

## A) Users and user accounts.

**Before you make some changes to important files it's safer to have original as a copy. Make a backup copy of files /etc/passwd and /etc/shadow and name these files passwd.ORIG and shadow.ORIG.**

```
:~$ cd /etc
:/etc$ sudo cp passwd passwd.ORIG
:/etc$ sudo cp shadow shadow.ORIG
```

**Use adduser command to create accounts for following users: ole, dole, doffen.**

```
:/etc$ adduser ole
adduser: Only root may add a user...      - we need to use sudo
```

```
:/etc$ sudo adduser ole
...
New password: ole123
...
```

```
:/etc$ sudo adduser dole
...
New password: dole123
...
```

```
:/etc$ sudo adduser doffen
...
New password: doffen123
...
```

**Look at file /etc/passwd and find registered users there. If new users got UserID under 1000, delete them, and create again using next available UserID and GroupID number.**

```
:/etc$ less passwd | grep ole
ole:x:1001:1001:,,,:/home/ole:/bin/bash
dole and doffen lines are almost identical, just with UserID and GoupID 1002 and 1003.
```

**Give some details about info that can be registered about users in file /etc/passwd.**

ole	- username, separated by colon
x	- means that user has a password
1001 (first occurrence)	- UserID
1001 (second occurrence)	- GroupID
,,,	- user info. Here comes info about name, phone number etc.
/home/ole	- users home directory.
/bin/bash	- path to user's command shell

## B) Creating user.

**Create a new user with “adduser” command. Look at content in file /etc/passwd. What is a UserID nr. for a new user? Try to create another user account with command “useradd”.**

```
:~$ sudo adduser user1
... now comes question about password, full name etc.
```

```
:~$ less /etc/passwd | grep user1
user1:x:1004          - new user got next available number.
```

```
:~$ sudo useradd user2
User account was created at once, without any questions about details.
```

```
:~$ less /etc/passwd | grep user2
user2:x:1005:1005::/home/user2:/bin/bash
```

**Explain a difference between commands adduser and useradd.**

adduser command is user friendlier and interactive. Actually, it is a perl script that uses useradd in background.

## C) Permissions for user home directory.

**What are permissions for home directory after creation? What does these permissions mean? For example, does ole have access to dole’s home directory? Can ole access hetti home directory? Can hetti access netti home directory? Explain.**

```
:~$ ls -l /home
```

drwxr-xr-x - all folders get such permissions automatically.

It means all permissions for owner, read- and execute permissions for group and for owners. Users can read content in other’s home directories, but they cannot create, move, change or delete files inside these folders.

**Is it possible to make hetti, netti and letti read each other home folders and at same time block ole, dole and doffen from reading these folders? Explain.**

```
:~$ sudo groupadd group1          - creating a new group
:~$ sudo usermod -a -G group1 hetti - adding hetti
:~$ sudo usermod -a -G group1 netti - adding netti
:~$ sudo usermod -a -G group1 letti - adding letti

:~$ cd ..
:/home$ sudo chmod -R 750 hetti    - updating permissions for hetti’s home folder
:/home$ sudo chmod -R 750 netti    - updating permissions for netti’s home folders
:/home$ sudo chmod -R 750 letti    - updating permissions for netti’s home folders
```

:/home\$ sudo chgrp -R group1 hetti	- this line makes hetti a group owner
:/home\$ sudo chgrp -R group1 netti	- this makes netti a group owner
:/home\$ sudo chgrp -R group1 letti	- this makes letti a group owner

... signing in with netti account ...

:/home\$ newgrp group1	- swapping to group group1 (works without it also)
:/home\$ cd hetti	- here comes content of hetti home folder

Other users apart from group1 can't read content in hetti/netti/letti folder.

### How can you give user ole access to read hetti/netti/letti home folders?

~\$ sudo usermod -a -G group1 ole	- that line adds user ole to group group1
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### How can you make hetti create and edit files in netti home folder?

By default, Linux's permission system does not allow for this. The good news is that Linux actually supports [ACLs](#) (access control lists), which allow for a much more fine-grained access control. In order to enable ACLs, you have to add `acl` to the mount options. For instance, if the partition that contains the directory where you want to set up advanced access control is mounted like this in `/etc/fstab`.

