

my Unix/Gnu Linux cheat sheat

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1 Links

1. sed useful commands <http://www.catonmat.net/blog/wp-content/uploads/2008/09/sediline.txt>
2. apt and dpkg cheat sheet <http://www.cyberciti.biz/tips/linux-debian-package-management-cheat-sheet.html>
3. scripting tutorial <http://linuxconfig.org/bash-scripting-tutorial>
4. <http://www.cyberciti.biz/faq/linux-unix-bsd-xargs-construct-argument-lists-utility/> has good commands to learn from, on xargs
5. good hints on writing robust scripts <http://www.davidpashley.com/articles/writing-robust-shell-scripts/>

2 To use rsync for backup from 2 drives on windows from mounted shared folder using VBOX

Assuming /media/G and /media/E are 2 different shared folders mounted already and you are now inside Linux in VBox then do

```
rsync -av --delete /media/G /media/E
```

3 How to remove colors from terminal

```
alias ls='ls --color=never'
```

4 How to convert files in current folder from png to eps

```
#!/bin/bash
for file in *.png; do
    filename=${file%.*}
    convert "$filename.png" "$filename.eps"
done
```

5 How to change extension of files in current folder

To change extension from .PNG to lowe case .png

```
#!/bin/bash
for file in *.PNG; do
    f=${file%.*}
    mv "$f.PNG" "$f.png"
done
```

6 recusrive tree search for string in files

```
grep -H -r "string I am searching for" *
```

This should also work

```
grep -H -r 'string I am searching for' *
```

also this

```
find . -type f -exec grep -l 'string' {} \;
```

7 recusrive tree search for string in files with specific extension

```
find . -name "*.txt" -print0 | xargs -0 egrep 'string'
```

8 recursive tree search for string in files, where the string is at start of a line

```
find . -name "*.txt" -exec egrep -l '^string' {} \;
```

9 recursive tree search for string in files, print file name and the line with match

```
find . -type f -print0 | xargs -0 grep -H 'documentclass'
```

10 recursive tree search for string in files, print file name only where match found

```
find . -type f -name *.tex -print0 | xargs -0 grep -l 'documentclass'
```

11 How to resize images in current folder based on width only

This example looks for all png files in current folder and will make thumbnails (shrink) any image that has a width larger than say 200 pixels. The height of the image is adjusted so that aspect ratio remain the same as originally was.

Edit as needed

```
#!/bin/bash
shopt -s nullglob
FILES=*.png
for file in $FILES
do
    f=${file%. *}
    echo "file is $file and f is $f"
    convert "$f.png[200x>]" "$f"_thumb.png
done
```

This example is as above except that the resizing is limited to enlarging the images to say 200 pixels. Edit as needed

```
#!/bin/bash
shopt -s nullglob
```

```
FILES=*.png
for file in $FILES
do
    f=${file%.*}
    echo "file is $file and f is $f"
    convert "$f.png[200x<]" "$f"_thumb.png
done
```

Reference:

1. <http://askubuntu.com/questions/135477/how-can-i-scale-all-images-in-a-folder-to-the-same-width>
2. <http://www.cyberciti.biz/faq/bash-loop-over-file/>

12 How to find image width and height?

Can use the file command. But the output has to be parsed. easier to use `imageinfo`

```
>sudo apt-get install imageinfo #install if needed
>w=`imageinfo --width foo.png`
>echo $w
81

>h=`imageinfo --height foo.png`
>echo $h
24
```

Reference:

1. <http://stackoverflow.com/questions/4670013/fast-way-to-get-image-dimensions-not-filesize>

13 How to resize animated gif file without losing the animation?

Useful trick to know

```
convert big.gif -coalesce coalesce.gif
convert -size 200x100 coalesce.gif -resize 200x10 small.gif
```

reference: <http://stackoverflow.com/questions/718491/resize-animated-gif-file-without-destroying-animation>

