Socket based word-finder

David Martinez

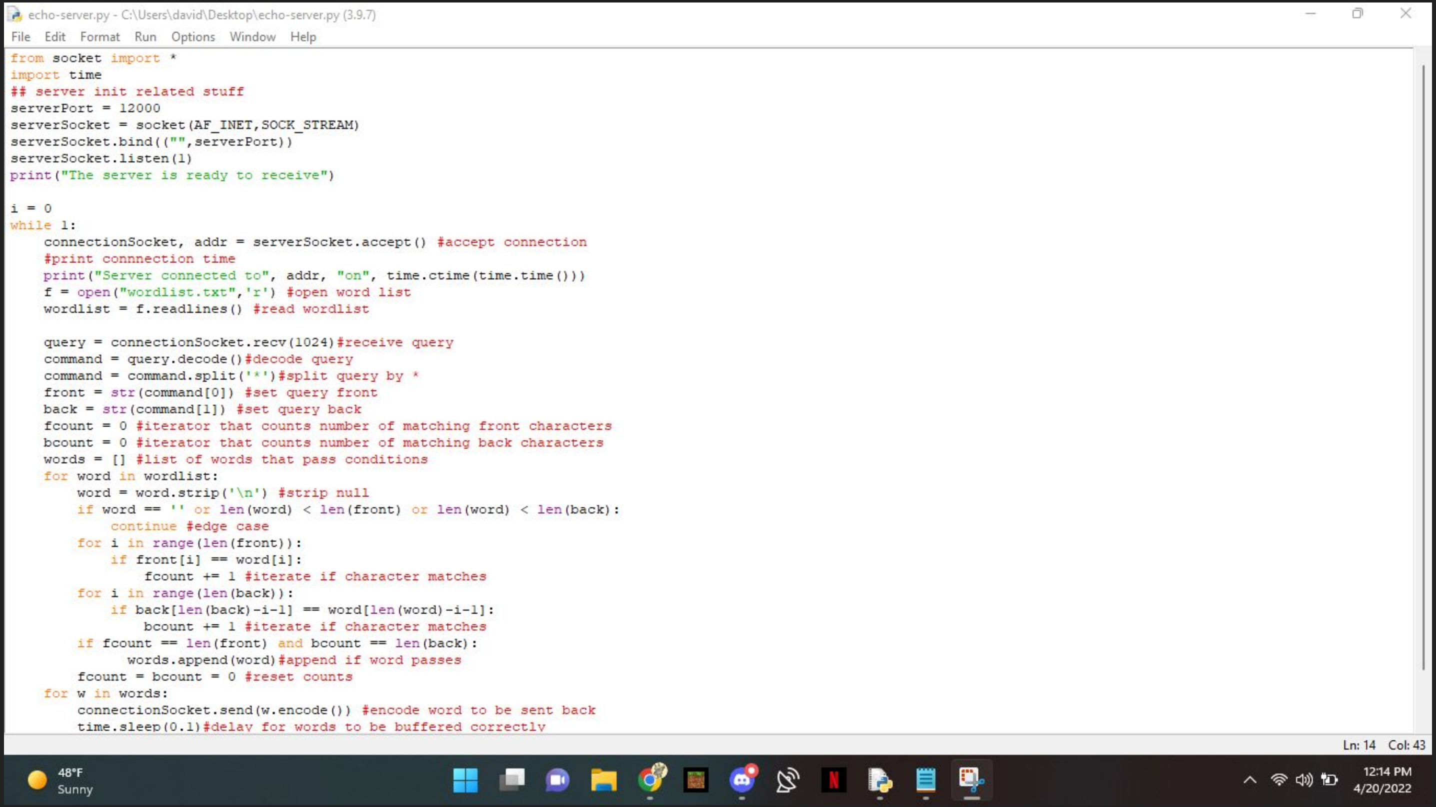
Program Objective

- Given a query, find a word with the corresponding prefix or postfix
- Have a server program handle requests
  - Server finds and sends corresponding words
- Have a client program handle queries
  - Client takes input of query and sends to server

