Task 7: Heuristic Machine V Heuristic Machine

Abstract: In this task I created a set of heuristics that picks a card from a table. A random number is generated, and the number is then compared in the table. The table holds the weight of the card that will be picked with the number. For example if the number generated is 15 the table will get two values a lower bound and a upper bound. A comparison is made so that the number 15 is greater than the lower bound but less than the upper bound. This is used to determine where in the table the number is which is the card to be picked.

Demo:

[3]> (demo--task7)

>>> Demo for task 7 <<<

Name of machine 1? M1

Name of machine 2? M2

>>> First set of games <<<

 M1 wins: 0

 M1 loses: 10

 M1 draws: 0

 M1 scores: (25.5 29.0 22.0 32.5 27.0 23.5 27.5 23.0 31.0 29.5)

 M1's Total winnings

 Aces: 6 Twos: 5 Threes: 8 Fours: 5 Fives: 8 Sixes: 4 Sevens: 4 Eights: 4 Nines: 1 Tens: 3 Jacks: 0 Queens: 0 Kings: 0

 M1's winning cards:

 Aces: 0 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 0 Tens: 0 Jacks: 0 Queens: 0 Kings: 0

 M1's Losing cards:

 Aces: 6 Twos: 5 Threes: 8 Fours: 5 Fives: 8 Sixes: 4 Sevens: 4 Eights: 4 Nines: 1 Tens: 3 Jacks: 0 Queens: 0 Kings: 0

 M1's Draw cards:

Aces: 0 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 0 Tens: 0 Jacks: 0 Queens: 0 Kings: 0

M2 wins: 10

M2 loses: 0

M2 draws: 0

M2 scores: (65.5 62.0 69.0 58.5 64.0 67.5 63.5 68.0 60.0 61.5)

M2's Total winnings

Aces: 0 Twos: 2 Threes: 2 Fours: 4 Fives: 2 Sixes: 6 Sevens: 5 Eights: 5 Nines: 8 Tens: 7 Jacks: 7 Queens: 8 Kings: 10

M2's winning cards:

Aces: 0 Twos: 2 Threes: 2 Fours: 4 Fives: 2 Sixes: 6 Sevens: 5 Eights: 5 Nines: 8 Tens: 7 Jacks: 7 Queens: 8 Kings: 10

M2's Losing cards:

Aces: 0 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 0 Tens: 0 Jacks: 0 Queens: 0 Kings: 0

M2's Draw cards:

Aces: 0 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 0 Tens: 0 Jacks: 0 Queens: 0 Kings: 0

Name of machine 1? M1

Name of machine 2? M202

>>> Second set of games <<<

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

--- Prize Card = (9 . DIAMOND)

--- M1's card: (5 . HEART) M1's score: 0.0

--- M202's card: (9 . SPADE) M202's score: 0.0

--- M202 won ---

--- M1 Score is: 0.0

--- M202 Score is: 9.0

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

--- Prize Card = (JACK . DIAMOND)

--- M1's card: (6 . HEART) M1's score: 0.0

--- M202's card: (QUEEN . SPADE) M202's score: 9.0

--- M202 won ---

--- M1 Score is: 0.0

--- M202 Score is: 20.0

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

--- Prize Card = (10 . DIAMOND)

--- M1's card: (JACK . HEART) M1's score: 0.0

--- M202's card: (10 . SPADE) M202's score: 20.0

--- M1 won ---

--- M1 Score is: 10.0

--- M202 Score is: 20.0

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

--- Prize Card = (ACE . DIAMOND)

--- M1's card: (ACE . HEART) M1's score: 10.0

--- M202's card: (ACE . SPADE) M202's score: 20.0

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

--- M1 Score is: 10.5

--- M202 Score is: 20.5

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

--- Prize Card = (7 . DIAMOND)

--- M1's card: (3 . HEART) M1's score: 10.5

--- M202's card: (2 . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 17.5

--- M202 Score is: 20.5

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

--- Prize Card = (6 . DIAMOND)

--- M1's card: (KING . HEART) M1's score: 17.5

--- M202's card: (JACK . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 23.5

--- M202 Score is: 20.5

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

--- Prize Card = (3 . DIAMOND)

--- M1's card: (QUEEN . HEART) M1's score: 23.5

--- M202's card: (8 . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 26.5

--- M202 Score is: 20.5

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

--- Prize Card = (4 . DIAMOND)