14 How to batch convert all .png files to .jpg?

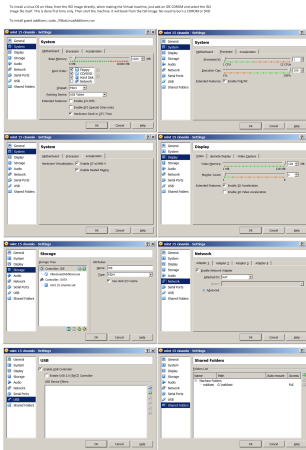
Thanks to <http://www.turnkeylinux.org/blog/png-vs-jpg>

```
apt-get install imagemagick

#one file
convert -flatten -background white file.png file.jpg

#batch
for f in *.png; do
    n=$(echo $f|sed 's/.png/.jpg/');
    convert -flatten -background white $f $n
done
```

15 How to install Linux on VBox



16 to use shared folders on a VBOX with Linux guest to windows

Make sure first the windows folder is added to shared folder in VBox settings for the VM. Then boot the VM. Now inside Linux create a mount point where to mount the shared folder to

```
>sudo mkdir /media/nabbasi
>ls -l /media
drwxr-xr-x 2 root root 4096 Jun 22 17:02 nabbasi

>cd /media
>sudo chown -hR me:me nabbasi
```



```
>ls -l
drwxr-xr-x  2 me  me   4096 Jun 22 17:02 nabbasi
```

Now mount the shared folder, making sure it is owned by me

```
>sudo ./win_mount.sh
>cat win_mount.sh
mount -t vboxsf -o uid=1000,gid=1000 nabbasi /media/nabbasi
```

17 join AVI files to one

Thanks to <http://www.torrent-invites.com/showthread.php?t=194756>

```
sudo apt-get install mencoder mplayer
cat *.avi > movie.avi
mencoder -forceidx -oac copy -ovc copy movie.avi -o movie_final.avi
```

18 How to change premissions recursive?

This will change all permissions on all files and folder

```
chmod -R 0755 folder_name
```

19 How to delete lines from file that starts with #?

This will change the file, backup is made to INPUT.txt.bak

```
sed -i.bak '/^#/d' INPUT.txt
```

20 How to search all tree and find file with specific name and then delete lines from this file that starts with #?

the -I {} is the marker, which says the file name is {}

```
find . -type f -name INPUT.txt -print0 | xargs -0 -I {} sed -i.bak '/^#/d' {}
```

The above could also be done like this

```
find . -type f -name INPUT.txt -print0 | xargs -0 sed -i.bak '/^#/d'
```

But I found using explicit marker for the argument more clear. This is useful. If using a command that needs more than one argument, the marker is needed anyway, so might as well get used to using it. Marker can be anything. So this works also

```
find . -type f -name INPUT.txt -print0 | xargs -0 -I file sed -i.bak '/^#/d' file
```

21 tree command

`tree -n -L 1 --charset nwidner` prints one level only and this `tree -n -i -L 1 -d .` does not print indentation lines

22 How copy selected files in one tree to another keeping same tree structure?

see <http://unix.stackexchange.com/questions/83593/copy-specific-file-type-keeping-the-folder-structure>

23 How to increase file handles limit for a process?

`ulimit -n` to find the limit, and to increase it to say 2048, type `ulimit -S -n 2048`

24 How to unzip a file using PHP on server?

Put this in a file `foo.php` and put it in the folder to unzip the file on the server and type the URL to this file

```
<?php
    //phpinfo();
    //echo exec('whoami');

    $command = "unzip file.zip > /dev/null 2>/dev/null &";
    $output = shell_exec($command);
    echo "<pre>Done !</pre>";
?>
```

25 How to increase open file limit?

type `ulimit -a` to see all limits. To change open file limit, edit the file `/etc/security/limits.conf` as root and add these lines

```
* soft nofile 4096
* hard nofile 4096
```

