COP 3223 Program #9: Basic Spellcheck (Files, Arrays of Strings)

Due Date: *Please Consult WebCourses*

Objective

1. To give students practice in reading input from files.
2. To give students practice utilizing an array of strings.

Problem: Spellcheck

Our spelling is pretty bad these days! But automating spell-checking is quite difficult. For this assignment, we'll attempt to fix a few basic spelling errors. This will elucidate how complicated real world problems like this can be (this program won't fix many common errors) and also give you practice with strings.

You will ask the user to enter the name of the file storing the dictionary. This dictionary file will have a single positive integer, ***n*** on a line by itself indicating that there are ***n*** words in the file. Each of these words will comprise lower case letters only and be in between 1 and 19 letters long. Each word will appear on its own line.

Once the dictionary is loaded in, then ask the user to enter a word. Based on the entered dictionary, do the following:

1. If the word appears exactly in the dictionary, print out the following message for the user:

```
WORD is a valid word in the dictionary. Congrats!
```

where you replace WORD with the word the user entered.

2. If the word entered doesn't match any word in the dictionary exactly, but can be formed by changing exactly one letter in the word, then output each possible word in the dictionary, one word per line using the following format:

```
You misstyped only one letter. You could have meant:
WORD1
WORD2
```

where WORD1, WORD2, etc are each of the valid dictionary words that can be formed by changing exactly one letter in the word the user entered.

3. If neither 1 nor 2 apply, see if a valid word can be formed by adding a single letter to the word the user entered (in any position). If this is possible, then output each possible word in the dictionary, one word per line using the following format:

```
You forgot adding one letter. You could have meant:
WORD1
WORD2
```

where WORD1, WORD2, etc are each of the valid dictionary words that can be formed by adding exactly one letter in the word the user entered (in any position). Note that all of the letters the user typed must appear in the valid word in the same relative order.

4. If neither 1, 2 nor 3, apply, see if a valid word can be formed by deleting a single letter to the word the user entered (in any position). If this is possible, then output each possible word in the dictionary, one word per line using the following format:

```
You added an extra letter. You could have meant:
WORD1
WORD2
```

where WORD1, WORD2, etc are each of the valid dictionary words that can be formed by deleting exactly one letter in the word the user entered.

5. If none of 1 through 4 applies, output the following:

```
Sorry, I am not sure what you meant to spell.
```

Prompt the user to enter another word or quit. Exit the program when they choose to quit.

Sample Input/Output

This is a sketch of a possible run of the program (but wasn't generated by an actual program so it might have a bug or two.)

Here is the dictionary file (words.txt) to use for this sample:

```
10
cat
hat
that
rat
the
their
smack
smart
ten
there
```

Sample Program Run (User Input in Bold and Italics)

```
What file is the dictionary in?
words.txt

Please select from the following choices:
1) Spellcheck a word.
2) Quit.
1
What word would you like to check?
smack
smack is a valid word in the dictionary. Congrats!

Please select from the following choices:
1) Spellcheck a word.
2) Quit.
1
What word would you like to check?
smact
You misstyped only one letter. You could have meant:
smack
smart

Please select from the following choices:
1) Spellcheck a word.
2) Quit.
1
What word would you like to check?
te
You forgot adding one letter. You could have meant:
the
ten

Please select from the following choices:
1) Spellcheck a word.
2) Quit.
1
What word would you like to check?
then
You added an extra letter. You could have meant:
the
ten

Please select from the following choices:
1) Spellcheck a word.
2) Quit.
1
What word would you like to check?
```

```
mat
You misstyped only one letter. You could have meant:
cat
hat
rat

Please select from the following choices:
1) Spellcheck a word.
2) Quit.
1
What word would you like to check?
knights
Sorry, I am not sure what you meant to spell.

Please select from the following choices:
1) Spellcheck a word.
2) Quit.
2
Thanks for using spellcheck!
```

Implementation Requirements

You must read all of the words from the file inputted by the user to an array of strings of size 1000 by 20.

You must write functions that correspond to each of the types of errors. These functions should print the appropriate results and return 1 if they succeeded, or return 0 if they failed.

You may write other auxiliary functions as needed.

Note: While you aren't required to solve the problem a particular way, some level of brute force/exhaustive search is recommended.

Grading Details

Your grade will be based on programming style, use of arrays of strings and fucntions, and correctness.

Deliverables

Please submit a single .c file called, spellcheck.c. Please make sure to fully comment your code, including both a header comment and internal comments.