Experiment No 4

Apply security to file folder or application using access permission and verify

I. Minimum Theoretical Background

Permission Types

There are basically six types of permissions in Windows: Full Control, Modify, Read & Execute, List Folder Contents, Read, and Write. List Folder Contents is the only permission that is exclusive to folders. There are more advanced attributes, but you'll never need to worry about those. So what do each of these permissions mean? Well, here is a nice chart from Microsoft's website that breaks on what each permissions means for files and for folders:

Permission	Meaning for Folders	Meaning for Files
Read	Permits viewing and listing of files and subfolders	Permits viewing or accessing of the file's contents
Write	Permits adding of files and subfolders	Permits writing to a file
Read & Execute	Permits viewing and listing of files and subfolders as well as executing of files; inherited by files and folders	Permits viewing and accessing of the file's contents as well as executing of the file
List Folder Contents	Permits viewing and listing of files and subfolders as well as executing of files; inherited by folders only	N/A
Modify	Permits reading and writing of files and subfolders; allows deletion of the folder	Permits reading and writing of the file; allows deletion of the file
Full Control	Permits reading, writing, changing, and deleting of files and subfolders	Permits reading, writing, changing and deleting of the file

Editing Permissions

Before you can edit any permissions, you have to have ownership of the file or folder. If the owner is another user account or a system account like Local System or Trusted Installer, you won't be able to edit the permissions. If you set Full Control permissions on a folder for a user, the user will be able to delete any file or subfolder regardless of what permissions are set for those files or subfolders.

By default permissions are inherited, so if you want custom permissions for a file or folder, you have to first disable inheritance. Deny permissions override Allow permissions, so use them sparingly and preferably only on specific users, not groups
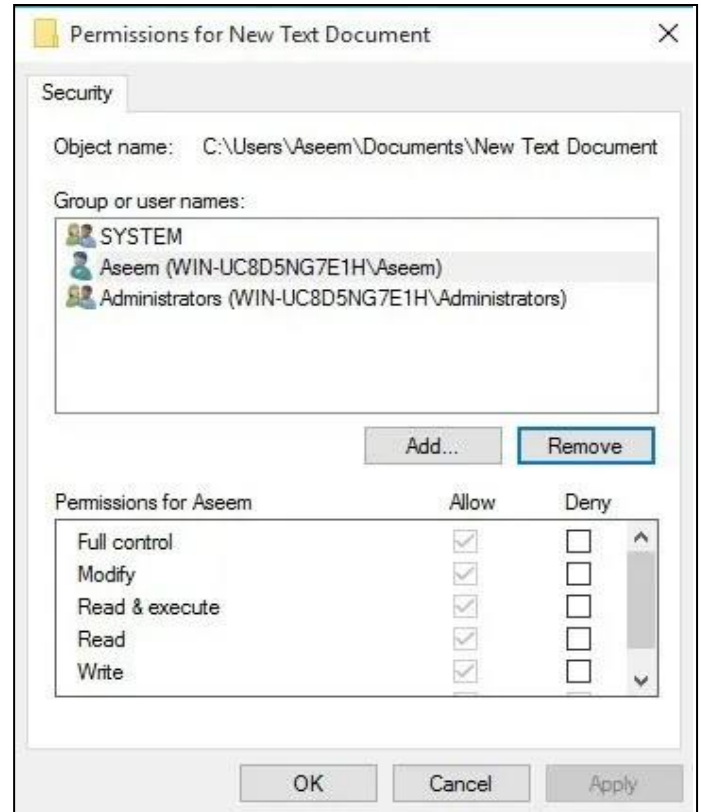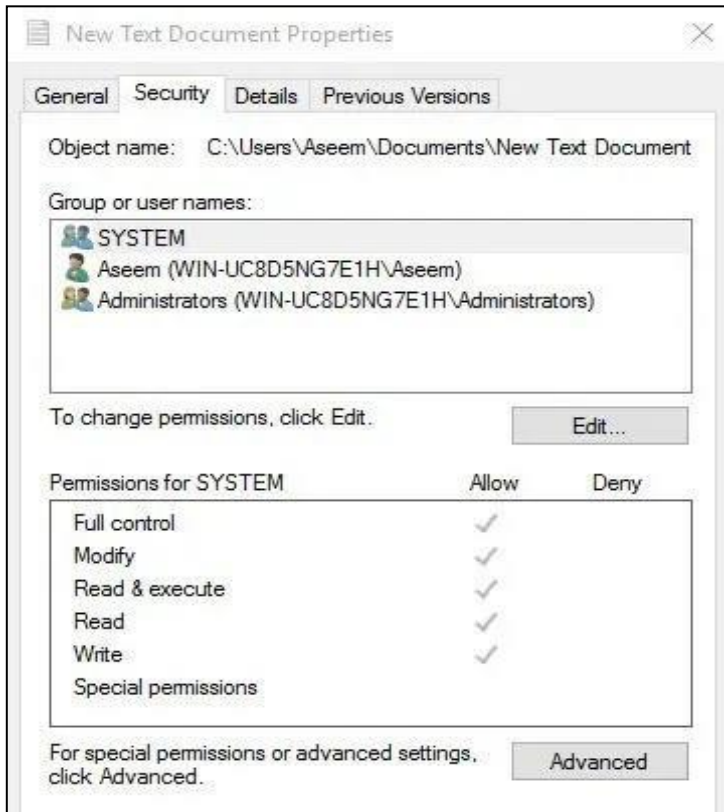