--- M1's card: (4 . HEART) M1's score: 26.5

--- M202's card: (3 . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 30.5

--- M202 Score is: 20.5

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

--- Prize Card = (QUEEN . DIAMOND)

--- M1's card: (10 . HEART) M1's score: 30.5

--- M202's card: (7 . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 42.5

--- M202 Score is: 20.5

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

--- Prize Card = (5 . DIAMOND)

--- M1's card: (8 . HEART) M1's score: 42.5

--- M202's card: (5 . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 47.5

--- M202 Score is: 20.5

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

--- Prize Card = (KING . DIAMOND)

--- M1's card: (9 . HEART) M1's score: 47.5

--- M202's card: (6 . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 60.5

--- M202 Score is: 20.5

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

--- Prize Card = (8 . DIAMOND)

--- M1's card: (7 . HEART) M1's score: 60.5

--- M202's card: (4 . SPADE) M202's score: 20.5

--- M1 won ---

--- M1 Score is: 68.5

--- M202 Score is: 20.5

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

--- Prize Card = (2 . DIAMOND)

--- M1's card: (2 . HEART) M1's score: 68.5

--- M202's card: (KING . SPADE) M202's score: 20.5

--- M202 won ---

--- M1 Score is: 68.5

--- M202 Score is: 22.5

--- M1 won the game! ---

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

--- Prize Card = (QUEEN . HEART)

--- M1's card: (6 . SPADE) M1's score: 0.0

--- M202's card: (QUEEN . DIAMOND) M202's score: 0.0

--- M202 won ---

--- M1 Score is: 0.0

--- M202 Score is: 12.0

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

--- Prize Card = (ACE . HEART)

--- M1's card: (ACE . SPADE) M1's score: 0.0

--- M202's card: (4 . DIAMOND) M202's score: 12.0

--- M202 won ---

--- M1 Score is: 0.0

--- M202 Score is: 13.0

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

--- Prize Card = (3 . HEART)

--- M1's card: (KING . SPADE) M1's score: 0.0

--- M202's card: (7 . DIAMOND) M202's score: 13.0

--- M1 won ---

--- M1 Score is: 3.0

--- M202 Score is: 13.0

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

--- Prize Card = (KING . HEART)

--- M1's card: (JACK . SPADE) M1's score: 3.0

--- M202's card: (3 . DIAMOND) M202's score: 13.0

--- M1 won ---

--- M1 Score is: 16.0

--- M202 Score is: 13.0

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

--- Prize Card = (5 . HEART)

--- M1's card: (QUEEN . SPADE) M1's score: 16.0

--- M202's card: (6 . DIAMOND) M202's score: 13.0

--- M1 won ---

--- M1 Score is: 21.0

--- M202 Score is: 13.0

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

--- Prize Card = (2 . HEART)

--- M1's card: (7 . SPADE) M1's score: 21.0

--- M202's card: (2 . DIAMOND) M202's score: 13.0

--- M1 won ---

--- M1 Score is: 23.0

--- M202 Score is: 13.0

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

--- Prize Card = (4 . HEART)

--- M1's card: (5 . SPADE) M1's score: 23.0

--- M202's card: (5 . DIAMOND) M202's score: 13.0

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

--- M1 Score is: 25.0

--- M202 Score is: 15.0

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

--- Prize Card = (6 . HEART)

--- M1's card: (10 . SPADE) M1's score: 25.0

--- M202's card: (9 . DIAMOND) M202's score: 15.0

--- M1 won ---

--- M1 Score is: 31.0

--- M202 Score is: 15.0

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

--- Prize Card = (9 . HEART)

--- M1's card: (8 . SPADE) M1's score: 31.0

--- M202's card: (8 . DIAMOND) M202's score: 15.0

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

--- M1 Score is: 35.5

--- M202 Score is: 19.5

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

--- Prize Card = (8 . HEART)

--- M1's card: (9 . SPADE) M1's score: 35.5

--- M202's card: (JACK . DIAMOND) M202's score: 19.5

--- M202 won ---

--- M1 Score is: 35.5

--- M202 Score is: 27.5

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

--- Prize Card = (10 . HEART)

