



Finishing for Linux!

Day6_FinalLinux.md



Recalling

Last Class TOPICS



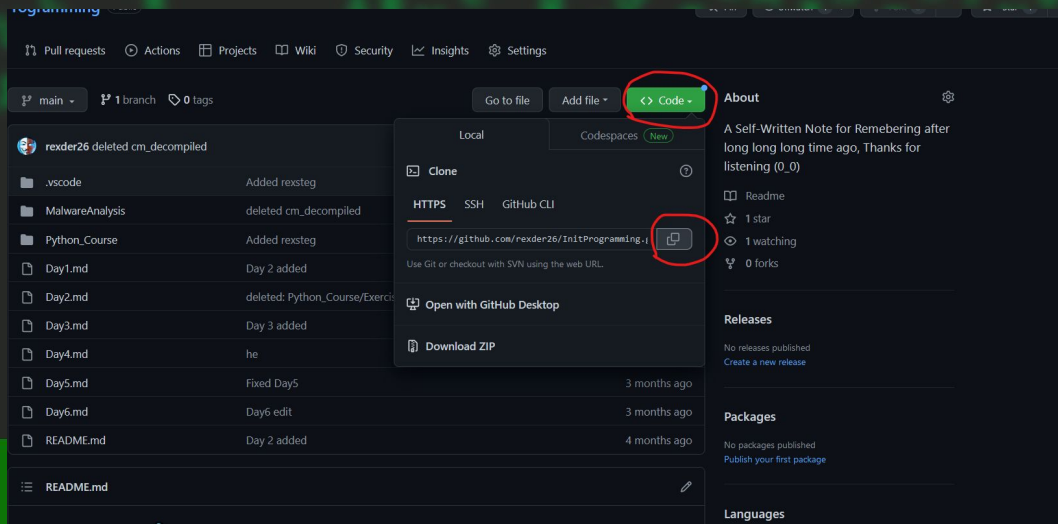
Topics

- Script Installation
- Help on linux
- Linux Services
- Symbolic linking
- alias
- tmux
- Wget
- find

Script installation

- Some hacking tools are developed by some peoples and those peoples make it open-source, that means we can get those scripts/programs from github.
- So we can download and use it. For this purpose git have a feature called 'clone'
- Syntax
 - `git clone <link_of_the_script_from_github>`

```
(rexder@HunterMachine)-[~]  
$ git clone https://github.com/rexder26/InitProgramming.git  
Cloning into 'InitProgramming'...  
remote: Enumerating objects: 73, done.  
remote: Counting objects: 100% (73/73), done.  
remote: Compressing objects: 100% (52/52), done.  
remote: Total 73 (delta 26), reused 59 (delta 15), pack-reused 0  
Receiving objects: 100% (73/73), 1.52 MiB | 235.00 KiB/s, done.  
Resolving deltas: 100% (26/26), done.
```



Script modules

- Scripts are made with scripting languages(programming) like { python,bash,go,ruby,...}
- So when we use these programming languages to do tasks their is something called modules/libraries these are needed to run the script as the dependencies.
- Example:
 1. Python: to install python modules we use -> `pip install <modulename>`
 - i. For requirements file -> `pip install -r requirements.txt`
 2. Go: to install go modules -> `go install <modulename>`
 3. Ruby: to install ruby modules -> `gem install <modulename>`

```
(rexder@HunterMachine)-[~]  
$ pip install term
```

Python installation

- If pip is not found there will be an error
- It will install

Command 'pip' not found, but can be installed with:
`sudo apt install python3-pip`

```
(rexder@HunterMachine)-[~]  
$ pip install term  
Defaulting to user installation because normal site-packages is not writeable  
Collecting term  
  Downloading term-2.4-py2.py3-none-any.whl (7.4 kB)  
Installing collected packages: term  
Successfully installed term-2.4
```

- If the package is already installed:

```
(rexder@HunterMachine)-[~]  
$ pip install -r requirements.txt  
Defaulting to user installation because normal site-packages is not writeable  
Requirement already satisfied: adblockparser==0.7 in /usr/lib/python3/dist-pack  
ges (from -r requirements.txt (line 1)) (0.7)  
Requirement already satisfied: AdvancedHTTPServer==2.2.0 in /usr/lib/python3/di  
t-packages (from -r requirements.txt (line 2)) (2.2.0)
```




