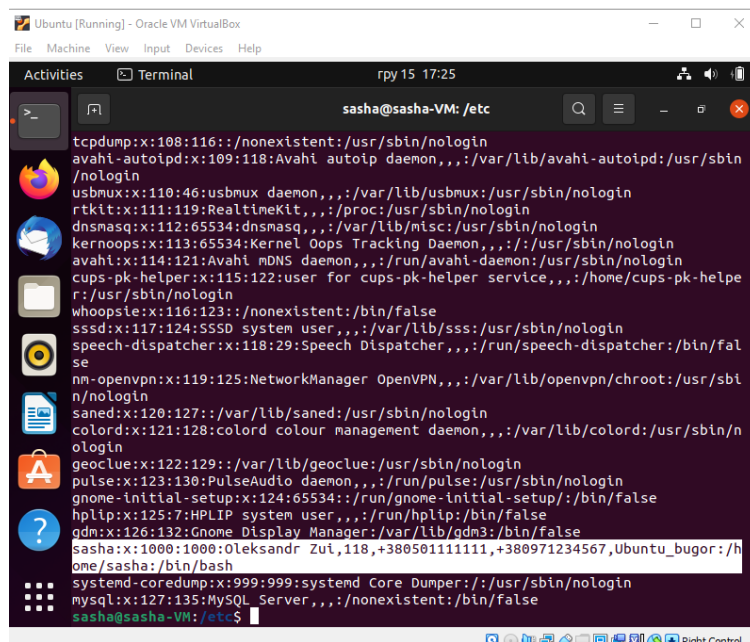


Task 5.2

1.

Cat etc



The screenshot shows a terminal window titled "Ubuntu [Running] - Oracle VM VirtualBox". The terminal is running the command `cat /etc/passwd` in the `sasha@sasha-VM: /etc` directory. The output lists system users and regular users, including `tcpdump`, `avahi-autoipd`, `usbmuxd`, `rtkit`, `dnsmasq`, `kernoops`, `avahi`, `cups-pk-helper`, `whoopie`, `sssd`, `speech-dispatcher`, `nm-openvpn`, `saned`, `colord`, `geoclue`, `pulse`, `gnome-initial-setup`, `hplip`, `gdm`, `sasha`, `systemd-coredump`, and `mysql`. The `sasha` entry is highlighted with a white background.

```
tcpdump:x:108:116::/nonexistent:/usr/sbin/nologin
avahi-autoipd:x:109:118:Avahi autoip daemon,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:110:46:usbmux daemon,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:119:RealtimeKit,,:/proc:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,:/var/lib/misc:/usr/sbin/nologin
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,:/home/cups-pk-helper:/usr/sbin/nologin
whoopie:x:116:123::/nonexistent:/bin/false
sssd:x:117:124:SSSD system user,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:118:29:Speech Dispatcher,,:/run/speech-dispatcher:/bin/false
nm-openvpn:x:119:125:NetworkManager OpenVPN,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:120:127::/var/lib/saned:/usr/sbin/nologin
colord:x:121:128:colord colour management daemon,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:122:129::/var/lib/geoclue:/usr/sbin/nologin
pulse:x:123:130:PulseAudio daemon,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:124:65534:/run/gnome-initial-setup:/bin/false
hplip:x:125:7:HPLIP system user,,:/run/hplip:/bin/false
gdm:x:126:132:Gnome Display Manager:/var/lib/gdm3:/bin/false
sasha:x:1000:1000:Oleksandr Zui,118,+380501111111,+380971234567,Ubuntu_bugor:/home/sasha:/bin/bash
systemd-coredump:x:999:999:systemd Core Dumper:/usr/sbin/nologin
mysql:x:127:135:MySQL Server,,:/nonexistent:/bin/false
sasha@sasha-VM:/etc$
```

sasha:x:1000:1000:Oleksander

Zui,118,+380501111111,+380971234567,Ubuntu_bugor:/home/sasha:/bin/bash

sasha – username

x – password

1000- UID

1000-GID

Oleksander Zui,118,+380501111111,+380971234567,Ubuntu_bugor – GECOS

/home/sasha – Home directory

/bin/bash – Login shell

Cat group

```
sasha@sasha-VM: /etc$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,sasha
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:sasha
floppy:x:25:
tape:x:26:
sudo:x:27:sasha
audio:x:29:pulse
dtp:x:30:sasha
www-data:x:33:
backup:x:34:
operator:x:37:
list:x:38:
irc:x:39:
```