~\$ sudo nano /etc/fstab	
.. /dev/sda1 / ext4 <b>acl</b> ,defaults 0 1	- adding <b>acl</b> here
... restarting Linux	

~\$ sudo groupadd group2	- creating a new group
~\$ sudo usermod -a -G group2 hetti	- adding hetti to that group
~\$ sudo usermod -a -G group2 netti	- adding netti to that group

:/home\$ sudo chgrp -R group2 hetti	- making hetti owner of group group2
:/home\$ sudo chgrp -R group2 netti	- making netti owner of group group2

~\$ sudo setfacl -m g:group2:rwX /home/hetti	- updating permissions for hetti home f., group2
~\$ sudo setfacl -m g:group2:rwX /home/netti	- updating permissions for netti home f., group2

~\$ sudo setfacl -m g:group1:rx /home/hetti	- updating permissions for hetti home f., group1
~\$ sudo setfacl -m g:group1:rx /home/netti	- updating permissions for netti home f., group1
~\$ sudo setfacl -m g:group1:rx /home/letti	- updating permissions for letti home f., group1

## D) Login shell (another program instead) for user.

**When created, user account gets a login shell, for example bash. What happens if you change bash to nano editor or alsamixer program? Check if you have alsamixer installed. Try both options. Think what advantages can it give in daily use of Linux.**

```
:~$ which alsamixer
/usr/bin/nano - alsamixer is installed on my pc
```

```
:~$ sudo nano /etc/passwd
... found user2 at the end of file, changed word (bash) with (alsamixer)
```

Log out, log in with user2, opened terminal as usually.  
A window called terminal appeared, but it has content of alsamixer.  
So, it is alsamixer that runs instead of terminal.

```
:~$ sudo nano /etc/passwd
... found user1, changed last word (bash) with (nano)
```

Log out, log in with user1, opened terminal as usually.  
A window called terminal appeared, but it has content of nano editor.

It can be helpful to prevent unexperienced users from typing commands in terminal. Another, harmless program can be opened instead.

## E) Preventing login

**Sometimes it can be actual to prevent login for some users. User trying to login will get a message that account is suspended. Can you make changes in /etc/passwd file to prevent login? Google this question and give answer afterwards.**

### 1. By modifyind shadow file.

```
:~$ usermod -L dole
```

```
:~$ su dole
Can't log in, existing password doesn't work.
```

```
:~$ sudo nano /etc/shadow
... removing ! in line dole:
dole:!!$6.....
Now I can log in with dole account as usually.
```

### 2. passwd file (didn't work on my pc).

```
:~$ sudo nano /etc/passwd
dole:x:1002:1002:,,,:/home/dole:/sbin/nologin - /bin/bash is changed with /sbin/nologin
```

```
:~$ sudo chsh -s /bin/false dole - that shall be correct solution for debian
```

## F) Users with same UserID.

**Create a new user with same UserID as existing user, for example user doffen. Find out what consequences it may have.**

### Info from Google:

Two users can have the same UID because it is just a number in a text file so you can set it to anything you want, including a value that is already used.

However Debian prevents me to do it with adduser kommando:

```
:/etc$ sudo adduser -u 1003 doffen2  
adduser: The UID 1003 already in use.
```

```
:/etc$ sudo adduser doffen  
adduser: The user 'doffen' already exists.
```

```
:/etc$ sudo adduser doffen2  
(Creating new user doffen2 with UID 1007)
```

```
:/etc$ sudo nano passwd  
...overwriting UID for doffen2 to 1003 manually, saving file
```

```
:/etc$ id doffen  
uid=1003(doffen) gid=1003(doffen) groups=1003(doffen)
```

```
:/etc$ id doffen2  
uid=1003(doffen) gid=1003(doffen) groups=1003(doffen)
```

Now we have two users with same UserID. Looks like everything works fine, probably some cons will be discovered later.

## G) Deleting users.

**Clean up, remove all users you have created earlier, ole, dole, doffen, hett, netti and letti.**

**Check following after that:**

- home directories are gone
- users are removed from file `/etc/passwd`
- groups are removed from file `/etc/groups`

```
:$ userdel -r ole  
:$ userdel -r dole  
... same for all newly created users
```

Home directories are gone, there is no info about these users neither in passwd or groups file.