I rebooted after this just in case (may be reboot is not needed). Now it works. When I do

```
>ulimit -n
4096
```

Reference: thanks to lornix answer

26 How to run sudo command without getting command not found error?

Use `sudo -E env "PATH=$PATH" command`. Reference <http://superuser.com/questions/709515/command-not-found-when-using-sudo>

27 How to replace spaces in file names and folder with underscore?

```
find /tmp/ -depth -name "*" -execdir rename 's/ /_/g' "{}" \;
```

Above is thanks to Dennis Williamson from <http://stackoverflow.com/questions/2709458/bash-script-to-replace-spaces-in-file-names>

Seems to work well.

28 How to convert DOS file to Unix?

```
tr -d '\015' < file.txt > new_file.txt
```

Just make sure not to use the same file above, else it will be wiped out.

<http://stackoverflow.com/questions/2613800/how-to-convert-dos-windows-newline-crlf-to-unix-newline-n-in-bash-script>

or just do `sudo apt-get install dos2unix` and type `dos2unix foo.txt` it will overwrite the file ok.

29 bulk file renaming in bash, to remove name with spaces, leaving trailing digits

Thanks to Avinash Raj, use this command `rename 's/.*\s//' *.pdf` see <http://stackoverflow.com/questions/34469075/bulk-file-renaming-in-bash-to-remove-name-with-spaces-leaving-trailing-digits>

30 How to convert djvu files to pdf?

Install `sudo apt-get install djvulibre-bin`. To convert multiple files, I wrote this small script

```
#!/bin/bash
#dj2pdf.sh    script to convert djvu files to pdf
set -x
for file in $1; do
    filename=${file%.*}
    ddjvu -format=pdf -quality=100 "$filename.djvu" "$filename.pdf"
done
```

To convert one file, type `dj2pdf file.djvu` and to convert multiple files, type `dj2pdf *.djvu`

31 How to test the C compiler quickly?

```
echo "void main(){printf(\"hello world\n\");}" |gcc -x c - -o /tmp/hello;/tmp/hello
```

32 How to delete files with some extension inside specific folder over tree?

thanks to Anderson M. Gomes <http://unix.stackexchange.com/questions/270071/how-to-delete-all-files-with-specific-extension-in-specific-named-folders-in-lar>

Here is the code

```
#to check
$ find /path/to/source -type d -name 'rules' -exec find '{}' -mindepth 1 -maxdepth 1 -type f

#to delete
$ find /path/to/source -type d -name 'rules' -exec find '{}' -mindepth 1 -maxdepth 1 -type f
```

33 How to download a web page using wget?

An example,

```
wget --recursive --no-clobber --page-requisites --html-extension --convert-links
--restrict-file-names=windows --domains the_domain_name.com --no-parent http://blabla_bl
```

34 How to delete folders inside tree with only specific name?

Answers thanks to <https://stackoverflow.com/questions/13032701/how-to-remove-folders-with-a-certain-name>

```
cd top_level
rm -rf `find . -type d -name folder_name_to_remove`
```

Or

```
cd top_level
find . -type d -name foo -a -prune -exec rm -rf {} \;
```

35 How to delete files with specific names inside tree?

```
cd top_level
find . -name "file_name" -print
find . -name "file_name" -delete
```

36 How to sort files in tree by date changed?

This will list all files in tree, showing date file changed with latest changed at bottom of listing shown.

```
find . -type f -printf '%TY-%Tm-%Td %TT %p\n' | sort
```

Thanks to <https://stackoverflow.com/questions/5566310/how-to-recursively-find-and-list-the-latest-modified-files-in-a-directory-with-s>

37 How print longest line in file?

```
awk '{ if ( length > x ) { x = length; y = $0 } }END{ print y }' ./file.tex
```

Thanks to Keith Thompson at <https://unix.stackexchange.com/questions/24509/how-to-print-the-longest-line-in-a-file>

38 How to change all spaces to underscore in folder names in tree?

Use

```
sudo apt install detox
detox -n --dry-run * #dry run, to test, does nothing.
detox *
```

This will change all folder names below where it is issued and changes any space in the name to underscore.