Applications

- Word games
  - Wordle, Scrabble
- Finding other entries in a large text file
  - Would need to replace corresponding wordlist

Server code

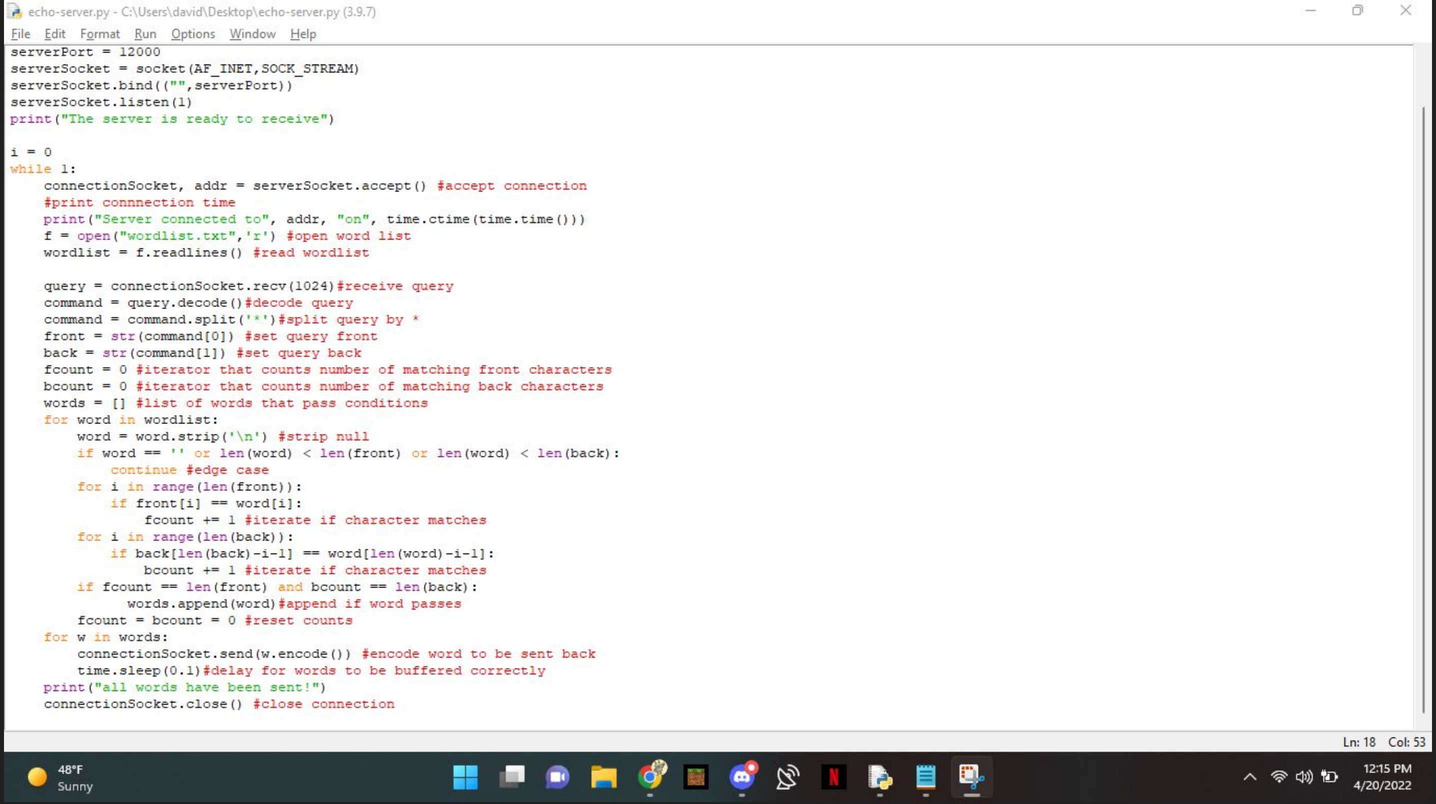


```python
from socket import *
import time
## server init related stuff
serverPort = 12000
serverSocket = socket(AF_INET,SOCK_STREAM)
serverSocket.bind(("",serverPort))
serverSocket.listen(1)
print("The server is ready to receive")

i = 0
while 1:
    connectionSocket, addr = serverSocket.accept() #accept connection
    #print connnection time
    print("Server connected to", addr, "on", time.ctime(time.time()))
    f = open("wordlist.txt",'r') #open word list
    wordlist = f.readlines() #read wordlist

    query = connectionSocket.recv(1024)#receive query
    command = query.decode()#decode query
    command = command.split('*')#split query by *
    front = str(command[0]) #set query front
    back = str(command[1]) #set query back
    fcount = 0 #iterator that counts number of matching front characters
    bcount = 0 #iterator that counts number of matching back characters
    words = [] #list of words that pass conditions
    for word in wordlist:
        word = word.strip('\n') #strip null
        if word == '' or len(word) < len(front) or len(word) < len(back):
            continue #edge case
        for i in range(len(front)):
            if front[i] == word[i]:
                fcount += 1 #iterate if character matches
        for i in range(len(back)):
            if back[len(back)-i-1] == word[len(word)-i-1]:
                bcount += 1 #iterate if character matches
        if fcount == len(front) and bcount == len(back):
              words.append(word)#append if word passes
        fcount = bcount = 0 #reset counts
    for w in words:
        connectionSocket.send(w.encode()) #encode word to be sent back
        time.sleep(0.1)#delay for words to be buffered correctly
```

