**Assignment #5 – ‘Access Control Policies ’**

**Initial commands:-**

*mkdir shared\_folder*

*docker run --name acp -d -t -v "$(pwd)"/shared\_folder:/shared\_folder ubuntu:20.04*

**Starting and login to the container:-**

*docker start acp {needed if we want to log in again into the docker}*

*sudo docker exec -it acp bash*

**Install acl package:-**

*apt-get update*

*apt-get install acl*

**Making Directory structure:-**

*mkdir ACP*

*cd ACP*

*mkdir assignments*

*cd assignments/*

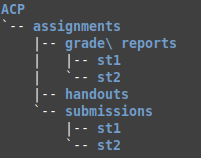
*mkdir 'handouts' 'submissions' 'grade reports’*

*mkdir submissions/st1 submissions/st2*

*mkdir grade\ reports/st1 grade\ reports/st2*

**Viewing directory structure using tree command:-**

*sudo apt-get install tree {not required, just a useful command to view directory/Testing}*

*tree ACP/*

**Creating groups:-**

*groupadd -g 20001 instructors*

*groupadd -g 21001 tas*

*groupadd -g 22001 students*

**Creating Users:-**

*useradd -g instructors -u 10001 alice*

*useradd -g tas -u 11001 bob*

*useradd -g tas -u 11002 charlie*

*useradd -g students -u 12001 st1*

*useradd -g students -u 12002 st2*

**Confirming the users being made:-**

*cut -d: -f1 /etc/passwd*

**Setting permissions for assignments directory:-**

*setfacl -m g:instructors:rx /ACP/assignments/*

*setfacl -m g:tas:r /ACP/assignments/*

*setfacl -m g:students:rx /ACP/assignments/*

If the TA user account is removed from the TA group, it will lose any permissions when accessing the file system. this will ensure that anyone else is not able to access the directory.

*setfacl -m o::r /ACP/assignments/*

**Setting the permissions to the handout’s directory:-**

Only instructors and TAs are allowed to write the assignment handouts, and all instructors, TAs, and students can read the assignment handouts.

*setfacl -m g:instructors:rwx /ACP/assignments/handouts*

*setfacl -m g:tas:rwx /ACP/assignments/handouts*

*setfacl -m g:students:rx /ACP/assignments/handouts*

*setfacl -m o::r /ACP/assignments/handouts*

**Setting the permissions to the submission’s directory:-**

Instructors and TAs can read students’ assignment submissions. A student can read his or her own assignment submissions but not other students’ submissions. A student can write (update) his or her own assignment submission but not other students’ assignment submissions. Instructors and TAs are not allowed to write to students’ assignment submissions.

*Setfacl -m g:instructors:rx /ACP/assignments/submissions*

*setfacl -m g:tas:rx /ACP/assignments/submissions*

*setfacl -m g:students:rx /ACP/assignments/submissions*

*setfacl -m o::r /ACP/assignments/submissions*

**#Not allowing students to access each other’s directory:-**

*setfacl -m u:st1:rwx /ACP/assignments/submissions/st1*

*setfacl -m u:st1:--- /ACP/assignments/submissions/st2*

*setfacl -m u:st2:--- /ACP/assignments/submissions/st1*

*setfacl -m u:st2/rwx /ACP/assignments/submissions/st2*

**Setting the permissions to grade reports directory:-**

Instructors can read and write the grade reports. TAs can read the grade reports but not write any grade reports. A student is allowed to read his or her own grade report but not other students’ grade reports. A student is not allowed to write any grade reports.

*setfacl -m g:instructors:rwx /ACP/assignments/grade\reports*

*setfacl -m g:tas:rx /ACP/assignments/grade\reports*

*setfacl -m g:students:rx /ACP/assignments/grade\reports*

*setfacl -m o::r /ACP/assignments/grade\reports*

**# Only the instructor can write into the student’s directory:-**

*setfacl -m g:instructors:rwx /ACP/assignments/grade\reports/st1*

*setfacl -m g:instructors:rwx /ACP/assignments/grade\reports/st2*

**# Not allowing students to access each other’s directory:-**

*setfacl -m u:st1:rx /ACP/assignments/grade\reports/st1*

*setfacl -m u:st2:--- /ACP/assignments/grade\reports/st1*

*setfacl -m u:st1:--- /ACP/assignments/grade\reports/st2*

*setfacl -m u:st2:rx /ACP/assignments/grade\reports/st2*

**Code.**

1. A well-explained process is available in a markdown file. Click [here](https://github.com/AYUSHs799/IITGN_CS431/blob/main/Assignment_5%20Access_Control_Policies/Process.md) to access the file or navigate to [*https://github.com/AYUSHs799/IITGN\_CS431/blob/main/Assignment\_5%20Access\_Control\_Policies/Process.md*](https://github.com/AYUSHs799/IITGN_CS431/blob/main/Assignment_5%20Access_Control_Policies/Process.md)*.*
2. Link to the folder containing all the files : (In case any of the link changes) [*https://github.com/AYUSHs799/IITGN\_CS431*](https://github.com/AYUSHs799/IITGN_CS431)

**References.**

1. [*https://www.tecmint.com/secure-files-using-acls-in-linux/*](https://www.tecmint.com/secure-files-using-acls-in-linux/)
2. [*https://www.ibm.com/docs/en/zos/2.3.0?topic=scd-setfacl-set-remove-change-access-control-lists-acls*](https://www.ibm.com/docs/en/zos/2.3.0?topic=scd-setfacl-set-remove-change-access-control-lists-acls)
3. [*https://www.geeksforgeeks.org/access-control-listsacl-linux/*](https://www.geeksforgeeks.org/access-control-listsacl-linux/)
4. [*https://access.redhat.com/documentation/en-us/red\_hat\_enterprise\_linux/7/html/system\_administrators\_guide/ch-access\_control\_lists*](https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html/system_administrators_guide/ch-access_control_lists)