Lab 6 Result

Q1

```
6 of Spades
```

Q2

```
Player 1 loses.
```

Q3

No output (No needed part)

Q4

```
Player 1 wins!
```

Q5

```
New Round:
Player 1 has [6 of Diamonds, 7 of Hearts, J of Spades] with value 23
Player 2 has [Q of Spades, 7 of Spades] with value 17
Player 3 has [3 of Diamonds, A of Clubs, 8 of Diamonds, 2 of Hearts, A of Spades, A of Clubs, 8 of Spades] with value 24
Dealer has [5 of Clubs, J of Clubs, 2 of Clubs] with value 17
Player 1 loses.
Player 2 pushes.
Player 3 loses.

New Round:
Player 1 has [K of Hearts, K of Hearts] with value 20
Player 2 has [3 of Hearts, J of Clubs, J of Hearts] with value 23
Player 3 has [A of Spades, 6 of Clubs] with value 17
Dealer has [A of Spades, 2 of Spades, 4 of Hearts] with value 17
Player 1 wins!
Player 2 loses.
Player 3 pushes.

New Round:
Player 1 has [8 of Spades, 5 of Spades, 2 of Spades, 6 of Hearts] with value 21
Player 2 has [2 of Spades, 10 of Hearts, K of Clubs] with value 22
Player 3 has [4 of Clubs, 3 of Hearts, 5 of Clubs, 8 of Clubs] with value 20
Dealer has [K of Diamonds, 10 of Clubs] with value 20
Player 1 wins!
Player 2 loses.
Player 3 pushes.

New Round:
Player 1 has [J of Spades, A of Clubs] with value 21
Player 2 has [7 of Clubs, Q of Clubs] with value 17
Player 3 has [A of Hearts, K of Clubs] with value 21
Dealer has [K of Clubs, J of Clubs] with value 20
Player 1 wins!
Player 2 loses.
Player 3 wins!

New Round:
Player 1 has [3 of Spades, J of Spades, 7 of Hearts] with value 20
Player 2 has [5 of Clubs, 6 of Hearts, 2 of Diamonds, 10 of Clubs] with value 23
Player 3 has [3 of Clubs, 5 of Hearts, 8 of Diamonds, 3 of Hearts] with value 19
Dealer has [7 of Diamonds, J of Hearts] with value 17
Player 1 wins!
Player 2 loses.
Player 3 wins!
```