Go package installation

- Go scripts are scripts made with go-lang(go programming language).
- There are 2 installation methods.
 - a. Old version
 - b. New version
- Old version
 - a. `go get github.com:capotej/groupcache-db-experiment.git`
- New version
 - a. Downloading the package `go install github.com/lc/gau/v2/cmd/gau@latest`
 - b. Moving the file to /usr/bin(the default download place is `/home/rexder/go/bin`)
`sudo mv filename _/usr/bin`

If you need help on linux about commands

You can use

- man (manual)
 - This will give you the whole manual and instruction of a tool or command.
- `man <yourcommand>`

```
(rexder@HunterMachine)-[~]  
$ man awk
```

Keys: arrow keys for navigation | q for quit

```
GAWK(1)                                Utility Commands                                GAWK(1)  
  
NAME  
    gawk - pattern scanning and processing language  
  
SYNOPSIS  
    gawk [ POSIX or GNU style options ] -f program-file [ -- ] file ...  
    gawk [ POSIX or GNU style options ] [ -- ] program-text file ...  
  
DESCRIPTION  
    Gawk is the GNU Project's implementation of the AWK programming language. It conforms to the definition of the language in the POSIX 1003.1 standard. This version in turn is based on the description in The AWK Programming Language, by Aho, Kernighan, and Weinberger. Gawk provides the additional features found in the current version of Brian Kernighan's awk and numerous GNU-specific extensions.  
  
    The command line consists of options to gawk itself, the AWK program text (if not supplied via the -f or --include options), and values to be made available in the ARGC and ARGV pre-defined AWK variables.  
  
    When gawk is invoked with the --profile option, it starts gathering profiling statistics from the execution of the program. Gawk runs more  
Manual page awk(1) line 1 (press h for help or q to quit)
```


Cont...

- Help

- Some Commands have help option.

- `<yourcommand> -h`
- `<yourcommand> -help`
- `<yourcommand> --help`

```
(rexder@HunterMachine)-[~]  
$ awk -help  
Usage: awk [POSIX or GNU style options] -f progfile [--] file ...  
Usage: awk [POSIX or GNU style options] [--] 'program' file ...  
POSIX options:          GNU long options: (standard)  
    -f progfile          --file=progfile  
    -F fs                --field-separator=fs  
    -v var=val           --assign=var=val  
Short options:          GNU long options: (extensions)  
    -b                  --characters-as-bytes  
    -c                  --traditional  
    -C                  --copyright  
    -d[file]            --dump-variables[=file]  
    -D[file]            --debug[=file]  
    -e 'program-text'   --source='program-text'  
    -E file             --exec=file  
    -g                  --gen-pot  
    -h                  --help  
    -i includefile      --include=includefile  
    -l library          --load=library  
    -L[fatal|invalid|no-ext] --lint[=fatal|invalid|no-ext]  
    -M                  --bignum  
    -N                  --use-lc-numeric
```



Break time

1. Download and run the python script from this github
 - a. <https://github.com/about3la/Sublist3r>
2. Download and test this go project
 - a. <https://github.com/lc/gau>
3. What is the tr command on linux?
4. What is the option for the ping command that can “use <size> as number of data bytes to be sent”

Linux Processes & Services

- Terms

- **Processes**: Running instances of programs.
 - When you execute a program like opening a text editor, running a command, or starting a web browser, Linux loads that program into memory and starts it as a process.
- **Services**: Background programs that start automatically or manually, often for system tasks (also known as **daemons**).
 - A Service that runs to gather any change on the system or to count time runs on Background.

- To get the processes running:

- `ps [options]`

- More commands

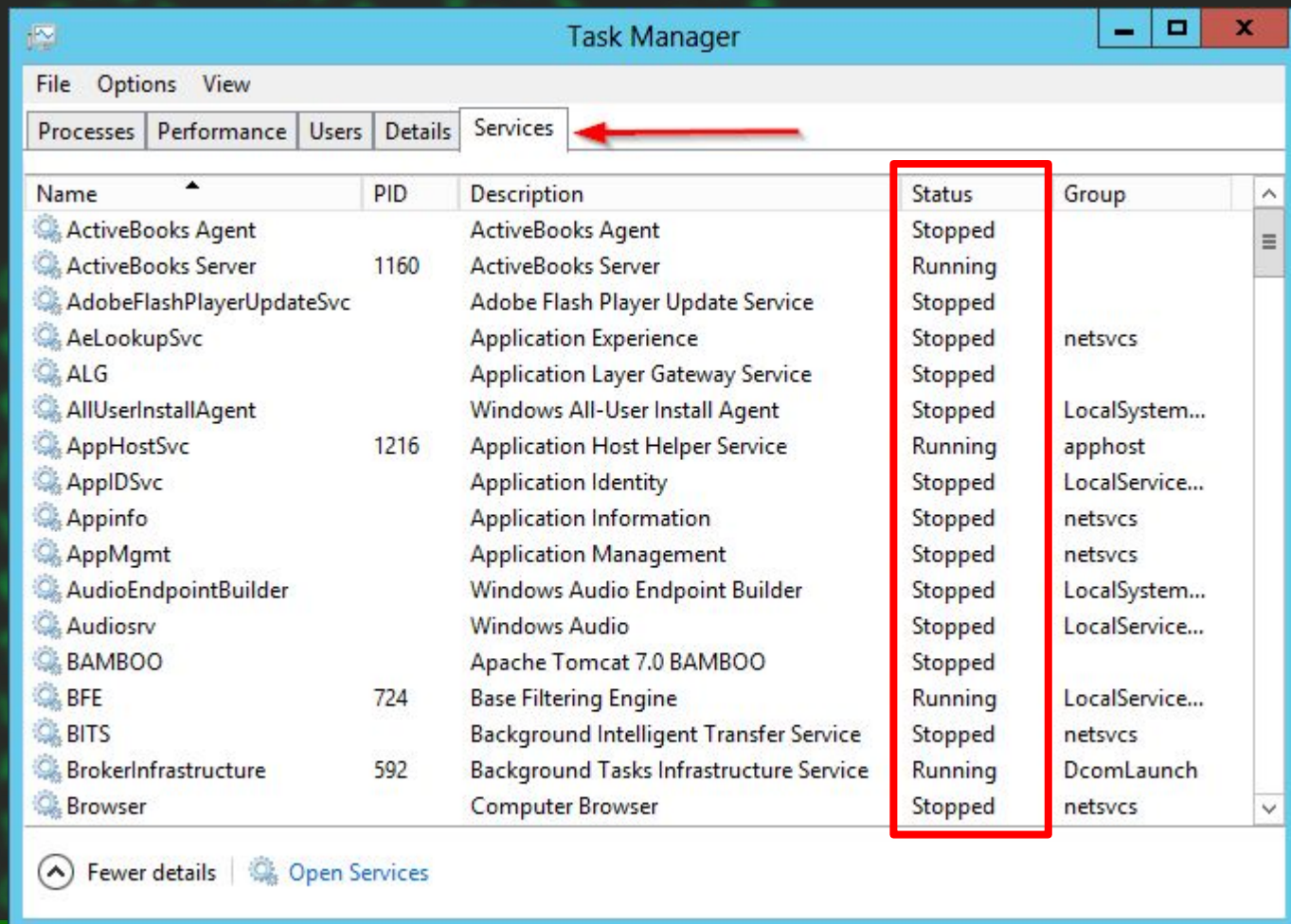
- `ps ->` for process running on my shell
- `ps -A ->` view all running process
- `ps -u username ->` view users process

```
(rexder@HunterMachine)-[~]
$ ps -A
  PID TTY          TIME CMD
    1 ?        00:00:02 systemd
    2 ?        00:00:00 kthreadd
    3 ?        00:00:00 rcu_gp
    4 ?        00:00:00 rcu_par_gp
    6 ?        00:00:00 kworker/0:0H-events_highpri
    9 ?        00:00:00 mm_percpu_wq
   10 ?        00:00:00 rcu_tasks_rude_
   11 ?        00:00:00 rcu_tasks_trace
   12 ?        00:00:00 ksoftirqd/0
   13 ?        00:00:00 rcu_sched
   14 ?        00:00:00 migration/0
   15 ?        00:00:00 cpuhp/0
   16 ?        00:00:00 cpuhp/1
   17 ?        00:00:00 migration/1
   18 ?        00:00:00 ksoftirqd/1
   20 ?        00:00:00 kworker/1:0H-events_highpri
   21 ?        00:00:00 cpuhp/2
   22 ?        00:00:00 migration/2
```

```
(rexder@HunterMachine)-[~]
$ ps -u nathan
  PID TTY          TIME CMD
 3503 pts/0      00:00:00 sh
 3516 pts/0      00:00:00 zsh
 3521 pts/0      00:00:00 nano
```

