

Test Case #3

Sample Input File

testcase1.txt
<pre>net user admin ya84*_o net group Administrators net group Administrators admin net group Users login admin ya84*_o uac Always net user alice Wvu_4_Life net user bob SHHHsecret net group Students net group Students alice net group Students bob net user tom geek_247 logout login alice Wvu_4_Life uac Change create file1.txt write file1.txt Text from Alice in file1 create file2.txt write file2.txt Text from Alice in file2 xcaccls file2.txt /E /G Users:R xcaccls file2.txt /E /G Students:RW program write file1.txt Example of a program trying to write. yes program read file1.txt logout login tom geek_247 uac Never program read file2.txt program write file2.txt Program attempting to write to a file. read file1.txt read file2.txt write file2.txt Text from Tom in file2 login bob SHHsecret logout login bob SHHsecret login bob SHHHsecret uac Never program write file2.txt Bob's program is writing to file2. write file2.txt Text from Bob in file2 read file2.txt logout login tom geek_247 xcaccls file1.txt /D alice logout end</pre>

Line-by-Line Expected Program Execution

```
>  
net user admin ya84*_o
```

Creates privileged user `admin` by adding entry to *accounts.txt* file containing username and plaintext (or hashed) password

Display message to terminal: "User admin created",
Display message to terminal: "Notify only on change"

Log message to *audit.txt* file: "User admin created"
Log message to *audit.txt* file: "Notify only on change"

```
>  
net group Administrators
```

Creates group `Administrators` without any users.

Display message to terminal: "Group Administrators created"

Log message to *audit.txt* file: "Group Administrators created"

```
>  
net group Administrators admin
```

Adds user `admin` to group `Administrators`

Display message to terminal: "User admin added to group Administrators"

Log message to *audit.txt* file: "User admin added to group Administrators"

```
>  
net group Users
```

Creates group `Users` without any users.

Display message to terminal: "Group Users created"

Log message to *audit.txt* file: "Group Users created"

```
>  
login admin ya84*_o
```

Locates entry for user `admin` in *accounts.txt* file and verifies that supplied password (or hash of supplied password) matches the one in the file

Successfully logs user `admin` into system

Display message to terminal: "User admin logged in"

Log message to *audit.txt* file: "User admin logged in"

```
>  
uac Always
```

Updated the current user's UAC settings to Always notify.

Successfully updates the current user's UAC settings to Always.

Display message to terminal: "Always notify"

Log message to *audit.txt* file: "Always notify"

```
>  
net user alice Wvu_4_Life
```

Creates user `alice` by adding entry to *accounts.txt* file containing username and plaintext (or hashed) password. Adds the user `alice` to group `Users`.

Display message to terminal: "User alice created"

Display message to terminal: "Notify only on change"

Log message to *audit.txt* file: "User alice created"

Log message to *audit.txt* file: "Notify only on change"

```
>  
net user bob SHHHsecret
```

Creates user `bob` by adding entry to *accounts.txt* file containing username and plaintext (or hashed) password. Adds the user `alice` to group `Users`.

Display message to terminal: "User bob created"

Display message to terminal: "Notify only on change"

Log message to *audit.txt* file: "User bob created"

Log message to *audit.txt* file: "Notify only on change"

```
>  
net group Students
```

Creates group `Students` without any users

Display message to terminal: "Group `Students` created"

Log message to *audit.txt* file: "Group `Students` created"

```
>  
net group Students alice
```

Adds user `alice` to group `Students`

Display message to terminal: "User `alice` added to group `Students`"

Log message to *audit.txt* file: "User `alice` added to group `Students`"

```
>  
net group Students bob
```

Adds user `bob` to group `Students`

Display message to terminal: "User `bob` added to group `Students`"

Log message to *audit.txt* file: "User `bob` added to group `Students`"

```
>  
net user tom geek_247
```

Creates user `tom` by adding entry to *accounts.txt* file containing username and plaintext (or hashed) password. Adds the user `alice` to group `Users`.

Display message to terminal: "User `tom` created"

Display message to terminal: "Notify only on change"

Log message to *audit.txt* file: "User `tom` created"

Log message to *audit.txt* file: "Notify only on change"

>

logout

Logs out user admin

Display message to terminal: "User admin logged out"

Log message to *audit.txt* file: "User admin logged out"

>

login alice Wvu_4_Life

Locates entry for user *alice* in *accounts.txt* file and verifies that supplied password (or hash of the supplied password) matches the one in the file

Successfully logs user *alice* into system

Display message to terminal: "User alice logged in"

Log message to *audit.txt* file: "User alice logged in"

>

uac Change

Updated the current user's UAC settings to notify only on change.

Successfully updates the current user's UAC settings to notify only on change.

