CS Scholars - Programming Hw4 [Optional]
Due Date: Wednesday 07/27 EOD

This assignment is **optional**, for students who want to challenge themselves by building a full interactive game in Python. For full credit, complete either #1 or #2.

There is no starter file for this assignment. You can start from a blank Python file for Hangman, or the interaction starter code for Memory Game.

#1 - Hangman

#2 - Memory Game

#1 - Hangman

Can attempt after the User Interaction lecture

Hangman is a simple two-player game where one player comes up with a mystery word and the other player guesses letters in the word. If the letter is in the word, the first player writes it in all the places where it appears; if the letter is not in the word, the first player draws part of a stick figure. If the second player guesses all the letters in the word, they win; if they guess too many wrong letters and the full stick figure is drawn, they lose.

Write a function `playHangman(word)` which takes a string (the word to guess) and lets the user play an interactive game of Hangman. The game should implement everything described above, apart from drawing a stick figure; instead, start the user at 6 incorrect guesses available and remove one for each incorrect guess.

Hint: this is a complex problem. You'll want to use **top-down design** to make it easier!

Note: to give you an idea of what you might want to include, here's an example of a full game of Hangman played in Python:

```
Current word: _ _ _ _ _ _ _ _ _ _ _ _
Incorrect guesses left: 6
Letters guessed:
Which letter do you want to guess: e
Not quite...
-----
Current word: _ _ _ _ _ _ _ _ _ _ _ _
Incorrect guesses left: 5
Letters guessed: e
Which letter do you want to guess: o
Good guess!
-----
Current word: _ _ o _ _ _ _ _ _ _ _ _
Incorrect guesses left: 5
Letters guessed: e, o
Which letter do you want to guess: i
Good guess!
-----
Current word: _ _ o _ _ _ _ _ i _ _ _
Incorrect guesses left: 5
Letters guessed: e, o, i
Which letter do you want to guess: n
Good guess!
-----
```

```
Current word: _ _ o _ _ _ _ _ i n _
Incorrect guesses left: 5
Letters guessed: e, o, i, n
Which letter do you want to guess: g
Good guess!
-----
Current word: _ _ o g _ _ _ _ i n g
Incorrect guesses left: 5
Letters guessed: e, o, i, n, g
Which letter do you want to guess: y
Not quite...
-----
Current word: _ _ o g _ _ _ _ i n g
Incorrect guesses left: 4
Letters guessed: e, o, i, n, g, y
Which letter do you want to guess: as
Please enter only one letter.
Which letter do you want to guess: a
Good guess!
-----
Current word: _ _ o g _ a _ _ i n g
Incorrect guesses left: 4
Letters guessed: e, o, i, n, g, y, a
Which letter do you want to guess: m
Good guess!
-----
Current word: _ _ o g _ a m m i n g
Incorrect guesses left: 4
Letters guessed: e, o, i, n, g, y, a, m
Which letter do you want to guess: i
You already guessed that letter! Pick a different letter.
Which letter do you want to guess: t
Not quite...
-----
Current word: _ _ o g _ a m m i n g
Incorrect guesses left: 3
Letters guessed: e, o, i, n, g, y, a, m, t
Which letter do you want to guess: r
Good guess!
-----
Current word: _ r o g r a m m i n g
Incorrect guesses left: 3
Letters guessed: e, o, i, n, g, y, a, m, t, r
Which letter do you want to guess: p
Good guess!
-----
Final word: p r o g r a m m i n g
You won in 11 turns.
```

#2 - Memory Game

Can attempt after the User Interaction lecture

Memory is a simple one-player game where the player starts with a small deck of cards (where each card appears twice in the deck), shuffles the deck, and places all the cards face-down. The player then takes turns, where in each turn they flip two cards face-up. If the cards match, they are left face-up; if they do not match, they are flipped face-down again. The goal is to flip all cards face-up in as few turns as possible.

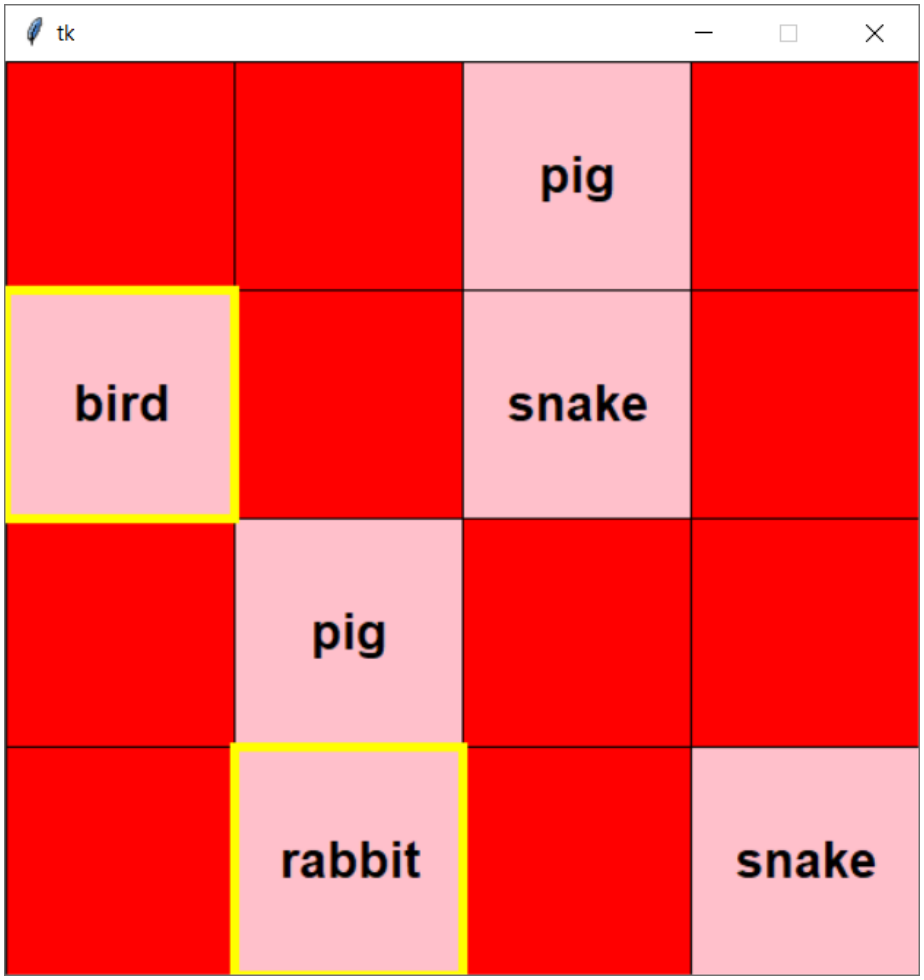
Using the interaction framework from class, implement a graphical version of the Memory Game. The game should be played using 16 cards where the 'face' of the card shows a word (so 8 unique words overall). The cards should be displayed in a 4-by-4 grid, and the user should be able to 'flip' a card by clicking on it.

Cards should automatically flip face-down again when two cards have been flipped up which don't match. However, this should not happen immediately - let the user see the value of the second card first, then anywhere to flip them face-down again.

Hint: you may want to represent cards with two values: the word on the face of the card and whether or not it is currently face-up.

Another Hint: it may help to distinguish which cards are 'temporarily' face-up as opposed to permanently face-up.

Here is an example of what a Memory Game could look like mid-game. In this game, the user just flipped the 'bird' and 'rabbit' cards; they will flip face-down again on the next click.


tk
pig
bird
snake
pig
rabbit
snake