Create directories

First, let's check what we have in our current directory.

ls -l

In order to create directory we need to use mkdir command.

Ok, let's create some structure.

mkdir myfirstdirectory creates directory with provided name.

Now imagine, we want to create multiple directories with similar names. We can create directories using one command after another, and repeat it multiple times. But we have better ways.

Let's create 10 directories, starting with testdir1 to testdir10. How to do it in **one** command?

mkdir testdir{1..10}

With this syntax we are able to create 10 directories with the name contains numbers from 1 to 10. Very handy.

ls -l

ok, another approach.

mkdir mydirectory anotherdirectory thirddirectory

This creates three different directories for us.

ls -l

Ok, let's create more complicated stuff. In order to create deeper structure, we have to use -p argument. This allows us to create the whole structure, without creating parent directory as first step.

mkdir -p parentdir/childdir{01..100}

What we do here? with -p we allowed the system to create parent directory and the second part we already know. Under the parentdir we created 100 files, from childdir001 to childdir100. Please notice, how nice it is formatted by the system! We said 01, but system created directories to keet three digits as it is in childdir100. Nice.

Let's see what we finally have.

ls -l

And as we created the structure, what we have in parentdir? How to check it? We'll learn more about it in the next section, but for now, let's take a look into parentdir

ls -l parentdir

In this way we can list files in another directory.

# A little of theory

Ok, now it is time for another concept, but before we do that, let's create one more directory

mkdir root

We've created the root directory. now let's move to it

cd root

Please take a look where we are:

pwd

We have this structure: /root/root.

Ok, now let's go back

cd ..

Now, let's do almost the same thing

cd /root

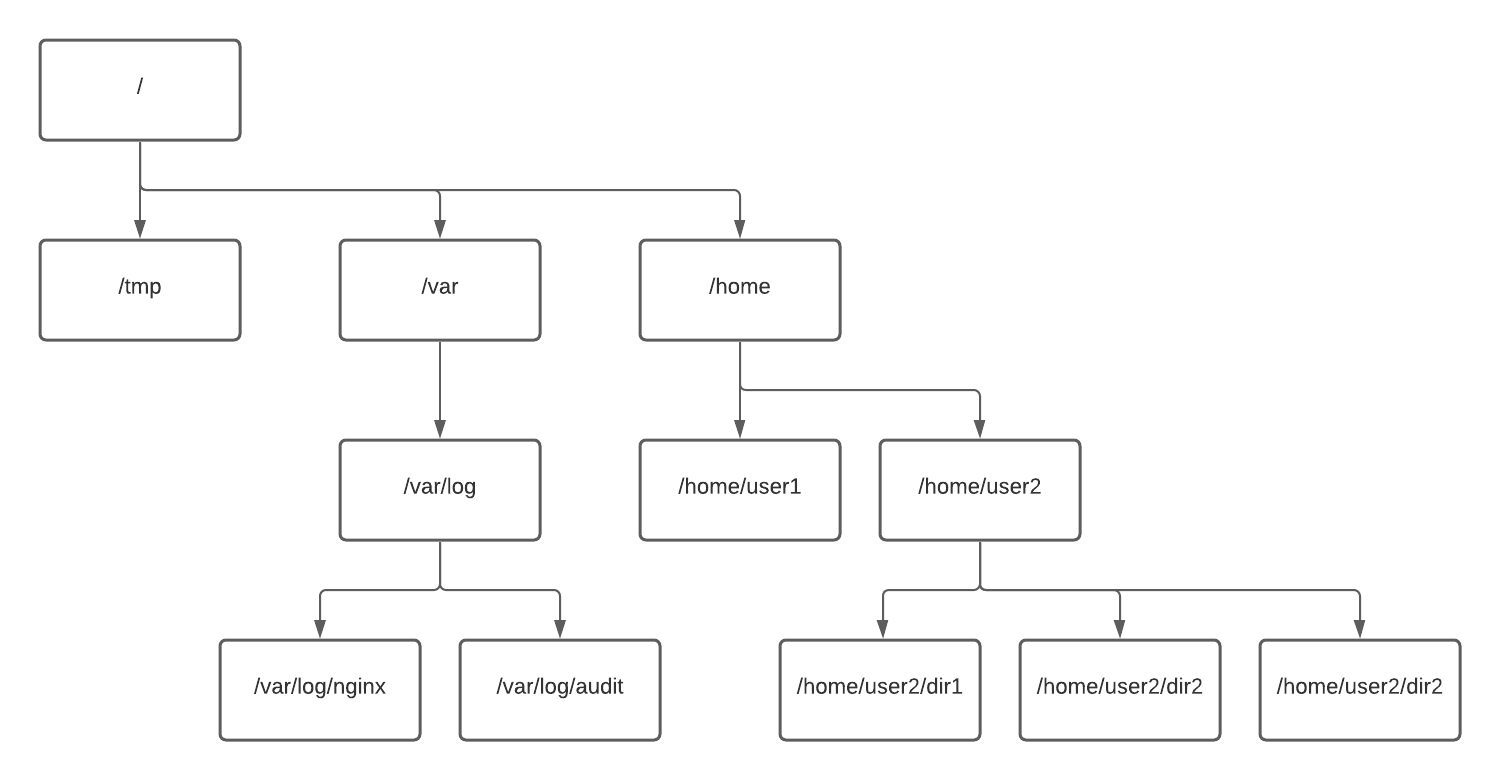
Where are we now?

pwd

What is the difference? Obviously, you noticed the / character. What all of it means?

