Task2

1) Analyze the structure of the /etc/passwd and /etc/group file, what fields are present in it, what users exist on the system? Specify several pseudo-users, how to define them?	```
GNU nano 2.2.6   File: /etc/passwd   Modified

Analyze the structure of the /etc/passwd and /etc/group file, what fields are
present in it, what users exist on the system? Specify several pseudo-users, how
to define them?root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nolog$
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
libuuid:x:100:101::/var/lib/libuuid:
syslog:x:101:104::/home/syslog:/bin/false
messagebus:x:102:105::/var/run/dbus:/bin/false
sshd:x:103:65534::/var/run/sshd:/usr/sbin/nologin
vadym:x:1000:1000:ITacad student,,,:/home/vadym:/bin/bash
```

Passwd format
username: pswd: uid: gid: uid comments: directory: shell

```
GNU nano 2.2.6                    File: /etc/group

root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,vadym
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
cdrom:x:24:vadym
floppy:x:25:
tape:x:26:
sudo:x:27:vadym
audio:x:29:
dip:x:30:vadym
www-data:x:33:
backup:x:34:
operator:x:37:
list:x:38:
irc:x:39:
src:x:40:
gnats:x:41:
shadow:x:42:
utmp:x:43:
video:x:44:
sasl:x:45:
plugdev:x:46:vadym
staff:x:50:
```

Group format
group_name:password:group_id:list

Pseudo-users
daemon - Used by system service processes
bin - Gives ownership of executables command
adm - Owns registration files
nobody - Used by many services
sshd – used by the secure shell server. |

2) What are the uid ranges? What is UID? How to define it?	The system UIDs from 0 to 99 should be statically allocated by the system, and shall not be created by applications. The system UIDs from 100 to 499 should be reserved for dynamic allocation by system. A unique identifier (UID) is an identifier that marks that particular record as unique from every other record. ``` root@CsnKhai:~# id uid=0(root) gid=0(root) groups=0(root) ```

3) What is GID? How to define it?	A GID (group IDs) is a group identifier.
	  GID 0 (zero) is reserved for the root group.
	  GID 1–99 are reserved for the system and application use.
	  GID 100+ allocated for the user's group.
	``
	root@CsnKhai:~# id
	uid=0(root) gid=0(root) groups=0(root)
	``

4) How to determine belonging of user to the specific group?	``` vadym@CsnKhai:~$ id -G 1000 4 24 27 30 46 109 110 ```
5) What are the commands for adding a user to the system? What are the basic parameters required to create a user?	``` vadym@CsnKhai:~$ sudo adduser sdrv [sudo] password for vadym: Adding user `sdrv' ... Adding new group `sdrv' (1001) ... Adding new user `sdrv' (1001) with group `sdrv' ... Creating home directory `/home/sdrv' ... Copying files from `/etc/skel' ... Enter new UNIX password: Retype new UNIX password: passwd: password updated successfully Changing the user information for sdrv Enter the new value, or press ENTER for the default Full Name []: user2 Room Number []: Work Phone []: Home Phone []: Other []: Is the information correct? [Y/n] y ``` **adduser** command creates a new user with the system default parameters, which are written in the /etc/default/useradd file **useradd** Create new user: `useradd {{name}}` Create a new user with the default home dir: `useradd --create-home {{name}}` Create a new user with a specific command shell: `useradd --shell {{/path/to/shell}} {{name}}` Create a new user without home directory: `useradd --no-create-home --system {{name}}`
6) How do I change the name (account name) of an existing user?	``` root@CsnKhai:~# usermod -l vadim vadym root@CsnKhai:~# usermod -md /home/vadim vadim ```
7) What is skell_dir? What is its structure?	The **/etc/skel** directory contains files and directories that are automatically copied over to a new user's home directory when such a user is created by the **useradd** program
8) How to remove a user from the system (including his mailbox)?	``` userdel -fr username ```
9) What commands and keys should be used to lock and unlock a user account?	``` root@CsnKhai:~# passwd -l vadym passwd: password expiry information changed. root@CsnKhai:~# passwd -u vadym passwd: password_expiry information changed. ```

| 10) How to remove a user's password and provide him with a password-free login for subsequent password change? | ```
root@CsnKhai:~# passwd -e vadim
passwd: password expiry information changed.
root@CsnKhai:~# chage -l vadim
Last password change                              : password must be
ed
Password expires                                  : password must be
ed
Password inactive                                 : password must be
ed
Account expires                                   : never
Minimum number of days between password change    : 0
Maximum number of days between password change    : 99999
Number of days of warning before password expires : 7
``` |
| 11) Display the extended format of information about the directory, tell about the information columns displayed on the terminal. | **Ls -l** long format of information about the directory.<br><br>```
vadim@CsnKhai:~$ ls -l
total 24
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 a
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 b
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 c
drwxr-xr-x 2 vadim student 4096 Dec 22 16:05 dira
-rw-r--r-- 1 vadim student 1183 Dec 21 16:25 info
-rw-r--r-- 1 vadim student    0 Dec 21 16:33 sdrv12345678
drwxr-xr-x 2 vadim student 4096 Dec 23 10:11 test
```<br><br>The first character represents the file type (- d  l ets.)<br>The next three characters represent the permissions for the file's owner.<br>Next three – the permissions for members of the file group.<br>Next three - The permissions for "others".<br>The number of hard links to this file.<br>The file's owner.<br>The group to whom the file belongs.<br>The size of the file in bloks.<br>The file's mtime (date and time when the file was last modified).<br>The name of the file. |
| 12) What access rights exist and for whom (i. e., describe the main roles)? Briefly describe the acronym for access rights. | ```
drwxr-xr-x 12 andreyex users 4.0K Apr  8 20:51 dirname
|[-][-][-]    [------] [---]
|| | | |        |      |
|| | | |        |      +----------> Group
|| | | |        +------------------> Owner
|| | | +--------------------------> Others Permissions
|| | +----------------------------> Group Permissions
| +------------------------------> Owner Permissions
+--------------------------------> File Type
```<br><br>**rwx** - three main permissions allow you to read, write and use files.<br>Any Linux user (process) in relation to any file can act in three roles: as the owner (user), as a member of the group that owns the file (group), and as an outsider (other), has no ownership relations of this file. |
| 13) What is the sequence of defining the relationship between the file and the user? | If the UID of the file is the same as the UID of the process, the user is the owner of the file
If the GID of the file matches the GID of any group the user belongs to, he is a member of the group to which the file belongs.
If neither the UID no the GID of a file overlaps with the UID of the process and the list of groups that the user running it belongs to, that user is an outsider. |