--- M1's card: (3 . SPADE) M1's score: 35.5

--- M202's card: (ACE . DIAMOND) M202's score: 27.5

--- M1 won ---

--- M1 Score is: 45.5

--- M202 Score is: 27.5

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

--- Prize Card = (7 . HEART)

--- M1's card: (4 . SPADE) M1's score: 45.5

--- M202's card: (KING . DIAMOND) M202's score: 27.5

--- M202 won ---

--- M1 Score is: 45.5

--- M202 Score is: 34.5

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

--- Prize Card = (JACK . HEART)

--- M1's card: (2 . SPADE) M1's score: 45.5

--- M202's card: (10 . DIAMOND) M202's score: 34.5

--- M202 won ---

--- M1 Score is: 45.5

--- M202 Score is: 45.5

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

 M1 wins: 1

M1 loses: 0

M1 draws: 1

M1 scores: (45.5 68.5)

M1's Total winnings

Aces: 0 Twos: 1 Threes: 2 Fours: 1 Fives: 2 Sixes: 2 Sevens: 1 Eights: 1 Nines: 0 Tens: 2 Jacks: 0 Queens: 1 Kings: 2

M1's winning cards:

Aces: 0 Twos: 0 Threes: 1 Fours: 1 Fives: 1 Sixes: 1 Sevens: 1 Eights: 1 Nines: 0 Tens: 1 Jacks: 0 Queens: 1 Kings: 1

M1's Losing cards:

Aces: 0 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 0 Tens: 0 Jacks: 0 Queens: 0 Kings: 0

M1's Draw cards:

Aces: 0 Twos: 1 Threes: 1 Fours: 0 Fives: 1 Sixes: 1 Sevens: 0 Eights: 0 Nines: 0 Tens: 1 Jacks: 0 Queens: 0 Kings: 1

M202 wins: 0

M202 loses: 1

M202 draws: 1

M202 scores: (45.5 22.5)

M202's Total winnings

Aces: 1 Twos: 1 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 1 Eights: 1 Nines: 1 Tens: 0 Jacks: 2 Queens: 1 Kings: 0

M202's winning cards:

Aces: 0 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 0 Tens: 0 Jacks: 0 Queens: 0 Kings: 0

M202's Losing cards:

Aces: 0 Twos: 1 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 1 Tens: 0 Jacks: 1 Queens: 0 Kings: 0

M202's Draw cards:

Aces: 1 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 1 Eights: 1 Nines: 0 Tens: 0 Jacks: 1 Queens: 1 Kings: 0

>>> Third set of games <<<

 M1 wins: 14

 M1 loses: 3

 M1 draws: 3

 M1 scores: (36.0 64.0 57.0 45.5 63.0 40.0 61.0 60.0 45.5 49.0 55.0 54.0 60.5 53.5 38.0 48.0 49.0 53.0 45.5 68.5)

 M1's Total winnings

 Aces: 5 Twos: 8 Threes: 12 Fours: 10 Fives: 10 Sixes: 13 Sevens: 11 Eights: 8 Nines: 7 Tens: 14 Jacks: 11 Queens: 12 Kings: 12

 M1's winning cards:

 Aces: 3 Twos: 4 Threes: 8 Fours: 6 Fives: 8 Sixes: 10 Sevens: 9 Eights: 7 Nines: 6 Tens: 10 Jacks: 8 Queens: 9 Kings: 11

 M1's Losing cards:

 Aces: 2 Twos: 1 Threes: 2 Fours: 2 Fives: 1 Sixes: 2 Sevens: 2 Eights: 0 Nines: 0 Tens: 1 Jacks: 2 Queens: 2 Kings: 0

 M1's Draw cards:

 Aces: 0 Twos: 3 Threes: 2 Fours: 2 Fives: 1 Sixes: 1 Sevens: 0 Eights: 1 Nines: 1 Tens: 3 Jacks: 1 Queens: 1 Kings: 1

 M202 wins: 3

 M202 loses: 14

 M202 draws: 3

 M202 scores: (55.0 27.0 34.0 45.5 28.0 51.0 30.0 31.0 45.5 42.0 36.0 37.0 30.5 37.5 53.0 43.0 42.0 38.0 45.5 22.5)

 M202's Total winnings

 Aces: 14 Twos: 11 Threes: 7 Fours: 8 Fives: 7 Sixes: 7 Sevens: 9 Eights: 11 Nines: 11 Tens: 5 Jacks: 7 Queens: 7 Kings: 7