Sudo:x:27:sasha

Sudo - group name

X – password

27 - unique identifier for the group

Sasha - list of users included in this group, containing usernames separated by commas without spaces

Pseudo user – UID 1-999 system accounts, such as server processes.

2. A UID (user identifier) is a number assigned by Linux to each user on the system. This number is used to identify the user to the system and to determine which system resources the user can access.

-UID 0 (zero) is reserved for the root.

-UIDs 1–99 are reserved for other predefined accounts.

-UID 100–999. reserve for dynamic system allocation

-UID 1000+ are used for user accounts

3. Groups in Linux are defined by GIDs (group IDs).

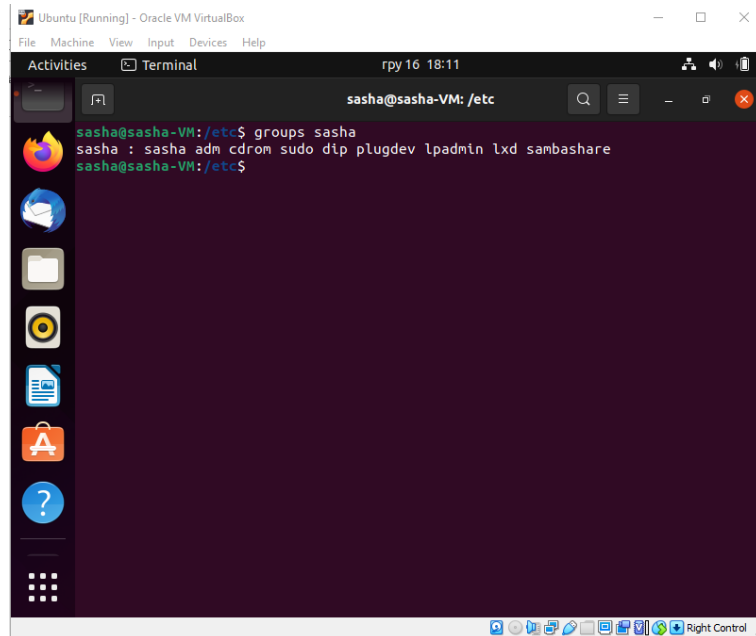
GID 0 (zero) is reserved for the root group.

GID 1–99 are reserved for the system

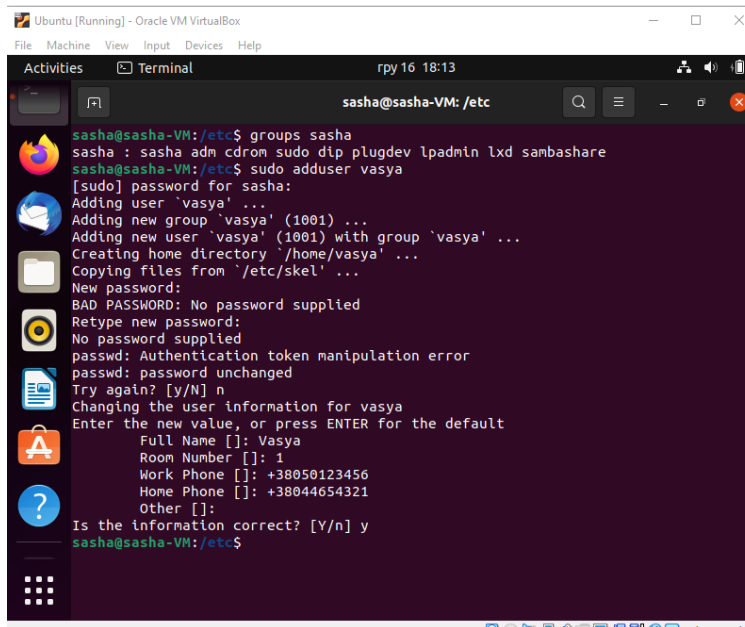
GID 100-999 - are reserved for the application use.

