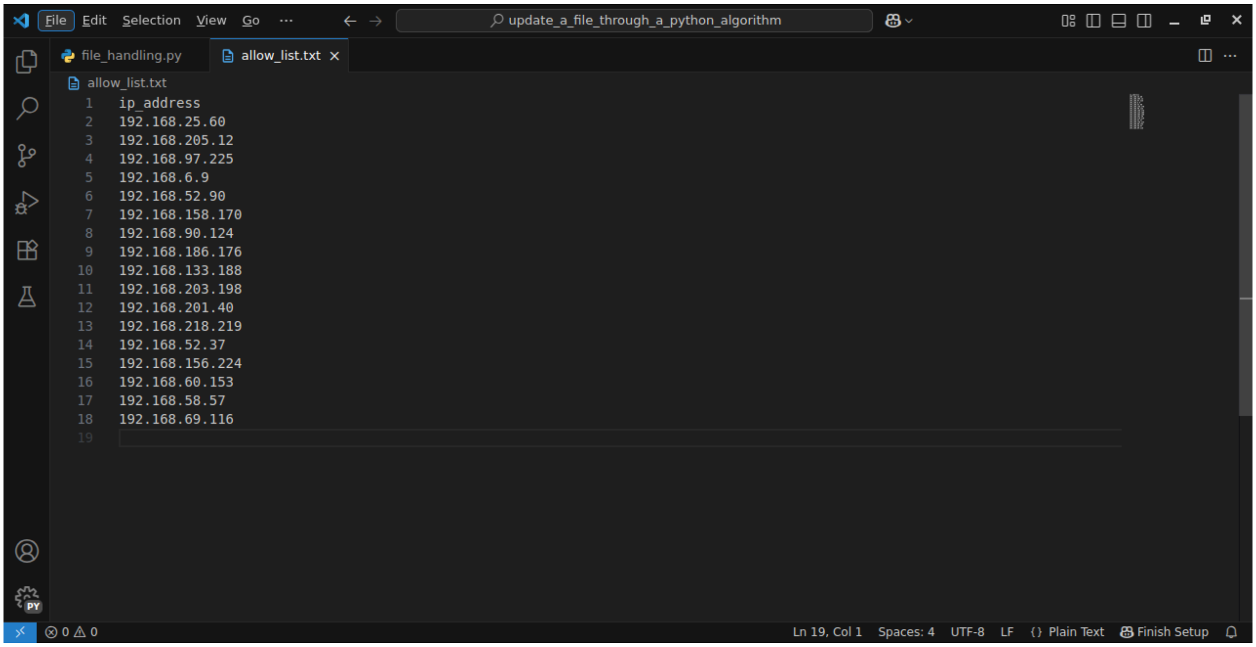
Algorithm for file updates in Python

Project description

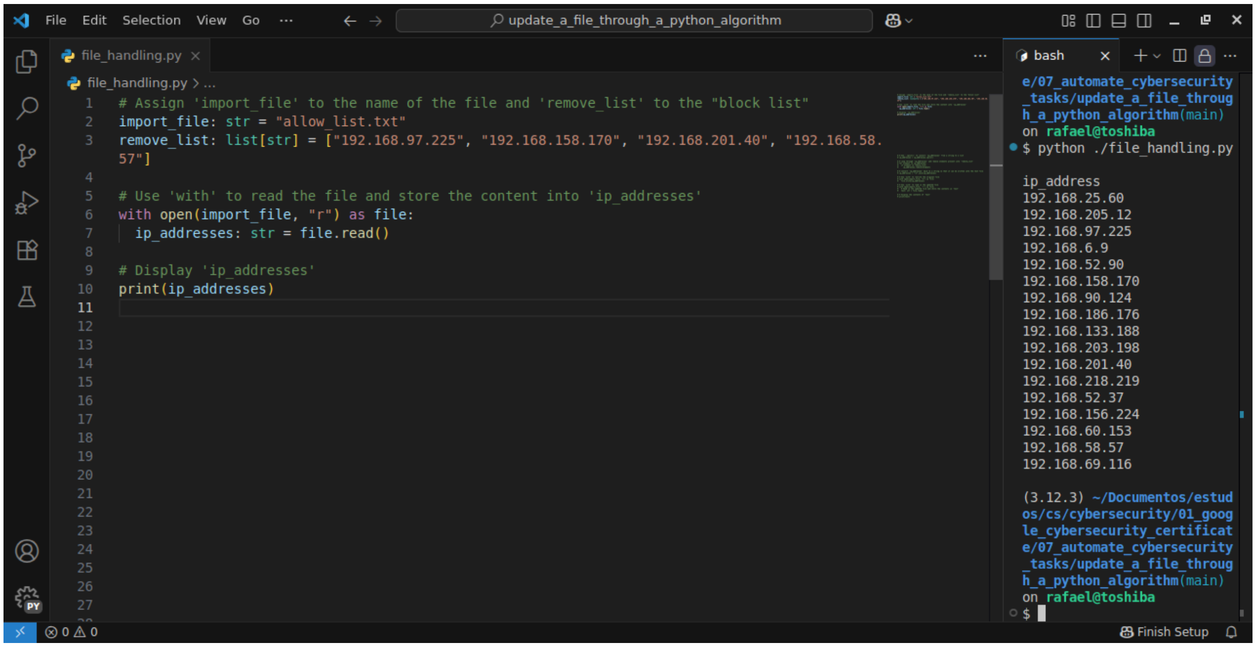
This algorithm provides upgrade automation of files containing allowed IP addresses. The function needs to execute inside the same folder that needs to be upgraded. Provide the name of the file and a list of denied IPs and the upgrade in the file is automatically executed.update_file(import_file, remove_list) function is designed to efficiently manage IP allow lists. Users provide a file name (the application needs to be executed within that file's folder) and a list of denied or blocked IPs for removal. The algorithm reads the file, converts its content into a list, and then iterates through the provided remove_list to identify and remove unauthorized IP addresses. Finally, through robust file management using with and open(), the updated list safely overwrites the original file's contents, ensuring the list is current and secure."

Open the file that contains the allow list



```
ip_address
192.168.25.60
192.168.205.12
192.168.97.225
192.168.6.9
192.168.52.90
192.168.158.170
192.168.90.124
192.168.186.176
192.168.133.188
192.168.203.198
192.168.201.40
192.168.218.219
192.168.52.37
192.168.156.224
192.168.60.153
192.168.58.57
192.168.69.116
```