 M202's winning cards:

 Aces: 1 Twos: 2 Threes: 1 Fours: 1 Fives: 2 Sixes: 1 Sevens: 1 Eights: 2 Nines: 3 Tens: 1 Jacks: 1 Queens: 1 Kings: 3

 M202's Losing cards:

Aces: 10 Twos: 9 Threes: 6 Fours: 7 Fives: 4 Sixes: 4 Sevens: 5 Eights: 7 Nines: 7 Tens: 4 Jacks: 5 Queens: 4 Kings: 3

 M202's Draw cards:

 Aces: 3 Twos: 0 Threes: 0 Fours: 0 Fives: 1 Sixes: 2 Sevens: 3 Eights: 2 Nines: 1 Tens: 0 Jacks: 1 Queens: 2 Kings: 1

>>> Finished Demo for task 7 <<<

NIL

[4]>

Code Demo.l:

```
( defun demo--task7 ()

  ( format t ">>> Demo for task 7 <<< ~%" )

  ( setf g ( hm-hm-game 2 1 ) )

  ( format t ">>> First set of games <<< ~%" )

  ( playing g 10 's )

  ( setf g ( hm-hm-game 2 ) )

  ( format t ">>> Second set of games <<< ~%" )

  ( playing g 2  )

  ( format t ">>> Third set of games <<< ~%" )

  ( playing g 18 's )

  ( format t ">>> Finished Demo for task 7 <<< ~%" )

  nil

  )
```

Code hm-rules.l:

```
( defun hm-rule02 ( value hand ( p player ) &aux my-card number )

  ( setf my-card ( select 0 hand ) )
```

```
( setf number ( get-random-number 130 ) )
( create-table-1 )
( set-card-list '1 '( 0 20 30 40 50 60 70 75 80 85 90 95 100 ) )
( set-card-list '2 '( 5 10 15 20 25 30 35 40 50 60 70 80 100 ) )
( set-card-list '3 '( 5 10 15 20 25 30 35 40 50 60 70 80 100 ) )
( set-card-list '4 '( 5 10 15 20 25 30 35 40 50 60 70 80 100 ) )
( set-card-list '5 '( 5 10 15 20 25 30 35 40 50 60 70 80 100 ) )
( set-card-list '6 '( 5 10 15 20 25 30 35 40 50 60 70 80 100 ) )
( set-card-list '7 '( 5 10 15 20 25 30 35 40 50 60 70 80 100 ) )
( set-card-list '8 '( 5 10 15 20 25 30 35 40 50 60 70 80 100 ) )
( set-card-list '9 '( 2 4 6 8 20 45 55 65 80 85 115 120 125 ) )
( set-card-list '10 '( 2 4 6 8 10 12 20 30 50 65 95 115 125 ) )
( set-card-list '11 '( 2 4 6 8 10 12 20 30 50 65 80 100 120 ) )
( set-card-list '12 '( 2 4 6 8 10 12 20 30 50 65 80 95 120 ) )
( set-card-list '13 '( 2 4 6 8 10 12 20 30 50 65 80 95 110 ) )
( setf number ( get-card-from-table value ) )
;( setf number ( get-card-name number ) )
( dotimes ( i ( get-cards-left ) )
  ( setf my-card ( select i hand ) )
  ( cond
    ( ( equal ( value-of my-card ) number )
    ( return-from hm-rule02 my-card )
   )
   )
 )
( loop
  ( setf number ( get-card-from-table value ) )
  ( dotimes ( i ( get-cards-left ) )
    ( setf my-card ( select i hand ) )
    ( cond
```

```lisp
        ( ( equal ( value-of my-card ) number )

          ( return-from hm-rule02 my-card )

          )

      )

      )

    )

  )


( defun get-card-from-table ( value &aux number lower upper count )

  ( setf count 1 )

  ( setf number ( get-random-number 130 ) )

  ( setf number ( + number 1 ) )

  ( dotimes ( i 13 )

    ( if ( equal count 13 ) ( setf upper 130 ) )

    ( cond

      ( ( equal count 13 )

      ( setf lower ( get-table-list value count ) )

      )

      ( t

      ( setf lower ( get-table-list value count ) )

      ( setf upper ( get-table-list value ( + count 1 ) ) )

      )

      )

    ( if ( and ( < number upper ) ( > number lower ) ) ( return-from
get-card-from-table count ) )

    ( setf count ( + count 1 ) )

    )

  )


( defun get-card-name ( number &aux name )

  ( cond
```

```
( ( equal number 1 )
  ( setf name 'ace )
  )
( ( equal number 2 )
  ( setf name 'two )
  )
( ( equal number 3 )
  ( setf name 'three )
  )
( ( equal number 4 )
  ( setf name 'four )
  )
( ( equal number 5 )
  ( setf name 'five )
  )
( ( equal number 6 )
  ( setf name 'six )
  )
( ( equal number 7 )
  ( setf name 'seven )
  )
( ( equal number 8 )
  ( setf name 'eight )
  )
( ( equal number 9 )
  ( setf name 'nine )
  )
( ( equal number 10 )
  ( setf name 'ten )
  )
```

```
     ( ( equal number 11 )

       ( setf name 'jack )

       )

     ( ( equal number 12 )

       ( setf name 'queen )

       )

     ( ( equal number 13 )

       ( setf name 'king )

       )

     ( t

       ( setf name nil )

       )

     )

   name

   )
```

