
Task 4: Game rules & Random Machine V Random Machine

Abstract: This task I implemented the game rules and a random machine as the players. Defining rounds, scoring, and a basic draw (both players get half the points) and playing a card. The prize card is shown to the user first then the players pick their cards and display them to the user. I wrapped up this task with a random machine vs another random machine.

Demo:

```
[50]> ( demo--task4 )
>>> Running Task 4 Demo.
```

Game 1:

```
>>>----- Round:  1 -----<<<
--- Prize Card = (8 . DIAMOND)

--- PLayer 1 plays ---

--- Cards-left  = 13
--- Number     = 3
--- Card       = (3 . CLUB)

--- PLayer 2 plays ---

--- Cards-left  = 13
--- Number     = 9
```

```
--- Card  = (9 . HEART)
--- Player 2 won ---
--- Player 1 Score is: 0.0
--- Player 2 Score is: 8.0
```

```
>>>----- Round:  2 -----<<<
```

```
--- Prize Card = (10 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 12
```

```
--- Number  = 2
```

```
--- Card  = (2 . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 12
```

```
--- Number  = 7
```

```
--- Card  = (7 . HEART)
```

```
--- Player 2 won ---
```

```
--- Player 1 Score is: 0.0
```

```
--- Player 2 Score is: 18.0
```

>>>----- Round: 3 -----<<<

--- Prize Card = (3 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 11

--- Number = 3

--- Card = (5 . CLUB)

--- Player 2 plays ---

--- Cards-left = 11

--- Number = 11

--- Card = (KING . HEART)

--- Player 2 won ---

--- Player 1 Score is: 0.0

--- Player 2 Score is: 21.0

>>>----- Round: 4 -----<<<

--- Prize Card = (KING . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 10

--- Number = 4

```
--- Card  = (7 . CLUB)

--- Player 2 plays ---

--- Cards-left  = 10
--- Number  = 8
--- Card  = (10 . HEART)
--- Player 2 won ---
--- Player 1 Score is: 0.0
--- Player 2 Score is: 34.0
```

```
>>>----- Round:  5 -----<<<
```

```
--- Prize Card = (QUEEN . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 9
--- Number  = 4
--- Card  = (8 . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 9
--- Number  = 5
--- Card  = (5 . HEART)
--- Player 1 won ---
```

--- Player 1 Score is: 12.0
--- Player 2 Score is: 34.0

>>>----- Round: 6 -----<<<

--- Prize Card = (ACE . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 8

--- Number = 4

--- Card = (9 . CLUB)

--- Player 2 plays ---

--- Cards-left = 8

--- Number = 1

--- Card = (ACE . HEART)

--- Player 1 won ---

--- Player 1 Score is: 13.0

--- Player 2 Score is: 34.0

>>>----- Round: 7 -----<<<

```
--- Prize Card = (5 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 7
```

```
--- Number  = 1
```

```
--- Card  = (ACE . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 7
```

```
--- Number  = 3
```

```
--- Card  = (4 . HEART)
```

```
--- Player 2 won ---
```

```
--- Player 1 Score is: 13.0
```

```
--- Player 2 Score is: 39.0
```

```
>>>----- Round:  8 -----<<<
```

```
--- Prize Card = (6 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 6
```

```
--- Number  = 3
```

```
--- Card  = (10 . CLUB)
```

--- Player 2 plays ---

--- Cards-left = 6

--- Number = 2

--- Card = (3 . HEART)

--- Player 1 won ---

--- Player 1 Score is: 19.0

--- Player 2 Score is: 39.0

>>>----- Round: 9 -----<<<

--- Prize Card = (7 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 5

--- Number = 1

--- Card = (4 . CLUB)

--- Player 2 plays ---

--- Cards-left = 5

--- Number = 5

--- Card = (QUEEN . HEART)

--- Player 2 won ---

--- Player 1 Score is: 19.0

--- Player 2 Score is: 46.0

>>>----- Round: 10 -----<<<

--- Prize Card = (2 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 4

--- Number = 2

--- Card = (JACK . CLUB)

--- Player 2 plays ---

--- Cards-left = 4

--- Number = 2

--- Card = (6 . HEART)

--- Player 1 won ---

--- Player 1 Score is: 21.0

--- Player 2 Score is: 46.0

>>>----- Round: 11 -----<<<

--- Prize Card = (9 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 3

--- Number = 3

--- Card = (KING . CLUB)

