CS 2316

Individual Homework 6 –Word Search

Due: Wednesday, October 8th, before 11:55 PM

Out of 100 points so don't mess it up…….

Files to submit: 1. HW6.py

For Help:

- TA Helpdesk – Schedule posted on class website.
- Email TA's or use T-Square Forums

Notes:

· **Don't forget to include the required comments and collaboration statement (as outlined on the course syllabus).**

· *Do not wait until the last minute to do this assignmen*t in case you run into problems.

· **Read the entire specifications document before starting this assignment.**

Premise

In this homework you will be creating a program to solve "word search" games:
(See http://en.wikipedia.org/wiki/Word_search for more details...)

File Format Information

You will be required to read in a CSV file of strings with an equal number of characters on each line of the CSV file. You should read in the entirety of the file and for every new line create a new line in the word search.

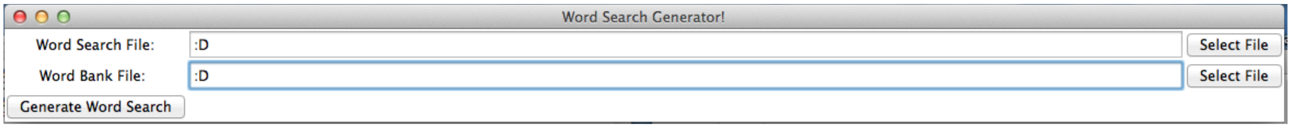
A sample row in the file could be:

```
'E', 'L', 'I', 'F', 'I', 'U', 'G', 'T'
```

The next line in the file would have the same number of characters.

Method Name: __init__

This method is automatically called whenever you create a new instance of your GUI class. The __init__ method is responsible for arranging and initializing your GUI. You should create a GUI that looks like the picture below.



Word Search File: :D

Word Bank File: :D

You may generate this window however you wish, but it is highly suggested that you use the grid layout manager. Things to note about the GUI you see:

- I would consider putting all of the widgets in a frame because you will be using multiple frames throughout this homework.
- The entry box between the “Word Search File:” label and the “Select File” button and the entry box between the “Word Bank File:” label and the “Select File” button is width 100, readonly, and has characters “:D” if no file has been selected.
    - On the line with the “Word Search File:” label, the “Select File” button calls the method called openWSClicked
    - On the line with the “Word Bank File:” label, the “Select File” button calls the method called opedWBClicked
- The title of the GUI is “Word Search Generator!”

Method Name: openWSClicked

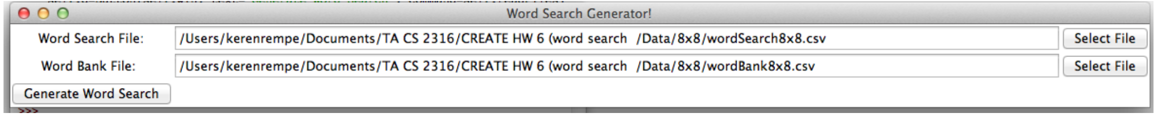
This method will simply launch a file open dialog box and prompt the user to select a word search file. After the user selects a file, the text for the Entry box beside “Word Search File:” label will be set to the file path. ***Store the file name returned in the “filename” object variable, so that other methods can access the string using “self.fileName”.***

(cough cough The function to use when you click the “ Select File” button is filedialog.askopenfilename() cough cough Thank Michael)

MethodName: openWBClicked

Similar to openWSClicked, this method will launch a file open dialog box and prompt the user to select a word bank file. After the user selects a file, the text for the Entry box beside “Word Bank File:” label will be set to the file path. ***Store the file name returned in the “filename1” object variable, so that other methods can access the string using “self.fileName1”.*** This method should call the next method, readFiles.

After both openWSClicked and openWBClicked have been called the GUI should look like the picture below.