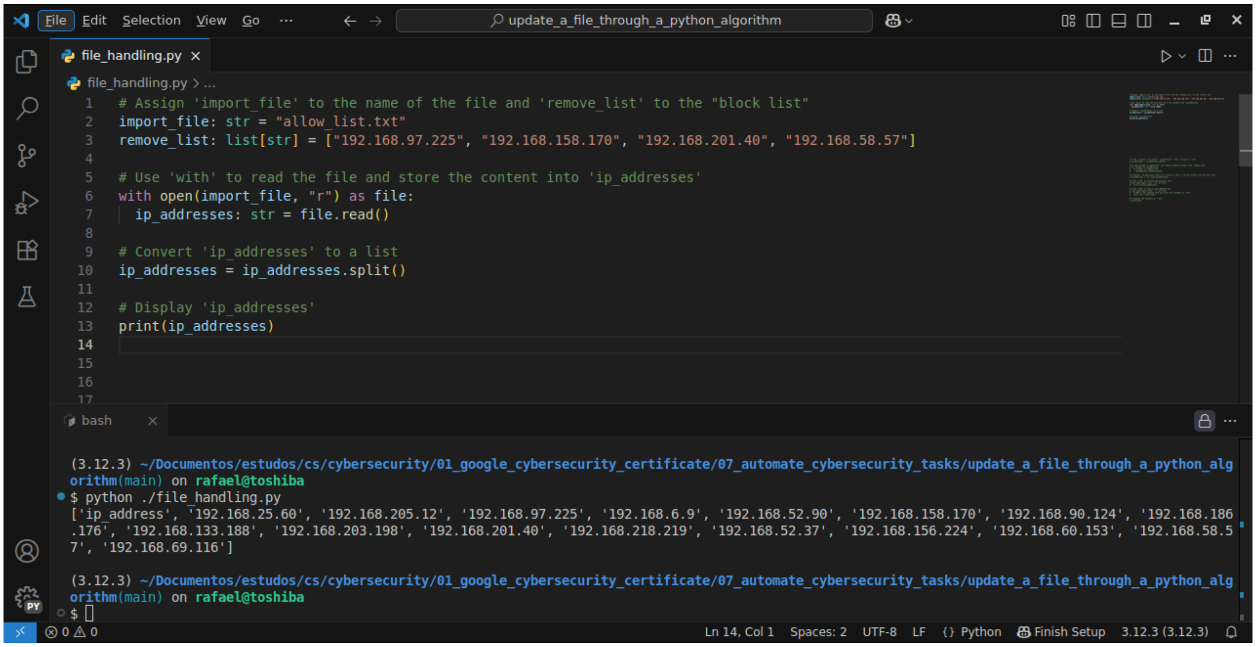
Read the file contents



```python
# Assign 'import_file' to the name of the file and 'remove_list' to the "block list"
import_file: str = "allow_list.txt"
remove_list: list[str] = ["192.168.97.225", "192.168.158.170", "192.168.201.40", "192.168.58.57"]

# Use 'with' to read the file and store the content into 'ip_addresses'
with open(import_file, "r") as file:
  ip_addresses: str = file.read()

# Display 'ip_addresses'
print(ip_addresses)
```

```
e/07_automate_cybersecurity
_tasks/update_a_file_throug
h_a_python_algorithm(main)
on rafael@toshiba
$ python ./file_handling.py

ip_address
192.168.25.60
192.168.205.12
192.168.97.225
192.168.6.9
192.168.52.90
192.168.158.170
192.168.90.124
192.168.186.176
192.168.133.188
192.168.203.198
192.168.201.40
192.168.218.219
192.168.52.37
192.168.156.224
192.168.60.153
192.168.58.57
192.168.69.116

(3.12.3) ~/Documentos/estud
os/cs/cybersecurity/01_goog
le_cybersecurity_certificat
e/07_automate_cybersecurity
_tasks/update_a_file_throug
h_a_python_algorithm(main)
on rafael@toshiba
$ 
```