In Linux filesystems, the root, the "first point" is a root directory. This root directory is represented by /. Everything what is on the top level of the filesystem is in / directory.

Let's take a look at the picture below.



Let's suppose, I am in /home/user2/dir1 directory. If I want to go to /var/log/nginx directory, I can do it in several ways.

* cd ../../../var/log/nginx
* cd /var/log/nginx

What is the difference? In the second version we are using the absolute path. We are referencing our journey through directories to the main, central point of the system - the root, /. When We place / on the beginning of the path it informs the system about our intention to use absolute path.

In the first example we use relative path. It simply means we are navigating from the current position.

Therefore, if we are in our home directory, which is root... Well, don't be confused. We are logged as root user. root user is the most powerful entity in the whole Linux system and it's home directory is /root. Other users have their home directories under /home. So, when you are in /root directory, it is totally different when you type cd /root than cd root.

# Time to go home!

Wherever we are in the Linux system, we have several ways to back home. Some says, all roads lead to Rome, in Linux it is almost true :)

So, first, if you remember your home directory, use it

cd /var/log  
pwd  
cd /root  
pwd

but this is not funny way of doing it.

There is a built-in variable called $HOME. This variable contains the path to the current user home directory.

cd /var/log  
pwd  
cd $HOME  
pwd

By the way, we can display the value of this variable, using echo $HOME

But $HOME is long. We can use something shorter - ~

cd /var/log  
pwd  
cd ~  
pwd

And finally, the shortest version...

cd /var/log  
pwd  
cd  
pwd

Yes, just cd is enough to come back to home directory.

Delete directories

Let's move to the home directory. cd

pwd

ls

First, we will remove the the root directory.

rmdir root

Now, let's remove all testdir directories.

rmdir testdir{1..10}

Yes, we can use the same syntax like the one when we created these directories :)

Ok, now let's remove parentdir directory.

rmdir parentdir

Hmm. We cannot. The directory is not empty. Ok, we have a way. Do you remember the -p argument of mkdir?

rmdir -p parentdir

Nope.

We have some directory called maindir, let's look inside

ls maindir

So, we can remove parent directory only when it is empty. This will work then

rmdir -p maindir/childdir

In order to remove the whole parentdir we need to do different command, rm. This command works for files. And as everything in Linux is a file, it should work for directories too.

rm parentdir

but... it is not.

Ok, let's... do this

rmdir parentdir/\*  
rmdir parentdir

Hmm... If you feel it is not like the smart Linux should operate...

You're right.

we have anotherparentdir with the same structure. Let's make it right. And risky.

rm -rf anotherparentdir

Wow, that was it! But.. It didn't work wit rm earlier.

Now we used some arguments

* -r means go recursively through directories (and treat everything as file)
* -f - force. Another words, do not ask, assume the user knows what he is doing.

And that is why this is risky command.

Try

rm -rf /

and read the notification. Nowadays Linux try to be careful with its users and this command, do you understand why?