Server code continued



echo-server.py - C:\Users\david\Desktop\echo-server.py (3.9.7)
File Edit Format Run Options Window Help
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```python
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serverSocket = socket(AF_INET,SOCK_STREAM)
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while 1:
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    f = open("wordlist.txt",'r') #open word list
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            if back[len(back)-i-1] == word[len(word)-i-1]:
                bcount += 1 #iterate if character matches
        if fcount == len(front) and bcount == len(back):
           words.append(word)#append if word passes
        fcount = bcount = 0 #reset counts
    for w in words:
        connectionSocket.send(w.encode()) #encode word to be sent back
        time.sleep(0.1)#delay for words to be buffered correctly
    print("all words have been sent!")
    connectionSocket.close() #close connection
```
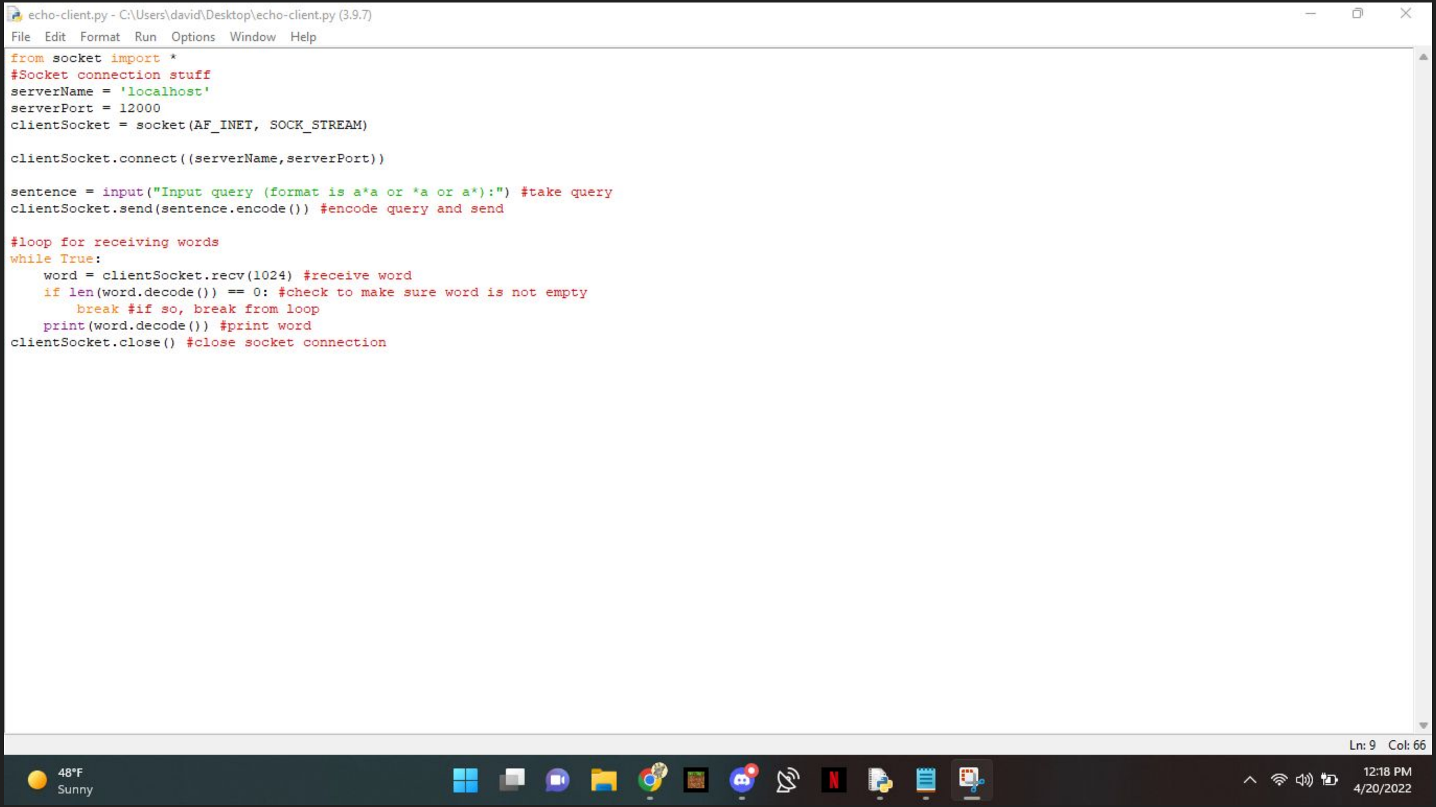

Client Code



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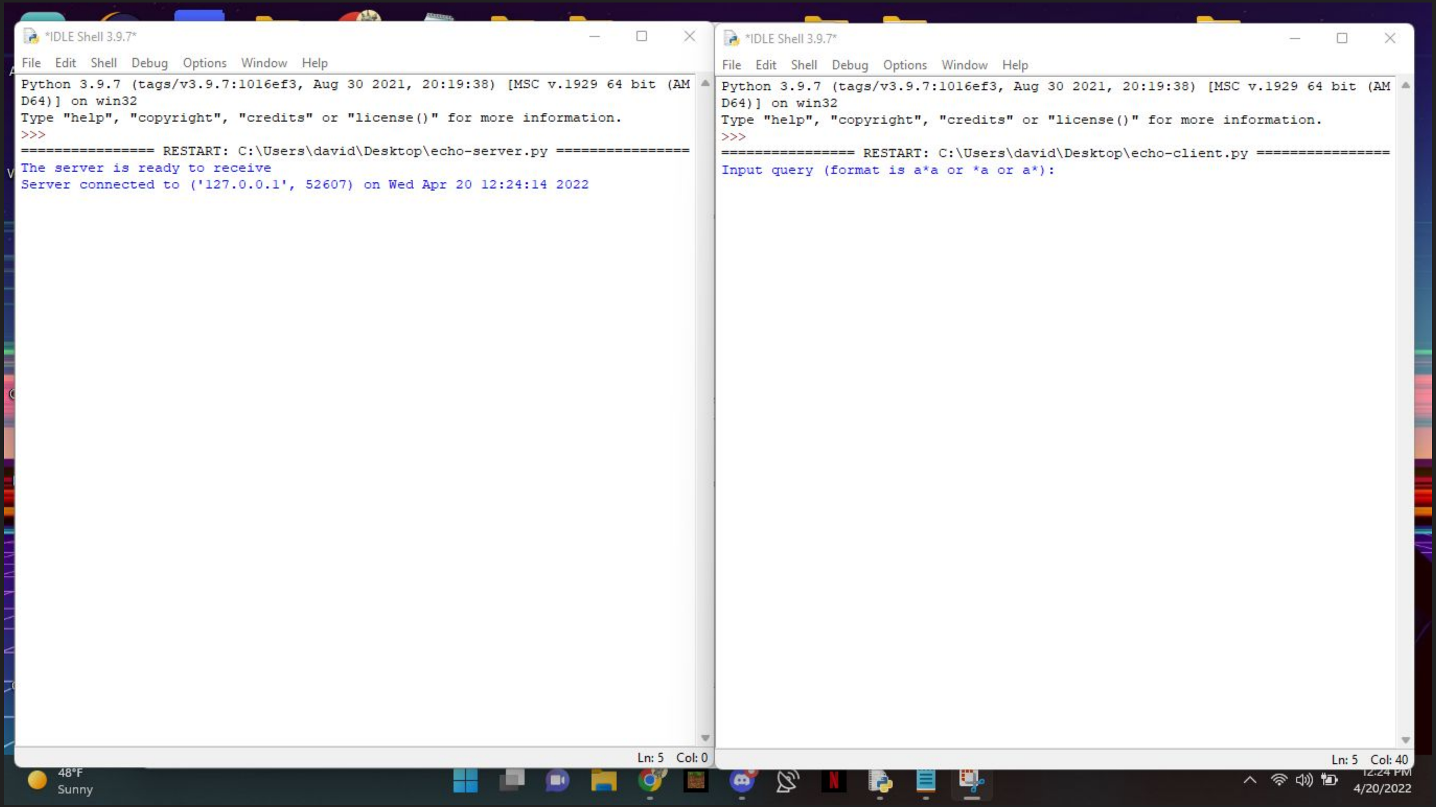
```python
from socket import *
#Socket connection stuff
serverName = 'localhost'
serverPort = 12000
clientSocket = socket(AF_INET, SOCK_STREAM)