14) What commands are used to change the owner of a file (directory), as well as the mode of access to the file? Give examples, demonstrate on the terminal.	```
root@CsnKhai:~# ls -l /home/vadim
total 24
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 a
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 b
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 c
drwxr-xr-x 2 vadim student 4096 Dec 22 16:05 dira
-rw-r--r-- 1 vadim student 1183 Dec 21 16:25 info
-rw-r--r-- 1 vadim student   0 Dec 21 16:33 sdrv12345678
drwxr-xr-x 2 vadim student 4096 Dec 23 10:11 test
root@CsnKhai:~# chmod ugo+rwx /home/vadim/sdrv12345678
root@CsnKhai:~# ls -l /home/vadim
total 24
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 a
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 b
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 c
drwxr-xr-x 2 vadim student 4096 Dec 22 16:05 dira
-rw-r--r-- 1 vadim student 1183 Dec 21 16:25 info
-rwxrwxrwx 1 vadim student   0 Dec 21 16:33 sdrv12345678
drwxr-xr-x 2 vadim student 4096 Dec 23 10:11 test
root@CsnKhai:~# chmod go-rwx /home/vadim/sdrv12345678
root@CsnKhai:~# ls -l /home/vadim
total 24
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 a
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 b
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 c
drwxr-xr-x 2 vadim student 4096 Dec 22 16:05 dira
-rw-r--r-- 1 vadim student 1183 Dec 21 16:25 info
-rwx------ 1 vadim student   0 Dec 21 16:33 sdrv12345678
drwxr-xr-x 2 vadim student 4096 Dec 23 10:11 test
```

```
root@CsnKhai:~# chown -R root:root /home/vadim/test
root@CsnKhai:~# ls -l /home/vadim
total 24
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 a
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 b
-rw-r--r-- 1 vadim student   2 Dec 21 15:43 c
drwxr-xr-x 2 vadim student 4096 Dec 22 16:05 dira
-rw-r--r-- 1 vadim student 1183 Dec 21 16:25 info
-rwx------ 1 root root   0 Dec 21 16:33 sdrv12345678
drwxr-xr-x 2 root root 4096 Dec 23 10:11 test
``` |
| 15) What is an example of octal representation of access rights? Describe the umask command. | drwxrwxrwx

d = Directory
r = Read
w = Write
x = Execute

chmod 777

↙ ↓ ↘
rwx\|rwx\|rwx
Owner\|Group\|Others

7	rwx	111
6	rw-	110
5	r-x	101
4	r--	100
3	-wx	011
2	-w-	010
1	--x	001
0	---	000

umask is a command to check default permission of newly created file or folder.
```
root@CsnKhai:~# umask
0022
```
A user-defined permissions 'mask'. A user can choose how to restrict permissions by using a **permissions mask**. A permission mask interacts with the default system permissions and changes them. The **umask** command is used to apply this mask.
A mask can have the following numeric, and the corresponding symbolic, values: |

	0	`---`	No permission
	1	`--x`	Execute
	2	`-w-`	Write
	3	`-wx`	Write and execute
	4	`r--`	Read
	5	`r-x`	Read and execute
	6	`rw-`	Read and write
	7	`rwx`	Read, write, and execute

| 16) Give definitions of sticky bits and mechanism of identifier substitution. Give an example of files and directories with these attributes. | Sticky Bit is mainly used on folders in order to avoid deletion of a folder and it's content by other users.<br>**ls -l** can be used to check if the x in others permissions field is replaced by t or T<br><br>```
root@CsnKhai:~# ls -l /home/vadim
total 24
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 a
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 b
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 c
drwxr-xr-x 2 vadim student 4096 Dec 22 16:05 dira
-rw-r--r-- 1 vadim student 1183 Dec 21 16:25 info
-rwx------ 1 root  root       0 Dec 21 16:33 sdrv12345678
drwxr-xr-x 2 root  root    4096 Dec 23 10:11 test
root@CsnKhai:~# chmod +t /home/vadim/sdrv12345678
root@CsnKhai:~# ls -l /home/vadim
total 24
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 a
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 b
-rw-r--r-- 1 vadim student    2 Dec 21 15:43 c
drwxr-xr-x 2 vadim student 4096 Dec 22 16:05 dira
-rw-r--r-- 1 vadim student 1183 Dec 21 16:25 info
-rwx-----T 1 root  root       0 Dec 21 16:33 sdrv12345678
drwxr-xr-x 2 root  root    4096 Dec 23 10:11 test
``` |
| 17) What file attributes should be present in the command script? | **script** - make typescript of terminal session
If the argument file is given, script saves the dialogue in this file. If no filename is given, the dialogue is saved in the file typescript. |