OS Info Project

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Introduction

The objective of this project is to demonstrate how to display operating system information using commands in Kali Linux. This includes showing IP addresses, hard disk information, the top 5 directories in the home directory, and monitoring CPU usage every 10 seconds.

Linux/Unix

The procedure to find os name and version on Linux:

1. Open the terminal application (bash shell)
2. For remote server login using the ssh: **ssh user@server-name**
3. Type any one of the following command to find os name and version in Linux:
cat /etc/os-release
lsb_release -a
hostnamectl
4. Type the following command to find Linux kernel version:
uname -r

Sample Output:

```
NAME="Ubuntu"
VERSION="17.10 (Artful Aardvark)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 17.10"
VERSION_ID="17.10"
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
VERSION_CODENAME=artful
UBUNTU_CODENAME=artful
```

UCSD Support. “UC San Diego - How to Find OS Version of Your Device.” *It Services - How to Find OS Version of Your Device - Information Technology*, 2023, support.ucsd.edu/its?id=kb_article_view&sysparm_article=KB0032481.

5. df

Df is not a partitioning utility, but prints out details about only mounted file systems. The list generated by df even includes file systems that are not real disk partitions.

Here is a simple example

```
$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda6        97G   43G   49G  48% /
none            4.0K     0  4.0K   0% /sys/fs/cgroup
udev            3.9G  8.0K  3.9G   1% /dev
tmpfs           799M  1.7M  797M   1% /run
none            5.0M     0  5.0M   0% /run/lock
none            3.9G   12M  3.9G   1% /run/shm
none            100M   20K  100M   1% /run/user
/dev/sda8       196G  154G   33G  83% /media/13f35f59-f023-4d98-b06f-9dfaebefd6c1
/dev/sda5        98G   37G   62G  38% /media/4668484A68483B47
```

Only the file systems that start with a /dev are actual devices or partitions.
Use grep to filter out real hard disk partitions/file systems.

```
$ df -h | grep ^/dev
/dev/sda6        97G   43G   49G  48% /
/dev/sda8       196G  154G   33G  83% /media/13f35f59-f023-4d98-b06f-9dfaebefd6c1
/dev/sda5        98G   37G   62G  38% /media/4668484A68483B47
```

Moon, Silver. “10 Commands to Check Disk Partitions and Disk Space on Linux.” *BinaryTides*, 4 Jan. 2023, www.binarytides.com/linux-command-check-disk-partitions/.

So, what does the sleep command do in Linux?

1. /bin/sleep is Linux or Unix command to delay for a specified amount of time.
2. You can suspend the calling shell script for a specified time. For example, pause for 10 seconds or stop execution for 2 mintues.
3. In other words, the sleep command pauses the execution on the next shell command for a given time.
4. GNU version of sleep command supports additional options
5. For example, suspend a bash shell script or command prompt for five seconds, type: `sleep 5`
6. Common examples of sleep commands include scheduling tasks and delaying the execution to allow a process to start. Another usage is waiting until a wifi network connection available to stream large file over the network.

Gite, Vivek. *What Does the Sleep Command Do in Linux? - Nixcraft*, 13 Dec. 2022, www.cyberciti.biz/faq/what-does-the-sleep-command-do-in-linux/.

Find Largest Directories in Linux

If you want to display the biggest directories in the current working directory, run:

```
# du -a | sort -n -r | head -n 5
```

```
tecmint Original VM's # du -a | sort -n -r | head -n 5
14014416        .
4676824 ./Ubuntu 15.04
4676612 ./Ubuntu 15.04/Ubuntu 15.04.vdi
4308280 ./Fedora 21 Workstation
4307972 ./Fedora 21 Workstation/Fedora 21 Workstation.vdi
tecmint Original VM's #
```

Find the Biggest Directories Only

Let us break down the command and see what says each parameter.

- `du` command: Estimate file space usage.
- `a` : Displays all files and folders.
- `sort` command : Sort lines of text files.
- `-n` : Compare according to string numerical value.
- `-r` : Reverse the result of comparisons.
- `head` : Output the first part of the files.
- `-n` : Print the first 'n' lines. (In our case, We displayed the first 5 lines).

Saive, Ravi. "How to Find Top Directories and Files (Disk Space) in Linux." *How to Find Most Used Disk Space Directories and Files in Linux*, 20 July 2023, www.tecmint.com/find-top-large-directories-and-files-sizes-in-linux.