--- Player 2 plays ---

--- Cards-left = 3

--- Number = 3

--- Card = (JACK . HEART)

--- Player 1 won ---

--- Player 1 Score is: 30.0

--- Player 2 Score is: 46.0

>>>----- Round: 12 -----<<<

--- Prize Card = (JACK . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 2

--- Number = 2

--- Card = (QUEEN . CLUB)

--- Player 2 plays ---

```
--- Cards-left  = 2
--- Number     = 1
--- Card       = (2 . HEART)
--- Player 1 won ---
--- Player 1 Score is: 41.0
--- Player 2 Score is: 46.0
```

```
>>>----- Round: 13 -----<<<
```

```
--- Prize Card = (4 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 1
--- Number     = 1
--- Card       = (6 . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 1
--- Number     = 1
--- Card       = (8 . HEART)
--- Player 2 won ---
--- Player 1 Score is: 41.0
--- Player 2 Score is: 50.0
```

```
--- Player 2 won the game! ---  
>>> Finished Task 4 Demo.
```

```
NIL
```

Game 2:

```
[51]> ( demo--task4 )  
>>> Running Task 4 Demo.
```

```
>>>----- Round:  1 -----<<<  
--- Prize Card = (QUEEN . DIAMOND)
```

```
--- PLayer 1 plays ---
```

```
--- Cards-left  = 13  
--- Number     = 4  
--- Card       = (4 . CLUB)
```

```
--- PLayer 2 plays ---
```

```
--- Cards-left  = 13  
--- Number     = 10  
--- Card       = (10 . SPADE)  
--- Player 2 won ---
```

--- Player 1 Score is: 0.0
--- Player 2 Score is: 12.0

>>>----- Round: 2 -----<<<

--- Prize Card = (6 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 12

--- Number = 9

--- Card = (10 . CLUB)

--- Player 2 plays ---

--- Cards-left = 12

--- Number = 4

--- Card = (4 . SPADE)

--- Player 1 won ---

--- Player 1 Score is: 6.0

--- Player 2 Score is: 12.0

>>>----- Round: 3 -----<<<

```
--- Prize Card = (KING . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 11
```

```
--- Number  = 1
```

```
--- Card  = (ACE . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 11
```

```
--- Number  = 2
```

```
--- Card  = (2 . SPADE)
```

```
--- Player 2 won ---
```

```
--- Player 1 Score is: 6.0
```

```
--- Player 2 Score is: 25.0
```

```
>>>----- Round:  4 -----<<<
```

```
--- Prize Card = (4 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 10
```

```
--- Number  = 3
```

```
--- Card  = (5 . CLUB)
```

--- Player 2 plays ---

--- Cards-left = 10

--- Number = 2

--- Card = (3 . SPADE)

--- Player 1 won ---

--- Player 1 Score is: 10.0

--- Player 2 Score is: 25.0

>>>----- Round: 5 -----<<<

--- Prize Card = (5 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 9

--- Number = 6

--- Card = (9 . CLUB)

--- Player 2 plays ---

--- Cards-left = 9

--- Number = 4

--- Card = (7 . SPADE)

--- Player 1 won ---

--- Player 1 Score is: 15.0

--- Player 2 Score is: 25.0

>>>----- Round: 6 -----<<<

--- Prize Card = (7 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 8

--- Number = 5

--- Card = (8 . CLUB)

--- Player 2 plays ---

--- Cards-left = 8

--- Number = 4

--- Card = (8 . SPADE)

--- The round ended in a draw ---

--- Player 1 Score is: 18.5

--- Player 2 Score is: 28.5

>>>----- Round: 7 -----<<<

--- Prize Card = (JACK . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 7

--- Number = 3

--- Card = (6 . CLUB)

--- Player 2 plays ---

--- Cards-left = 7

--- Number = 7

--- Card = (KING . SPADE)

--- Player 2 won ---

--- Player 1 Score is: 18.5

--- Player 2 Score is: 39.5

>>>----- Round: 8 -----<<<

--- Prize Card = (3 . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 6

--- Number = 2

--- Card = (3 . CLUB)