II. Procedure

If you right-click on a file or folder, choose Properties and click on the Security tab, we can now try to edit some permissions. Go ahead and click the Edit button to get started.
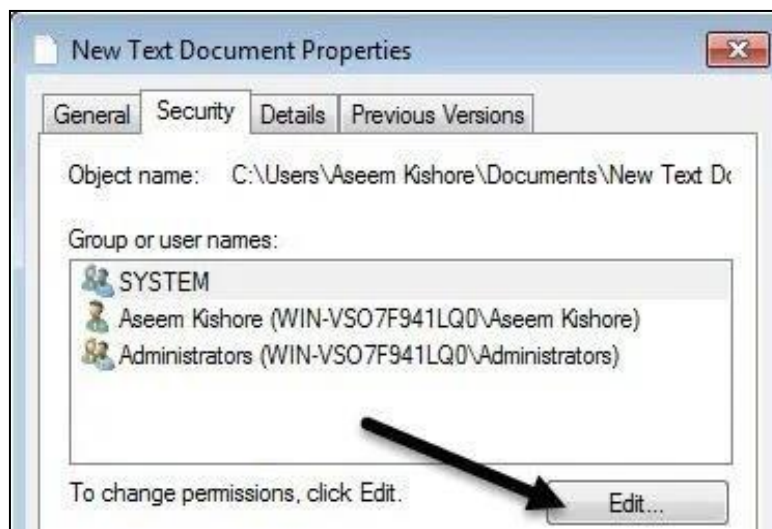
At this point, there are a couple of things you can do. Firstly, you'll notice that the Allow column is probably greyed out and can't be edited. This is because of the inheritance I was talking about earlier.
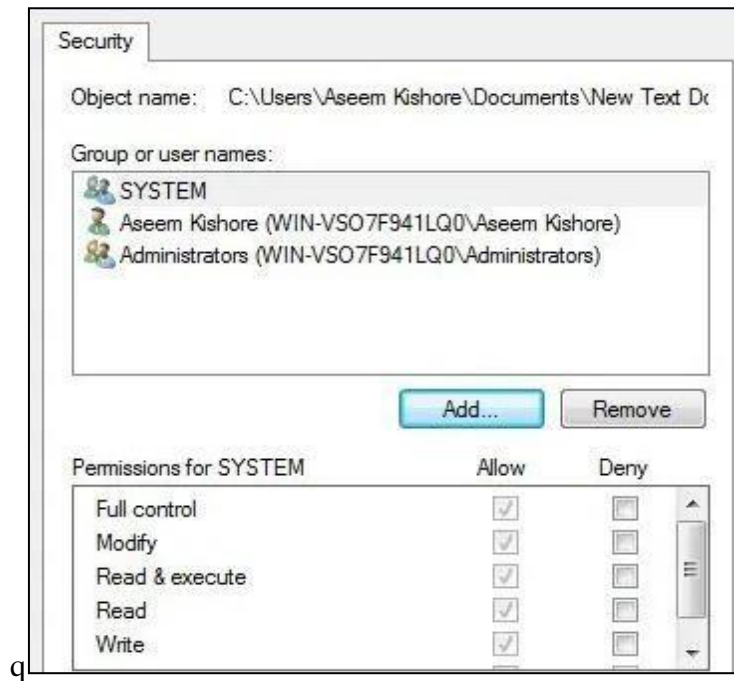