GID 1000+ allocated for the user's group.

4. Groups sasha

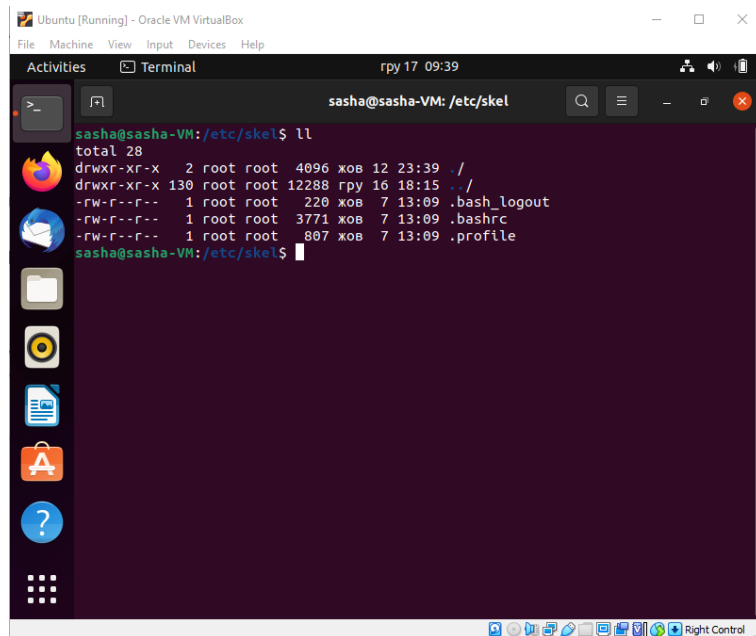


5. Sudo adduser vasya



6. Sudo usermod -l vasya petya

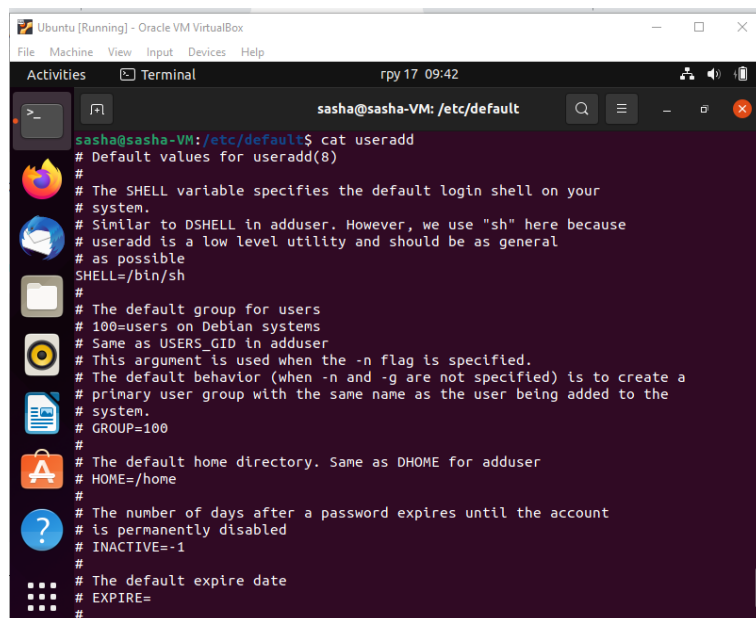
7. Directory / etc / skel / (skel is derived from "skeleton") is used to start the home directory when a user is first created.



```
sasha@sasha-VM: /etc/skel$ ll
total 28
drwxr-xr-x  2 root root 4096 x08 12 23:39 ./
drwxr-xr-x 130 root root 12288 rpy 16 18:15 ../
-rw-r--r--  1 root root  220 x08  7 13:09 .bash_logout
-rw-r--r--  1 root root  3771 x08  7 13:09 .bashrc
-rw-r--r--  1 root root   807 x08  7 13:09 .profile
sasha@sasha-VM: /etc/skel$
```

The "skeleton" directory is defined in / etc / default / useradd.