Code hm-table.l:

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

;

;

; Create  property lists

;


( defmethod create-table-1 ()

  ( create-pl 'ace-L1 )

  ( create-pl 'two-L1 )

  ( create-pl 'three-L1 )

  ( create-pl 'four-L1 )
```

```
  ( create-pl 'five-L1 )

  ( create-pl 'six-L1 )

  ( create-pl 'seven-L1 )

  ( create-pl 'eight-L1 )

  ( create-pl 'nine-L1 )

  ( create-pl 'ten-L1 )

  ( create-pl 'jack-L1 )

  ( create-pl 'queen-L1 )

  ( create-pl 'king-L1 )

  )




( defmethod create-pl ( name )

  ( setf ( symbol-plist name ) '( ace 0 two 0 three 0 four 0 five 0
six 0 seven 0 eight 0 nine 0 ten 0 jack 0 queen 0 king 0 ) )

  )


;-------------------

;

;

; Set-up property lists

;



;-------------------

;

;

; Getters

;
```

```lisp
( defmethod get-table-list ( first second &aux name number )

   ( setf name ( get-pl-name first ) )

   ( setf number ( get-table-card second ) )

   ( get name number )

   )
```

```lisp
;

;

; Setters

;


( defmethod set-card-list ( card-name list &aux name count )

   ( setf count 1 )

   ( setf name ( get-pl-name card-name ) )

   ( dotimes ( i 13 )

      ( setf ( get name ( get-table-card count ) ) ( nth ( - count 1 )
list ) )

      ( setf count ( + count 1 ) )

      )

   )
```

```lisp
;

;

; helpers

;


( defmethod get-pl-name ( card-name &aux name )

   ( setf name nil )

   ( cond
```

```
( ( equal card-name 1 )
  ( setf name 'ace-Ll )
  )
( ( equal card-name 2 )
  ( setf name 'two-Ll )
  )
( ( equal card-name 3 )
  ( setf name 'three-Ll )
  )
( ( equal card-name 4 )
  ( setf name 'four-Ll )
  )
( ( equal card-name 5 )
  ( setf name 'five-Ll )
  )
( ( equal card-name 6 )
  ( setf name 'six-Ll )
  )
( ( equal card-name 7 )
  ( setf name 'seven-Ll )
  )
( ( equal card-name 8 )
  ( setf name 'eight-Ll )
  )
( ( equal card-name 9 )
  ( setf name 'nine-Ll )
  )
( ( equal card-name 10 )
  ( setf name 'ten-Ll )
  )
```

```
( ( equal card-name 11 )
  ( setf name 'jack-Ll )
  )
( ( equal card-name 12 )
  ( setf name 'queen-Ll )
  )
( ( equal card-name 13 )
  ( setf name 'king-Ll )
  )
( t
  nil
  )
)
name
)


( defmethod get-table-card ( card &aux card-name )
  ( setf card-name nil )
  ( cond
    ( ( equal card 1 )
      ( setf card-name 'ace )
      )
    ( ( equal card 2 )
      ( setf card-name 'two )
      )
    ( ( equal card 3 )
      ( setf card-name 'three )
      )
    ( ( equal card 4 )
      ( setf card-name 'four )
```