However, you can check items on the Deny column. So if you just want to block access to a folder for a specific user or group, click the Add button first and once added, you can check the Deny button next to Full Control.
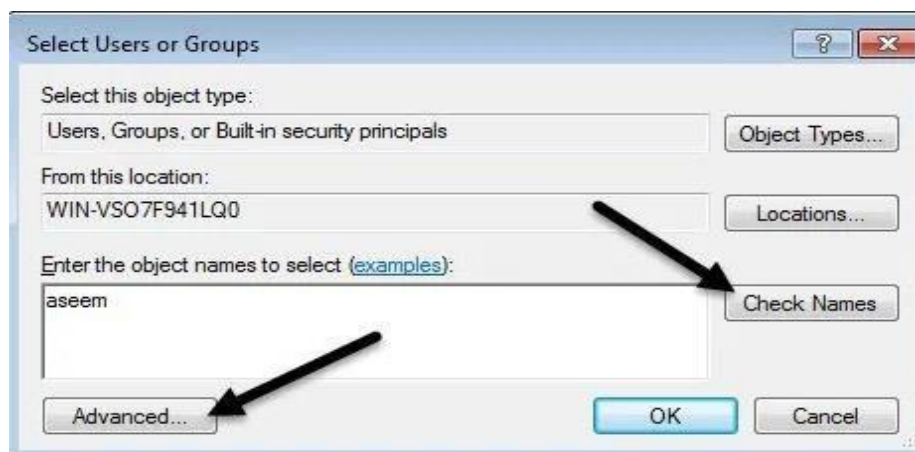
When you click the Add button, you have to type in the user name or group name into the box and then click on Check Names to make sure it's correct. If you don't remember the user or group name, click on the Advanced button and then just click Find Now. It will show you all the users and groups.
