Advance Linux Process Management(Ubuntu,Centos,OpenSuse)

There are some advance process monitoring tools for Linux Operating system.
Some of them are explaining bellow

htop:

Most system administrator familiar with Linux have used the *top* command line utility to
see what process is taking the most CPU or memory. There's a similar utility called htop
that is much easier to use for normal tasks.It's interactive, real-time and most
importantly its very user friendly and you can see the CPU utilization at a glance.

But to use the htop utility we have to install it first.Because By default it is not installed
in the operating system

Installing Process of htop in linux(with Different Package management):

Ubuntu:
=> sudo apt install htop

Centos:
for installing in centos we just need to add an EPEL repository so yum can find it.
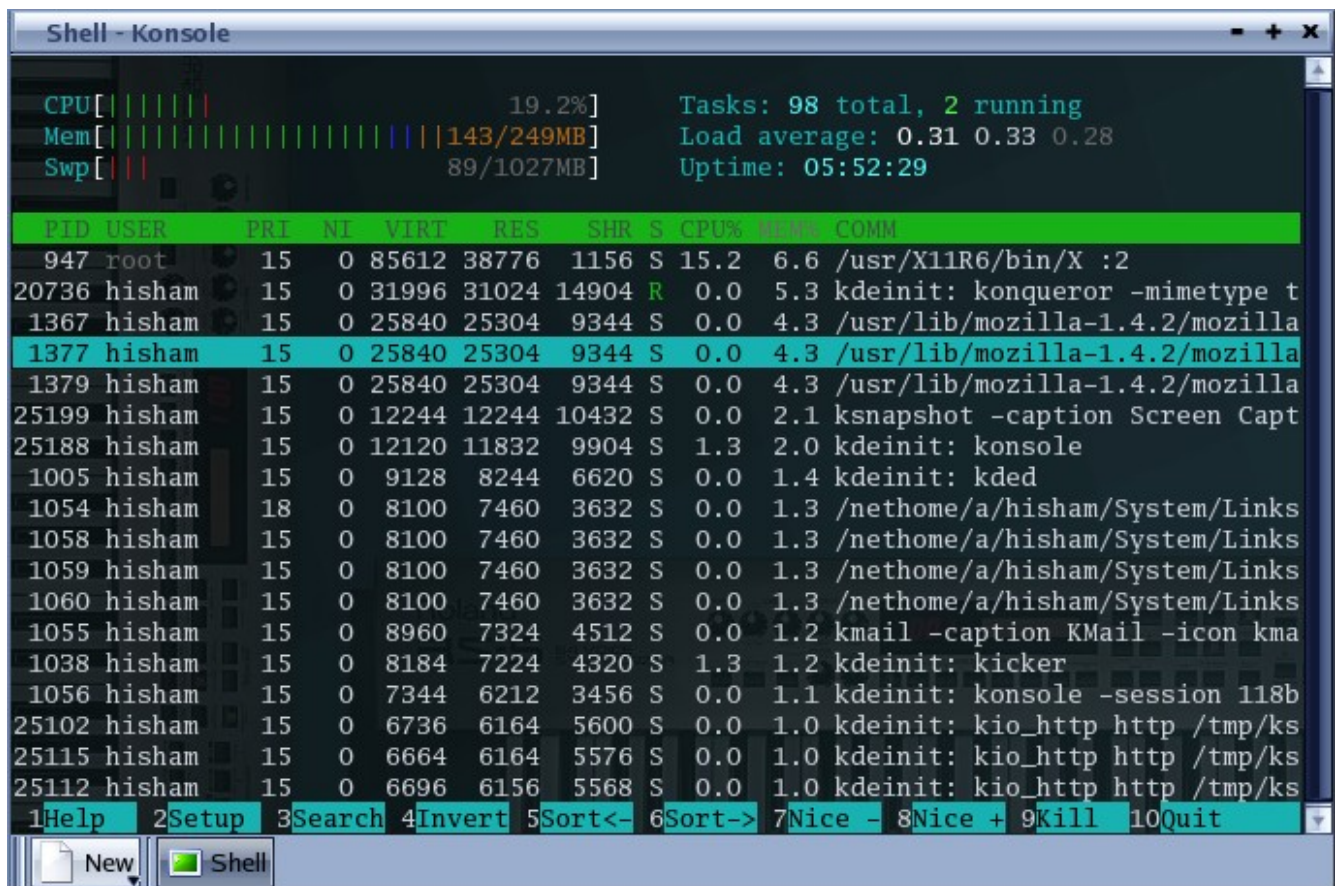
=>sudo yum -y install epel-release
=>sudo yum -y update
=>sudo yum install htop