3. Calculating CPU Usage

3.1. Getting CPU Usage Using *vmstat*

The *vmstat* command displays CPU activity in near-real time:

```
[root@localhost ~]# vmstat 3 4
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 4  0      0 1347080   6120 941464    0    0    68    11   72  137  1  2 97  0  0
 1  0      0 1347080   6120 941464    0    0     0     0   84  157  1  2 97  0  0
 1  0      0 1347080   6120 941464    0    0     0     0   59  107  1  1 98  0  0
 1  0      0 1347080   6120 941464    0    0     0     1   59  104  1  1 98  0  0
```

The columns under CPU provide an overview of where the processor time is spent:

- *us* – time spent running non-kernel code
- *sy* – time spent running kernel code
- *id* – time spent idle
- *wa* – time spent waiting for I/O
- *st* – time is stolen from a virtual machine

The *id* column is what we're interested in. With the delay of a second, we calculate the CPU usage using *vmstat*:

```
[root@localhost ~]# echo "CPU Usage: "$[100-$(vmstat 1 2|tail -1|awk '{print $15}')]"%"
CPU Usage: 2%
```

baeldung. "Get Overall CPU Usage on Linux." *Baeldung on Linux*, 18 Mar. 2024, www.baeldung.com/linux/get-cpu-usage.

Using Complex Commands

The `watch` command also allows you to use more complex user-defined commands, with their own arguments and options. One way to do this is to use the backslash (****) symbol:

```
watch [options] \
```

Using the command above brings you to the next line in the terminal, where you need to add the user-defined command. Once you hit **Enter**, it executes the command. For instance:

```
watch -n 5 \
echo "watch command example output"
```

```
phoenixnap@test-system:~$ watch -n 5 \
> echo "watch command example output"
```

Another option is to add the user-define command in single quotation marks:

```
watch [options] '[command]'
```

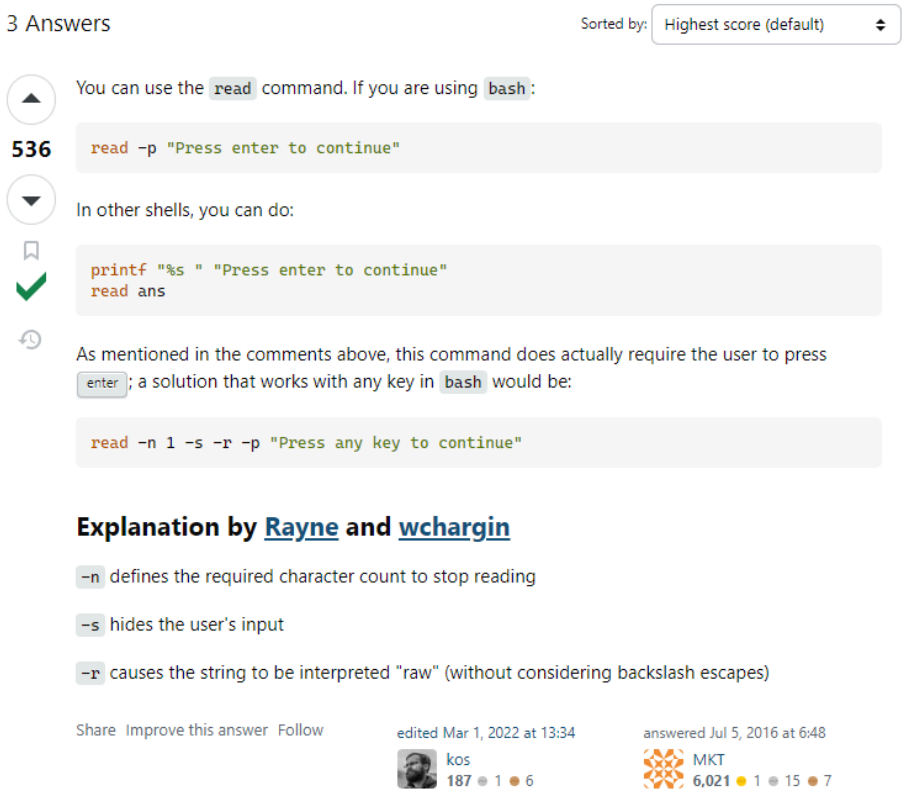
Using the example above, the command would be:

```
watch -n 5 'echo "watch command example output"'
```

```
Every 5.0s: echo "watch command example output"    test-system: Thu Aug  5 06:31:38 2021

watch command example output
```

Kovačević, Aleksandar. "Linux Watch Command - Examples and How to Use It." *Knowledge Base by phoenixNAP*, 11 Aug. 2021, phoenixnap.com/kb/linux-watch-command.