39 apt useful commands

To just update a program to its latest without knowing the version number do, say want to update gfortran

```
sudo apt-get upgrade gfortran
```

To update the distribution do

```
sudo apt-get dist-upgrade
```

40 How to start a command after some time

To start a command after some time, say 30 minutes do `sleep 30m && ./my_script`

To start a command after some time, say 2 hrs do `sleep 2h && python ./script.py`

The above can be canceled before the time elapses, and the command will not run.

41 How to mount shared windows folder from Linux guest using VMWARE?

This was very tricky. Here are the steps I did. This is on Linux Ubuntu as guest running inside the VMWare virtual machine with windows 7 as Host.

First I made sure shared folder is added when installing the guest OS in VMWare setup. Added "data" as my shared folder name.

After booting into Linux, did (as user called "me")

```
sudo apt-get install open-vm-tools open-vm-tools-desktop open-vm-tools-dkms
cd /mnt
sudo mkdir -p /mnt/hgfs/data
sudo sudo chown -hR me:me data #this sets me as owner. This is important
vmhgfs-fuse .host:data /mnt/hgfs/data
```

Do NOT use sudo in the last command above. When I did that, I got permission error.

42 How to make guest OS (windows) see USB devices on Linux Host

Make sure you are in vboxusers group

```
sudo usermod -a -G vboxusers <username>
```

logout and login. Now try to add USB 2.0 to VBox USB in settings of the window virtual machine. It should now be enabled.

43 How to remove a network disk in windows?

in windows DOS, type

```
net use G: /delete
```

Where G: is say the network disk

44 How to share folder using windows as guest and linux as host?

Made my `/home/me/data/` as shared folder in VBox setting. So shared folder shows as `data` then.

Booted VBox windows 7. Then in windows typed in DOS

Type `net use G: \\vboxsvr\data`

So now it shows in windows as derive G

45 How to find files on linux?

`sudo updatedb` then `locate file_name` can also use `find` but `locate` is faster.

46 How to check is samba is running?

`smbclient -L localhost` if it asks for password, type it. It is then running.

47 How to see what printers are there in Linux?

`lpstat -p`

or do `http://localhost:631/printers/` and select Printers from the menu. The above is CUPS interface.

48 How to extract first frame of animated gif file as png image?

`convert 'moving_disk.gif[0]' moving_disk.png`

49 How to change title of Linux termina?

Thanks to <https://askubuntu.com/questions/22413/how-to-change-gnome-terminal-title> type

```
PROMPT_COMMAND='echo -ne "\033]0;TITLE HERE\007"'
```

This will change the title in the terminal banner, normally located in the upper left corner.

To make the terminal title be the full path of the current folder, type

```
PROMPT_COMMAND='echo -ne "\033]0;$PWD\007"'
```

To make the terminal title be the last folder in full path of the current folder, type

```
PROMPT_COMMAND='echo -ne "\033]0;$(basename $(pwd))\007"'
```


50 How to slow down or speed up an existing animated gif file?

Thanks to <http://blog.floriancargonet.com/slow-down-or-speed-up-a-gif-with-imagemagick/>
`identify -verbose your.gif | grep Delay` | give current delay between each frame in 100'th of second. So it say 50x100 then the delay is half second. To change the delay to one second between each frame do

```
convert -delay 100x100 your.gif your_slow.gif
```

So to make the time 0.25 second between each frame do

```
convert -delay 25x100 your.gif your_slow.gif
```

It looks like 6x100 is min time between frames that browsers support. But this could depend on which browser.