Cat useradd



```
sasha@sasha-VM: /etc/default$ cat useradd
# Default values for useradd(8)
#
# The SHELL variable specifies the default login shell on your
# system.
# Similar to DSHELL in adduser. However, we use "sh" here because
# useradd is a low level utility and should be as general
# as possible
SHELL=/bin/sh
#
# The default group for users
# 100=users on Debian systems
# Same as USERS_GID in adduser
# This argument is used when the -n flag is specified.
# The default behavior (when -n and -g are not specified) is to create a
# primary user group with the same name as the user being added to the
# system.
# GROUP=100
#
# The default home directory. Same as DHOME for adduser
# HOME=/home
#
# The number of days after a password expires until the account
# is permanently disabled
# INACTIVE=-1
#
# The default expire date
# EXPIRE=
#
```

- 8. Sudo userdel -r petya
- 9. Sudo passwd -l kolya - lock user kolya
- Sudo passwd -S kolya - check user
- Sudo passwd -u kolya - unblock user

```
Ubuntu [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

Activities Terminal rpy 17 10:04
sasha@sasha-VM: /etc

avahi:x:114:121:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helpe
r:/usr/sbin/nologin
whoopsie:x:116:123:/:nonexistent:/bin/false
sssd:x:117:124:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:118:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/fal
se
nm-openvpn:x:119:125:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbi
n/nologin
saned:x:120:127:/:/var/lib/saned:/usr/sbin/nologin
colord:x:121:128:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/n
ologin
geoclue:x:122:129:/:/var/lib/geoclue:/usr/sbin/nologin
pulse:x:123:130:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:124:65534:/:/run/gnome-initial-setup:/bin/false
hplip:x:125:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:126:132:Gnome Display Manager:/var/lib/gdm3:/bin/false
sasha:x:1000:1000:Oleksandr Zut,118,+380501111111,+380971234567,Ubuntu_bugor:/h
ome/sasha:/bin/bash
systemd-coredump:x:999:999:systemd Core Dumper:/:/usr/sbin/nologin
mysql:x:127:135:MySQL Server,,,:/nonexistent:/bin/false
kolya:x:1001:1002:/:home/kolya:/bin/sh
sasha@sasha-VM:/etc$ sudo passwd -S kolya
kolya L 12/17/2021 0 99999 7 -1
sasha@sasha-VM:/etc$ sudo passwd -u kolya
passwd: password expiry information changed.
sasha@sasha-VM:/etc$ sudo passwd -S kolya
kolya P 12/17/2021 0 99999 7 -1
sasha@sasha-VM:/etc$
```

10. Sudo passwd –de kolya Su kolya

```
Ubuntu [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

Activities Terminal rpy 17 15:15
sasha@sasha-VM: /etc

sasha@sasha-VM:/etc$ sudo passwd -de kolya
passwd: password expiry information changed.
sasha@sasha-VM:/etc$ su kolya
You are required to change your password immediately (administrator enforced)
New password:
Retype new password:
$
$ su sasha
Password:
sasha@sasha-VM:/etc$
```