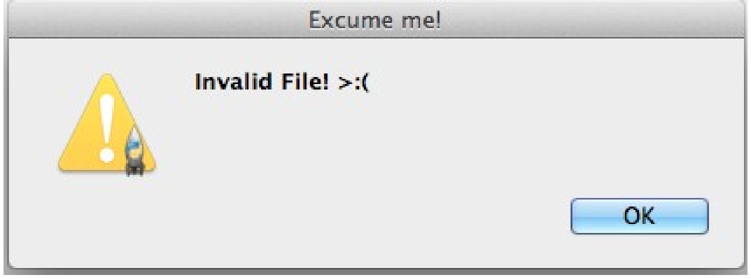
Word Search File: /Users/kerenrempe/Documents/TA CS 2316/CREATE HW 6 (word search /Data/8x8/wordSearch8x8.csv

Word Bank File: /Users/kerenrempe/Documents/TA CS 2316/CREATE HW 6 (word search /Data/8x8/wordBank8x8.csv

First Example
wordSearch8x8.csv

Method Name: readFiles

This method should open the CSV files and read in the files. This method should check that all the characters are letters. If the file does not meet that criteria then it can't be read and there should be an error message with the title "Excuse me!" stating "Invalid file! >:(". When reading in the CSV file, each valid letter should be converted to uppercase and all whitespace should be stripped. The file should be fixed if all the letters are not uppercase or if white space needs to be stripped. This method should make a list of each line in the CSV file nested in a list(e.g. [['E', 'L', 'I', 'F', 'I', 'U', 'G', 'T'],[next row in csv file],etc.) and the list should be an instance variable (i.e. self.wordSearchLines). If the files can be read it should call the next method generate.

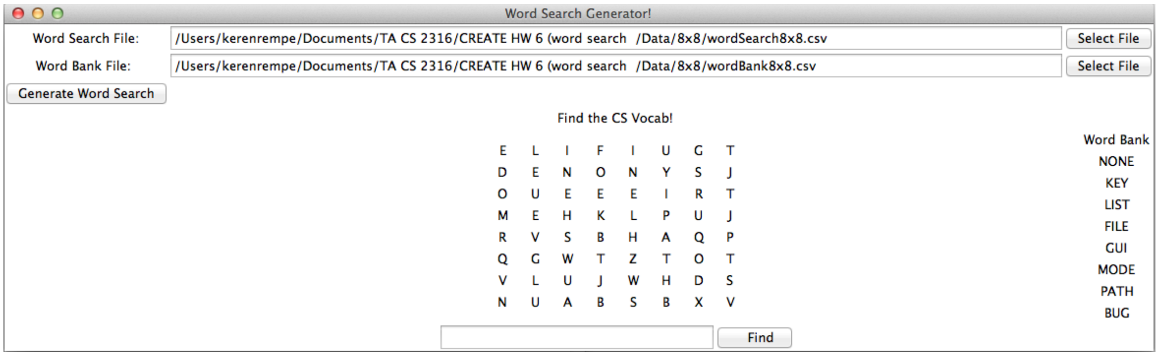


Excume me!

Invalid File! >:(

Method Name: generate

This method should take make the instance variable from readFile method and put it into the format of the picture below. The "Find" button's command is tied to the next method, findStartingCoords.



Word Search Generator!

Word Search File: /Users/kerenrempe/Documents/TA CS 2316/CREATE HW 6 (word search /Data/8x8/wordSearch8x8.csv

Word Bank File: /Users/kerenrempe/Documents/TA CS 2316/CREATE HW 6 (word search /Data/8x8/wordBank8x8.csv

Find the CS Vocab!

E	L	I	F	I	U	G	T
D	E	N	O	N	Y	S	J
O	U	E	E	E	I	R	T
M	E	H	K	L	P	U	J
R	V	S	B	H	A	Q	P
Q	G	W	T	Z	T	O	T
V	L	U	J	W	H	D	S
N	U	A	B	S	B	X	V

Word Bank
NONE
KEY
LIST
FILE
GUI
MODE
PATH
BUG

I highly suggest using the grid layout manager! Other things to note about the GUI you see:

- There is a title for the generated word search, "Find the CS Vocab!" and it is centered in the columns of the word search.