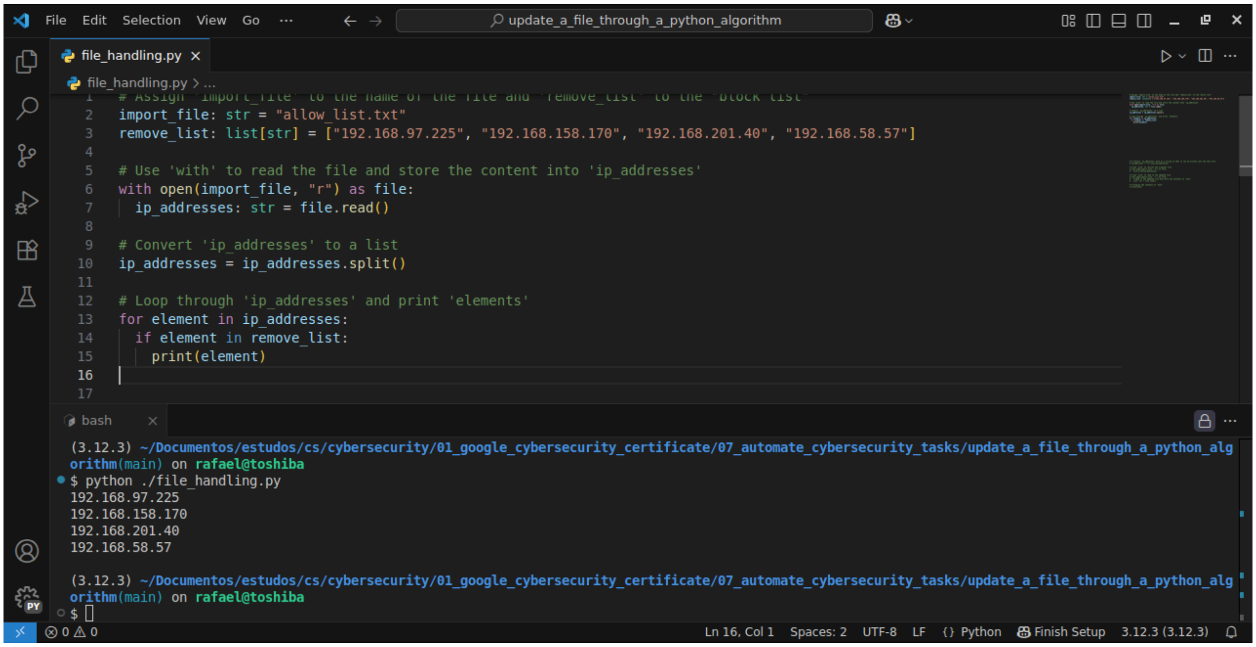
Convert the string into a list



```python
# Assign 'import_file' to the name of the file and 'remove_list' to the "block list"
import_file: str = "allow_list.txt"
remove_list: list[str] = ["192.168.97.225", "192.168.158.170", "192.168.201.40", "192.168.58.57"]

# Use 'with' to read the file and store the content into 'ip_addresses'
with open(import_file, "r") as file:
  ip_addresses: str = file.read()

# Convert 'ip_addresses' to a list
ip_addresses = ip_addresses.split()

# Display 'ip_addresses'
print(ip_addresses)
```

```
(3.12.3) ~/Documentos/estudos/cs/cybersecurity/01_google_cybersecurity_certificate/07_automate_cybersecurity_tasks/update_a_file_through_a_python_alg
orithm(main) on rafael@toshiba
$ python ./file_handling.py
['ip_address', '192.168.25.60', '192.168.205.12', '192.168.97.225', '192.168.6.9', '192.168.52.90', '192.168.158.170', '192.168.90.124', '192.168.186
.176', '192.168.133.188', '192.168.203.198', '192.168.201.40', '192.168.218.219', '192.168.52.37', '192.168.156.224', '192.168.60.153', '192.168.58.5
7', '192.168.69.116']

(3.12.3) ~/Documentos/estudos/cs/cybersecurity/01_google_cybersecurity_certificate/07_automate_cybersecurity_tasks/update_a_file_through_a_python_alg
orithm(main) on rafael@toshiba
$ 
```

