

day45 word play
Due Wednesday 12/13/23

Did you know that some words contain other words hidden in them? For example, if you take every other letter of "BARBARIAN" you get "BRAIN". Who knew?

In today's program you will find words that show up in other words and do some other fun things with words.

First, open today's assignment on the Google Classroom and fork the project. This has a file attached to it with most words in the English language. Forking the project makes a copy in your account.

My starter code loads all the words into a list called "words".

<https://replit.com/@MrHays/day45-word-play#main.py>

Click on this link or open the attached repl from the Google Classroom. Then, **very important**: click **Fork** to make a copy in your account!

Once you have forked the project, you may need to click on "main.py" over on the left. When you do, things should look like this more or less:



```
1 #day45 word play
2
3 #Do not change the following code
4 f=open("DictionaryE.txt","r")
5 allWords = f.read()
6 f.close()
7 words = allWords.split("\n")
8 print("Dictionary:",len(words),"words")
9 #Write your program after this line (See the PDF for
  instructions)
```

Now, there are four parts to today's assignment:

1. Words inside other words

Put a comment in your program below my starter code:

```
#part 1 every other
```

First, we're going to figure out which words contain other words when we take every other letter. There are over 100,000 words in the list, and to go through all of them would take too long, so we'll be limiting our searches.

Ask the user to enter a letter to check:

```
letter = input("Check words starting with this letter: ")
```

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Now do a loop:

```
for word in words:
```

This takes the words, one at a time, from the big list so we can check them.

Next, see if the word starts with the correct letter:

```
if word[0] == letter and len(word)>7:
```

This only grabs words that are 8 letters or longer that start with the letter that the user entered. Now we have a word and we know it starts with the right letter that the word is at least 8 letters long. Next we create a word, taking every other letter from this word.

```
wd = ""
for x in range(len(word)):
    if x%2==0:
        wd=wd+word[x]
if wd in words:
    print(word,wd)
```

If you copy this code, you'll probably have to fix the indents. Add a count variable and report how many words were found. See my sample output here, where I run this code for the letter "w":

```
weaklier wale
weekends weed
weirdies wide
weirdness wides
weirdoes wide
whackier wake
whatnots want
wherries were
whiffled wife
whiffler wife
whifflers wives
whiffles wife
whimsied wise
whimsies wise
whinnied wine
whinnier wine
whinnies wine
whippier wipe
whirlier wile
whirlies wile
whitfield wifed
woodnote wont
woodnotes wonts
wordiness wries
wrangled wage
wrangler wage
wranglers wages
wrangles wage
28 words found where every other letter spells another word
```

To wrap up this part, please pick your favorite "every other letter" word creation, copy it, and print it like this:

```
print("My favorite is whimsies, wise")
```

Print a blank line.

Add a comment: #part 2

2. Next we are going to count how many words are in the dictionary for each length of word.

After your part 2 comment, add this code:

```
counts = [0]*30
```

This creates a list called "counts" which is where we will store our word counts. Next, add the following code which goes through the entire list and counts all the words by length:

```
for count in range(30):
    for word in words:
        if len(word) == count:
            counts[count] += 1
```

Finally, add this so we can see the results:

```
for x in range(30):
    print(x, counts[x])
```

You should get the following:

```
0 0
1 2
2 141
3 854
4 3134
5 6929
6 11505
7 16888
8 19464
9 16695
10 11882
11 8375
12 5812
13 3676
14 2102
15 1159
16 583
17 229
18 107
19 39
20 29
21 11
22 4
23 2
24 0
25 1
26 0
27 0
28 1
29 0
```

Make sure your results are the same as mine. For example, there are 6929 five letter words in this dictionary. (By the way, that's about how many possible Wordle words there are, if you play that game.)

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Pick a word length that has less than 40 words in it. For example: 1, 19, 20, 21, 22, 23, 25, or 28. Add another for loop that prints all the words that are that length. It should look like this:

```
for word in words:  
    if len(word)==21:  
        print(word)
```

I chose 21 letter words, so mine looked like this:

All the 21 letter words:

```
antienvironmentalists  
antiinstitutionalists  
counterclassification  
electroencephalograms  
electroencephalograph  
electrotherapeutically  
gastroenterologically  
internationalizations  
mechanotherapeutically  
microminiaturizations  
microradiographically
```

Add a little print line above this like I did that tells the user how long the words are.

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Print a blank line, write "#part 3"

3. Print words containing certain letters

Ask the user to enter a phrase. You will run through the entire list and print any words that contain this phrase. See if you can do this without using my code (you could use a for loop like I just did above, then check if phrase in word: to find the words that contain the phrase. Keep a count variable and report how many were found, or say "No words containing analytigers were found."

Sample output:

```
Enter a phrase to search for: tiger
tiger
tigereye
tigereyes
tigerish
tigers
5 words containing tiger were found
```

Continue to the next page for the last part, part 4.

4. Part 4

Add a `#part 4` comment. Print a blank line.

Go through the entire list of words and count how many palindromes there are.

A palindrome is a word that is spelled the same forwards and backwards.

You can make a String variable reversed if you do this:

```
rev = word[::-1]
```

You'll do a for loop like in the last two parts:

```
for word in words:
```

You'll use this line:

```
if word[::-1] == word and len(word)>2:
```

See if you can get this done without my help.

Count and print the count like this:

```
80 palindromes found.
```

For extra credit, print 20 randomly chosen palindromes from the ones you found.

Show me before you turn anything in. Thanks.