After a successful install we have to type

=>sudo htop

we should see the status of your system

```
Shell - Konsole                                                    - + x

  CPU[||||||                      19.2%]    Tasks: 98 total, 2 running
  Mem[||||||||||||||||||||||143/249MB]     Load average: 0.31 0.33 0.28
  Swp[|||                     89/1027MB]   Uptime: 05:52:29

  PID USER       PRI  NI  VIRT   RES   SHR S CPU% MEM% COMM
   947 root       15   0 85612 38776  1156 S 15.2  6.6 /usr/X11R6/bin/X :2
 20736 hisham     15   0 31996 31024 14904 R  0.0  5.3 kdeinit: konqueror -mimetype t
  1367 hisham     15   0 25840 25304  9344 S  0.0  4.3 /usr/lib/mozilla-1.4.2/mozilla
  1377 hisham     15   0 25840 25304  9344 S  0.0  4.3 /usr/lib/mozilla-1.4.2/mozilla
  1379 hisham     15   0 25840 25304  9344 S  0.0  4.3 /usr/lib/mozilla-1.4.2/mozilla
 25199 hisham     15   0 12244 12244 10432 S  0.0  2.1 ksnapshot -caption Screen Capt
 25188 hisham     15   0 12120 11832  9904 S  1.3  2.0 kdeinit: konsole
  1005 hisham     15   0  9128  8244  6620 S  0.0  1.4 kdeinit: kded
  1054 hisham     18   0  8100  7460  3632 S  0.0  1.3 /nethome/a/hisham/System/Links
  1058 hisham     15   0  8100  7460  3632 S  0.0  1.3 /nethome/a/hisham/System/Links
  1059 hisham     15   0  8100  7460  3632 S  0.0  1.3 /nethome/a/hisham/System/Links
  1060 hisham     15   0  8100  7460  3632 S  0.0  1.3 /nethome/a/hisham/System/Links
  1055 hisham     15   0  8960  7324  4512 S  0.0  1.2 kmail -caption KMail -icon kma
  1038 hisham     15   0  8184  7224  4320 S  1.3  1.2 kdeinit: kicker
  1056 hisham     15   0  7344  6212  3456 S  0.0  1.1 kdeinit: konsole -session 118b
 25102 hisham     15   0  6736  6164  5600 S  0.0  1.0 kdeinit: kio_http http /tmp/ks
 25115 hisham     15   0  6664  6164  5576 S  0.0  1.0 kdeinit: kio_http http /tmp/ks
 25112 hisham     15   0  6696  6156  5568 S  0.0  1.0 kdeinit: kio_http http /tmp/ks
 1Help   2Setup  3Search 4Invert 5Sort<- 6Sort-> 7Nice - 8Nice + 9Kill  10Quit

  New      Shell
```

Its almost look like top command but more interactive and more user friendly.

Lets talk about each option about the htop utility.

1) First option is the CPU which shows us the CPU utilization percentage and also in a graph mode

2) Second option is the memory option Which shows the actual memory which is used .

3) Third Option is the Swap space that is used by the system

4) Next option on the right portion is Task. It show the total ,Threads and the Running task

5) Next option shows the Load average of the system

6) Third option shows on the right shows the Uptime of the server shows the amount of time server is running

The lower Part provides details of the process just like top command lets see it again

Name Of The Header	Description
PID	Every Process has a unique process id (the so called PID).the process id is very important. For example you want to kill a process then you need to provide the process id for that
USER	The name of the users the process is using .many process are run as root so you can see it quite often
PRI	It shows the priority of the process. This number is an indication that when the process will get the CPU cycles again. Lower the value higher the priority. Process with a higher priority will have the CPU cycle sooner. And lower priority process get the CPU cycle later
NI	The NICE value of the process .With the Help of the NICE value we can change the process Priority
VIRT	Total amount of Memory claimed by the process
RES	The memory size that the process is using at that moment
SHR	The amount of Shared memory that the process is sharing with other processed

S	Shows the status of the processed 'R' means it is running 'S' means it is in sleeping mode 'Z' means its a zombie process 'T' means stopped, either by a job control signal 'D' means uninterruptible sleep
%CPU	The amount of CPU that is used by the last pooling cycle (which is typically 5 seconds)
%MEM	The amount of MEMORY that is used by the last pooling cycle (which is typically 5 seconds)
TIME	It indicates the total amount of CPU time that the process has used since it was started
COMMAND	This is the command that started the processed

the most useful option is the option on the bottom .There are 10 option on the bottom of the screen

Name	Description
F1	Its the help option. it contains the descriptions of every other option and short codes
F2	Setup option with this option you can customize the appearance of the htop utility .you can also set the color of the output and your desired option with this option. you can set which column should be there and which column should not

F3	With this option you can search a particular process just type F3 and the name of the process to find it.
F4	You can filter the process with this command. if you write a process name and it will show all the process s name with the same command name
F6	F6 is the sort option .you can sort the process by different options. you can sort the process by PID,USER,Priority,Time etc
F7	F7 is used to decrease the Nice value of any process the low the Nice value the greater the priority
F8	F8 is used to increase the Nice value of any process the higher the Nice value the lower the priority
F9	Its the kill command you select a process and press F9 it will show you a list of signal the you want to send to that process. That's how you can kill any process
F10	Exit command for htop

You can also find the process filtered bu user from the commands just like we use like top command.

=>htop -u <username>

Fuser:

The *fuser* command is basically used to identify processes using files, directories, or sockets. The tool basically displays the PIDs of processes that are using the file whose name is passed as argument to the command. Suppose you are given a task to identify the processes that are using a particular file,'fuser' command lets you identify processes based on the files (or directories, or sockets) they are accessing. Not only that, the tool also allows you to kill these processes, so you don't have to use the *kill* or *killall* commands separately.