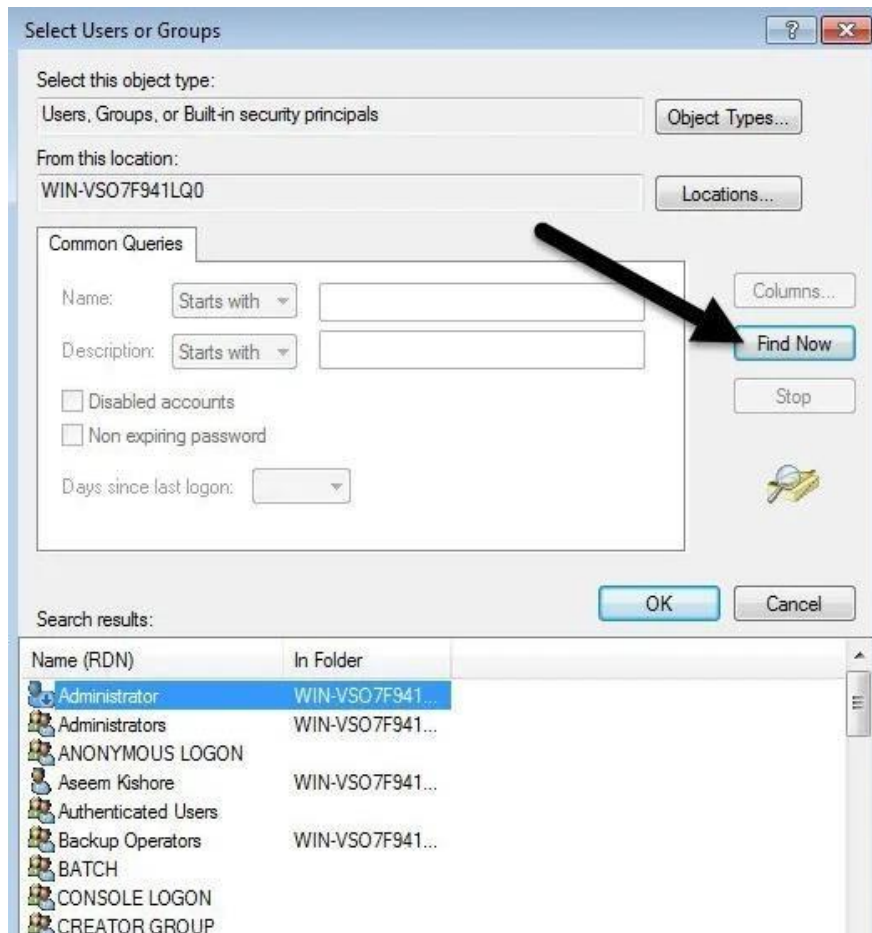
Click OK and the user or group will be added to the access control list. Now you can check the Allow column or Deny column. As mentioned, try to use Deny only for users instead of groups.
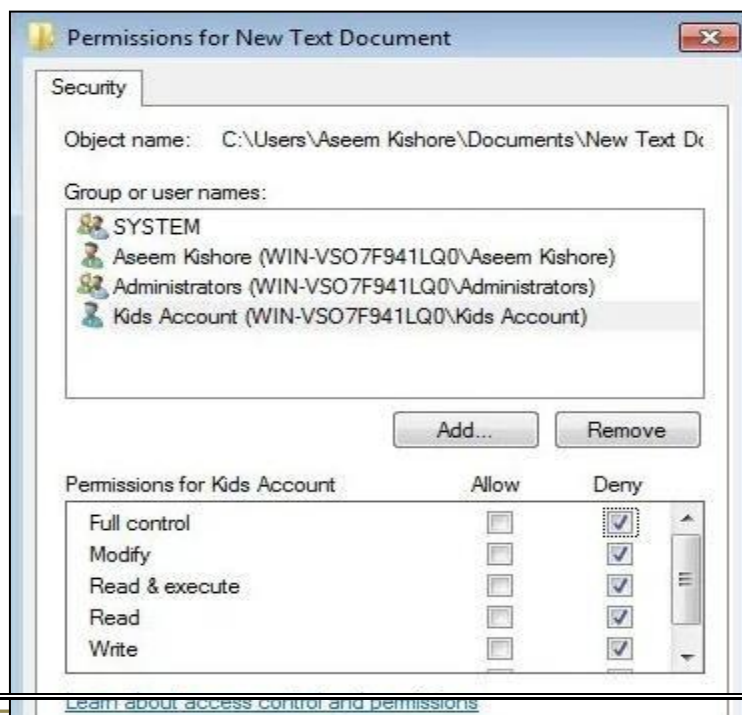
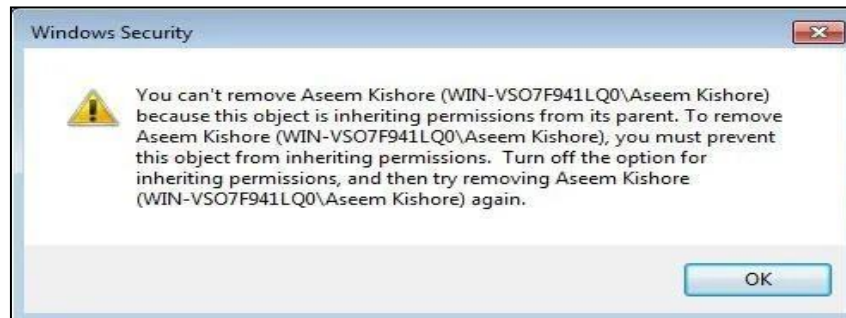Now what happens if we try to remove a user or group from the list. Well, you can easily remove the user you just added, but if you try to remove any of the items that were already there, you'll get an error message.