--- Player 2 plays ---


```
--- Cards-left  = 6
--- Number    = 3
--- Card      = (6 . SPADE)
--- Player 2 won ---
--- Player 1 Score is: 18.5
--- Player 2 Score is: 42.5
```

```
>>>----- Round:  9 -----<<<
```

```
--- Prize Card = (8 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 5
--- Number    = 3
--- Card      = (JACK . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 5
--- Number    = 2
--- Card      = (5 . SPADE)
--- Player 1 won ---
--- Player 1 Score is: 26.5
--- Player 2 Score is: 42.5
```

>>>----- Round: 10 -----<<<

--- Prize Card = (ACE . DIAMOND)

--- Player 1 plays ---

--- Cards-left = 4

--- Number = 2

--- Card = (7 . CLUB)

--- Player 2 plays ---

--- Cards-left = 4

--- Number = 3

--- Card = (JACK . SPADE)

--- Player 2 won ---

--- Player 1 Score is: 26.5

--- Player 2 Score is: 43.5

>>>----- Round: 11 -----<<<

--- Prize Card = (9 . DIAMOND)

--- Player 1 plays ---

```
--- Cards-left  = 3
--- Number      = 3
--- Card        = (KING . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 3
--- Number      = 2
--- Card        = (9 . SPADE)
--- Player 1 won ---
--- Player 1 Score is: 35.5
--- Player 2 Score is: 43.5
```

```
>>>----- Round: 12 -----<<<
```

```
--- Prize Card = (2 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 2
--- Number      = 1
--- Card        = (2 . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 2
--- Number      = 2
```

```
--- Card  = (QUEEN . SPADE)
--- Player 2 won ---
--- Player 1 Score is: 35.5
--- Player 2 Score is: 45.5
```

```
>>>----- Round:  13 -----<<<
```

```
--- Prize Card = (10 . DIAMOND)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 1
```

```
--- Number  = 1
```

```
--- Card  = (QUEEN . CLUB)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 1
```

```
--- Number  = 1
```

```
--- Card  = (ACE . SPADE)
```

```
--- Player 1 won ---
```

```
--- Player 1 Score is: 45.5
```

```
--- Player 2 Score is: 45.5
```

```
--- The game ended in a draw. ---
```

```
>>> Finished Task 4 Demo.
```

NIL

Game 3:

```
[52]> ( demo--task4 )
```

```
>>> Running Task 4 Demo.
```

```
>>>----- Round:  1 -----<<<
```

```
--- Prize Card = (6 . CLUB)
```

```
--- PLayer 1 plays ---
```

```
--- Cards-left  = 13
```

```
--- Number    = 9
```

```
--- Card      = (9 . DIAMOND)
```

```
--- PLayer 2 plays ---
```

```
--- Cards-left  = 13
```

```
--- Number    = 9
```

```
--- Card      = (9 . SPADE)
```

```
--- The round ended in a draw ---
```

```
--- Player 1 Score is: 3.0
```

```
--- Player 2 Score is: 3.0
```

>>>----- Round: 2 -----<<<

--- Prize Card = (ACE . CLUB)

--- Player 1 plays ---

--- Cards-left = 12

--- Number = 5

--- Card = (5 . DIAMOND)

--- Player 2 plays ---

--- Cards-left = 12

--- Number = 7

--- Card = (7 . SPADE)

--- Player 2 won ---

--- Player 1 Score is: 3.0

--- Player 2 Score is: 4.0

>>>----- Round: 3 -----<<<

--- Prize Card = (KING . CLUB)

--- Player 1 plays ---

```
--- Cards-left  = 11
--- Number      = 6
--- Card        = (7 . DIAMOND)

--- Player 2 plays ---

--- Cards-left  = 11
--- Number      = 9
--- Card        = (JACK . SPADE)
--- Player 2 won ---
--- Player 1 Score is: 3.0
--- Player 2 Score is: 17.0
```

```
>>>----- Round:  4 -----<<<
```

```
--- Prize Card = (8 . CLUB)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 10
--- Number      = 2
--- Card        = (2 . DIAMOND)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 10
```

```
--- Number  = 3
--- Card  = (3 . SPADE)
--- Player 2 won ---
--- Player 1 Score is: 3.0
--- Player 2 Score is: 25.0
```

```
>>>----- Round:  5 -----<<<
```

```
--- Prize Card = (JACK . CLUB)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 9
```

```
--- Number  = 3
```

```
--- Card  = (4 . DIAMOND)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 9
```

```
--- Number  = 3
```

```
--- Card  = (4 . SPADE)
```

```
--- The round ended in a draw ---
```

```
--- Player 1 Score is: 8.5
```

```
--- Player 2 Score is: 30.5
```


