# Algorithm for file updates in Python

## Project description

This project focuses on maintaining an up-to-date access control file for employees who are permitted to view restricted healthcare content. The file, which lists employee IP addresses, is regularly updated to reflect changes in staff working with personal patient records. Employees' access is managed by referencing a list of IP addresses that should be removed from the allow list due to changes in their work status. Using Python, I developed a script that automates the process of updating the allow list by removing any IP addresses found in the remove list. This ensures that only authorized employees retain access to sensitive information within the healthcare company's restricted subnetwork.

## Open the file that contains the allow list

Variable assignment: Assigns a string to import_file and a list of strings to remove_list.

```python
import_file = "allow_list.txt"
```

List: Square brackets [] create a list.

```python
remove_list = ["192.168.97.225", "192.168.158.170", "192.168.201.40", "192.168.58.57"]
```

with statement: Context manager for safe file handling.
open(): Built-in function to open a file. "r" means read mode.
as: Assigns the opened file object to file.

```python
with open(import_file, "r") as file:
```

## Read the file contents

file.read(): Reads the entire file content as a string.

```python
    ip_addresses = file.read()
```

## Convert the string into a list

split(): String method that splits the string into a list using whitespace as the separator.

```python
ip_addresses = ip_addresses.split()
```

## Iterate through the remove list

for loop: Iterates over each element in the ip_addresses list.

```
for element in ip_addresses:
```

if statement: Checks if element is in remove_list.

```
    if element in remove_list:
```

## Remove IP addresses that are on the remove list

remove(): List method that removes the first occurrence of the specified value.
remove(): Removes the matching element from the list.

```
        ip_addresses.remove(element)
```

## Update the file with the revised list of IP addresses

join(): String method that joins elements of a list into a single string, separated by a space.

```
ip_addresses = " ".join(ip_addresses)
```

with statement: Opens the file safely for writing.
"w": Write mode, overwrites the file.

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

file.write(): Writes the string to the file.

```
    file.write(ip_addresses)
```

## Summary

The algorithm begins by reading the current allow list of IP addresses from a file. It then splits the file contents into a list for easier processing. For each IP address, the script checks if it appears in the remove list and, if so, removes it from the allow list. After processing, the updated list is joined back into a string and written to the original file, overwriting the previous contents. This approach ensures that the allow list always reflects the most current access permissions. The use of Python's file handling and list manipulation features makes the process efficient and easy to maintain.