In order to disable inheritance, you have to go back to the main Security tab for the file or folder and click on the Advanced button at the bottom.
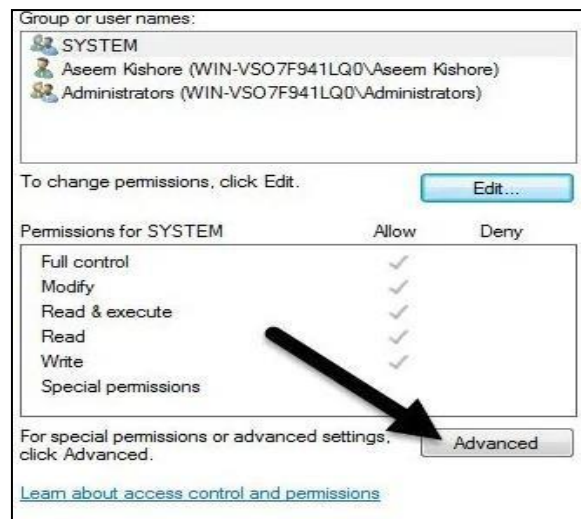
On Windows 7, you'll one extra tab for Owner. In Windows 10, they just moved that to the top and you have to click Change. Anyway, in Windows 7, click on Change Permissions at the bottom of the first tab.
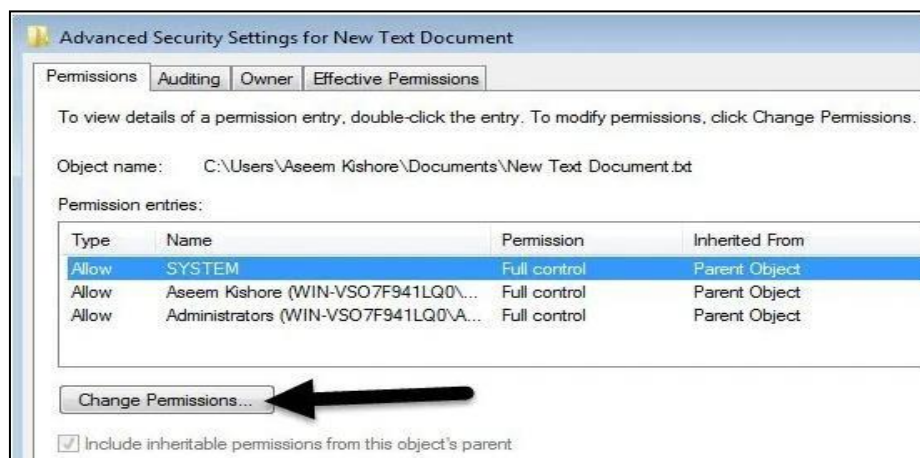
On the Advanced Security Settings dialog, uncheck the Include inheritable permissions from this object's parent box.
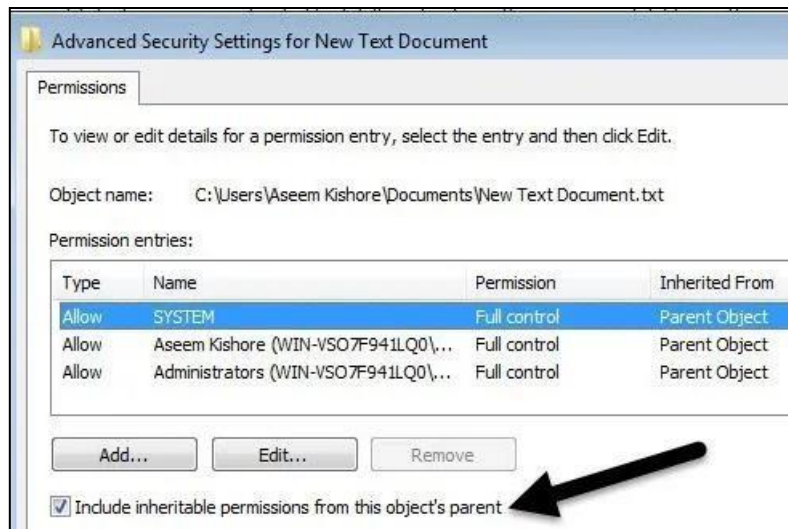
When you do that, another dialog box will popup and it will ask you whether you want to convert the inherited permissions to explicit permissions or whether you just want to remove all the inherited permissions.