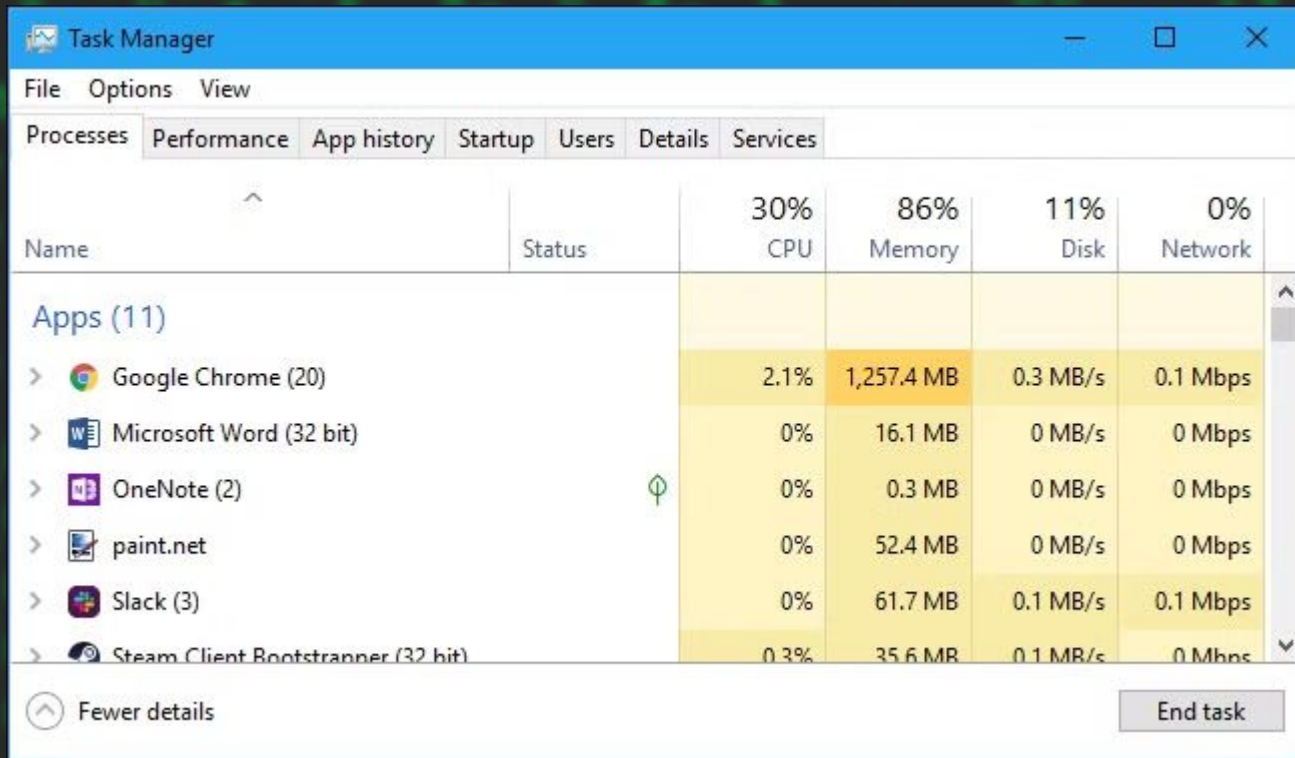

Service

These are windows services.



Processes.

Processes on Windows.



The screenshot shows the Windows Task Manager window with the 'Processes' tab selected. The window title is 'Task Manager'. The menu bar includes 'File', 'Options', and 'View'. The tabs are 'Processes', 'Performance', 'App history', 'Startup', 'Users', 'Details', and 'Services'. The 'Processes' tab displays a list of running applications with columns for Name, Status, CPU, Memory, Disk, and Network. The list is titled 'Apps (11)'. The processes listed are Google Chrome (20), Microsoft Word (32 bit), OneNote (2), paint.net, Slack (3), and Steam Client Bootstrapper (32 bit). The CPU usage is 30%, Memory is 86%, Disk is 11%, and Network is 0%.

Name	Status	30% CPU	86% Memory	11% Disk	0% Network
Apps (11)					
> Google Chrome (20)		2.1%	1,257.4 MB	0.3 MB/s	0.1 Mbps
> Microsoft Word (32 bit)		0%	16.1 MB	0 MB/s	0 Mbps
> OneNote (2)		0%	0.3 MB	0 MB/s	0 Mbps
> paint.net		0%	52.4 MB	0 MB/s	0 Mbps
> Slack (3)		0%	61.7 MB	0.1 MB/s	0.1 Mbps
> Steam Client Bootstrapper (32 bit)		0.3%	35.6 MB	0.1 MB/s	0 Mbps

At the bottom of the window, there is a 'Fewer details' button and an 'End task' button.