3 Answers

Sorted by: Highest score (default)

536

You can use the `read` command. If you are using `bash`:

```
read -p "Press enter to continue"
```

In other shells, you can do:

```
printf "%s " "Press enter to continue"
read ans
```

As mentioned in the comments above, this command does actually require the user to press `enter`; a solution that works with any key in `bash` would be:

```
read -n 1 -s -r -p "Press any key to continue"
```

Explanation by Rayne and wchargin

`-n` defines the required character count to stop reading

`-s` hides the user's input

`-r` causes the string to be interpreted "raw" (without considering backslash escapes)

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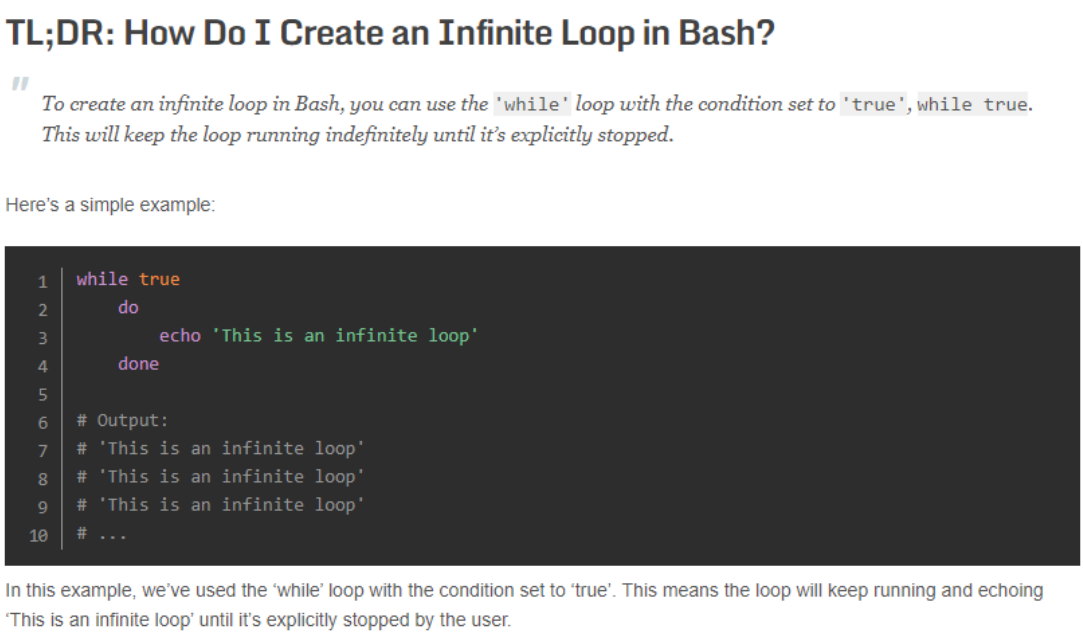
edited Mar 1, 2022 at 13:34 kos 187 ● 1 ● 6

answered Jul 5, 2016 at 6:48 MKT 6,021 ● 1 ● 15 ● 7

kos. "How Can I Make 'Press Any Key to Continue.'" *Unix & Linux Stack Exchange*, 1 Mar. 2022, unix.stackexchange.com/questions/293940/how-can-i-make-press-any-key-to-continue.



TL;DR: How Do I Create an Infinite Loop in Bash?

> *To create an infinite loop in Bash, you can use the `'while'` loop with the condition set to `'true'`, `while true`. This will keep the loop running indefinitely until it's explicitly stopped.*

