Python File Update Algorithm

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Project Description:

In this project, I developed a Python script to automate the process of updating a text file that contains a list of usernames. The goal was to remove a specific set of usernames from the file to simulate user deactivation or data sanitization in a cybersecurity context. This task demonstrates my ability to use Python file handling functions along with common string and list manipulation methods.

Python Code:

```
# List of users to remove
inactive_users = ['user123', 'guest45', 'test_user']

# Open and read the original file
with open('users.txt', 'r') as file:
    user_list = file.read().splitlines()

# Filter out inactive users
for user in inactive_users:
    if user in user_list:
        user_list.remove(user)

# Overwrite the file with the updated list
with open('users.txt', 'w') as file:
    for user in user_list:
        file.write(user + '\n')
```

Code Explanation:

- `with open(...) as file:`
  This is a context manager used to open a file. It ensures that the file is automatically closed after the block is executed.
- `.read()` and `.splitlines()`
  These methods are used together to read all lines from the file and convert them into a list without newline characters.
- `for user in inactive_users:`
  A for loop is used to iterate through each user we want to remove.
- `user_list.remove(user)`
  The `.remove()` method removes a specific element from the list if it exists. This step simulates deactivating users.

- `file.write(user + '\n')`
  This writes each remaining username back to the file on a new line.

Summary:

This Python activity enhanced my understanding of how to manipulate files in a secure and structured way using Python. I practiced using `open()`, `read()`, `write()`, `splitlines()`, and list manipulation with loops. This exercise is applicable in cybersecurity workflows such as user provisioning and log sanitization. Automating such processes improves efficiency and reduces human error in routine file updates.