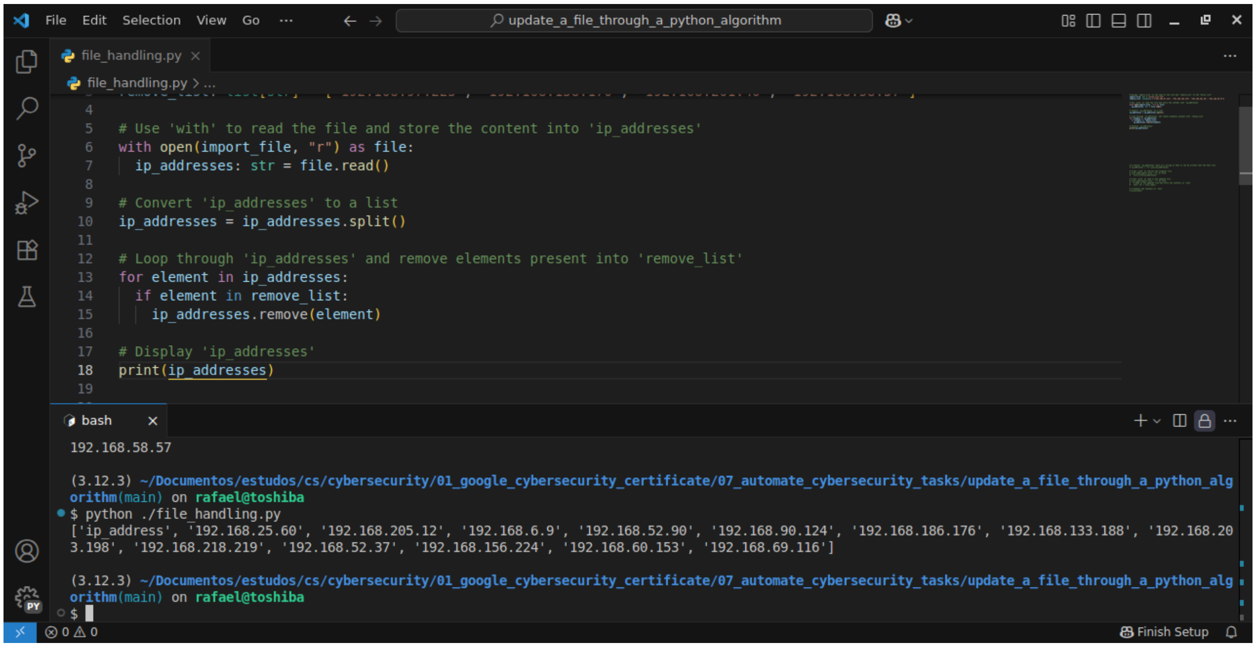
Iterate through the remove list



```python
# Assign 'import_file' to the name of the file and 'remove_list' to the "block list"
import_file: str = "allow_list.txt"
remove_list: list[str] = ["192.168.97.225", "192.168.158.170", "192.168.201.40", "192.168.58.57"]

# Use 'with' to read the file and store the content into 'ip_addresses'
with open(import_file, "r") as file:
  ip_addresses: str = file.read()

# Convert 'ip_addresses' to a list
ip_addresses = ip_addresses.split()

# Loop through 'ip_addresses' and print 'elements'
for element in ip_addresses:
  if element in remove_list:
    print(element)

```

```
(3.12.3) ~/Documentos/estudos/cs/cybersecurity/01_google_cybersecurity_certificate/07_automate_cybersecurity_tasks/update_a_file_through_a_python_alg
orithm(main) on rafael@toshiba
