How to Convert a Column into a Row in a Linux File?

written by sysadmin | 18 August 2025

I want to convert a file containing a column into a row in a Linux file.

Problem

How to convert a column into a row in a Linux file?

Solution

For your information, columns are vertical, or what you arrange from top to bottom, while rows are horizontal, or what you can arrange from left to right. Consider the picture below to distinguish between columns and rows:



Columns vs rows

For example, you have a **test.txt** file as shown below:

```
sysadmin@Ubuntu2404:~$ cat test.txt
Ubuntu
Debian
CentOS
Red
Gentoo
Fedora
OpenSUSE
Scientific
CloudLinux
Elementary
sysadmin@Ubuntu2404:~$
```
The test.txt file

To convert into a row, use the command below:

```
awk 'BEGIN { ORS=" " } { print } END { print "\n" }' test.txt
```

Then the file changes to as shown below:

```
sysadmin@Ubuntu2404:~$ cat test.txt
Ubuntu
Debian
CentOS
Red
Gentoo
Fedora
OpenSUSE
Scientific
CloudLinux
Elementary
sysadmin@Ubuntu2404:~$ awk 'BEGIN { ORS=" " } { print } END { print "\n" }' test.txt
Ubuntu Debian CentOS Red Gentoo Fedora OpenSUSE Scientific CloudLinux Elementary
 sysadmin@Ubuntu2404:~$
```
Using the awk command

You can also use the command below:

```
tr '\n' ' ' < test.txt && echo
```

So that the file becomes as shown below:

```
sysadmin@Ubuntu2404:~$ cat test.txt
Ubuntu
Debian
CentOS
Red
Gentoo
Fedora
OpenSUSE
Scientific
CloudLinux
Elementary
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ tr '\n' ' ' < test.txt && echo
Ubuntu Debian CentOS Red Gentoo Fedora OpenSUSE Scientific CloudLinux Elementary
sysadmin@Ubuntu2404:~$
```

Using the tr command

Or you can also use the command below:

```
paste -sd" " test.txt
```

To make the file look like this:

```
sysadmin@Ubuntu2404:~$ cat test.txt
Ubuntu
Debian
CentOS
Red
Gentoo
Fedora
OpenSUSE
Scientific
CloudLinux
Elementary
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ awk 'BEGIN { ORS=" " } { print } END { print "\n" }' test.txt > result.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ cat result.txt
Ubuntu Debian CentOS Red Gentoo Fedora OpenSUSE Scientific CloudLinux Elementary
 sysadmin@Ubuntu2404:~$
```

Using the paste command

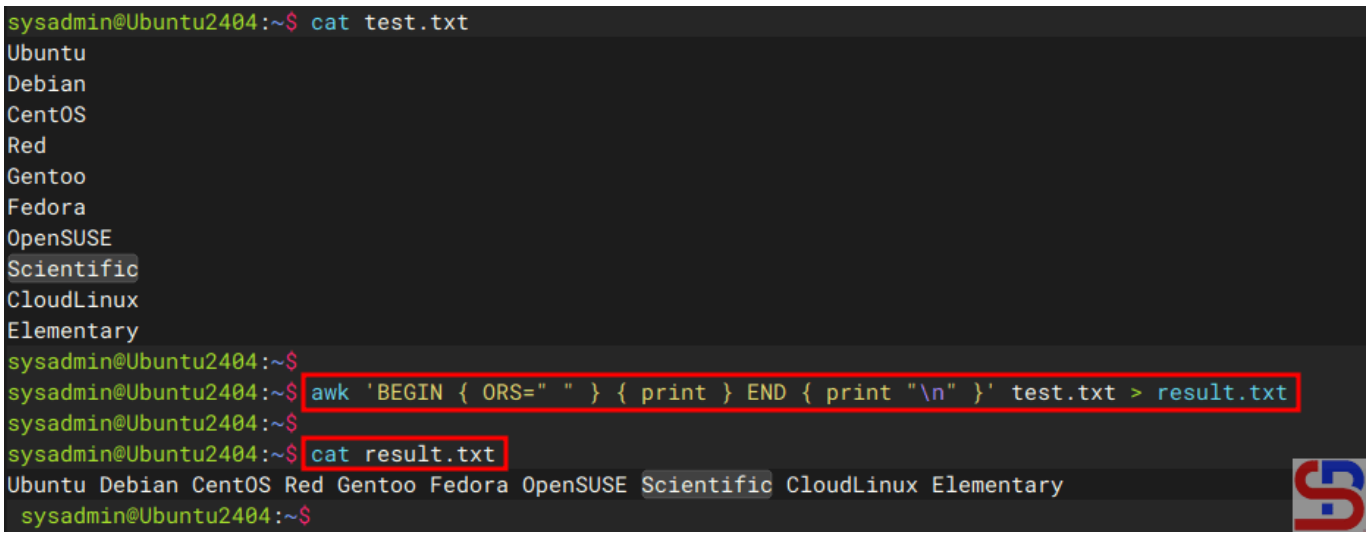
Note

If you want to enter the results in a file, for example, the result.txt file, then you can use the standard output redirection or stdout on Linux. For example, you use the awk command to change the file, so you can use the command

below:

```
awk 'BEGIN { ORS=" " } { print } END { print "\n" }' test.txt > result.txt
```

Then the results of these changes are in the result.txt file as shown below:



Using the redirection to save the result

Likewise, by using the two commands above, you can simply add stdout at the end of the two commands.

References

keydifferences.com
community.unix.com

How to Create a File of a Certain Size in Linux?

written by sysadmin | 18 August 2025

The previous article has explained how to reduce the size of a file in Linux. This article will explain how to increase the size of a file in Linux.

Problem

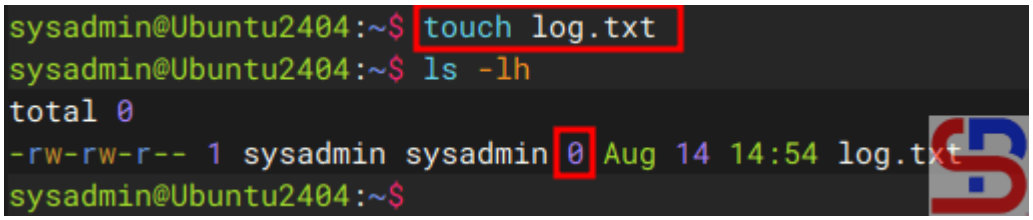
How to create a file of a certain size in Linux?