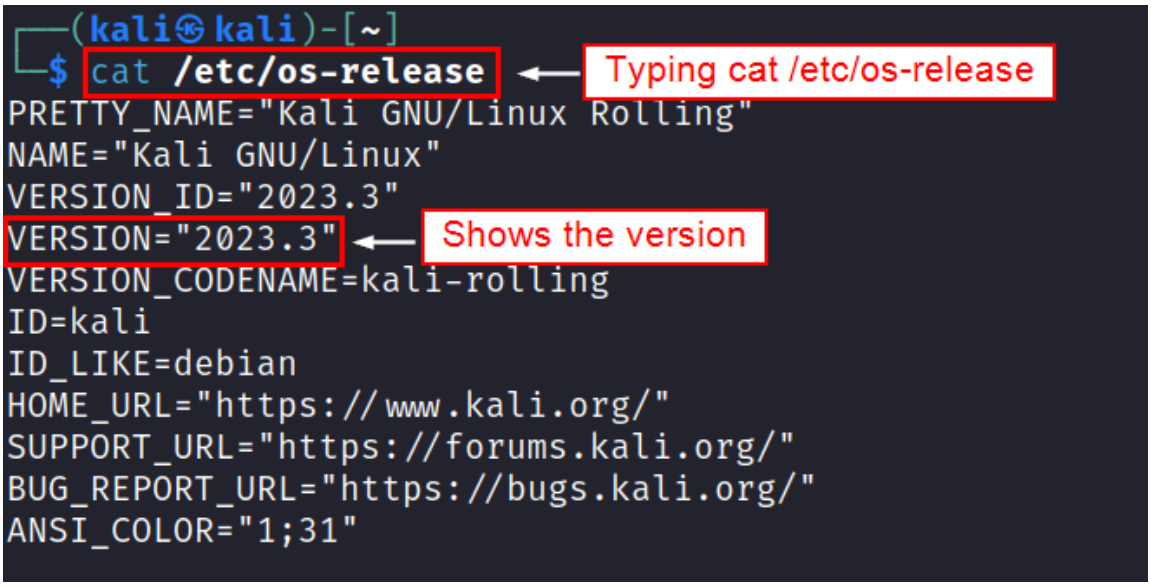
Here's a simple example:

```
while true
    do
        echo 'This is an infinite loop'
    done

# Output:
# 'This is an infinite loop'
# 'This is an infinite loop'
# 'This is an infinite loop'
# ...
```

In this example, we've used the 'while' loop with the condition set to 'true'. This means the loop will keep running and echoing 'This is an infinite loop' until it's explicitly stopped by the user.

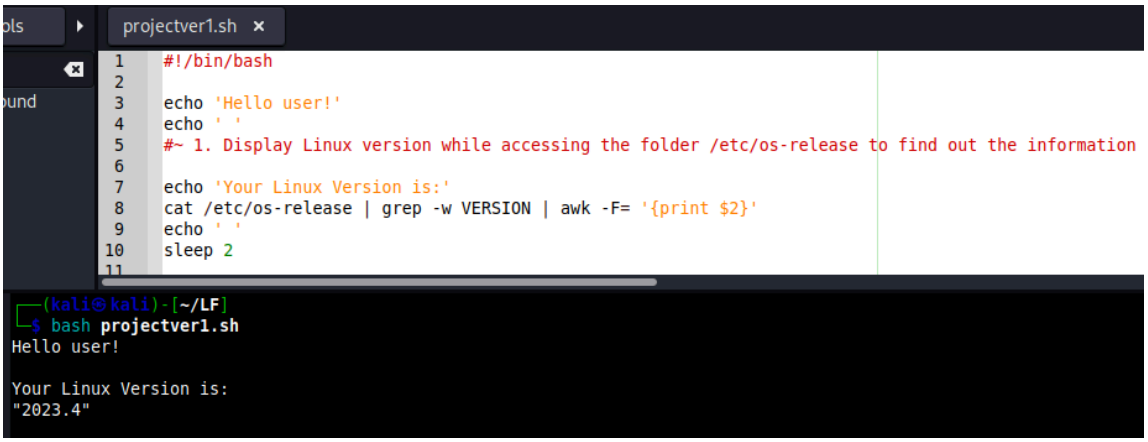
RamugliaGabriel is the owner and founder of IOFLOOD.com, Gabriel. "Creating an Infinite Bash Loop: Linux Shell Script Syntax." *Linux Dedicated Server Blog*, 4 Dec. 2023, ioflood.com/blog/bash-infinite-loop/.



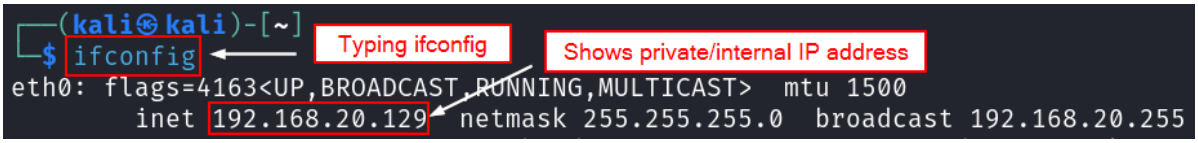
Display the Linux version.

```
5   #1. Display Linux version while accessing the folder /etc/os-release to find out the information
```

