player's turn, he can give the command “ragequit” to quit the game. Then this player will be replaced by a computer player who continues to play the game. However, for

my program the ragequit feature does not work properly it prints the message but does not automatically transfer to a computer player.

```
Your hand: KH TH 7H 5D AS KS 7C 8H 9C 6H 2S QD 4S
Legal plays: KH 7H 7C
ragequit
Player1 ragequits. A computer will now take over.
```

Below demonstrates the discard feature. I started the game again, at the following turn, there are no legal plays, and then the player can choose to discard the card currently in his hand. As shown below I discarded the card KS. Since no cards were played, one can see that the game table stayed the same after the discard.

```
Cards on the table:
Clubs: 4 5 6 7 T J Q K
Diamonds: 4 5 6 7 J Q K
Hearts: 2 3 4 5 6 7 Q K
Spades: A 2 3 4 5 6 7 8 9 T
Your hand: TH KS 8H 9C
Legal plays:
discard KS
Player1 discards KS.
Cards on the table:
Clubs: 4 5 6 7 T J Q K
Diamonds: 4 5 6 7 J Q K
Hearts: 2 3 4 5 6 7 Q K
Spades: A 2 3 4 5 6 7 8 9 T
```

If I input quit right now the program will try to calculate the winner even though the round hasn't end, and you can find the KS that I previously discarded in the set of discarded cards.

```
quit
Player1's discards: KS
Player1's score: 0 + 13 = 13
Player2's discards: 3C AH 9D TD 8C 2C
Player2's score: 0 + 33 = 33
Player3's discards: JH
Player3's score: 0 + 11 = 11
Player4's discards: 9H QS 8D JS AC
Player4's score: 0 + 41 = 41
Player3 wins!
ixu@ubuntu1804-004:~/cs246/w21/straights$
```