Solution

By default, if you want to create a file, it will use the command:

```
touch example.txt
```

And the command above will generate an example.txt file with a size of 0 bytes, as shown in the image below:



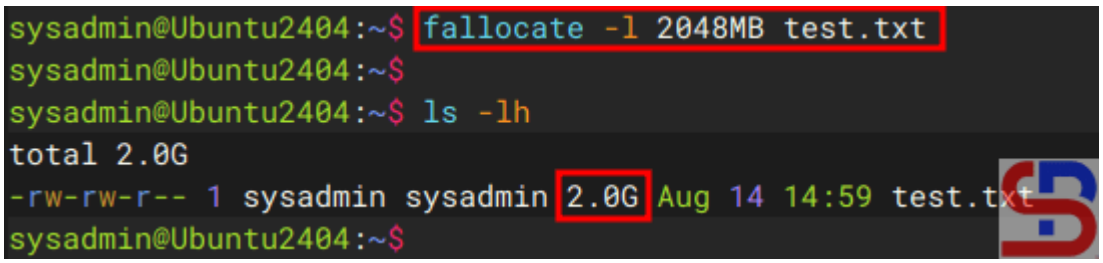
Create a file in Linux

However, sometimes there are situations where you have to create a file of a certain size for a purpose, e.g., you have to create a test.txt file with a size of 2 GB, Then there are several methods to generate such files of a certain size:

1. Using the fallocate command

Use the command below to create a test.txt file with a size of 2 GB:

```
fallocate -l 2048MB test.txt
```

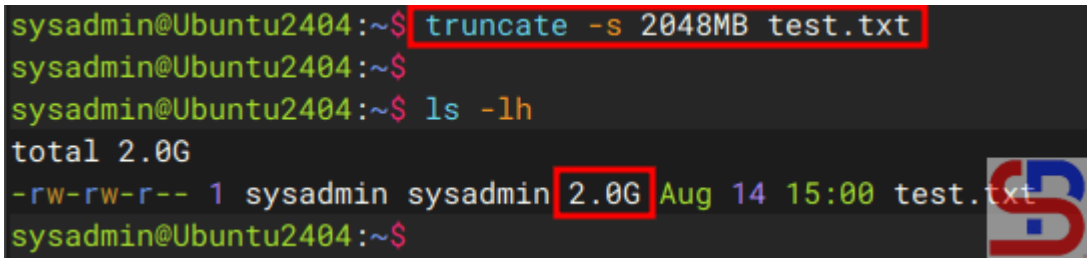


Using the fallocate command

2. Using the truncate command

Create a test.txt file with a size of 2 GB using the command below:

```
truncate -s 2048MB test.txt
```



Using the truncate command

3. Using the dd command

To produce a test.txt file that is 2 GB in size, run the command below:

```
dd if=/dev/zero of=test.txt bs=1M count=2048MB
```



Using the dd command

4. Using the head command

Use the command below to generate a test.txt file of size 2 GB:

```
head --bytes 2048MB /dev/zero > test.txt
```

```
sysadmin@Ubuntu2404:~$ head --bytes 2048MB /dev/zero > test.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls -lh
total 2.0G
-rw-rw-r-- 1 sysadmin sysadmin 2.0G Aug 14 15:03 test.txt
sysadmin@Ubuntu2404:~$
```

Using the head command

5. Using the tail command

Utilize the following command to generate a 2 GB test.txt file:

```
tail --bytes 2048MB /dev/zero > test.txt
```

```
sysadmin@Ubuntu2404:~$ tail --bytes 2048MB /dev/zero > test.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls -lh
total 2.0G
-rw-rw-r-- 1 sysadmin sysadmin 2.0G Aug 14 15:04 test.txt
sysadmin@Ubuntu2404:~$
```

Using the tail command

6. Using Perl commands

Below is the command to create a 2 GB test.txt file (the number 2147483648 comes from 2048x1024x1024):

```
perl -e 'print '0' x 2147483648' > test.txt
```

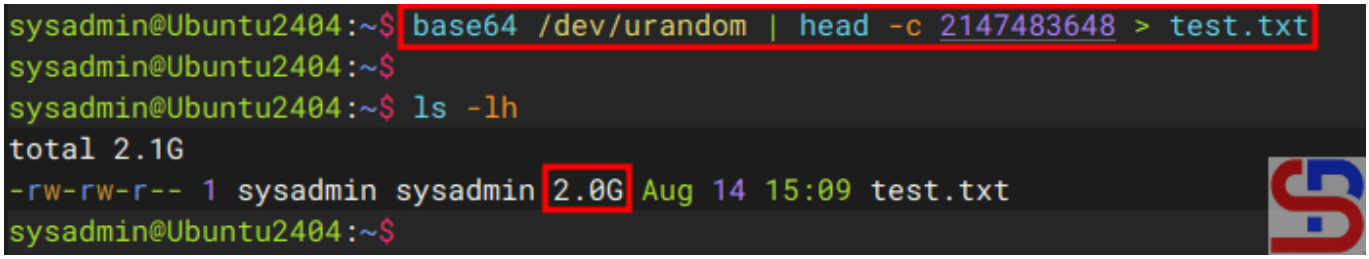
```
sysadmin@Ubuntu2404:~$ perl -e 'print '0' x 2147483648' > test.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls -lh
total 2.1G
-rw-rw-r-- 1 sysadmin sysadmin 2.0G Aug 14 15:07 test.txt
sysadmin@Ubuntu2404:~$
```

Using the Perl command

7. Using the base64 command

Create a 2 GB test.tx file, followed by (the number 2147483648 comes from 2048x1024x1024):

```
base64 /dev/urandom | head -c 2147483648 > test.txt
```



Using the base64 command

Note

To get quick results when creating a file of a certain size, you can use the truncate or fallocate command.

References

baeldung.com
tutorialspoint.com
ostechnix.com
unix.stackexchange.com
stackoverflow.com

How to Reduce the Size of a File on Linux?

written by sysadmin | 18 August 2025

One that often causes the hard drive on the Linux device to decrease its size is the number of very large files that are usually logged by an application. Therefore, as a Sysadmin, you must maintain and supervise the files so that the size is not too large. This article will explain how to reduce the size of a file on Linux.