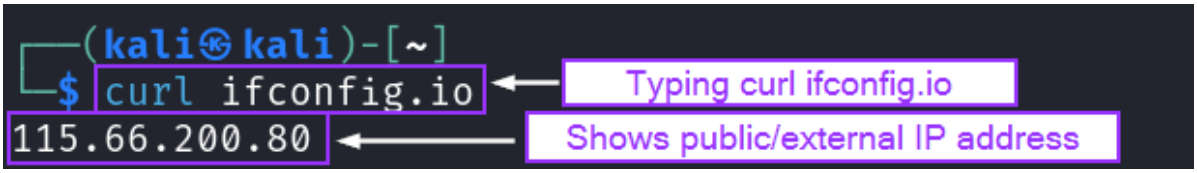
Information on Geany



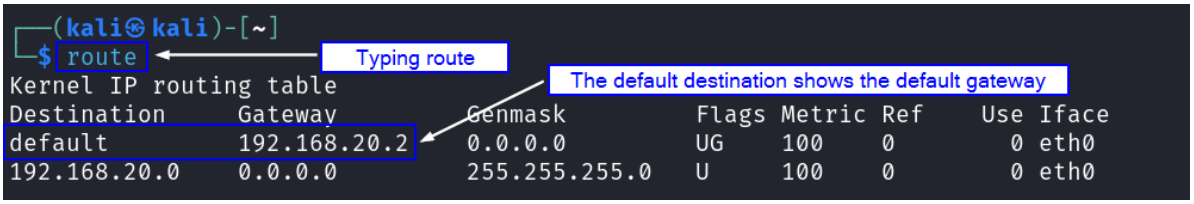
To filter out the rest of the data in /etc/os-release and display the version number using awk -F=, you can use grep -w VERSION. After displaying the result, you can pause the script for 2 seconds using sleep so that the user can read it.



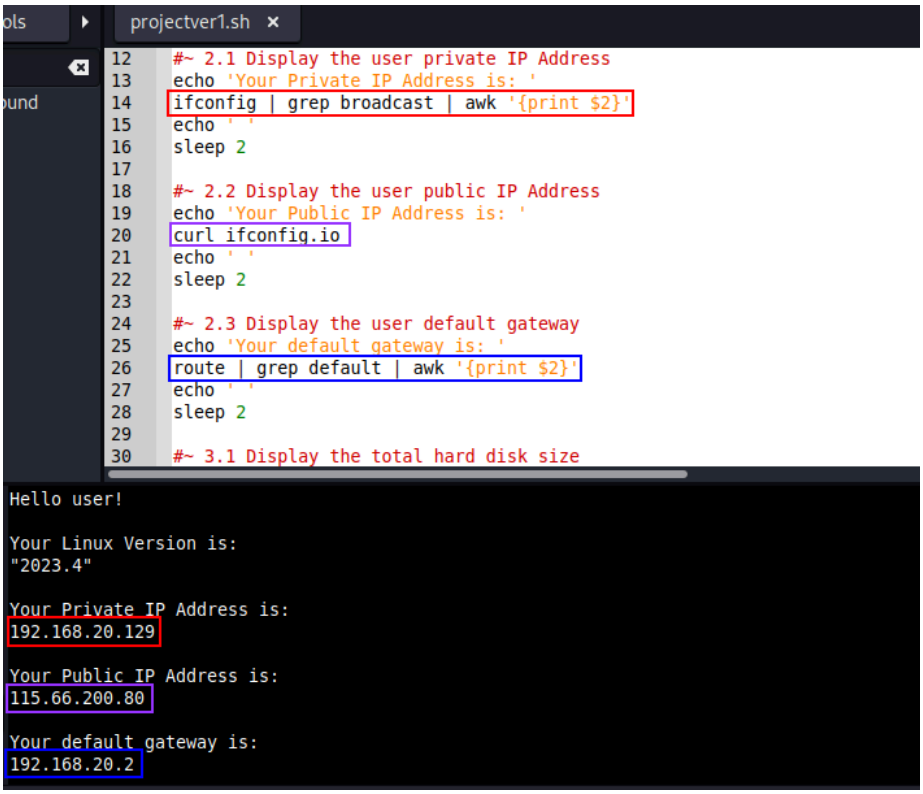
Display the internal/private IP address.



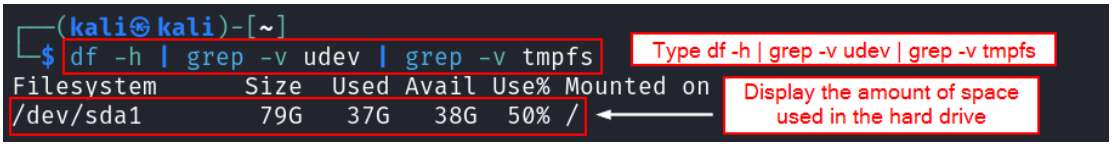
Display the external/public IP address.



Display the default gateway.