51 Misc. useful linux commands

1. `cd -` goes back to last directory
2. `reset` clears and resets the terminal
3. if you type `apt update` then want to do it again by adding `sudo` then no need to retype everything, just type `sudo !!` then the `!!` will copy the last command
4. `history` followed by `!nn` where `nn` is the command number show in history, will run that command
5. To run 2 commands one after the other, but stop if one fail, do `cmd1; cmd2; cmd3`
The above will stop if one of these commands fail. If you use `cmd1&& cmd2&& cmd3` then it will not stop if one command fail. so using `;` is more safe.
6. `command` column `t|` is useful command to format messy output into columns so easier to read

52 How to find files that changed before sometime ago?

use the command `find . -type f -mmin -150` to find files that changed within 150 minutes ago. And the command `find . -type f -mmin +150` to find files that changed longer than 150 minutes ago.

53 How to change how window bars and windows (terminals) look like?

on xfce, right click on the desktop->applications->settings manager->windows manager-> then select a theme. The theme Moheli looks good.

54 How to test Linux performance using sysbench ?

Install sysbench which is available in all installation managers.

Use `>sysbench --help` for help. No man pages?

Then do

```
>sysbench cpu run
sysbench 1.0.20 (using system LuaJIT 2.0.5)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Prime numbers limit: 10000

Initializing worker threads...

Threads started!

CPU speed:
  events per second: 3983.04

General statistics:
  total time:                10.0005s
  total number of events:    39839

Latency (ms):
  min:                       0.23
  avg:                       0.25
  max:                       20.25
  95th percentile:         0.26
  sum:                       9943.89

Threads fairness:
  events (avg/stddev):       39839.0000/0.00
  execution time (avg/stddev): 9.9439/0.00
```

And

```

>sysbench memory run
sysbench 1.0.20 (using system LuaJIT 2.0.5)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Running memory speed test with the following options:
  block size: 1KiB
  total size: 102400MiB
  operation: write
  scope: global

Initializing worker threads...

Threads started!

Total operations: 74842059 (7482566.83 per second)

73087.95 MiB transferred (7307.19 MiB/sec)

General statistics:
  total time:                10.0013s
  total number of events:    74842059

Latency (ms):
  min:                       0.00
  avg:                       0.00
  max:                       10.37
  95th percentile:          0.00
  sum:                       4017.76

Threads fairness:
  events (avg/stddev):       74842059.0000/0.00
  execution time (avg/stddev): 4.0178/0.00

```

or

```

>sysbench --threads=5 memory run
sysbench 1.0.20 (using system LuaJIT 2.0.5)

Running the test with following options:
Number of threads: 5
Initializing random number generator from current time

```

```
Running memory speed test with the following options:
```

```
block size: 1KiB
total size: 102400MiB
operation: write
scope: global
```

```
Initializing worker threads...
```

```
Threads started!
```

```
Total operations: 89536061 (8944801.69 per second)
```

```
87437.56 MiB transferred (8735.16 MiB/sec)
```

```
General statistics:
```

```
total time:                10.0028s
total number of events:    89536061
```

```
Latency (ms):
```

```
min:                0.00
avg:                0.00
max:                46.68
95th percentile:    0.00
sum:                27564.97
```

```
Threads fairness:
```

```
events (avg/stddev):    17907212.2000/1640514.61
execution time (avg/stddev): 5.5130/0.11
```

or

```
>sysbench --threads=5 cpu run
sysbench 1.0.20 (using system LuaJIT 2.0.5)
```

```
Running the test with following options:
```

```
Number of threads: 5
Initializing random number generator from current time
```

```
Prime numbers limit: 10000
```

```
Initializing worker threads...
```

```
Threads started!
```

```
CPU speed:
  events per second: 6707.45

General statistics:
  total time:                10.0036s
  total number of events:    67111

Latency (ms):
  min:                       0.23
  avg:                       0.74
  max:                       56.90
  95th percentile:         2.22
  sum:                       49553.41

Threads fairness:
  events (avg/stddev):       13422.2000/856.28
  execution time (avg/stddev): 9.9107/0.03
```