- Each letter is its own label and between each letter has three spaces after the letter.
- I suggest putting the letters in a frame.
- To the right is a word back of a list of words to search. I recommend putting this in another frame.
- Underneath the word search is an entry box with width 30 and a button "   Find   " which I advise putting into another frame. *(cough cough that's three different frames cough cough)*
- The entry box text should be able to be accessed in other methods.

Make sure to store a list as an instance variable called self.words that contains the label objects created when you make the word bank.

Then make sure to store another list as an instance variable called self.letters that contains the label objects of the letters in the word search.

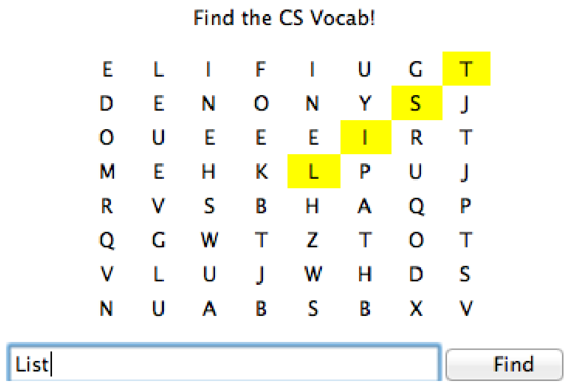
Make sure the indices MATCH UP! If the letter is at (0,0) like in the picture above "E" then its label object should be at index 0.

EX.
self.wordSearchLines=[['E', 'L', 'I', 'F', 'I', 'U', 'G', 'T'], ['D', 'E', 'N', 'O', 'N', 'Y', 'S', 'J'],…
self.words=[pointer to Label(self.rootWin, text="NONE"), etc. for word bank]
self.letters=[[pointer to Label(self.rootWin, text = "E"), etc for row 1], etc.]

Notice that self.letters is a 2D list

Method Name: findStartingCoords

In this method you are going to return a list of all the coordinates of the first letter of a particular word. The coordinates should be in a tuple in the list. For the word "List" the findStartingCoords method would return [(0,1), (3,4), (6,1)] because there is an "L" at those positions.



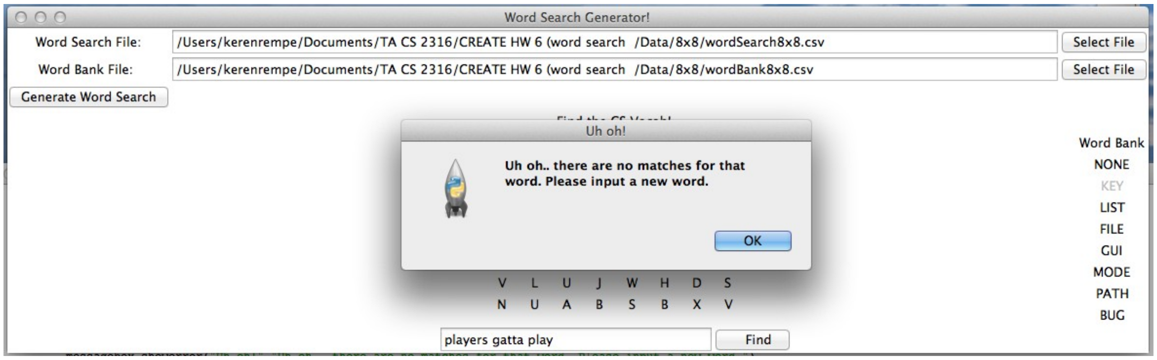
Find the CS Vocab!

E	L	I	F	I	U	G	T
D	E	N	O	N	Y	S	J
O	U	E	E	E	I	R	T
M	E	H	K	L	P	U	J
R	V	S	B	H	A	Q	P
Q	G	W	T	Z	T	O	T
V	L	U	J	W	H	D	S
N	U	A	B	S	B	X	V

List

Method Name: find

Get the text in the entry box from the generate method and check if it is in the word bank. If the word is not in the word bank you should tell the user “Uh oh.. There are no matches for that word. Please input a new word.”



