Access Control Lists (ACL) in Linux

What is ACL ?
Access control list (ACL) provides an additional, more flexible permission mechanism for file systems. It is designed to assist with UNIX file permissions. ACL allows you to give permissions for any user or group to any disc resource.

Use of ACL :
Think of a scenario in which a particular user is not a member of group created by you but still you want to give some read or write access, how can you do it without making user a member of group, here comes in picture Access Control Lists, ACL helps us to do this trick.

Basically, ACLs are used to make a flexible permission mechanism in Linux.
From Linux man pages, ACLs are used to define more fine-grained discretionary access rights for files and directories.

setfacl and **getfacl** are used for setting up ACL and showing ACL respectively.

For example:
```
getfacl FILENAME
```

Output:
```
# file: FILENAME
# owner: iafzal
# group: iafzal
user::rw-
group::rw-
other::r--
```

- **List of commands for setting up ACL :**

1) To add permission for user
```
setfacl -m "u:user:permissions" /path/to/file
```

2) To add permissions for a group
```
setfacl -m "g:group:permissions" /path/to/file
```

3) To allow all files or directories to inherit ACL entries from the directory it is within
```
setfacl -dm "entry" /path/to/dir
```

4) To remove a specific entry
```
setfacl -x "entry" /path/to/file
```

5) To remove all entries
```
setfacl -b path/to/file
```

For example:
```
setfacl -m u:iafzal:rwx FILENAME
```

- **Modifying ACL using setfacl:**
  To add permissions for a user (user is either the user name or ID):

```
# setfacl -m "u:user:permissions"
```

To add permissions for a group (group is either the group name or ID):

```
# setfacl -m "g:group:permissions"
```

To allow all files or directories to inherit ACL entries from the directory it is within:

```
# setfacl -dm "entry"
```

Example :

```
setfacl -m u:iafzal:r-x FILENAME
```

- **View ACL :**
  To show permissions :

```
# getfacl FILENAME
```

- **Remove ACL for Everyone:**
  If you want to remove the set ACL permissions, use setfacl command with -b option. For example

```
# setfacl –b FILENAME
```

ACL puts a plus + sign after it assign the permission to a FILE

rw-rwxr–+, this indicates there are extra ACL permissions set which you can check by getfacl command.