Managing Processes.

```
~ > $ kill -l
```

```
HUP INT QUIT ILL TRAP ABRT BUS FPE KILL USR1 SEGV USR2 PIPE ALRM TERM STKFLT  
CHLD CONT STOP TSTP TTIN TTOU URG XCPU XFSZ VTALRM PROF WINCH POLL PWR SYS
```

- To stop process
 - kill [options] [PID]
 - killall [programname]
- More on kill
 - kill -19 PID -> to stop the process
 - kill -18 PID -> to resume the process we stopped
 - kill -9 PID -> to Stop a process immediately
 - ... there are 31 options.
- PID: Process ID
- PPID: Parent Process ID

```
(rexder@HunterMachine)-[~]  
$ kill -9 3841
```

```
~ > $ killall picom  
~ > $
```




Let's test it!

You love it?

- This is a time Taking an not realtime.
- For Real Time we have the tool called 'top' installed on linux by default.
- But to make this fun we will use 'htop', it is colorful and more enhanced!

```
top - 08:49:20 up 4:22, 1 user, load average: 0.05, 0.08, 0.07
Tasks: 194 total, 1 running, 192 sleeping, 1 stopped, 0 zombie
%Cpu(s): 3.5 us, 0.7 sy, 0.0 ni, 95.7 id, 0.0 wa, 0.0 hi, 0.1 si, 0.0 st
MiB Mem : 10024.9 total, 8008.5 free, 1082.1 used, 934.3 buff/cache
MiB Swap: 976.0 total, 976.0 free, 0.0 used, 8687.4 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1478	rexder	20	0	5085600	392876	129728	S	12.3	3.8	0:46.71	gnome-s+
1204	rexder	20	0	1157208	75424	46784	S	2.3	0.7	0:10.71	Xorg
2035	rexder	20	0	433572	71808	39176	S	0.7	0.7	0:04.10	gnome-t+
1548	rexder	20	0	167184	6964	6264	S	0.3	0.1	0:00.11	at-spi2+
1620	rexder	20	0	1152360	53784	21700	S	0.3	0.5	0:01.16	gsd-med+
4169	rexder	20	0	10092	3652	3168	R	0.3	0.0	0:00.01	top
1	root	20	0	164052	10576	7872	S	0.0	0.1	0:02.02	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_par+
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker+
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_perc+
10	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_tas+
11	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_tas+
12	root	20	0	0	0	0	S	0.0	0.0	0:00.05	ksoftir+
13	root	20	0	0	0	0	I	0.0	0.0	0:00.39	rcu_sch+
14	root	rt	0	0	0	0	S	0.0	0.0	0:00.18	migrati+

- top -