ubuntu $ ls -l

total 0

lrwxrwxrwx 1 root root 1 Aug 28 14:39 filesystem -> /

ubuntu $ mkdir myfirstdirectory

ubuntu $ mkdir testdir{1..10}

ubuntu $ ls -l

total 44

lrwxrwxrwx 1 root root 1 Aug 28 14:39 filesystem -> /

drwxr-xr-x 2 root root 4096 Sep 5 11:28 myfirstdirectory

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir1

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir10

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir2

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir3

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir4

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir5

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir6

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir7

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir8

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir9

ubuntu $ mkdir mydirectory anotherdirectory thirddirectory

ubuntu $ ls -l

total 56

drwxr-xr-x 2 root root 4096 Sep 5 11:29 anotherdirectory

lrwxrwxrwx 1 root root 1 Aug 28 14:39 filesystem -> /

drwxr-xr-x 2 root root 4096 Sep 5 11:29 mydirectory

drwxr-xr-x 2 root root 4096 Sep 5 11:28 myfirstdirectory

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir1

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir10

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir2

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir3

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir4

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir5

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir6

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir7

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir8

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir9

drwxr-xr-x 2 root root 4096 Sep 5 11:29 thirddirectory

ubuntu $ mkdir -p parentdir/childdir{01..100}

ubuntu $ ls -l

total 60

drwxr-xr-x 2 root root 4096 Sep 5 11:29 anotherdirectory

lrwxrwxrwx 1 root root 1 Aug 28 14:39 filesystem -> /

drwxr-xr-x 2 root root 4096 Sep 5 11:29 mydirectory

drwxr-xr-x 2 root root 4096 Sep 5 11:28 myfirstdirectory

drwxr-xr-x 102 root root 4096 Sep 5 11:29 parentdir

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir1

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir10

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir2

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir3

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir4

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir5

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir6

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir7

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir8

drwxr-xr-x 2 root root 4096 Sep 5 11:28 testdir9

drwxr-xr-x 2 root root 4096 Sep 5 11:29 thirddirectory

ubuntu $ ls -l parentdir

total 400

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir001

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir002

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir003

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir004

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir005

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir006

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir007

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir008

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir009

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir010

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir011

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir012

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir013

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir014

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir015

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir016

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir017

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir018

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir019

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir020

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir021

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir022

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir023

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir024

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir025

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir026

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir027

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir028

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir029

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir030

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir031

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir032

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir033

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir034

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drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir036

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir037

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir038

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir039

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir040

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir041

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir042

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir043

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir044

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir045

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drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir071

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir072

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir073

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drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir075

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir076

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drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir078

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir079

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir080

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir081

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drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir098

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir099

drwxr-xr-x 2 root root 4096 Sep 5 11:29 childdir100

ubuntu $ cd parentdir

ubuntu $ ls

childdir001 childdir009 childdir017 childdir025 childdir033 childdir041 childdir049 childdir057 childdir065 childdir073 childdir081 childdir089 childdir097

childdir002 childdir010 childdir018 childdir026 childdir034 childdir042 childdir050 childdir058 childdir066 childdir074 childdir082 childdir090 childdir098

childdir003 childdir011 childdir019 childdir027 childdir035 childdir043 childdir051 childdir059 childdir067 childdir075 childdir083 childdir091 childdir099

childdir004 childdir012 childdir020 childdir028 childdir036 childdir044 childdir052 childdir060 childdir068 childdir076 childdir084 childdir092 childdir100

childdir005 childdir013 childdir021 childdir029 childdir037 childdir045 childdir053 childdir061 childdir069 childdir077 childdir085 childdir093

childdir006 childdir014 childdir022 childdir030 childdir038 childdir046 childdir054 childdir062 childdir070 childdir078 childdir086 childdir094

childdir007 childdir015 childdir023 childdir031 childdir039 childdir047 childdir055 childdir063 childdir071 childdir079 childdir087 childdir095

childdir008 childdir016 childdir024 childdir032 childdir040 childdir048 childdir056 childdir064 childdir072 childdir080 childdir088 childdir096

ubuntu $ pwd

/root/parentdir

ubuntu $ cd ..

ubuntu $ pwd

/root

ubuntu $ cd parentdir/childdir023

ubuntu $ pwd

/root/parentdir/childdir023

ubuntu $ cd ../..

ubuntu $ cd ..

ubuntu $ mkdir root

mkdir: cannot create directory 'root': File exists

ubuntu $ cd root

ubuntu $ pwd

/root

ubuntu $ cd /root

ubuntu $ pwd

/root

ubuntu $ cd /var/log

ubuntu $ pwd

/var/log

ubuntu $ cd /root

ubuntu $ pwd

/root

ubuntu $ cd /var/log

ubuntu $ pwd

/var/log

ubuntu $ cd $HOME

ubuntu $ pwd

/root

ubuntu $ cd /var/log

ubuntu $ pwd

/var/log

ubuntu $ cd ~

ubuntu $ pwd

/root

ubuntu $ cd /var/log

ubuntu $ pwd

/var/log

ubuntu $ cd

ubuntu $ pwd

/root

ubuntu $ pwd

/root

ubuntu $ ls

anotherdirectory filesystem mydirectory parentdir testdir10 testdir3 testdir5 testdir7 testdir9

anotherparentdir maindir myfirstdirectory testdir1 testdir2 testdir4 testdir6 testdir8 thirddirectory

ubuntu $ rmdir root

rmdir: failed to remove 'root': No such file or directory

ubuntu $ rmdir testdir{1..10}

ubuntu $ rmdir parentdir

rmdir: failed to remove 'parentdir': Directory not empty

ubuntu $ rmdir -p parentdir

rmdir: failed to remove 'parentdir': Directory not empty

ubuntu $ ls maindir

childdir

ubuntu $ rmdir -p maindir/childdir

ubuntu $ rm parentdir

rm: cannot remove 'parentdir': Is a directory

ubuntu $ rmdir parentdir/\*

ubuntu $ rmdir parentdir

ubuntu $ rm -rf anotherparentdir

ubuntu $ rm -rf /

rm: it is dangerous to operate recursively on '/'

rm: use --no-preserve-root to override this failsafe

ubuntu $