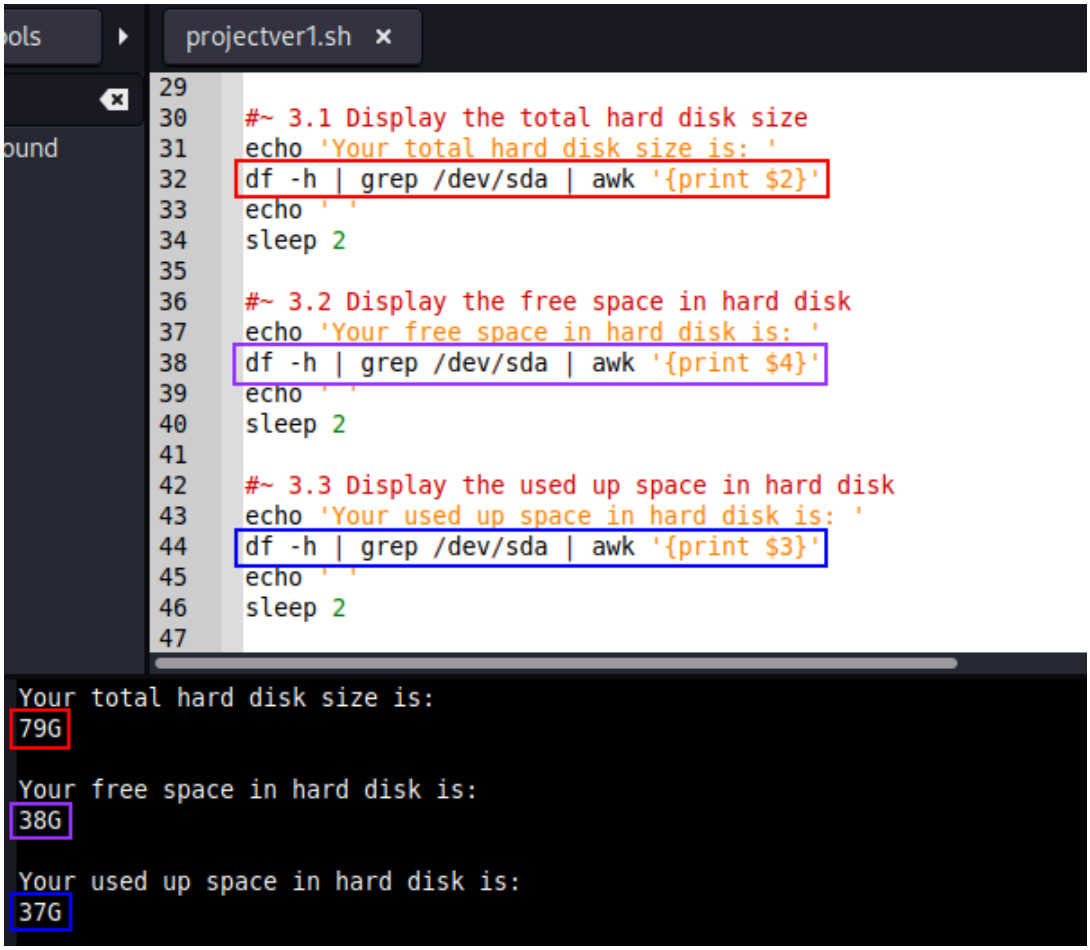


Displaying the output of all the IP addresses in Geany.

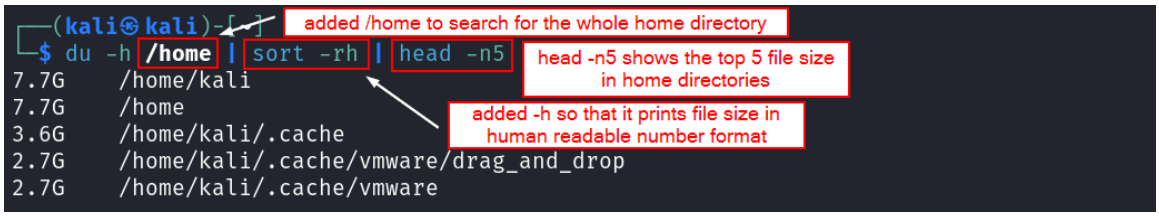


Display hard disk information by excluding udev and tmpfs.