>>>----- Round: 6 -----<<<

--- Prize Card = (10 . CLUB)

--- Player 1 plays ---

--- Cards-left = 8

--- Number = 5

--- Card = (10 . DIAMOND)

--- Player 2 plays ---

--- Cards-left = 8

--- Number = 3

--- Card = (5 . SPADE)

--- Player 1 won ---

--- Player 1 Score is: 18.5

--- Player 2 Score is: 30.5

>>>----- Round: 7 -----<<<

--- Prize Card = (4 . CLUB)

--- Player 1 plays ---

--- Cards-left = 7

```
--- Number  = 7
--- Card    = (KING . DIAMOND)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 7
--- Number      = 6
--- Card        = (QUEEN . SPADE)
--- Player 1 won ---
--- Player 1 Score is: 22.5
--- Player 2 Score is: 30.5
```

```
>>>----- Round:  8 -----<<<
```

```
--- Prize Card = (5 . CLUB)
```

```
--- Player 1 plays ---
```

```
--- Cards-left  = 6
--- Number      = 2
--- Card        = (3 . DIAMOND)
```

```
--- Player 2 plays ---
```

```
--- Cards-left  = 6
--- Number      = 6
--- Card        = (KING . SPADE)
```

```
--- Player 2 won ---  
--- Player 1 Score is: 22.5  
--- Player 2 Score is: 35.5
```

```
>>>----- Round: 9 -----<<<
```

```
--- Prize Card = (9 . CLUB)
```

```
--- Player 1 plays ---
```

```
--- Cards-left = 5
```

```
--- Number = 4
```

```
--- Card = (JACK . DIAMOND)
```

```
--- Player 2 plays ---
```

```
--- Cards-left = 5
```

```
--- Number = 2
```

```
--- Card = (2 . SPADE)
```

```
--- Player 1 won ---
```

```
--- Player 1 Score is: 31.5
```

```
--- Player 2 Score is: 35.5
```

>>>----- Round: 10 -----<<<

--- Prize Card = (7 . CLUB)

--- Player 1 plays ---

--- Cards-left = 4

--- Number = 2

--- Card = (6 . DIAMOND)

--- Player 2 plays ---

--- Cards-left = 4

--- Number = 2

--- Card = (6 . SPADE)

--- The round ended in a draw ---

--- Player 1 Score is: 35.0

--- Player 2 Score is: 39.0

>>>----- Round: 11 -----<<<

--- Prize Card = (2 . CLUB)

--- Player 1 plays ---

--- Cards-left = 3

--- Number = 3

--- Card = (QUEEN . DIAMOND)

--- Player 2 plays ---

--- Cards-left = 3

--- Number = 3

--- Card = (10 . SPADE)

--- Player 1 won ---

--- Player 1 Score is: 37.0

--- Player 2 Score is: 39.0

>>>----- Round: 12 -----<<<

--- Prize Card = (3 . CLUB)

--- Player 1 plays ---

--- Cards-left = 2

--- Number = 1

--- Card = (ACE . DIAMOND)

--- Player 2 plays ---

--- Cards-left = 2

--- Number = 2

--- Card = (8 . SPADE)

--- Player 2 won ---

--- Player 1 Score is: 37.0

--- Player 2 Score is: 42.0

>>>----- Round: 13 -----<<<

--- Prize Card = (QUEEN . CLUB)

--- Player 1 plays ---

--- Cards-left = 1

--- Number = 1

--- Card = (8 . DIAMOND)

--- Player 2 plays ---

--- Cards-left = 1

--- Number = 1

--- Card = (ACE . SPADE)

--- Player 1 won ---

--- Player 1 Score is: 49.0

--- Player 2 Score is: 42.0

--- Player 1 won the game! ---

>>> Finished Task 4 Demo.