11. Ls –hl

```

sasha@sasha-VM: /etc$ ls -hl
total 1,2M
drwxr-xr-x 3 root root 4,0K жов 12 23:48 acpi
-rw-r--r-- 1 root root 3,0K жов 12 23:39 adduser.conf
drwxr-xr-x 3 root root 4,0K жов 12 23:43 alsa
-rw-r--r-- 1 root root 4,0K гpy 14 19:22 alternatives
-rw-r--r-- 1 root root 335 жов 7 13:09 anacrontab
-rw-r--r-- 1 root root 433 жов 7 13:09 apg.conf
-rw-r--r-- 5 root root 4,0K жов 12 23:44 apm
drwxr-xr-x 3 root root 4,0K жов 12 23:48 apparmor
drwxr-xr-x 7 root root 4,0K гpy 13 16:55 apparmor.d
drwxr-xr-x 4 root root 4,0K гpy 4 20:18 appport
-rw-r--r-- 1 root root 769 cep 28 23:15 appstream.conf
drwxr-xr-x 7 root root 4,0K гpy 4 19:57 apt
drwxr-xr-x 3 root root 4,0K жов 12 23:49 avahi
-rw-r--r-- 1 root root 2,3K жов 7 13:09 bash.bashrc
-rw-r--r-- 1 root root 45 cep 12 2020 bash_completion
drwxr-xr-x 2 root root 4,0K гpy 15 12:04 bash_completion.d
-rw-r--r-- 1 root root 367 ver 24 06:36 bindresvport.blacklist
drwxr-xr-x 2 root root 4,0K жов 4 12:23 binfmt.d
drwxr-xr-x 2 root root 4,0K гpy 4 20:17 bluetooth
-rw-r--r-- 1 root root 33 жов 12 23:49 brlapi.key
drwxr-xr-x 7 root root 4,0K жов 12 23:48 brltty
-rw-r--r-- 1 root root 29K жов 7 13:09 brltty.conf
drwxr-xr-x 3 root root 4,0K жов 12 23:39 ca-certificates
-rw-r--r-- 1 root root 5,6K жов 12 23:39 ca-certificates.conf
drwxr-xr-x 2 root dip 4,0K жов 12 23:48 chatscripts
drwxr-xr-x 2 root root 4,0K гpy 4 19:30 console-setup
drwxr-xr-x 2 root root 4,0K жов 12 23:48 cracklib

```

12. Every file in Unix has the following attributes :

Owner permissions – The owner's permissions determine what actions the owner of the file can perform on the file.

Group permissions – The group's permissions determine what actions a user, who is a member of the group that a file belongs to, can perform on the file.

Other (world) permissions – The permissions for others indicate what action all other users can perform on the file.

Read - Grants the capability to read, i.e., view the contents of the file.

Write - Grants the capability to modify, or remove the content of the file.

Execute - User with execute permissions can run a file as a program.

13. The owner of the file is the user who created it.

14. Sudo chown root file.txt

L1

Sudo chmod 111 file.txt

L1

Sudo chmod 777 file.txt

L1

```

sasha@sasha-VM: ~/example
sasha@sasha-VM:~/example$ ll
total 8
drwxrwxr-x 2 sasha sasha 4096 rpy 17 16:31 ./
drwxr-x--- 17 sasha sasha 4096 rpy 17 16:29 ../
-rw-rw-r-- 1 sasha sasha 0 rpy 17 16:31 file.txt
sasha@sasha-VM:~/example$ chown root file.txt
chown: changing ownership of 'file.txt': Operation not permitted
sasha@sasha-VM:~/example$ sudo chown root file.txt
[sudo] password for sasha:
sasha@sasha-VM:~/example$ ll
total 8
drwxrwxr-x 2 sasha sasha 4096 rpy 17 16:31 ./
drwxr-x--- 17 sasha sasha 4096 rpy 17 16:29 ../
-rw-rw-r-- 1 root sasha 0 rpy 17 16:31 file.txt
sasha@sasha-VM:~/example$ chmod 111 file.txt
chmod: changing permissions of 'file.txt': Operation not permitted
sasha@sasha-VM:~/example$ sudo chmod 111 file.txt
sasha@sasha-VM:~/example$ ll
total 8
drwxrwxr-x 2 sasha sasha 4096 rpy 17 16:31 ./
drwxr-x--- 17 sasha sasha 4096 rpy 17 16:29 ../
---x--x--x 1 root sasha 0 rpy 17 16:31 file.txt*
sasha@sasha-VM:~/example$ sudo chmod 777 file.txt
sasha@sasha-VM:~/example$ ll
total 8
drwxrwxr-x 2 sasha sasha 4096 rpy 17 16:31 ./
drwxr-x--- 17 sasha sasha 4096 rpy 17 16:29 ../
-rwxrwxrwx 1 root sasha 0 rpy 17 16:31 file.txt*
sasha@sasha-VM:~/example$