Display message to terminal: "Notify only on change"

Log message to *audit.txt* file: "Notify only on change"

>

create file1.txt

Creates empty file named *file1.txt* with default permissions and *alice* as the owner

Display message to terminal: "File file1.txt with owner alice and default permissions created"

Log message to *audit.txt* file: "File file1.txt with owner alice and default permissions created"

```
>  
write file1.txt Text from Alice in file1
```

Appends supplied text as new line to *file1.txt*

Display message to terminal: "User alice wrote to file1.txt: Text from Alice in file1"

Log message to *audit.txt* file: "User alice wrote to file1.txt: Text from Alice in file1"

```
>  
create file2.txt
```

Creates empty file named *file2.txt* with default permissions and alice as the owner

Display message to terminal: "File file2.txt with owner alice and default permissions created "

Log message to *audit.txt* file: "File file2.txt with owner alice and default permissions created"

```
>  
write file2.txt Text from Alice in file2
```

Appends supplied text as new line to *file2.txt*

Display message to terminal: "User alice wrote to file2.txt: Text from Alice in file2"

Log message to *audit.txt* file: "User alice wrote to file2.txt: Text from Alice in file2"

```
>  
xcaccls file1.txt /E /G Users:R
```

Sets file permissions for *file1.txt* to allow read read for the Users group.

Display message to terminal: "The ACL for file1.txt appended by alice to include users:R"

Log message to *audit.txt* file: "The ACL for file1.txt appended by alice to include users:R"

```
>  
xcals file2.txt /E /G Students:RW
```

Sets `Students` group permissions for *file2.txt* to RW

Display message to terminal: "The ACL for file2.txt appended by alice to include Students:RW"

Log message to *audit.txt* file: "The ACL for file2.txt appended by alice to include Students:RW"

```
>  
program write file1.txt Example of a program trying to write.  
yes
```

Based on the UAC settings asks for permission to write to file. The user answers with “yes”. Appends supplied text to file1.txt.

Display message to terminal: "program wrote to file1.txt: Example of a program trying to write."

Log message to *audit.txt* file: "program wrote to file1.txt: Example of a program trying to write."

```
>  
program read file1.txt
```

Based on the UAC settings allows the program to read from the file. The program successfully reads from the file.

Display the content of the file1.txt to terminal: "program read file1.txt as: Text from Alice in file1
Example of a program trying to write."

Log message to *audit.txt* file: "program read file1.txt as: Text from Alice in file1
Example of a program trying to write."

>

logout

Logs out user `alice`

Display message to terminal: "User `alice` logged out"

Log message to *audit.txt* file: "User `alice` logged out"

>

login tom geek_247

Locates entry for user `tom` in *accounts.txt* file and verifies that supplied password (or hash of supplied password) matches the one in the file.

Successfully logs user `tom` into system

Display message to terminal: "User `tom` logged in"

Log message to *audit.txt* file: "User `tom` logged in"

>

uac Never

Updated the current user's UAC settings to never notify.

Successfully updates the current user's UAC settings to never notify.

Display message to terminal: "Never notify"

Log message to *audit.txt* file: "Never notify"

>

program read file2.txt

Based on the UAC settings, allows the program to read from the file. The program successfully reads from the file.

Display the content of the *file2.txt* to terminal: "program read *file2.txt* as: Text from Alice in *file2*"

Log message to *audit.txt* file: "program read *file2.txt* as: Text from Alice in *file1*"

```
>  
program write file2.txt Program attempting to write to a file.
```

The user does not have a write access to file2.txt. Access is denied.

Display message to terminal: "program denied write access to file2.txt"

Log message to *audit.txt* file: "program denied write access to file2.txt"

```
>  
read file1.txt
```

Display message to terminal: "User tom denied read access to file1.txt"

Log message to *audit.txt* file: "User tom denied read access to file1.txt"

```
>  
read file2.txt
```

Display the content of the file2.txt to terminal: "User tom reads file2.txt as: Text from Alice in file2"

Log message to *audit.txt* file: "User tom reads file2.txt as: Text from Alice in file2"

```
>  
write file2.txt Text from Tom in file2
```

Display message to terminal: "User tom denied write access to file2.txt"

Log message to *audit.txt* file: "User tom denied write access to file2.txt"

```
>  
login bob SHHsecret
```

Display message to terminal: "Login failed: simultaneous login not permitted"

Log message to *audit.txt* file: "Login failed: simultaneous login not permitted"

```
>  
logout
```

Logs out user tom

Display message to terminal: "User tom logged out"

Log message to *audit.txt* file: "User tom logged out"

```
>  
login bob SHHsecret
```

Display message to terminal: "Login failed: invalid username or password"

Log message to *audit.txt* file: " Login failed: invalid username or password"

```
>  
login bob SHHHsecret
```

Locates entry for user bob in *accounts.txt* file and verifies that supplied password (or hash of supplied password) matches the one in the file

Successfully logs user bob into system

Display message to terminal: "User bob logged in"

Log message to *audit.txt* file: "User bob logged in"

```
>  
uac Never
```

Updated the current user's UAC settings to never notify.