NIL

[53]>

Code:

```
;-----  
;  
; Task 4:  
;  
; Game Rules: Bidding, scoring, and playing a card  
; Note: Added current round to the globals.  
;-----
```

```
( defun task4 ()  
  ( init-cards )  
  ( play-a-game )  
  nil  
)  
  
( defun demo--task4 ()  
  ( format t ">>> Running Task 4 Demo.  ~%" )  
  ( init-cards )  
  ( play-a-game )  
  ( format t ">>> Finished Task 4 Demo.  ~%" )  
  ( format t " ~%" )  
  ( format t " ~%" )  
  ( format t " ~%" )
```

```

    nil
  )

;-----
;
; Deal hands, and set prize card
;
; ( task 3 functions )
;

; set globals, deal the cards to the hands and shuffle the prize suite
( defun init-cards ()
  ( set-globals )
  ( deal-cards )
  ( shuffle-suite )
  nil
)

;-----
;
; Play a card
;
;
;
;

; Used by the player to get and return the card picked.
( defun play-a-card ( hand &aux card )
  ( setf card ( random-card hand ) )
  card
)

```



```

;-----
;
; Score of a card
;
;
;

; gets the value of the card. Card is processed from ( rank.suite ).
; Returns a value for the rank
( defun value-of ( card &aux part number )
  ( setf part ( car card ) )
  ( cond
    ( ( equal part 'ace )
      ( setf number 1 )
    )
    ( ( equal part 2 )
      ( setf number 2 )
    )
    ( ( equal part 3 )
      ( setf number 3 )
    )
    ( ( equal part 4 )
      ( setf number 4 )
    )
    ( ( equal part 5 )
      ( setf number 5 )
    )
    ( ( equal part 6 )

```

```
( setf number 6 )  
)  
( ( equal part 7 )  
  ( setf number 7 )  
  )  
( ( equal part 8 )  
  ( setf number 8 )  
  )  
( ( equal part 9 )  
  ( setf number 9 )  
  )  
( ( equal part 10 )  
  ( setf number 10 )  
  )  
( ( equal part 'jack )  
  ( setf number 11 )  
  )  
( ( equal part 'queen )  
  ( setf number 12 )  
  )  
( ( equal part 'king )  
  ( setf number 13 )  
  )  
)  
number  
)
```

```
;-----  
;
```

```

; Play a round
;
; Bidding
;

; displays the current round and lets the two players each select
; a card to try and win the prize card.
; Higher value of the rank wins the round.
; Show the scores of each player at the end of the round.
; increase the round counter by 1 as the round is over.
( defun play-a-round ()
  ( display-current-round )
  ( play-cards )
  ( display-scores )
  ( setf *current-round* ( + *current-round* 1 ) )
  nil
)

; formating for nice display to the user.
( defun display-current-round ()
  ( format t "~%" )
  ( format t "~%" )
  ( format t "~%" )
  ( format t ">>>----- Round:  ~A -----<<< ~%" *current-round*
)
  nil
)

; calculate the score of each player and display the scores.

```

```

; Score is total rounds won ( get value of the prize card add to total
)

; take the rounds ending in a draw then sum the draws and divide by 2.

; Giving each player half the points.

( defun display-scores ()

  ( setf *player1-score* ( + ( sum *player1-winnings* ) ( float ( / (
sum *draw-winnings* ) 2 ) ) ) ) )

  ( setf *player2-score* ( + ( sum *player2-winnings* ) ( float ( / (
sum *draw-winnings* ) 2 ) ) ) ) )

  ( format t "--- Player 1 Score is: ~A~%" *player1-score* )

  ( format t "--- Player 2 Score is: ~A~%" *player2-score* )

  ( format t "~%" )

  ( format t "~%" )

  nil

)

```

```

; Get each players hand from the globals *hand1* and *hand2*.

; Select the prize card and display it first.

; Two random players -> each picks a random card to play.

; Check who won the round.

; Afterwards remove each card from the hands of both players.

( defun play-cards ( &aux player1 player2 card1 card2 )

  ( setf player1 *hand1* )

  ( setf player2 *hand2* )

  ( setf prize ( prize-card ) )

  ( display-prize-card prize )

  ( format t "~%" )

  ( format t "--- PLayer 1 plays --- ~%" )

  ( format t "~%" )

)

```

```

( setf card1 ( play-a-card player1 ) )
( format t "~%" )
( format t "--- PLayer 2 plays --- ~%" )
( format t "~%" )
( setf card2 ( play-a-card player2 ) )
( who-won card1 card2 prize )
( remove-cards card1 card2 )
nil
)