Problem

How to reduce the size of a file on Linux?

Solution

There are several methods to reduce a file in Linux, and assume that you have a **log.txt** file measuring 4 GB.

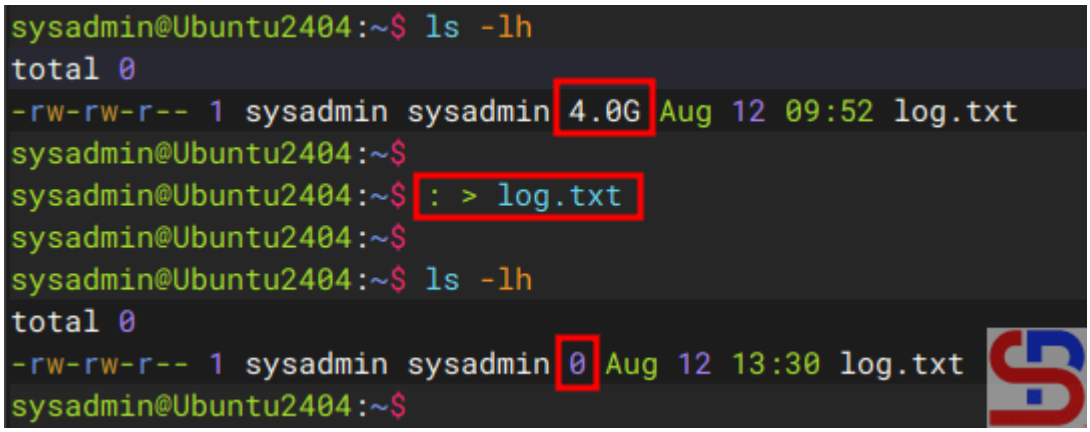
A. Up to 0 Bytes

There are several methods to reduce the file size to 0 bytes:

1. Using the colon command

Use the below command to reduce the file to 0 bytes:

```
: > log.txt
```



Reduce the file size up to 0 bytes using the colon command

2. Using the cat command

To decrease the file to 0 bytes, use the command below:

```
cat /dev/null > log.txt
```

```
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 4.0G Aug 12 13:31 log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ cat /dev/null > log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 0 Aug 12 13:32 log.txt
sysadmin@Ubuntu2404:~$
```

Reduce the file size up to 0 bytes using the /dev/null command

3. Using the echo command

Use the command below to reduce the file size to zero bytes.:

```
echo -n > log.txt
```

```
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 4.0G Aug 12 13:33 log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ echo -n > log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 0 Aug 12 13:33 log.txt
sysadmin@Ubuntu2404:~$
```

Reduce the file size up to 0 bytes using the echo command

4. Using the redirection command

To get the file down to zero bytes, use the command below:

```
> log.txt
```

```
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 4.0G Aug 12 13:34 log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ > log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 0 Aug 12 13:34 log.txt
sysadmin@Ubuntu2404:~$
```

Reduce the file size up to 0 bytes using the redirection command

5. Using the truncate command

To shrink the file to zero bytes, use the command below:

```
truncate -s 0 log.txt
```

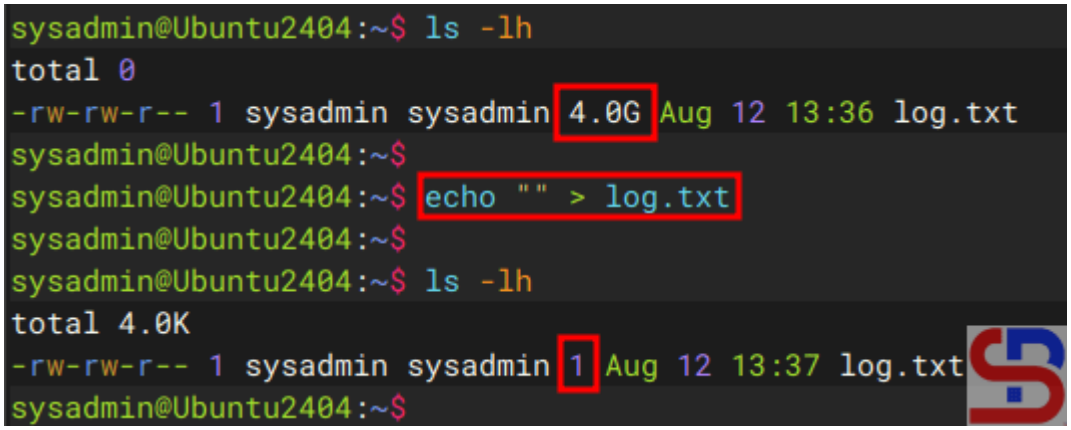
```
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 4.0G Aug 12 13:35 log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ truncate -s 0 log.txt
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls -lh
total 0
-rw-rw-r-- 1 sysadmin sysadmin 0 Aug 12 13:35 log.txt
sysadmin@Ubuntu2404:~$
```

Reduce the file size up to 0 bytes using the truncate command

B. Up to 1 Byte

To reduce the file size to 1 byte, use the command below:

```
echo "" > log.txt
```

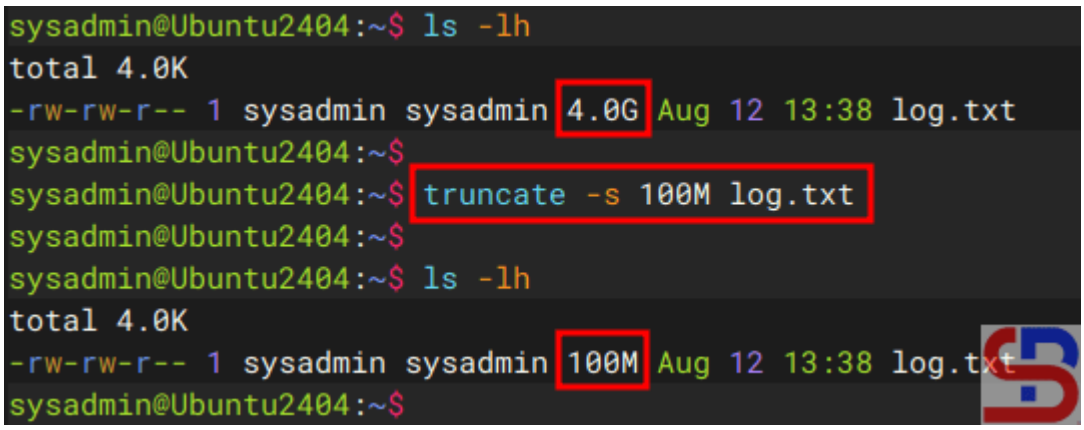


Reduce the file size to 1 byte

C. Reduce the file size to a certain size

To reduce the file size to a certain size (for example, make the file size 100 M), use the following command:

```
truncate -s 100M log.txt
```