Unless you really know exactly what permissions you want, I suggest choosing Add (explicit permissions) and then just removing whatever you don't want afterwards. Basically, clicking on Add will keep all the same permissions, but now they won't be greyed out and you can click Remove to delete any user or group. Clicking Remove, will start you off with a clean slate.

In Windows 10, it looks slightly different. After clicking on the Advanced button, you have to click on Disable Inheritance.

Name: C:\Users\Aseem\Documents\New Text Document.txt

Owner: Aseem (WIN-UC8D5NG7E1H\Aseem) 🛡 Change

Permissions | Auditing | Effective Access

For additional information, double-click a permission entry. To modify a permission entry, select the entry and click Edit

Permission entries:

	Type	Principal	Access	Inherited from
👥	Allow	SYSTEM	Full control	C:\Users\Aseem\Documents\
👥	Allow	Administrators (WIN-UC8D5NG7E1H\Admi...	Full control	C:\Users\Aseem\Documents\
👤	Allow	Aseem (WIN-UC8D5NG7E1H\Aseem)	Full control	C:\Users\Aseem\Documents\

Add | Remove | View

Disable inheritance

When you click on that button, you'll get the same options as in Windows 7, but just in a different form. The Convert option is the same as Add and the second option is the same as Remove

Block Inheritance ✕

⚠ What would you like to do with the current inherited permissions?

You are about to block inheritance to this object, which means that permissions inherited from a parent object will no longer be applied to this object.

→ Convert inherited permissions into explicit permissions on this object.

→ Remove all inherited permissions from this object.