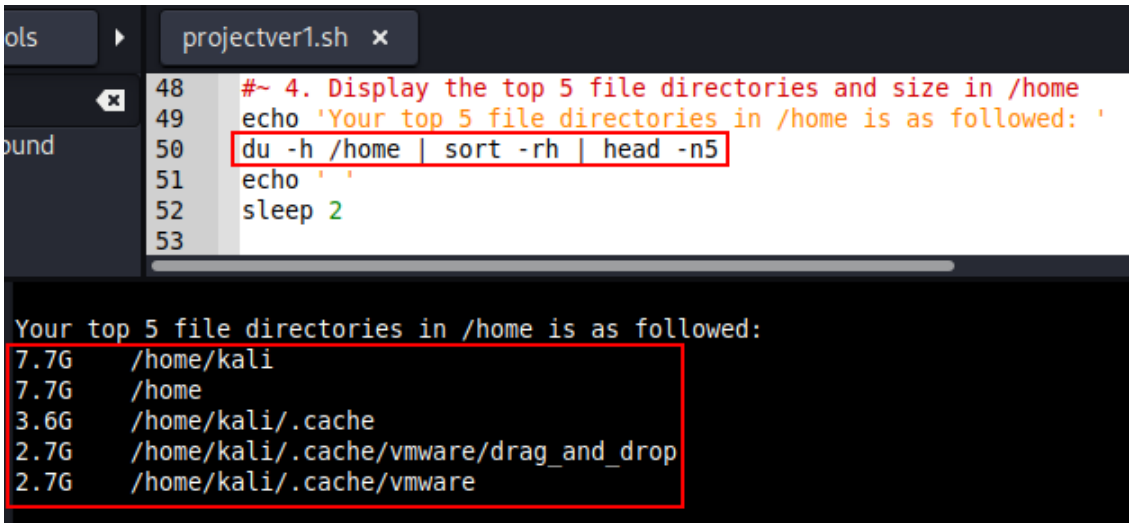
Display hard disk information using grep /dev/sda1, using different colours to differentiate the total size, used space, and available space on the hard drive.



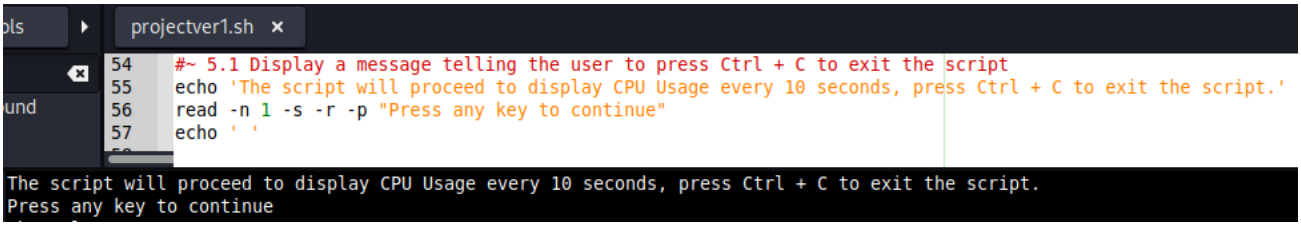
Use grep /dev/sda1 to display the row and awk to print individual information.



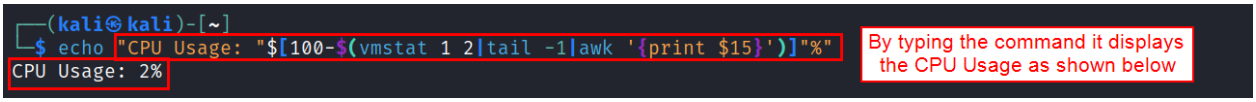
Display the top 5 directories in the home directory and their sizes.



Display the top 5 directories in the home directory and their sizes in Geany.

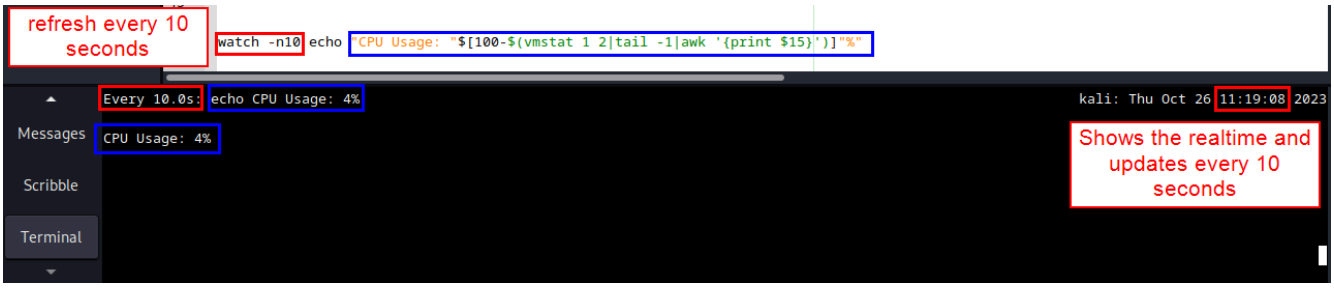


To exit the script, the user must press Ctrl + C. The command displaying Linux CPU usage every 10 seconds will continue running until this action is taken. After reading the message, the user can press any key to continue.