$ python ./file_handling.py
192.168.97.225
192.168.158.170
192.168.201.40
192.168.58.57

(3.12.3) ~/Documentos/estudos/cs/cybersecurity/01_google_cybersecurity_certificate/07_automate_cybersecurity_tasks/update_a_file_through_a_python_alg
orithm(main) on rafael@toshiba
$ 
```

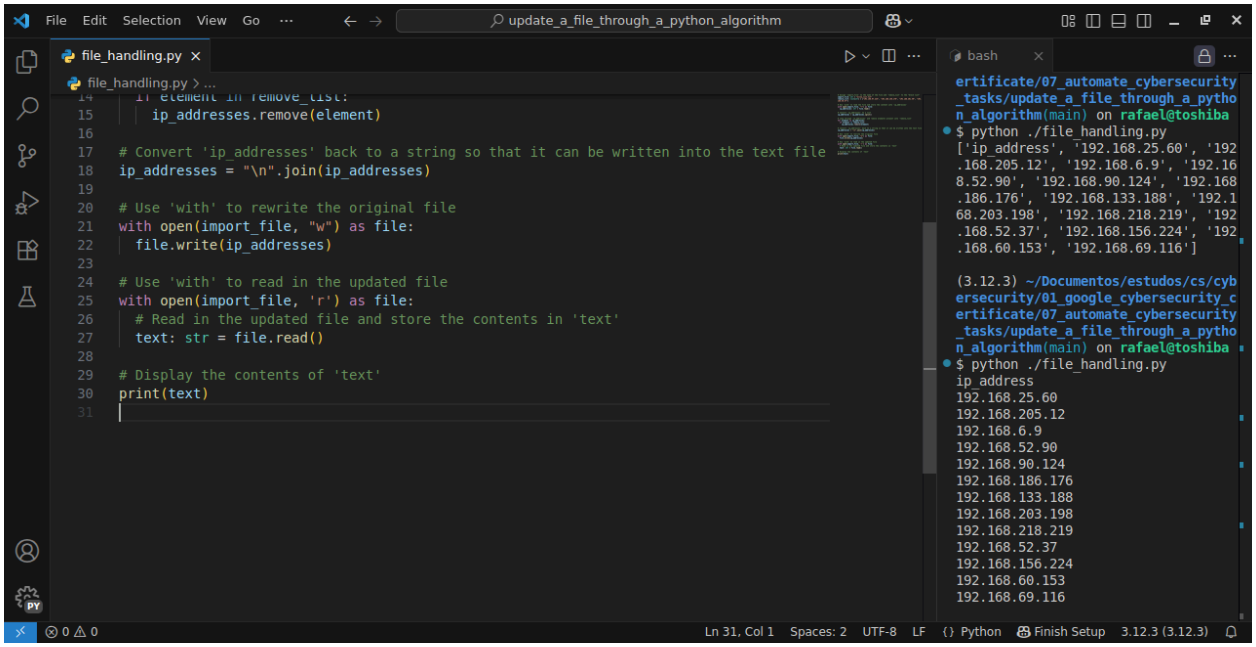
Remove IP addresses that are on the remove list



```python

# Use 'with' to read the file and store the content into 'ip_addresses'
with open(import_file, "r") as file:
  ip_addresses: str = file.read()

# Convert 'ip_addresses' to a list
ip_addresses = ip_addresses.split()

# Loop through 'ip_addresses' and remove elements present into 'remove_list'
for element in ip_addresses:
  if element in remove_list:
    ip_addresses.remove(element)

# Display 'ip_addresses'
print(ip_addresses)