Q6

```
New Round:
Player 1 has [4 of Hearts, 10 of Hearts] with value 14
Player 2 has [2 of Spades, 7 of Diamonds] with value 9
Player 3 has [3 of Hearts, K of Diamonds] with value 13
Dealer has [6 of Hearts, 9 of Diamonds, Q of Diamonds] with value 25
Player 1 wins!
Player 2 wins!
Player 3 wins!

New Round:
Player 1 has [9 of Clubs, Q of Hearts] with value 19
Player 2 has [7 of Clubs, 9 of Hearts] with value 16
Player 3 has [A of Clubs, 8 of Clubs] with value 19
Dealer has [7 of Hearts, A of Hearts] with value 18
Player 1 wins!
Player 2 loses.
Player 3 wins!

New Round:
Player 1 has [J of Clubs, Q of Clubs] with value 20
Player 2 has [J of Hearts, J of Hearts] with value 20
Player 3 has [10 of Clubs, 5 of Diamonds] with value 15
Dealer has [10 of Hearts, A of Diamonds] with value 21
Player 1 loses.
Player 2 loses.
Player 3 loses.

New Round:
Player 1 has [8 of Diamonds, J of Diamonds] with value 18
Player 2 has [7 of Clubs, A of Diamonds] with value 18
Player 3 has [9 of Hearts, J of Spades] with value 19
Dealer has [J of Spades, 9 of Diamonds] with value 19
Player 1 loses.
Player 2 loses.
Player 3 pushes.

New Round:
Player 1 has [3 of Clubs, 5 of Spades, J of Diamonds, J of Spades, 7 of Hearts, 4 of Hearts, 8 of Clubs] with value 47
Player 2 has [3 of Clubs, 9 of Clubs] with value 12
Player 3 has [3 of Diamonds, K of Diamonds] with value 13
Dealer has [6 of Hearts, 10 of Spades, 9 of Diamonds] with value 25
Player 1 loses.
Player 2 wins!
Player 3 wins!
```
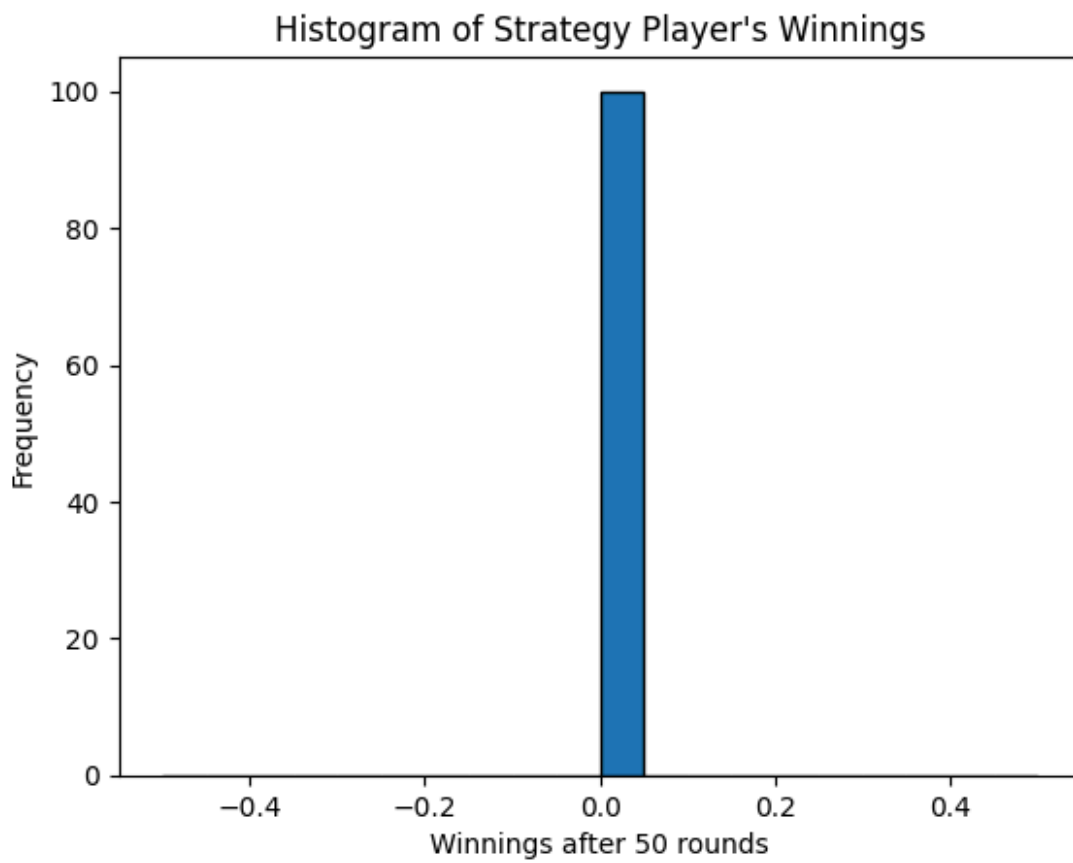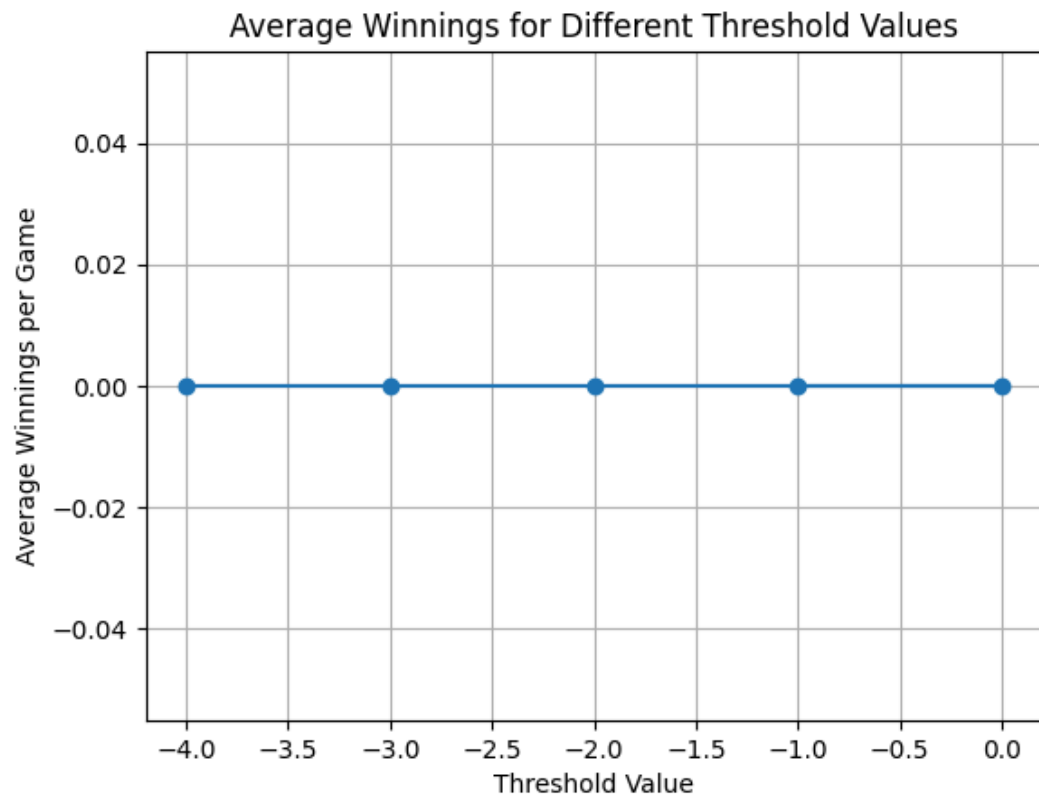
Q7

```
Strategy player's winnings after 50 rounds: 0
```