Cancel
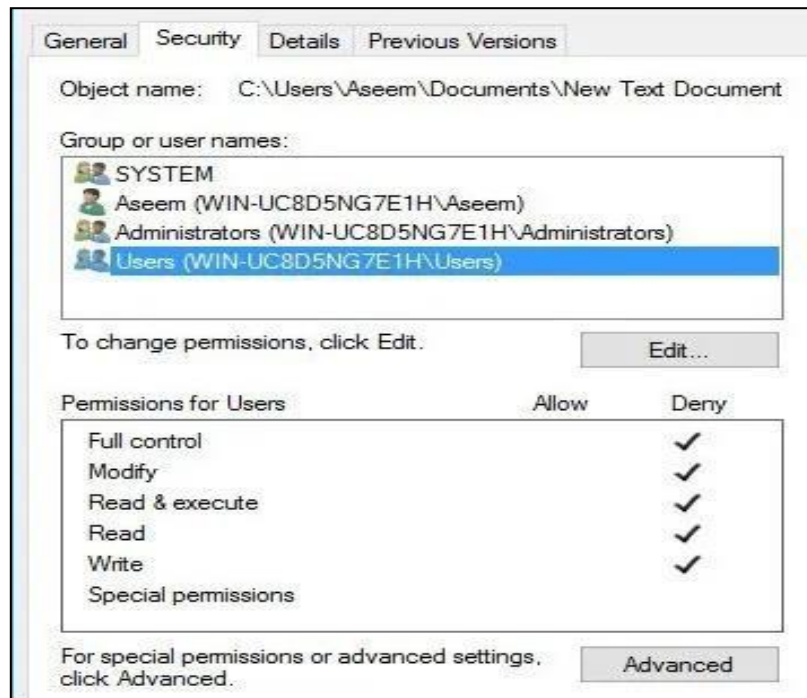
The only thing you have to understand now is the Effective Permissions or Effective Access tab. So what is effective permissions? Well, let's see the example above. I have a text file and my account, Aseem, has Full Control. Now what if I add another item to the list so that the group Users is denied Full Control.
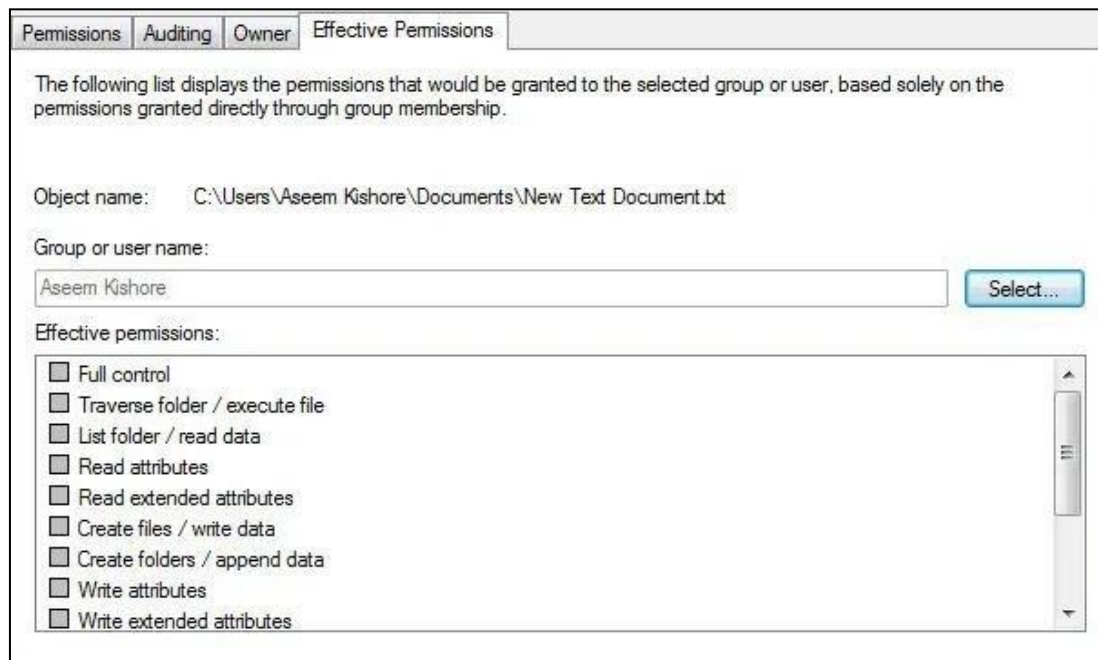
The only problem here is that the Aseem account is also part of the Users group. So I have Full Control in one permission and Deny in another, which one wins? Well, as I mentioned above, Deny always overrides Allow, so Deny will win, but we can also confirm this manually.