```

```
192.168.58.57

(3.12.3) ~/Documentos/estudos/cs/cybersecurity/01_google_cybersecurity_certificate/07_automate_cybersecurity_tasks/update_a_file_through_a_python_alg
orithm(main) on rafael@toshiba
$ python ./file_handling.py
['ip_address', '192.168.25.60', '192.168.205.12', '192.168.6.9', '192.168.52.90', '192.168.90.124', '192.168.186.176', '192.168.133.188', '192.168.20
3.198', '192.168.218.219', '192.168.52.37', '192.168.156.224', '192.168.60.153', '192.168.69.116']

(3.12.3) ~/Documentos/estudos/cs/cybersecurity/01_google_cybersecurity_certificate/07_automate_cybersecurity_tasks/update_a_file_through_a_python_alg
orithm(main) on rafael@toshiba
$ 
```

Update the file with the revised list of IP addresses



```python
  if element in remove_list:
    ip_addresses.remove(element)

# Convert 'ip_addresses' back to a string so that it can be written into the text file
ip_addresses = "\n".join(ip_addresses)

# Use 'with' to rewrite the original file
with open(import_file, "w") as file:
  file.write(ip_addresses)

# Use 'with' to read in the updated file
with open(import_file, 'r') as file:
  # Read in the updated file and store the contents in 'text'
  text: str = file.read()

# Display the contents of 'text'
print(text)

```

```
ertificate/07_automate_cybersecurity
_tasks/update_a_file_through_a_pytho
n_algorithm(main) on rafael@toshiba
$ python ./file_handling.py
['ip_address', '192.168.25.60', '192
.168.205.12', '192.168.6.9', '192.16
8.52.90', '192.168.90.124', '192.168
.186.176', '192.168.133.188', '192.1
68.203.198', '192.168.218.219', '192
.168.52.37', '192.168.156.224', '192
.168.60.153', '192.168.69.116']

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ersecurity/01_google_cybersecurity_c
ertificate/07_automate_cybersecurity
_tasks/update_a_file_through_a_pytho
n_algorithm(main) on rafael@toshiba
$ python ./file_handling.py
ip_address
192.168.25.60
192.168.205.12
192.168.6.9
192.168.52.90
192.168.90.124
192.168.186.176
192.168.133.188
192.168.203.198
192.168.218.219
192.168.52.37
192.168.156.224
192.168.60.153
192.168.69.116
```

Summary

update_file(import_file, remove_list)

Provide a file name (the application needs to be executed within that file's folder) and a list of denied or blocked IPs for removal. Through file management using “with” and “open()” all operations are safely executed, upgrading the file contents.