Q8

Histogram of Strategy Player's Winnings

Average winnings per game: 0.0
Standard deviation: 0.0
Probability of net winning: 0.00
Probability of net losing: 0.00
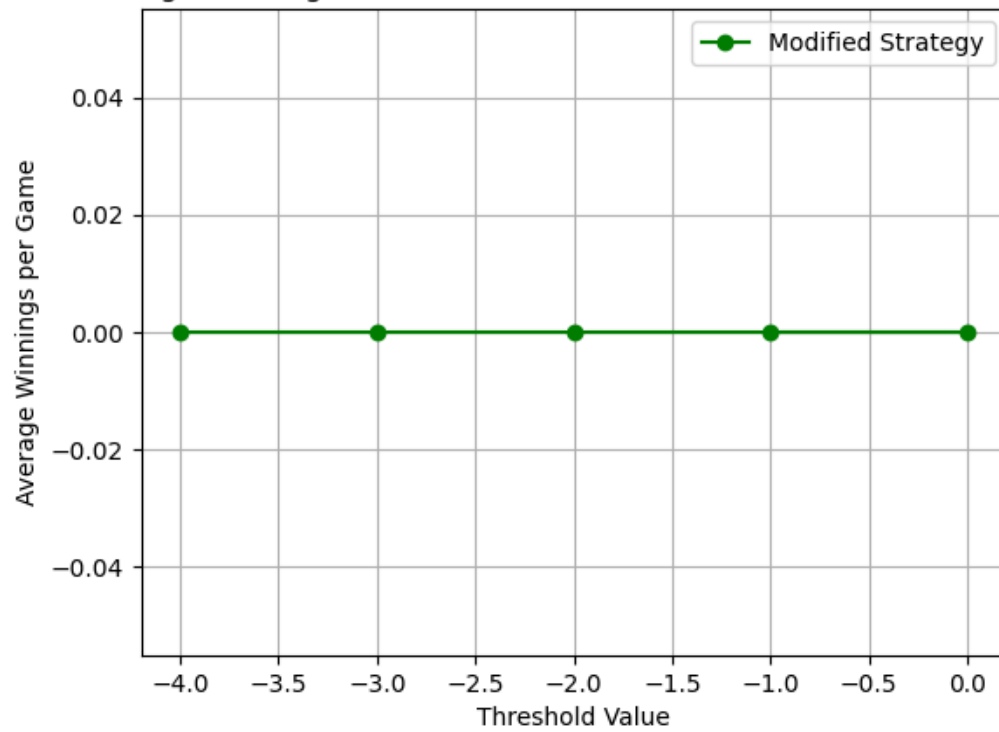
Q9