Word Search Generator!

Word Search File: /Users/kerenrempe/Documents/TA CS 2316/CREATE HW 6 (word search /Data/8x8/wordSearch8x8.csv

Word Bank File: /Users/kerenrempe/Documents/TA CS 2316/CREATE HW 6 (word search /Data/8x8/wordBank8x8.csv

Uh oh!

Uh oh.. there are no matches for that word. Please input a new word.

```
V  L  U  J  W  H  D  S
N  U  A  B  S  B  X  V
```

players gatta play

Word Bank
NONE
KEY
LIST
FILE
GUI
MODE
PATH
BUG

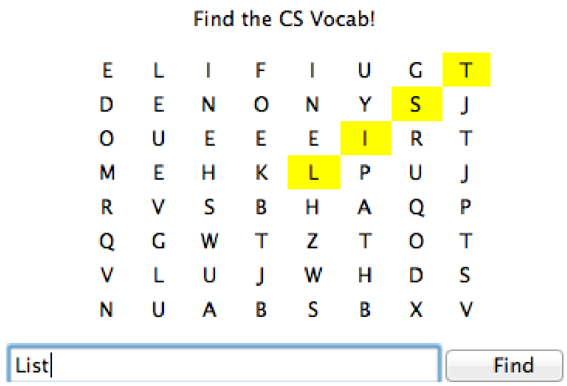
In this method you are going to get the returned list from findStartingCoords. Iterate through findStartingCoords and for each findStartingCoords you should search in each different direction

Different Directions:

- Left to Right match
- Right to Left match
- Down Right match
- Down Left match
- Up Right match
- Up Left match
- Up match
- Down match

For each direction, make sure your indices are not out of bounds *(cough cough try and except cough cough*). When searching along in a direction, if the next letter you see is not the next letter in the word from the entry box then you should ***raise a value error or continue, whatever floats your boat.*** This will cause your code to stop ***trying*** in that direction.

If you find the next letter is the next correct letter in the word then make sure you save those coordinates. Once you find the coordinates for the whole word you should return it in a variable designated coordList.



Find the CS Vocab!

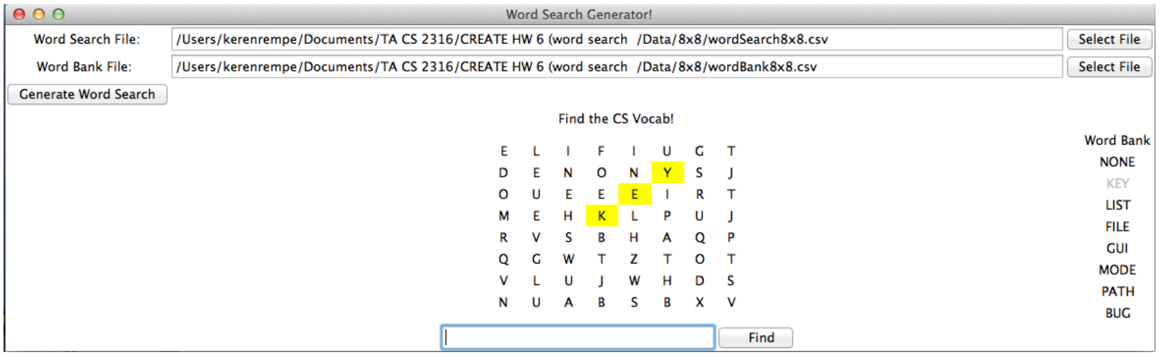
E	L	I	F	I	U	G	T
D	E	N	O	N	Y	S	J
O	U	E	E	E	I	R	T
M	E	H	K	L	P	U	J
R	V	S	B	H	A	Q	P
Q	G	W	T	Z	T	O	T
V	L	U	J	W	H	D	S
N	U	A	B	S	B	X	V

List

For example, the coordList for the word “List” would be [(3, 4), (2, 5), (1, 6), (0, 7)].