And

```
>sysbench --threads=5 --file_test_mode="seqwr" fileio run
sysbench 1.0.20 (using system LuaJIT 2.0.5)

Running the test with following options:
Number of threads: 5
Initializing random number generator from current time

Extra file open flags: (none)
128 files, 16MiB each
2GiB total file size
Block size 16KiB
Periodic FSYNC enabled, calling fsync() each 100 requests.
Calling fsync() at the end of test, Enabled.
Using synchronous I/O mode
Doing sequential write (creation) test
Initializing worker threads...

Threads started!

File operations:
  reads/s:                   0.00
  writes/s:                  36.47
  fsyncs/s:                  101.22
```

```

Throughput:
  read, MiB/s:          0.00
  written, MiB/s:       0.57

General statistics:
  total time:           10.1126s
  total number of events: 753

Latency (ms):
  min:                  0.00
  avg:                  66.82
  max:                  655.80
  95th percentile:     337.94
  sum:                  50315.70

Threads fairness:
  events (avg/stddev):  150.6000/63.87
  execution time (avg/stddev): 10.0631/0.04

```

To use on windows go to <https://github.com/akopytov/sysbench> but need WSL to use.

The compiled tests are

```

ompile-in tests:
fileio - File I/O test
cpu - CPU performance test
memory - Memory functions speed test
threads - Threads subsystem performance test
mutex - Mutex performance test

```

Reference <https://linuxconfig.org/how-to-benchmark-your-linux-system>

55 How to test Linux performance using geekbench ?

Installed geekbench on Linux Majoaro using the installation manager (from AUR).

Then did

```

>geekbench --help
Geekbench 5.4.5 Tryout : https://www.geekbench.com/

Usage:

  geekbench [ options ]

Options:

```

```

-h, --help                print this message
--unlock EMAIL KEY       unlock Geekbench using EMAIL and KEY

--cpu                     run the CPU benchmark
--sysinfo                 display system information and exit
[0911/024243:WARNING:src/halogen/cuda/cuda_library.cpp(1465)] Cannot find or load CUDA library
[0911/024243:WARNING:src/halogen/cl/opencl_library.cpp(691)] Cannot find or load OpenCL library
[0911/024243:WARNING:src/halogen/vulkan/vulkan_common.h(28)] VulkanException: vkCreateInstance

If no options are given, the default action is to run the CPU benchmark.

```

To run the tests did

```

>geekbench --sysinfo
System Information
  Operating System      Manjaro Linux
  Kernel                Linux 5.15.53-1-MANJARO x86_64
  Model                 innotek GmbH VirtualBox
  Motherboard           Oracle Corporation VirtualBox
  BIOS                  innotek GmbH VirtualBox

Processor Information
  Name                  Intel Core i9-12900K
  Topology              1 Processor, 6 Cores
  Identifier            GenuineIntel Family 6 Model 151 Stepping 2
  Base Frequency        3.19 GHz
  L1 Instruction Cache  32.0 KB x 6
  L1 Data Cache         48.0 KB x 6
  L2 Cache              1.25 MB x 6
  L3 Cache              30.0 MB x 6

Memory Information
  Size                  50.9 GB

```

Then now run the full test

```

>geekbench
Geekbench 5.4.5 Tryout : https://www.geekbench.com/

Geekbench 5 requires an active Internet connection when in tryout mode and
automatically uploads benchmark results to the Geekbench Browser.

Buy a Geekbench 5 license from the Primate Labs Store to enable offline use
and unlock other features:

https://store.primatelabs.com/v5

```

Enter your Geekbench 5 license using the following command line:

```
geekbench --unlock <email> <key>
```