Reduce the file size to a certain size

Note

By using the command above, you can reduce the size of a file, causing the size of the hard disk on the Linux device to increase. And if you experience failure in reducing the file size, then usually the problem is with the write permissions on the file. Use the command below so that the file gets write permission to reduce the file size:

```
sudo sh -c '> filename'
```

Change the filename to your real filename. After that, run one of the commands above, and the file size should be reduced.

References

namehero.com
phoenixnap.com
operavps.com
linuxconfig.org

How to Use the Trash-cli as Recycle Bin in Linux?

written by sysadmin | 18 August 2025

The previous article explained how to create a recycle bin in the Linux CLI without installing an application. This article will explain how to create a recycle bin in the Linux CLI using the trash-cli application.

Problem

How to use the trash-cli as a recycle bin in Linux?

Solution

Trash-cli is an application to trash files, recording the original path, deletion date, and permissions, which can function as a recycle bin in the Linux CLI.

A. Install the app

RockyLinux/AlmaLinux/CentOS

```
yum install epel-release
yum install trash-cli
```

Ubuntu/Debian

```
sudo apt update
sudo apt-get install trash-cli
```

OpenSUSE

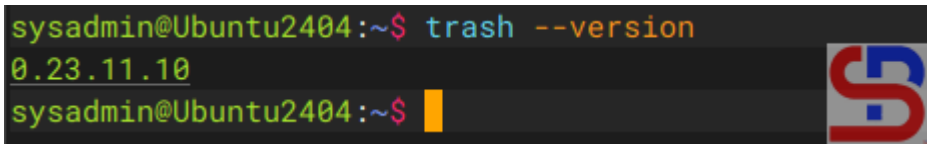
```
zypper addrepo
https://download.opensuse.org/repositories/home:siegel/openSUSE_Leap_15.1/hom
e:siegel.repo
zipper refresh
zypper install python-trash-cli
```

You can also install this application from GitHub by using the command below:

```
git clone https://github.com/andreafrancia/trash-cli.git
cd trash-cli
python setup.py install
```

To see the trash-cli version installed, you can use the command:

```
trash --version
```



Display version of trash-cli

B. Delete item(s)

If you want to delete a file, for example, the images.zip file, then use the command below:

```
trash images.zip
```

If you want to delete more than one file, you can delete them directly using, for example, the command below:

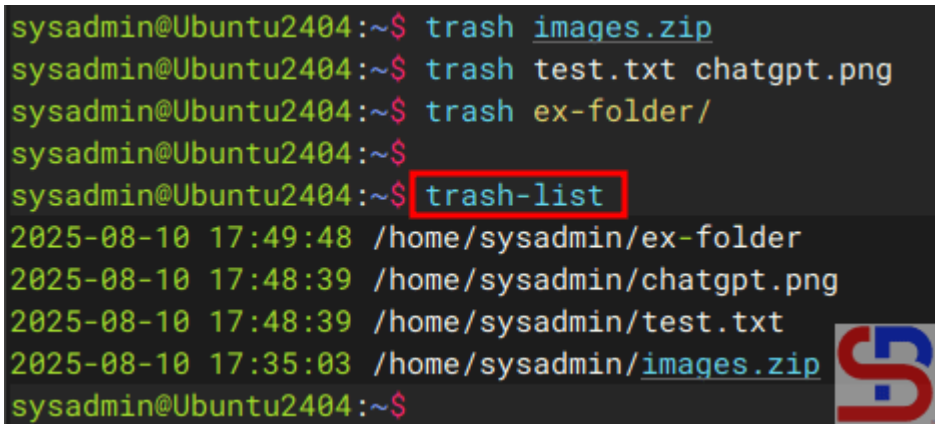
```
trash test.txt chatgpt.png
```

You can also delete folder(s) using the format above.

C. Displays deleted item(s)

To show deleted file(s) and folder(s), use the command below:

```
trash-list
```



Displays the contents in the trash

D. Restore item(s)

To restore deleted item(s), use the command below:

```
trash-restore
```

It will display all the items that have been deleted, and you will be asked to select the files to be restored. Enter the file number, and the file will be restored to its original location as in the image below:

```
sysadmin@Ubuntu2404:~$ ls
 Cloudflare.pdf   data  'Disk Space Requirement.txt'   nfs   pictures.zip
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ trash-restore
   0 2025-08-10 17:35:03 /home/sysadmin/images.zip
   1 2025-08-10 17:48:39 /home/sysadmin/chatgpt.png
   2 2025-08-10 17:48:39 /home/sysadmin/test.txt
   3 2025-08-10 17:49:48 /home/sysadmin/ex-folder
What file to restore [0..3]: 0
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ ls
 Cloudflare.pdf   data  'Disk Space Requirement.txt'   images.zip   nfs   pictures.zip
sysadmin@Ubuntu2404:~$
```

Restoring the content from the trash

If you want to restore more than one item, you can write file numbers separated by commas.

```
sysadmin@Ubuntu2404:~$ trash-restore
   0 2025-08-10 17:48:39 /home/sysadmin/chatgpt.png
   1 2025-08-10 17:48:39 /home/sysadmin/test.txt
   2 2025-08-10 17:49:48 /home/sysadmin/ex-folder
What file to restore [0..2]: 0,2
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ trash-list
2025-08-10 17:48:39 /home/sysadmin/test.txt
sysadmin@Ubuntu2404:~$
```

Restoring the contents from the trash

E. Empty the trash bin

If you want to empty the trash bin, use the command below:

```
trash-empty
```

All items in the trash can be deleted as shown in the image below:

```
sysadmin@Ubuntu2404:~$ trash-empty
Would empty the following trash directories:
    - /home/sysadmin/.local/share/Trash
Proceed? (y/n) y
sysadmin@Ubuntu2404:~$
sysadmin@Ubuntu2404:~$ trash-list
sysadmin@Ubuntu2404:~$
```