```lisp
    )
  ( ( equal card 5 )
    ( setf card-name 'five )
    )
  ( ( equal card 6 )
    ( setf card-name 'six )
    )
  ( ( equal card 7 )
    ( setf card-name 'seven )
    )
  ( ( equal card 8 )
    ( setf card-name 'eight )
    )
  ( ( equal card 9 )
    ( setf card-name 'nine )
    )
  ( ( equal card 10 )
    ( setf card-name 'ten )
    )
  ( ( equal card 11 )
    ( setf card-name 'jack )
    )
  ( ( equal card 12 )
    ( setf card-name 'queen )
    )
  ( ( equal card 13 )
    ( setf card-name 'king )
    )
  ( t
    nil
```

```
        )
      )
    card-name
    )
```

Stats:

100 games against a random machine

M1 wins: 62

 M1 loses: 35

 M1 draws: 3

M1's Total winnings

 Aces: 28 Twos: 48 Threes: 43 Fours: 40 Fives: 44 Sixes: 54 Sevens: 47 Eights: 41 Nines: 44 Tens: 56 Jacks: 56 Queens: 49 Kings: 50

 M1's winning cards:

 Aces: 13 Twos: 26 Threes: 22 Fours: 22 Fives: 26 Sixes: 36 Sevens: 30 Eights: 28 Nines: 31 Tens: 38 Jacks: 43 Queens: 41 Kings: 36

 M1's Losing cards:

 Aces: 14 Twos: 21 Threes: 21 Fours: 17 Fives: 18 Sixes: 18 Sevens: 16 Eights: 13 Nines: 13 Tens: 15 Jacks: 13 Queens: 6 Kings: 13

 M1's Draw cards:

 Aces: 2 Twos: 2 Threes: 1 Fours: 1 Fives: 1 Sixes: 0 Sevens: 2 Eights: 1 Nines: 0 Tens: 3 Jacks: 1 Queens: 2 Kings: 1

100 games against a machine with same-card heuristics

M1 wins: 1

 M1 loses: 99

 M1 draws: 0

M1's Total winnings

 Aces: 75 Twos: 79 Threes: 65 Fours: 65 Fives: 49 Sixes: 52 Sevens: 52 Eights: 47 Nines: 18 Tens: 24 Jacks: 12 Queens: 3 Kings: 0

M1's winning cards:

Aces: 1 Twos: 0 Threes: 1 Fours: 1 Fives: 1 Sixes: 1 Sevens: 1 Eights: 1 Nines: 0 Tens: 1 Jacks: 0 Queens: 0 Kings: 0

M1's Losing cards:

Aces: 74 Twos: 79 Threes: 64 Fours: 64 Fives: 48 Sixes: 51 Sevens: 51 Eights: 46 Nines: 18 Tens: 23 Jacks: 12 Queens: 3 Kings: 0

M1's Draw cards:

Aces: 0 Twos: 0 Threes: 0 Fours: 0 Fives: 0 Sixes: 0 Sevens: 0 Eights: 0 Nines: 0 Tens: 0 Jacks: 0 Queens: 0 Kings: 0

100 games against itself

M1 wins: 45

M1 loses: 55

M1 draws: 1

M1's Total winnings

Aces: 45 Twos: 44 Threes: 40 Fours: 46 Fives: 38 Sixes: 51 Sevens: 40 Eights: 42 Nines: 54 Tens: 49 Jacks: 44 Queens: 45 Kings: 40

M1's winning cards:

Aces: 20 Twos: 19 Threes: 15 Fours: 21 Fives: 15 Sixes: 27 Sevens: 19 Eights: 19 Nines: 28 Tens: 27 Jacks: 32 Queens: 26 Kings: 26

M1's Losing cards:

Aces: 25 Twos: 24 Threes: 25 Fours: 25 Fives: 22 Sixes: 24 Sevens: 20 Eights: 23 Nines: 25 Tens: 21 Jacks: 12 Queens: 18 Kings: 14

M1's Draw cards:

Aces: 0 Twos: 1 Threes: 0 Fours: 0 Fives: 1 Sixes: 0 Sevens: 1 Eights: 0 Nines: 1 Tens: 1 Jacks: 0 Queens: 1 Kings: 0