Successfully updates the current user's UAC settings to never notify.

Display message to terminal: "Never notify"

Log message to *audit.txt* file: "Never notify"

```
>  
program write file2.txt Bob's program is writing to file2.
```

Based on the UAC settings, allows writing to the file. Appends supplied text to file2.txt.

Display message to terminal: "program wrote to file2.txt: Bob's program is writing to file2"

Log message to *audit.txt* file: "program wrote to file2.txt: Bob's program is writing to file2"

```
>  
write file2.txt Text from Bob in file2
```

Appends supplied text as new line to *file2.txt*

Display message to terminal: "User bob wrote to file2.txt: Text from Bob in file2"

Log message to *audit.txt* file: "User bob wrote to file2.txt: Text from Bob in file2"

```
>  
read file2.txt
```

User bob successfully reads *file2.txt*

Display message to terminal: "User bob reads file2.txt as: Text from Alice in file2 Text from Bob in file2"

Log message to *audit.txt* file: "User bob reads file2.txt as: Text from Alice in file2 Text from Bob in file2"

```
>  
logout
```

Logs out user bob

Display message to terminal: "User bob logged out"

Log message to *audit.txt* file: "User bob logged out"

```
>  
login tom geek_247
```

Locates entry for user `tom` in *accounts.txt* file and verifies that supplied password (or hash of supplied password) matches the one in the file

Successfully logs user `tom` into system

Display message to terminal: "User `tom` logged in"

Log message to *audit.txt* file: "User `tom` logged in"

```
>  
xcaccls file1.txt /D alice
```

Overwrites ACL for *file1.txt* to include only `D:alice` (deny access to `alice`)

Display message to terminal: "Error with `xcaccls`: only file owner or member of Administrators group may run command"

Log message to *audit.txt* file: "Error with `xcaccls`: only file owner or member of Administrators group may run command"

```
>  
logout
```

Logs out user `tom`

Display message to terminal: "User `tom` logged out"

Log message to *audit.txt* file: "User `tom` logged out"

```
>  
end
```

Program writes out the *groups.txt* and *files.txt* files, performs necessary clean-up, and terminates

Final Content of User Created Files

file1.txt
Text from Alice in file1 Example of a program trying to write write.

file2.txt
Text from Alice in file2 Text from Bob in file2 Bob's program is writing to file2

groups.txt Content

groups.txt
Administrators: admin Users: alice bob tom Students: alice bob

files.txt Content

files.txt
file1.txt alice (alice:F,Administrators:F) file2.txt alice (alice:F,Administrators:F,Users:R,Students:RW)

accounts.txt Content (An example format with plain ASCII passwords)

accounts.txt
admin ya84*_o Always notify alice Wvu_4_Life Notify only on change bob SHHHsecret Never notify tom geek_247 Never notify

Audit Log Content

audit.txt

```
User admin created
Notify only on change
Group Administrators created
User admin added to group Administrators
Group Users created
User admin logged in
User alice created
Notify only on change
User bob created
Notify only on change
Group Students created
User alice added to group Students
User bob added to group Students
User tom created
Notify only on change
User admin logged out
User alice logged in
File file1.txt with owner alice and default permissions created
User alice wrote to file1.txt: Text from Alice in file1
File file2.txt with owner alice and default permissions created
User alice wrote to file2.txt: Text from Alice in file2
The ACL for file2.txt appended by alice to include users:R
The ACL for file2.txt appended by alice to include Students:RW
program wrote to file1.txt: Example of a program trying to write.
program read file1.txt as: Text from Alice in file1
Example of a program trying to write.
User alice logged out
User tom logged in
Never notify
program read file2.txt as: Text from Alice in file2
program denied write access to file2.txt
User tom denied read access to file1.txt
User tom read file2.txt as:
Text from Alice in file2
User tom denied write access to file2.txt
Login failed: simultaneous login not permitted
User tom logged out
Login failed: invalid username or password
User bob logged in
Never notify
program wrote to file2.txt: Bob's program is writing to file2.
User bob wrote to file2.txt: Text from Bob in file2
User bob reads file2.txt as:
Text from Alice in file2
Text from Bob in file2
User bob logged out
```

```
User tom logged in  
Error with xcacls: Only file owner or member of Administrators group  
may run command  
User tom logged out
```