```

; Checks to see who's card value is higher

; Add the prize card to the player or a draw total.

```

( defun who-won ( card1 card2 prize-card &aux val1 val2 )
  ( setf val1 ( value-of card1 ) )
  ( setf val2 ( value-of card2 ) )
  ( cond
    ( ( > val1 val2 )
      ( round-winner-player1 )
      ( add-prize-player1 prize-card )
    )
    ( ( > val2 val1 )
      ( round-winner-player2 )
      ( add-prize-player2 prize-card )
    )
    ( t
      ( round-winner-draw )
      ( add-prize-draw prize-card )
    )
  )
  nil
)

```

```

)

; formating for nice display to the user.
( defun round-winner-player1 ()
  ( format t "--- Player 1 won --- ~%" )
  nil
)

; Add the value of the prize card to player 1's score.
; The score is a list that is summed after each round.
( defun add-prize-player1 ( card )
  ( setf *player1-winnings* ( cons ( value-of card ) *player1-
winnings* ) )
  nil
)

; formating for nice display to the user.
( defun round-winner-player2 ()
  ( format t "--- Player 2 won --- ~%" )
  nil
)

; Add the value of the prize card to player 2's score.
; The score is a list that is summed after each round.
( defun add-prize-player2 ( card )
  ( setf *player2-winnings* ( cons ( value-of card ) *player2-
winnings* ) )
  nil
)

; formating for nice display to the user.

```

```

( defun round-winner-draw ()
  ( format t "--- The round ended in a draw --- ~%" )
  nil
)

; Add the value of the prize card to the draw score to be summed
; and divided by 2 for each player.
; The score is a list that is summed after each round.
( defun add-prize-draw ( card )
  ( setf *draw-winnings* ( cons ( value-of card ) *draw-winnings* ) )
  nil
)

; removes each card played from the respective player.
( defun remove-cards ( card1 card2 )
  ( setf *hand1* ( take-from card1 *hand1* ) )
  ( setf *hand2* ( take-from card2 *hand2* ) )
  nil
)

;-----
;
; Play a game
; which is
; Thirteen rounds
;

; Plays a game of thirteen rounds.
; Recursively checking to see if the prize suite is empty.
( defun play-a-game ( )

```

```

( cond
  ( ( equal ( length *prize-suite* ) 0 )
    ( get-results )
  )
  ( t
    ( play-a-round )
    ( play-a-game )
  )
)
nil
)

```

; checks to see which player won the game. Total higher score wins.

```

( defun get-results ()
  ( cond
    ( ( > *player1-score* *player2-score* )
      ( format t "--- Player 1 won the game! --- ~%" )
    )
    ( ( > *player2-score* *player1-score* )
      ( format t "--- Player 2 won the game! --- ~%" )
    )
    ( t
      ( format t "--- The game ended in a draw. --- ~%" )
    )
  )
  nil
)

```

```

;-----

```



```

;
; Player rules
;
;
;

; Note: clcr is the cards left in the current round.
; Used for the random player. Pick a random card.
; Closely linked with get-cards-left function.
; Implments the description from get-cards-left.
; Display the number -> which card the player has picked
; and then display the card to the user.
( defun random-card ( hand &aux card number clcr )
  ( setf clcr ( get-cards-left ) )
  ( setf number ( + ( get-random-number clcr ) 1 ) )
  ( format t "--- Number = ~A~%" number )
  ( setf card ( select ( - number 1 ) hand ) )
  ( display-card card )
  card
)

; formating for nice display to the user.
; Used to display the card a player has picked.
( defun display-card ( card )
  ( format t "--- Card = ~A~%" card )
  nil
)

; formating for nice display to the user.

```

```

; Used to display the prize card for the current round.
( defun display-prize-card ( card )
  ( format t "--- Prize Card = ~A~%" card )
  nil
)

; Used by the players to pick a card from the cards left.
; After the round is over the hand shrinks. This tells us
; How many cards are left to pick from.
; Formatted so if one is a number from the random player
; the card picked will be the first element from the list
; instead of the second.
( defun get-cards-left ( &aux round cards-left )
  ( setf round *current-round* )
  ( setf cards-left ( - 14 *current-round* ) )
  ( format t "--- Cards-left = ~A~%" cards-left )
  cards-left
)

;-----
;
; Helper functions for task 4
;
;
;

; Helper function used to sum all the numbers in a list.
( defun sum ( l )

```

```
( cond
  ( ( null l )
    0
  )
  ( t
    ( + ( car l ) ( sum ( cdr l ) ) )
  )
)
```