Empty the trash

In addition, you can delete some items that are more than 3 days old by using the command:

```
trash-empty 7
```

You can also delete items with the .zip extension by using the command:

```
trash-empty *.zip
```

F. Combine the rm command with the trash application

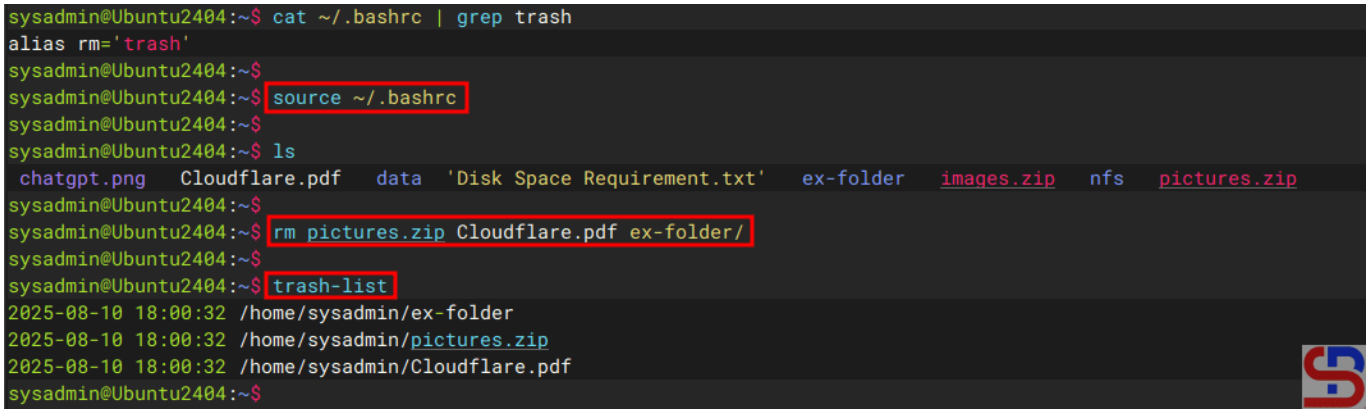
By default, you have to use the trash command to delete a file or folder when using the trash-cli application. However, Linux uses the **rm** command to delete a file or folder. Therefore, you can combine the rm command and the trash command by adding the script below to the **.bashrc** file:

```
alias rm=`trash`
```

After that, run the command:

```
source ~/.bashrc
```

Then, try deleting files or folders using the rm command, then the items that have been deleted using the **rm** command should be in the trash can using the trash-list command, as in the image below:



Combine the rm command with trash-cli

Warning
If you combine the rm command with the trash application, you can delete the folder without using -rf option like in the image above.

Note

You have to manually change the **.bashrc** file for each user who wants to combine the rm command and this trash application. You can also use crontab for each user to delete items in the trash can. Just like the previous method, **the weakness of this method** is that if you use sudo to delete a file or folder, the file or folder will be immediately deleted from the Linux system and will not be saved in the Recycle bin that has been created. So be careful about that.

References

github.com
tecmint.com
vitux.com
installati.one

How to Encrypt a File Using the Vim Application?

written by sysadmin | 18 August 2025

If you have important source code and are worried that someone is changing or duplicating it, you can protect it by encrypting the file so that other people cannot read the source code unless they can enter the appropriate password. There are several ways to encrypt a file, but in this article will use the vim application.

Problem

How to encrypt a file using the Vim application?

Solution

A. The Vim application

Vim or **vi improved** is an enhanced, improved, and extended version of the Vi text editor. To see if the application is already installed or not, use the command below:

```
vim --version
```

If your Linux device does not have a Vim application, you can install it using the following commands:

RockyLinux/AlmaLinux/CentOS

```
yum install vim
```

Ubuntu/Debian

```
sudo apt update
sudo apt install vim
```

OpenSUSE

```
sudo zypper install vim
```

The Vim application has a feature to encrypt a file so that users who want to access the file must enter a password, and the algorithm used by the Vim application to encrypt a file is Blowfish. Suppose you have a file called test.txt, the contents of which are as below:

```
No  Name        Address
1   Richard     Apt. 344 86094 Swaniawski Drive, East Suzetteshire, MT
51323-2013
2   Alex        4522 Rosenbaum Island, Lake Suzan, IL 68193
3   Bryan       Apt. 907 703 Douglas Run, West Brainburgh, MT 70080-8990
```

B. Encrypt the file

There are 2 methods for encrypting files using the Vim application:

1. Before accessing the file

If you want to encrypt a file, then use the format below before you access the file:

```
vim -x filename
```

For example, if your file name is test.txt, then use the command below before you access the file:

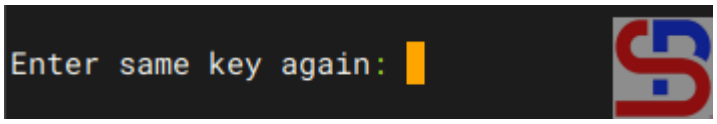
```
vim -x test.txt
```

There will be writing as below:



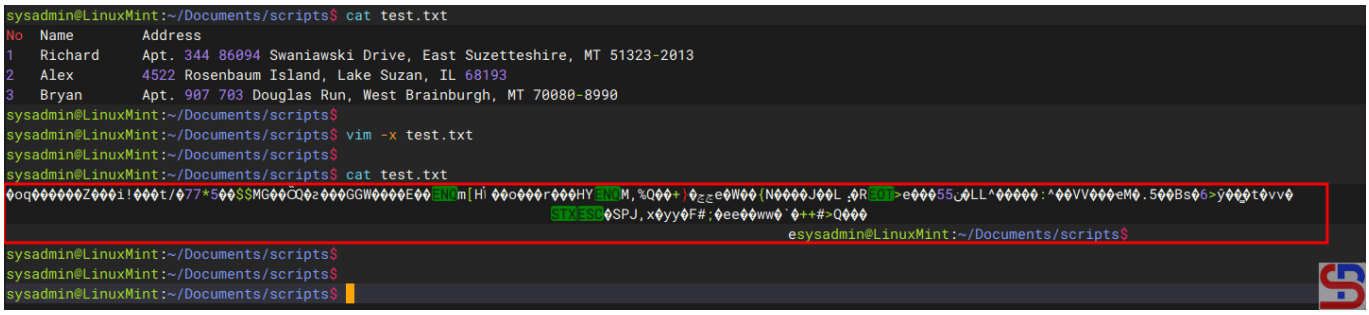
Enter the password

Enter the password you want, press the Enter button, then there will be writing as below:



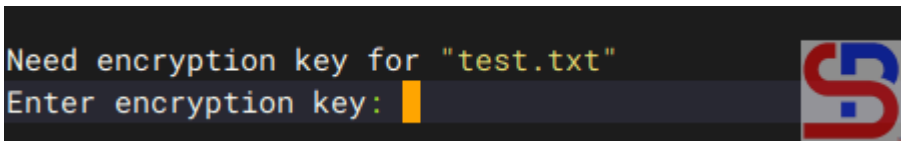
Enter the password again

You will be able to access the test.txt file. After that, save and exit the file, and thus you have successfully encrypted the file. Now, try to display the file, and the file should be encrypted as shown below:



Encrypt the file using the first method

If you or other users want to access the file, you must enter the password as shown below:

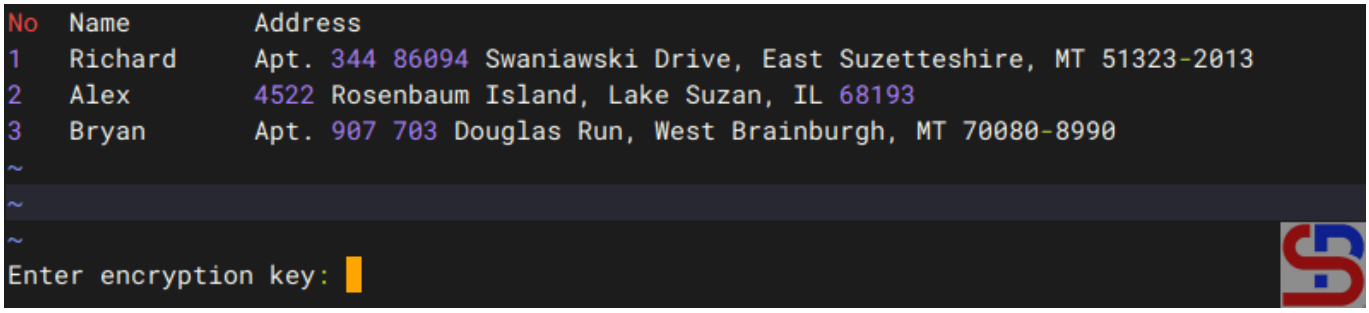


When accessing the encrypted file using the Vim application

If your password is suitable, the file can be displayed, but if the password is not appropriate, the file remains in its the condition in the encrypt.

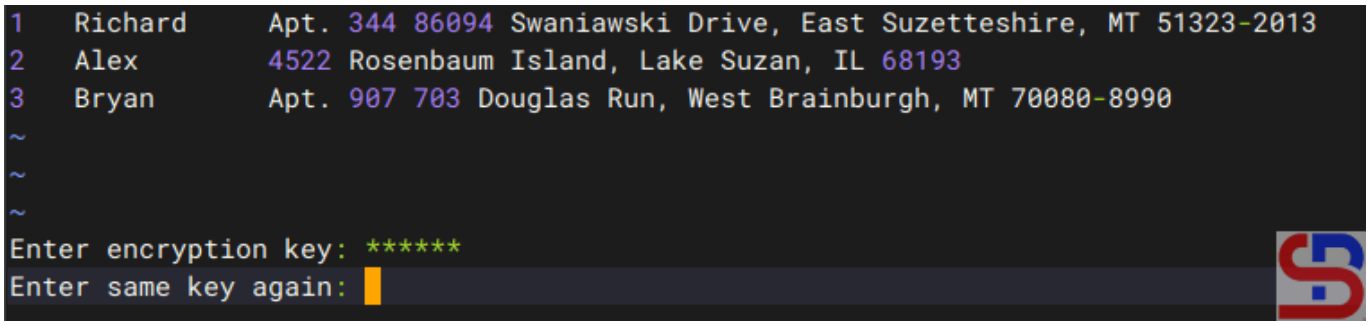
2. When accessing files

When you are accessing the file and want the file to be encrypted, then in the command mode (mode in Vim after you press the Esc button), Type **:X**, press the Enter button, it will be written as below:



Create the encrypt using the second method

Press the Enter key after entering the desired password, and the following text will appear:

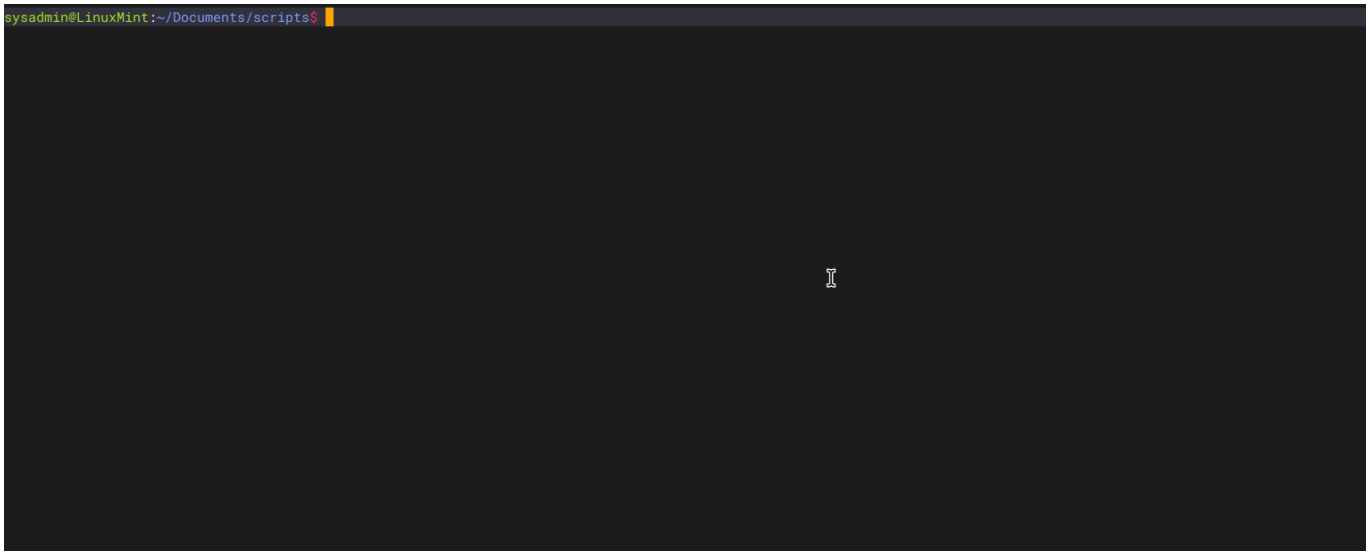


Enter the password again

After that, save and exit the file, and thus you have successfully encrypted the file.