Running Gathering system information

System Information

Operating System	Manjaro Linux
Kernel	Linux 5.15.53-1-MANJARO x86_64
Model	innotek GmbH VirtualBox
Motherboard	Oracle Corporation VirtualBox
BIOS	innotek GmbH VirtualBox

Processor Information

Name	Intel Core i9-12900K
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L3 Cache	30.0 MB x 6

Memory Information

Size	50.9 GB
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Single-Core

- Running AES-XTS
- Running Text Compression
- Running Image Compression
- Running Navigation
- Running HTML5
- Running SQLite
- Running PDF Rendering
- Running Text Rendering
- Running Clang
- Running Camera
- Running N-Body Physics
- Running Rigid Body Physics
- Running Gaussian Blur
- Running Face Detection
- Running Horizon Detection
- Running Image Inpainting
- Running HDR
- Running Ray Tracing
- Running Structure from Motion
- Running Speech Recognition

Running Machine Learning

Multi-Core

Running AES-XTS
Running Text Compression
Running Image Compression
Running Navigation
Running HTML5
Running SQLite
Running PDF Rendering
Running Text Rendering
Running Clang
Running Camera
Running N-Body Physics
Running Rigid Body Physics
Running Gaussian Blur
Running Face Detection
Running Horizon Detection
Running Image Inpainting
Running HDR
Running Ray Tracing
Running Structure from Motion
Running Speech Recognition
Running Machine Learning

Uploading results to the Geekbench Browser. This could take a minute or two depending on the speed of your internet connection.

Upload succeeded. Visit the following link and view your results online:

<https://browser.geekbench.com/v5/cpu/17190798>

Visit the following link and add this result to your profile:

<https://browser.geekbench.com/v5/cpu/17190798/claim?key=464173>

The result is

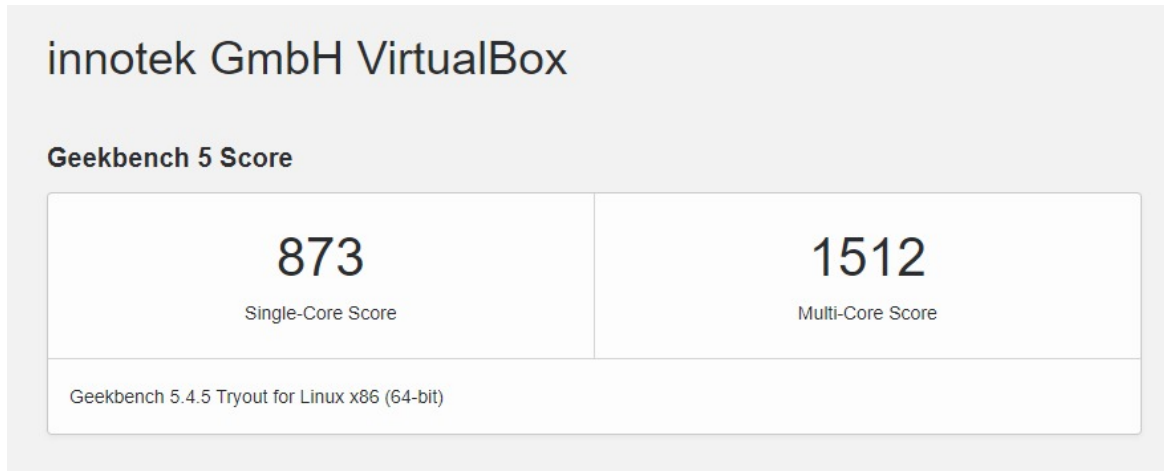


Figure 1: Benchmarks before disabling hyper_V

The above was run on Virtual box. It shows it is slow performance. So I disabled Hyper-V on windows 10. Using instructions given in <https://www.wintips.org/fix-virtualbox-running-very-slow-in-windows-10-11/> (make sure to follow all instructions, include issuing the command line and rebooting windows).

