Algorithm for file updates in Python

Project description

At my company, access to certain content is restricted by an allow list of IP addresses. The "allow_list.txt" file identifies these IP addresses. A separate remove list identifies IP addresses that should no longer have access to this content. I created an algorithm to automate updating the "allow_list.txt" file and remove these IP addresses that should no longer have access.

Open the file that contains the allow list

I opened the "allow_list.txt" and "remove_list.txt" files by using a with statement and the open() function.

```
1   allow_list = "allow_list.txt"
2 ∨ with open(allow_list, "r") as file:
3       # reads the file and stores the IP addresses in a variable
4       ip_addresses = file.read()
5
6   remove_list = "remove_list.txt"
7 ∨ with open(remove_list, "r") as file:
8       # reads the file and stores the IP addresses in a variable
9       remove_list = file.read()
```

Read the file contents

On line 4 I used the .read() method to convert the file contents into a string.

Convert the string into a list

On lines 12 and 13 I used the .split() method to convert the strings from the allow and remove files into lists so they are easier to manipulate. I did this by

```
11      # converting the string of IP addresses into a list
12      ip_addresses = ip_addresses.split()
13      remove_list = remove_list.split()
```

Iterate through the remove list

To remove each of the IP addresses in the remove list I used a for loop to go through the whole list of IPs.

```
15    # removing the IP addresses in the remove_list from the ip_addresses list
16    for i in remove_list:
17        if i in ip_addresses:
18            ip_addresses.remove(i)
```

Remove IP addresses that are on the remove list

To check if the IP address in the remove list is on the list of ip addresses I used an if statement on line 17. Then if that was true, I used the .remove() method to remove that entry from the list on line 18.

Update the file with the revised list of IP addresses

To update the "allow_list.txt" file I need to convert the list of IPs back into a string. To do this I used the .join() method.

```
20    # converting the list of IP addresses back into a string so it can be written to the allow_list file
21    ip_addresses = "\n".join(ip_addresses)
```

Then I used another with statement and the .write() method to update the file.

```
23    with open(allow_list, "w") as file:
24        # writing the IP addresses back to the allow_list file
25        file.write(ip_addresses)
```

Summary

I created an algorithm that removes the IP addresses identified in the "remove_list.txt" file from the "allow_list.txt" file of approved UP addresses. This algorithm involved opening the file, converting it to a string to be read, and then converting this string to a list stored in the variable ip_addresses. I then iterated through the IP addresses in remove_list. With each iteration, I evaluated if the element was part of the ip_addresses list. If it was, I applied the .remove() method to remove the element from ip_addresses. After this, I used the .join() method to convert the ip_addresses back into a string so that I could write over the contents of the "allow_list.txt" file with the revised list of IP addresses.