Fibonacci Solitaire - Prog 4
CECS 342-07 LISP program
Fall 2023
Due: Nov 9, 2023

Solitaire is a card game that is played by one person. Solitaire is also known by the name “Patience”.
It is estimated that there are more than 1700 different versions of Solitaire… make that 1701 because we are inventing a new Solitaire game today.

Welcome to Fibonacci Solitaire! This game uses one standard deck of cards. Here are the rules:

1) Take the top card from the deck and place it face up on the table.
2) The Sum is now the value of that card (Ace = 1, 2 = 2, … 10 = 10, Jack = 10, Queen = 10, King = 10)
3) If the Sum is a Fibonacci number, discard that pile (hand), and start over at instruction #1
4) If the Sum is not Fibonacci, take the next card from the top of the deck and place it on top of the card stack (pile or hand) on the table.
5) The Sum is now the sum of all cards in the stack on the table.
6) Go to instruction #3.

Continue to play the game, keeping track of how many piles you have created that are Fibonacci piles.

If the last card from the deck gives you a Fibonacci pile, then you win! Write the word “Winner” on the screen and show how many Fibonacci piles there were.

If the last card from the deck does not give you a Fibonacci pile, then you lose. Write the word “Loser” on the screen.

These 2 screen shots show possible winner and loser hands. When you acquire a Fibonacci pile, print out the value (Fibonacci number) and start over on the next line.

Losing Game

```
1- New Deck
2- Shuffle
3- Show Deck
4- Play Game
5- Play until winning hand
6- Quit
Enter choice 1 - 6: 4
AD, Fibo: 1
2D, Fibo: 2
3D,Fibo: 3
4D,5D,6D,7D,8D,9D,10D,JD,QD,KD,AH,2H,3H,4H, Fibo: 89
5H, Fibo: 5
6H,7H,Fibo: 13
8H, Fibo: 8
9H,10H,JH,QH,KH,AS,2S,3S, Fibo: 55
4S,5S,6S,7S,8S,9S,10S,JS,QS,KS,9S,6S,7D,QS,QD,2H,4D,2D,2H,QH,5H,10D,10S,Last hand:166
Loser in 9  piles
```

Winning Game:

```
Enter choice 1 - 6: 2
1- New Deck
2- Shuffle
3- Show Deck
4- Play Game
5- Play until winning hand
6- Quit
Enter choice 1 - 6: 5

Loser in 5  piles -> going for the win. Games:1
Loser in 11  piles -> going for the win. Games:2
Loser in 8  piles -> going for the win. Games:3
Loser in 9  piles -> going for the win. Games:4

AD, Fibo: 1
5S, Fibo: 5
QH,2H,6H,3D, Fibo: 21
5S, Fibo: 5
KD,4H,KD,10H, Fibo: 34
9D,7S,AD,3H,5H,AH,QS,QS,6S,6H,9H,10S,KS,JD,2S,10D,AS,2D,9H,7D,QD,6D, Fibo: 144
JS,2S,8D,8S,3H,KH,9S,7H,JH,4D,9S,4H,4S,AS, Fibo: 89
3S, Fibo: 3
5D,Fibo: 5
8H, Fibo: 8
7H,6S, Fibo: 13

Winner in 11 piles

#### games played:5
```

(Notice that I had to play 5 games to win)

You will have a menu in your program that looks like this:

Welcome to Fibonacci Solitaire!

1) New Deck
2) Display Deck
3) Shuffle Deck
4) Play Solitaire
5) Play until Win
6) Exit

Submitting your program:

On the due date, you will submit 2 things

1) your Lisp source file
2) Screenshot(s) of the output. The screenshot needs to show the following:
    a. Show unshuffled deck
    b. Show shuffled deck
    c. Show a winning game
    d. Show a losing game

Helpful notes:

You can use this online compiler: https://www.tutorialspoint.com/execute_lisp_online.php

This is a pretty good video (we will watch it together in class): https://youtu.be/ymSq4wHrqyU

Here is an online tutorial you can use: https://www.tutorialspoint.com/lisp/index.htm

Notice from the above screens – it may take a long time to find a winning game. You may want to have another menu item that plays a winning game. Then you could pre-arrange your deck accordingly to play a winning game