Click on Advanced and go to the Effective Permissions or Effective Access tab. In Windows 7, click the Select button and type in the user or group name. In Windows 10, click the Select a user link.

In Windows 7, once you select the the user, it will instantly show the permissions in the list box below. As you can see, all of the permissions are unchecked, which makes sense.

In Windows 10, you have to click the View effective access button after selecting the user. You'll also get a nice red X for no access and a green check mark for allowed access, which is a bit easier to read.
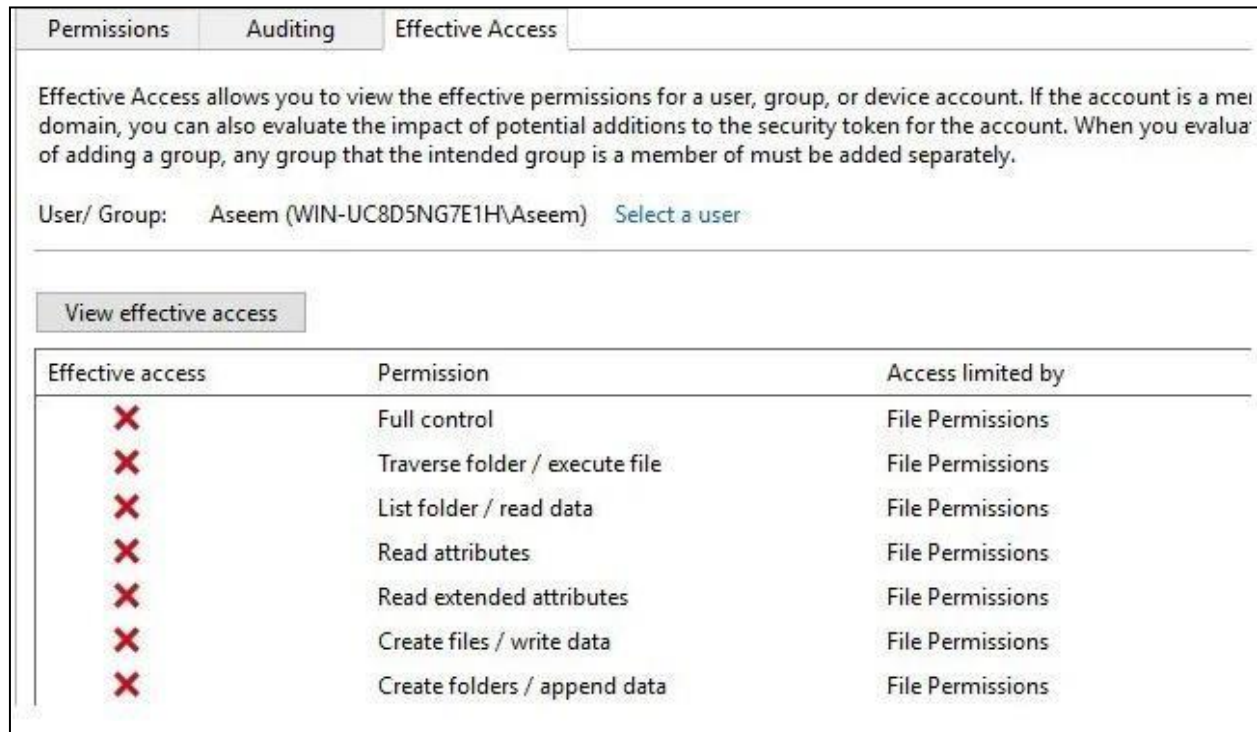
III. Conclusion

Hence we had successfully assign different permissions and delete permissions of the file and folder.

IV. Exercise

Q.1 Which are different permissions given to file?

Q.2 Which are different benefits of giving permission to file?

Q.3 Is it possible to delete permission of file once given? justify.

Q.4 Write a short note on file permissions.

Q.5 State the meaning of read and write permission for folder.

Answers

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Network and Information Security(22620)

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