clientSocket.connect((serverName,serverPort))

sentence = input("Input query (format is a*a or *a or a*):") #take query
clientSocket.send(sentence.encode()) #encode query and send

#loop for receiving words
while True:
    word = clientSocket.recv(1024) #receive word
    if len(word.decode()) == 0: #check to make sure word is not empty
        break #if so, break from loop
    print(word.decode()) #print word
clientSocket.close() #close socket connection
```

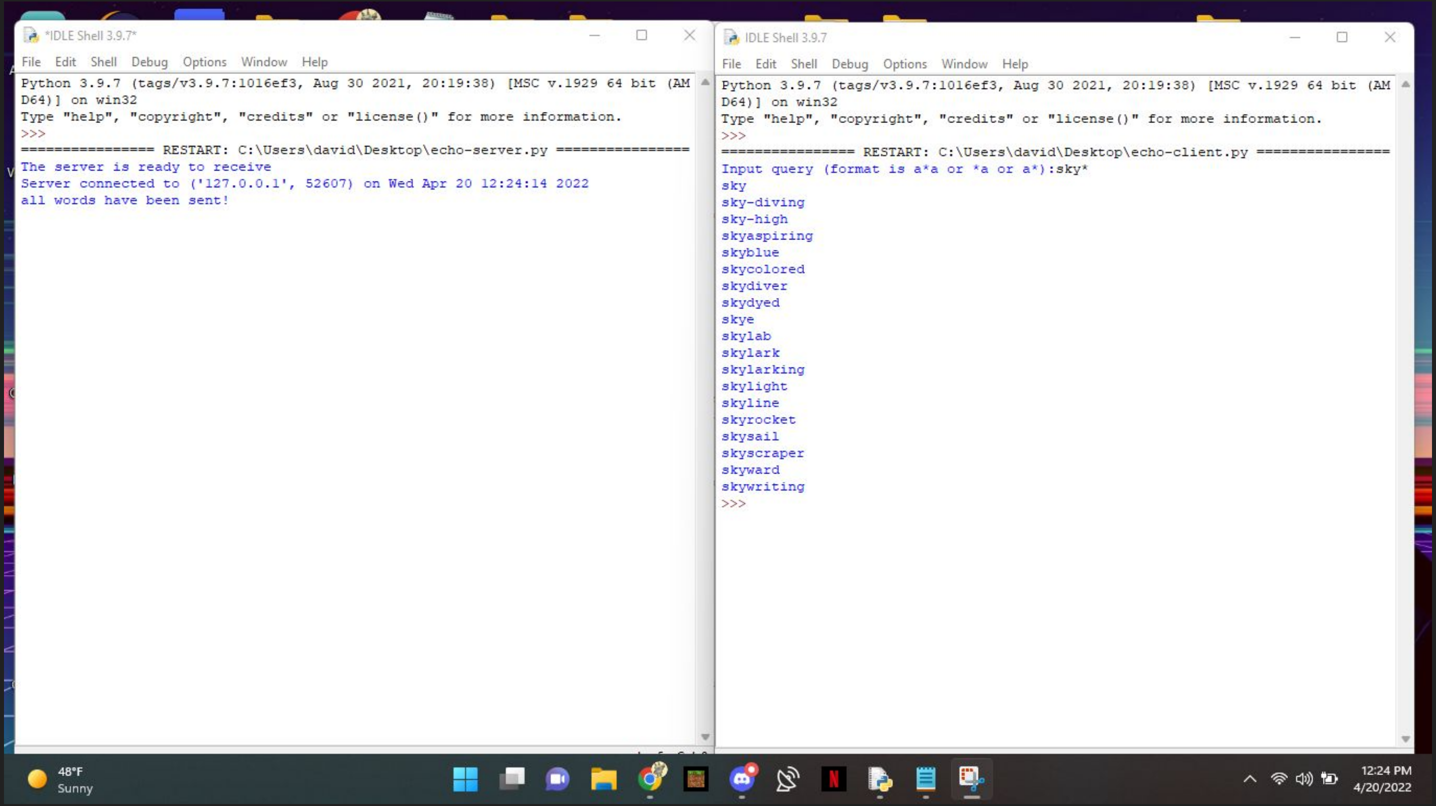
Demo



```
Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AM
D64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
================ RESTART: C:\Users\david\Desktop\echo-server.py ================
The server is ready to receive
Server connected to ('127.0.0.1', 52607) on Wed Apr 20 12:24:14 2022
```

```
Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AM
D64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
================ RESTART: C:\Users\david\Desktop\echo-client.py ================
Input query (format is a*a or *a or a*):
```

Demo continued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IDLE Shell 3.9.7
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4/20/2022

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all words have been sent!
```

```
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D64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
================ RESTART: C:\Users\david\Desktop\echo-client.py ================
Input query (format is a*a or *a or a*):sky*
sky
sky-diving
sky-high
skyaspiring
skyblue
skycolored
skydiver
skydyed
skye
skylab
skylark
skylarking
skylight
skyline
skyrocket
skysail
skyscraper
skyward
skywriting
>>>
```

Future goals for code

- Modify to specify desired length
- Accept multiple word files
- Implement threads for multiple users
    - Code is mostly thread friendly, would be quick to implement