C. Decrypt the file

If you want the file to be decrypted or no longer need to use a password to access it, then open the file by entering the password and then write **:X** in the command mode, and press the Enter button 2x when you are asked to enter the password. After that, save and exit the file, and the file should be directly opened without having to enter the password again, as shown below:



Decrypt the file

Note

You must always remember the password that you use to encrypt in Vim because if you forget then as far as I know, you will not be able to decrypt the file.

References

askubuntu.com
geeksforgeeks.org
networkworld.com
ii.com
superuser.com

How to Print All columns From the nth to the Last?

written by sysadmin | 18 August 2025

I often see a log where I want to print sequential columns in the log for a purpose.

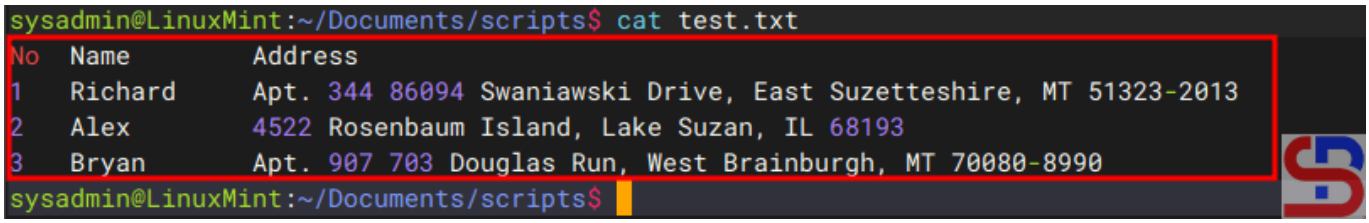
Problem

How to print all columns from the nth to the last?

Solution

For example, you have a test.txt file that contains the following:

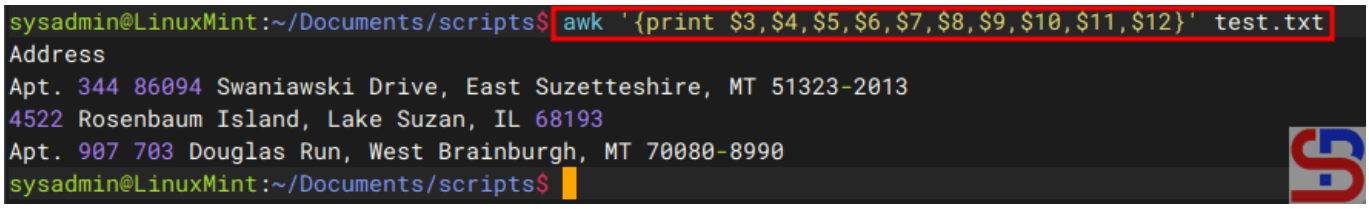
```
No  Name        Address
1   Richard     Apt. 344 86094 Swaniawski Drive, East Suzetteshire, MT
51323-2013
2   Alex        4522 Rosenbaum Island, Lake Suzan, IL 68193
3   Bryan       Apt. 907 703 Douglas Run, West Brainburgh, MT 70080-8990
```



Display the log

Usually, to display the complete Address column, I will run the command below:

```
awk '{print $3,$4,$5,$6,$7,$8,$9,$10,$11,$12}' test.txt
```



Using the original script

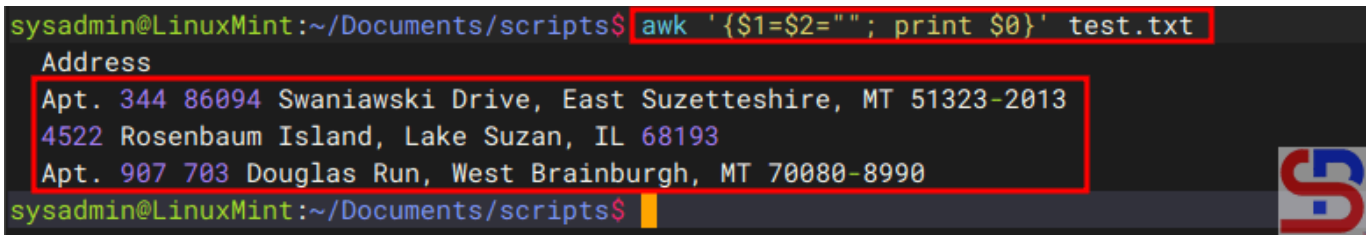
However, I think this method is less effective because if the address is more than 12 columns, then I have to write more than 12 items, and it is very tiring. After searching on the internet, there are 2 methods you can use:

1. Using the awk command

From the test.txt file, you just want to print the entire column except columns 1 and 2, then you can use the command below:

```
awk '{$1=$2=""; print $0}' test.txt
```

The result will be as shown in the image below:



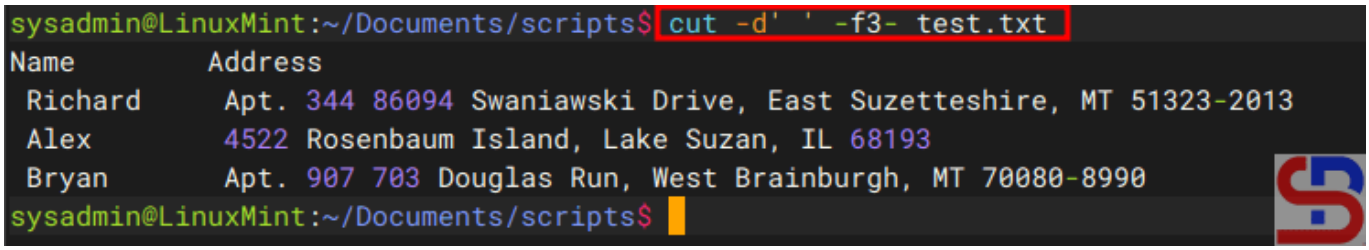
Using the awk command

2. Using the cut command

In addition to using awk, you can also use the cut command to display the same by using the command below:

```
cut -d' ' -f3- test.txt
```

And the result will be as shown in the image below when you run the command above:



Using the cut command

Warning

Replace the variable **-f3-** with what column you will start printing. If you start printing from column 7, then change the command above to the following:

```
cut -d" " -f7- test.txt
```

Note

There are still several methods to print columns that run from the nth to the last column, but I think those two methods will suffice.