Method Name: updateGUI

If the word is in the word search then each letter in the word should be changed to yellow. Remember that time I told you to save self.words and self.letters well to change the color of the letters in the word search and the word bank you should iterate through the pointer to the Label and configure them to the appropriate colors.



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E	L	I	F	I	U	G	T
D	E	N	O	N	Y	S	J
O	U	E	E	E	I	R	T
M	E	H	K	L	P	U	J
R	V	S	B	H	A	Q	P
Q	G	W	T	Z	T	O	T
V	L	U	J	W	H	D	S
N	U	A	B	S	B	X	V

Word Bank
NONE
KEY
LIST
FILE
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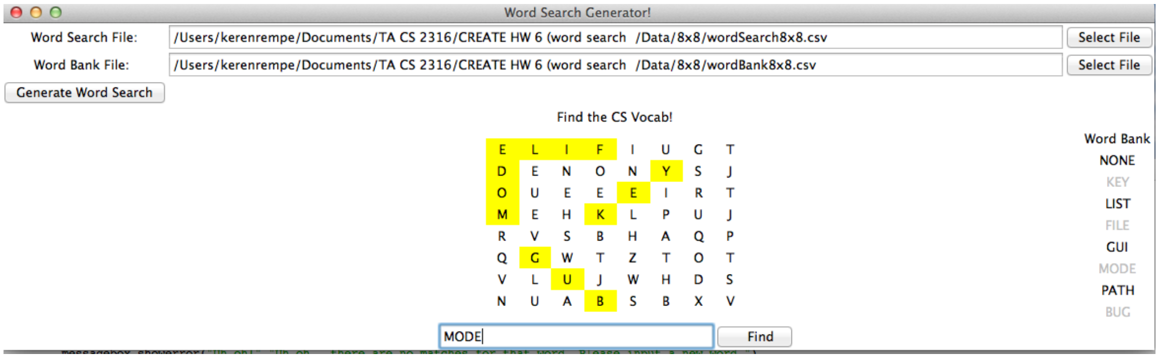

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E	L	I	F	I	U	G	T
D	E	N	O	N	Y	S	J
O	U	E	E	E	I	R	T
M	E	H	K	L	P	U	J
R	V	S	B	H	A	Q	P
Q	G	W	T	Z	T	O	T
V	L	U	J	W	H	D	S
N	U	A	B	S	B	X	V

Word Bank
NONE
KEY
LIST
FILE
GUI
MODE
PATH
BUG

MODE

Things to note about the GUI above:

- When you find a word in the word search, the word bank word changes to grey. ***(cough cough .config(fg=”grey”) cough cough)***

- When you find a word in the word search, the letter’s background of the found word should change to yellow. ***(cough cough .config(bg=”yellow”) cough cough)***

I’M SO PROUD YOU’VE READ THIS FAR.

“There’s nothing to it but to do it.” –Jake

Grading:
You will earn points as follows for each piece of functionality that works correctly according to the specifications.

The GUI	**10**
The GUI looks like it should	10
openWSClicked / openWBClicked	**10**
Replaces the Word Search Entry box text with file path	5
Replaces the Word Bank Entry box text with file path	5
readFiles	**10**
Properly reads in csv file	5
Makes data accessible in other files	5

generate	**30**
Makes word bank	10
Makes the actual word search	5
Makes the find Entry box	5
Makes self.words correctly	5
Makes self.letters correctly	5
findStartingCoords	**10**
findStartindCoords is correct	5
returns findStartingCoords	5
find	**20**
Left to Right match	2
Right to Left match	2
Down Right match	2
Down Left match	2
Up Right match	2
Up Left match	2
Up match	2
Down match	2
If the word is not in the Word Search	4
updateGUIs	**10**
Correctly change the color of the word in the word search	5
Correctly change the color of the word in the word bank	5