In addition to the above, I made sure in VBox setting to use KVM for virtualization. See <https://superuser.com/questions/945910/how-to-select-paravirtualization-interface-in-virtualbox>

The performance now is much better.

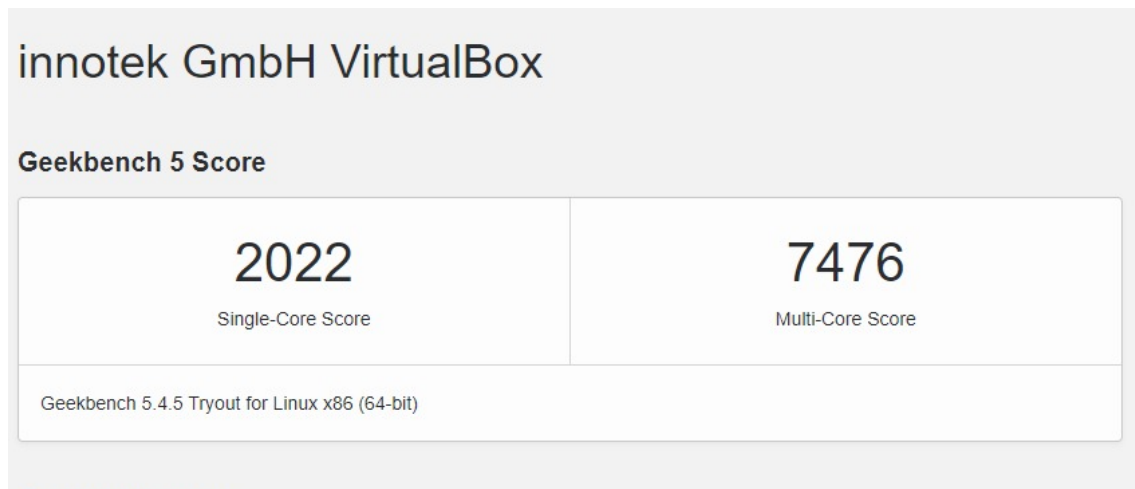


Figure 2: Benchmarks after disabling hyper_V

56 How to stop window to snap/expand automatically when top edge hit the top of the desktop ?

This is the most stupid and annoying feature in Linux desktop and impossible to find how to turn it off. Googling around, this worked

```
xfconf-query -c xfwm4 -p /general/tile_on_move -s false
```

No wonder Linux will never ever make it on the desktop.

57 How to find line number which is longest in file?

```
awk '{ print length(), NR | "sort -rn" }' index.tex | head -n 1
```

This prints 2 numbers on the screen. The first number is the actual length and the second number is the line number itself in the file.

Thanks to Attila O. <https://askubuntu.com/questions/375832/how-to-get-longest-line-from-a-file>

58 How to change line in all files in tree?

Suppose we wanted to replace text in any line in files in some tree.

Do

```
#!/bin/bash

cd $HOME/my_tree

find . -name "fricas_listA.txt"|while read fname; do
  echo "processing $fname"
  sed -i 's/algorithm="fricas"/algorithm=""fricas"/g' $fname
done
```

The above replaces `algorithm="fricas"` by `algorithm=""fricas""` everywhere in all files called `fricas_listA.txt` in the tree. To apply this to all text file, replace `-name "fricas_listA.txt"` by `-name "*.txt"`

59 How to delete lines in all files in tree that contain some specific text?

Suppose we wanted to delete all lines that has some word, say window in them.

Do

```
#!/bin/bash

cd $HOME/my_tree

find . -name "*.txt"|while read fname; do
    echo "processing $fname"
    sed -i '/windows/d' $fname
done
```

60 How to remove some text from a line (but not delete the whole line)

Suppose we wanted to delete only the word window from any line.

Do

```
#!/bin/bash

cd $HOME/my_tree

find . -name "*.txt"|while read fname; do
    echo "processing $fname"
    sed -i 's/windows//g' $fname
done
```