Average Winnings for Different Threshold Values

{-1: np.float64(0.0),
 0: np.float64(0.0),
 -2: np.float64(0.0),
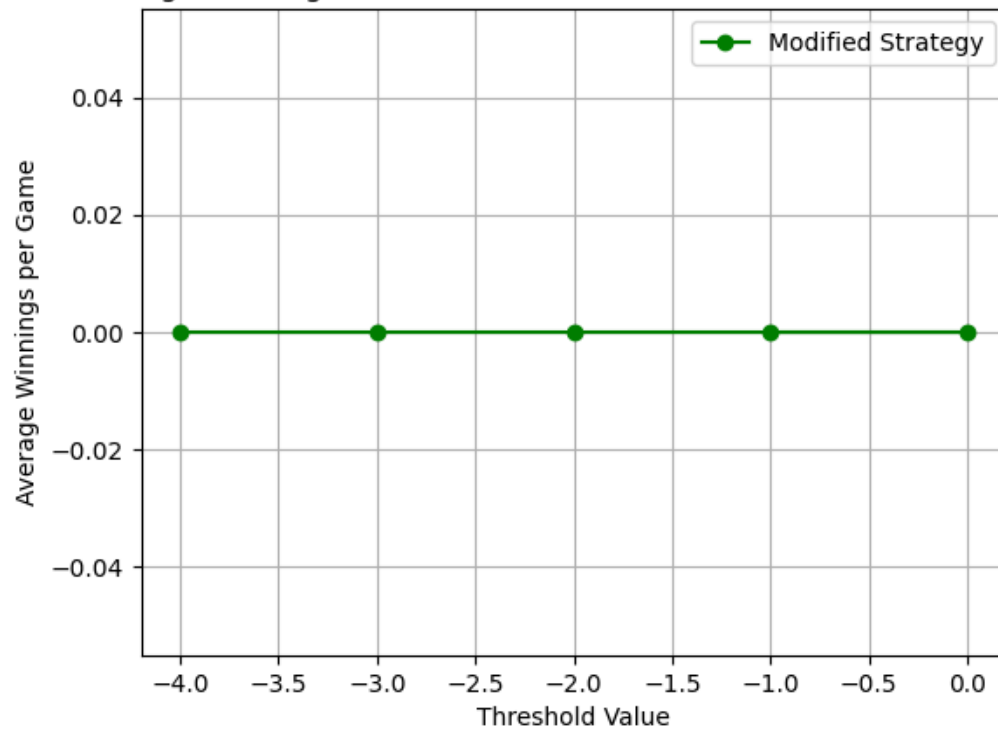 -3: np.float64(0.0),
 -4: np.float64(0.0)}

Q10

Average Winnings for Different Threshold Values (Modified Strategy)


```
{-1: np.float64(0.0),
 0: np.float64(0.0),
 -2: np.float64(0.0),
 -3: np.float64(0.0),
 -4: np.float64(0.0)}
```

Average Winnings for Different Threshold Values (Modified Strategy)


```
{-1: np.float64(0.0),
 0: np.float64(0.0),
 -2: np.float64(0.0),
 -3: np.float64(0.0),
 -4: np.float64(0.0)}
```