Display the CPU usage using the vmstat command.

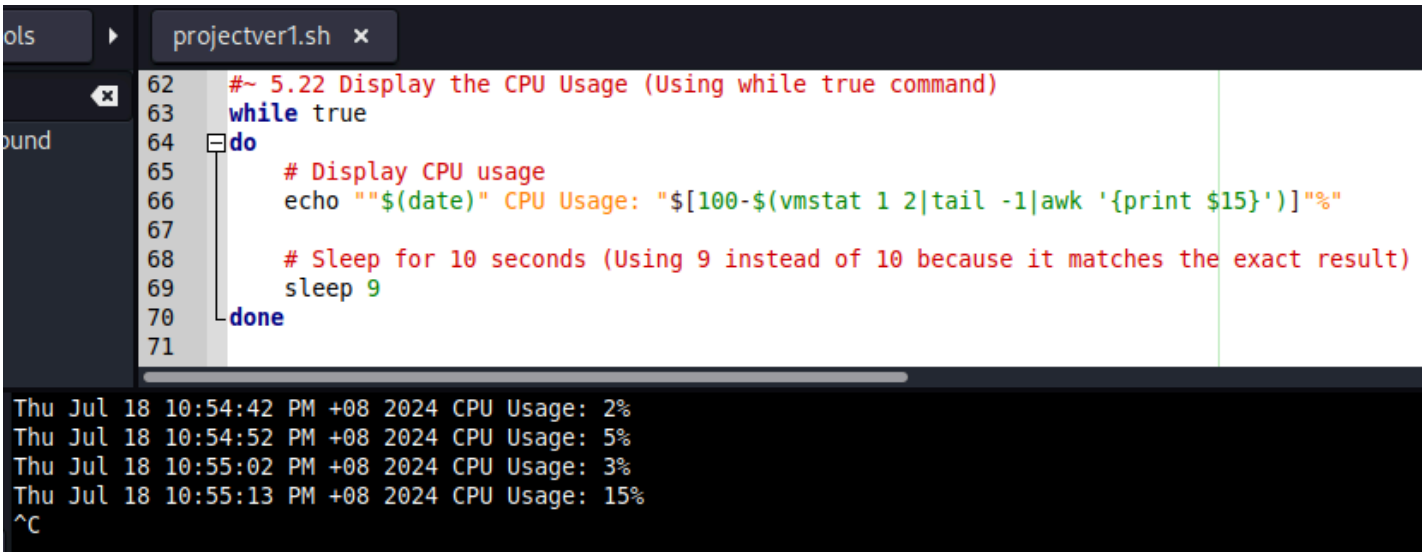
Using watch command



Display the CPU Usage in Geany.

Display the CPU usage, refreshing every 10 seconds in Geany.

Using while true command



By using the while true command, the script continues in a loop. I've included a date command to inform the user of the time when the script will display CPU usage using the vmstat command. Additionally, I've added sleep 9 to refresh every 10 seconds, matching the time interval specified by the date command.

References

UCSD Support. “UC San Diego - How to Find OS Version of Your Device.” *It Services - How to Find OS Version of Your Device - Information Technology*, 2023, support.ucsd.edu/its?id=kb_article_view&sysparm_article=KB0032481.

Moon, Silver. “10 Commands to Check Disk Partitions and Disk Space on Linux.” *BinaryTides*, 4 Jan. 2023, www.binarytides.com/linux-command-check-disk-partitions/.

Gite, Vivek. *What Does the Sleep Command Do in Linux? - Nixcraft*, 13 Dec. 2022, www.cyberciti.biz/faq/what-does-the-sleep-command-do-in-linux/.

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Kovačević, Aleksandar. “Linux Watch Command - Examples and How to Use It.” *Knowledge Base by phoenixNAP*, 11 Aug. 2021, phoenixnap.com/kb/linux-watch-command.

kos. “How Can I Make ‘Press Any Key to Continue.’” *Unix & Linux Stack Exchange*, 1 Mar. 2022, unix.stackexchange.com/questions/293940/how-can-i-make-press-any-key-to-continue.

RamugliaGabriel is the owner and founder of IOFLOOD.com, Gabriel. “Creating an Infinite Bash Loop: Linux Shell Script Syntax.” *Linux Dedicated Server Blog*, 4 Dec. 2023, ioflood.com/blog/bash-infinite-loop/.