Algorithm for file updates in Python

Project description

In this project, I am a security analyst for a healthcare company tasked with regularly updating a file that identifies employees who can access restricted content such as patient records. Employees that can access are restricted based on their IP address. There is an allow list for IP addresses who are permitted to view this restricted information. There is also a remove list that identifies which employees must be removed from this list. I will create an algorithm using Python to check whether the allow list contains any IP addresses identified in the remove list and then remove those IP addresses from the file in the allow list.

Algorithm created with explanations in comments

```
def update_file(import_file, remove_list):

#First I define the function as update_file and it takes two parameters : the file with valid IP addresses
# and the remove_list which is a list of IP addresses to remove (should have no access).

  with open(import_file, "r") as file:
    ip_addresses = file.read()

#I use with to close the file after having it read and saved into variable ip_addresses. This opens the file from
#the argument file used in import_file and reads it.

  ip_addresses = ip_addresses.split()

#I use split method to turn the string file into a list in order to loop through its elements easily

  for element in ip_addresses:

    if element in remove_list:

        ip_addresses.remove(element)

#If the IP address from the file matches an IP address in the remove_list, then we remove it from the list

  ip_addresses = " ".join(ip_addresses)

#Turn the list back into a string format in order to write it back into the original file

  with open(import_file, "w") as file:

    file.write(ip_addresses)

#Calling the function and using a fabricated list of IP addresses to remove.

update_file("allow_list.txt", ["192.168.25.60", "192.168.140.81", "192.168.203.198"])

#Read the updated file after removing the IP addresses from the remove_list

with open("allow_list.txt", "r") as file:
  text = file.read()

#Look at the file of allowed IP addresses
print(text)
```

```
ip_address 192.168.205.12 192.168.6.9 192.168.52.90 192.168.90.124 192.168.186.176 192.168.133.188 192.168.218.219 192.168.52.3
7 192.168.156.224 192.168.60.153 192.168.69.116
```

Note that the IP addresses used are fabricated for the purpose of this project.

Summary

I created an algorithm that removes IP addresses from a file of approved IP addresses. The algorithm allowed me to open the file, converting it to a string for reading and then converting it to a list to go through in order to remove all the IP addresses from the list. I then converted the list back into the string format it was originally in using .join() method so I could write it over to the file with the revised list of IP addresses.