```

15. Below, we can see the translated values of the octal and how they are related

Number			Permission	
4			read	
2			write	
1			execute	
Read	Write	Execute	Total Value	Symbolic Equivalent:
0	0	0	0	
0	0	1	1	x
0	2	0	2	w
0	2	1	3	wx
4	0	0	4	r
4	0	1	5	rx
4	2	0	6	rw
4	2	1	7	rwX

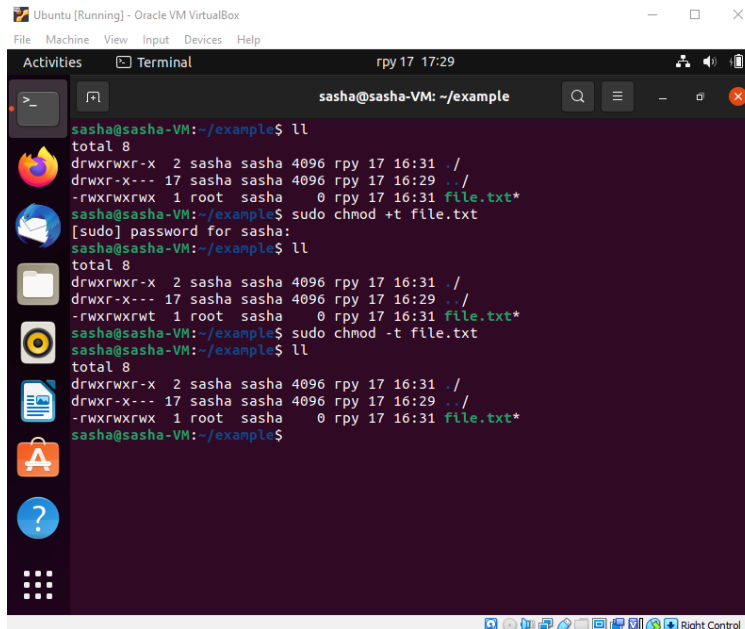
16. The last special bit of resolution is the Sticky Bit. If this bit is set for a folder, then files in this folder can be deleted only by their owner.

Sudo chmod +t file.txt

add stick bit

Sudo chmod -t file.txt

remove stick bit



The screenshot shows a terminal window titled 'sasha@sasha-VM: ~/example'. The user 'sasha' is running the command 'll' (alias for 'ls -la'). The output shows the following permissions and details for files in the current directory:

```
total 8
drwxrwxr-x 2 sasha sasha 4096 rpy 17 16:31 ./
drwxr-x--- 17 sasha sasha 4096 rpy 17 16:29 ../
-rwxrwxrwx 1 root sasha 0 rpy 17 16:31 file.txt*
```

The user then runs 'sudo chmod +t file.txt'. A password prompt appears: '[sudo] password for sasha:'. After entering the password, the user runs 'll' again. The output is identical to the first run.

```
total 8
drwxrwxr-x 2 sasha sasha 4096 rpy 17 16:31 ./
drwxr-x--- 17 sasha sasha 4096 rpy 17 16:29 ../
-rwxrwxrwt 1 root sasha 0 rpy 17 16:31 file.txt*
```

The user then runs 'sudo chmod -t file.txt' and runs 'll' again. The output is identical to the previous runs.

```
total 8
drwxrwxr-x 2 sasha sasha 4096 rpy 17 16:31 ./
drwxr-x--- 17 sasha sasha 4096 rpy 17 16:29 ../
-rwxrwxrwx 1 root sasha 0 rpy 17 16:31 file.txt*
```

17. The files and directories can have following attributes:

- a - append only
- c - compressed
- d - no dump
- e - extent format
- i - immutable
- j - data journaling
- s - secure deletion
- t - no tail-merging
- u - undeletable
- A - no atime updates
- D - synchronous directory updates
- S - synchronous updates
- T - top of directory hierarchy