References

testingbot.com
stackoverflow.com

How to Display Linux Applications Using the Most CPU and Memory With a Bash Script?

written by sysadmin | 18 August 2025

I have some Linux servers used to run some of the necessary applications in the office. But occasionally, I can’t reach certain servers due to issues, and I saw in the monitoring tool that the CPU or RAM on the server had increased significantly, resulting in the server having to be forcibly shut down and restarted. I tried to find out what applications caused the CPU or RAM to go up, but unfortunately, the monitoring application I used only showed the value of the CPU or RAM, but did not feature applications that used the CPU or RAM the most.

Problem

How to display Linux applications using the most CPU and memory with a bash script?

Solution

The ps command displays information about a selection of the active processes, so that by using the command, you can see which applications are using the most CPU and memory. Let’s say you want to display the 50 most CPU-intensive applications on Linux, then use the command below:

```
ps -eo pid,%cpu,args --sort=-%cpu | head -n 10
```

And use the command below to display the 10 applications that use the most memory on Linux:

```
ps -eo pid,%mem,args --sort=-%mem | head -n 10
```

Based on the two commands above, you can create a bash script to see which applications are using the most CPU and RAM on Linux servers. Create a **mon_cpu_ram.sh** file and copy the bash script below into the file:

```
#!/bin/bash

# Get 50 application that take biggest cpu
ps -eo pid,%cpu,args --sort=-%cpu | head -n 50 > get_50_app_cpu.txt

# total cpu
awk 'NR > 1 {mem[$3" "$4" "$5" "$6" "$7" "$8" "$9" "$10" "$11" "$12" "$13"
"$14" "$15" "$16" "$17] += $2} END {for (cmd in mem) printf "%.1f\t%s\n",
mem[cmd], cmd}' get_50_app_cpu.txt | sort -nr | head -n 5 > total_cpu.txt

# Display date and uptime
date +"%Y-%m-%d %H:%M:%S" >> cpu_history.txt
uptime=`uptime -p`
echo "Uptime: $uptime" >> app_cpu_mem.txt

# get 3 apps that takeing biggest CPU
head -n3 total_cpu.txt >> cpu_history.txt
echo >> cpu_history.txt

# send the output of biggest CPU
date +"%Y-%m-%d %H:%M:%S" >> app_cpu_mem.txt
echo "Big CPU" >> app_cpu_mem.txt
head -n3 total_cpu.txt >> app_cpu_mem.txt
```

```
# Get 50 application that take biggest memory
ps -eo pid,%mem,args --sort=-%mem | head -n 50 > get_50_app_mem.txt

# total memory
awk 'NR > 1 {mem[$3" "$4" "$5" "$6" "$7" "$8" "$9" "$10" "$11" "$12" "$13"
"$14" "$15" "$16" "$17] += $2} END {for (cmd in mem) printf "%.1f\t%s\n",
mem[cmd], cmd}' get_50_app_mem.txt | sort -nr | head -n 5 > total_mem.txt

# get 3 apps that taking biggest memory
date +"%Y-%m-%d %H:%M:%S" >> mem_history.txt
head -n3 total_mem.txt >> mem_history.txt
echo >> mem_history.txt

# send the output of biggest Memory
echo "Big Memory" >> app_cpu_mem.txt
head -n3 total_mem.txt >> app_cpu_mem.txt

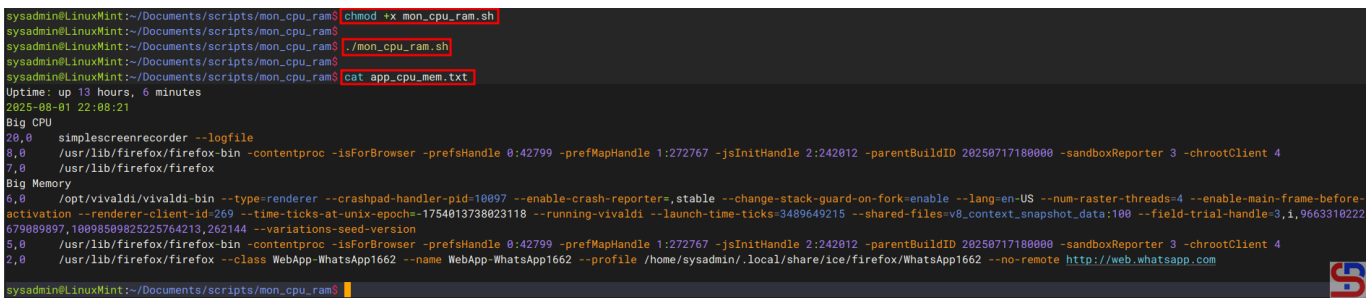
echo >> app_cpu_mem.txt
```

After that, permit the file and run it using the command below:

```
chmod +x mon_cpu_ram.sh
./mon_cpu_ram.sh
```

If you run the bash script, it will produce 3 files:

- cpu_history.txt => Display the history of the CPU only
- mem_history.txt => Display the histoy of the memory history
- app_cpu_mem.txt => Displays the CPU and Memory history simultaneously



Run the bash script

If you want the file to run every 5 minutes, enter the file

in the crontab by copying the script below into the crontab:

```
*/5 * * * *     cd /home/sysadmin/;. /mon_cpu_ram.sh
```

Note

I think this script is useful for sysadmins, especially me, to identify any applications that use the most CPU and RAM in Linux, so you can limit CPU or RAM to these applications.

References

man7.org
geeksforgeeks.org