```
0[ 5.3%] Tasks: 107, 252 thr, 84 kthr; 1 runnin
1[ 3.9%] Load average: 0.23 0.19 0.13
2[ 6.7%] Uptime: 04:31:35
3[ 4.6%]
Mem[ 1.08G/9.79G]
Swp[ 0K/976M]
```

Main	I/O										
PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
1478	rexder	20	0	5104M	390M	128M	S	15.2	3.9	1:02.97	/usr/bin/gnom
1504	rexder	20	0	5104M	390M	128M	S	3.3	3.9	0:08.43	/usr/bin/gnom
1506	rexder	20	0	5104M	390M	128M	S	3.3	3.9	0:08.82	/usr/bin/gnom
1507	rexder	20	0	5104M	390M	128M	S	3.3	3.9	0:08.78	/usr/bin/gnom
1204	rexder	20	0	1133M	78456	48372	S	2.6	0.8	0:15.39	/usr/lib/xorg
1505	rexder	20	0	5104M	390M	128M	S	2.6	3.9	0:08.53	/usr/bin/gnom
1250	rexder	20	0	1133M	78456	48372	S	0.7	0.8	0:01.83	/usr/lib/xorg
1386	rexder	20	0	213M	2984	2524	S	0.7	0.0	0:25.18	/usr/bin/VBox
2035	rexder	20	0	423M	72932	40276	S	0.7	0.7	0:06.62	/usr/libexec/
5637	rexder	20	0	8196	4476	3428	R	0.7	0.0	0:00.05	htop
1	root	20	0	16428	9660	7384	S	0.0	0.1	0:02.25	/lib/systemd/
260	root	20	0	71448	25912	24448	S	0.0	0.3	0:00.60	/lib/systemd/
280	root	20	0	22676	5840	4072	S	0.0	0.1	0:00.17	/lib/systemd/
F1Help	F2Setup	F3Search	F4Filter	F5Tree	F6SortBy	F7Nice	F8Nice	F9Kill	F10Quit		

- htop -

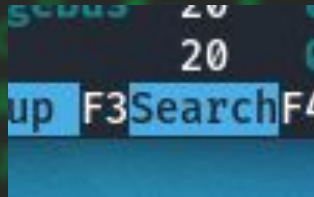
To kill on htop

1. Search for the process
2. Choose SIGKILL(9) and kill it!

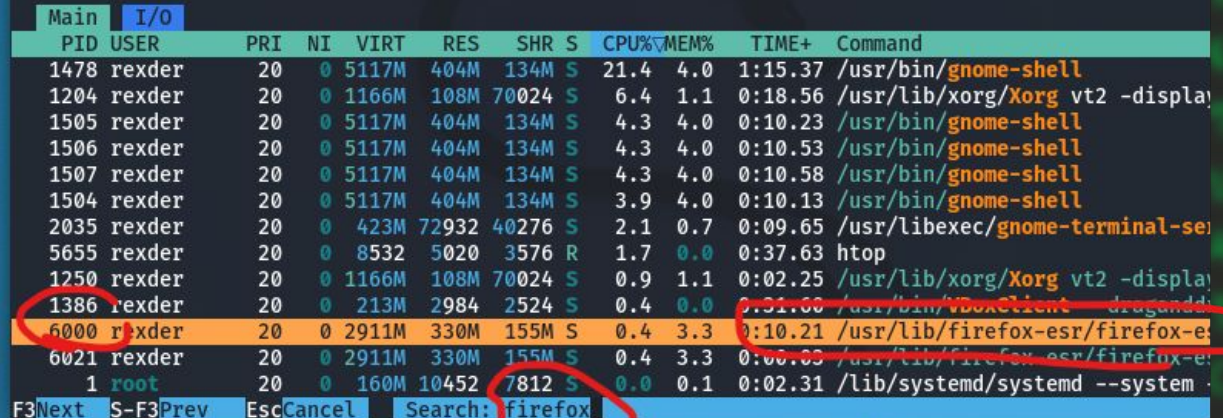


This screenshot shows the htop interface with the signal selection menu open. The menu lists various signals, with SIGKILL (9) circled in red. The background table shows the process list with PID 6000 circled in red.

Send Signal:	PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
4 SIGILL	2038	rexder	20	0	423M	72932	40276	S	0.0	0.7	0:00.00	/usr/libexec/gnome-
5 SIGTRAP	2041	rexder	20	0	10584	6236	4060	S	0.0	0.1	0:01.52	zsh
6 SIGABRT	3157	rexder	20	0	5117M	404M	134M	S	0.0	4.0	0:00.00	/usr/bin/gnome-shell
6 SIGIOT	3501	root	20	0	10648	5104	4520	S	0.0	0.0	0:00.00	sudo su - nathan
7 SIGBUS	3502	root	20	0	10032	4388	3816	S	0.0	0.0	0:00.00	su - nathan
8 SIGFPE	3503	nathan	20	0	2420	1728	1608	S	0.0	0.0	0:00.00	-sh
9 SIGKILL	3516	nathan	20	0	9132	4960	4032	S	0.0	0.0	0:00.01	/bin/zsh -i
10 SIGUSR1	3521	nathan	20	0	6480	3204	2752	T	0.0	0.0	0:00.00	nano Perm.txt
11 SIGSEGV	3524	root	20	0	10024	4408	3824	S	0.0	0.0	0:00.02	su rexder
12 SIGUSR2	3525	rexder	20	0	10468	6456	4320	S	0.0	0.1	0:01.56	zsh
13 SIGPIPE	4564	root	20	0	6628	2772	2508	S	0.0	0.0	0:00.00	/usr/sbin/cron -f
14 SIGALRM	5041	rexder	20	0	10012	6032	4116	S	0.0	0.1	0:00.05	zsh
15 SIGTERM	6000	rexder	20	0	2909M	327M	155M	S	0.4	3.3	0:10.81	/usr/lib/firefox-es



0.0 0.1 0:00.01 /usr/libexec/x
Nice -F8Nice +F9Kill F10Quit



This screenshot shows the main htop process list. The process with PID 6000 is circled in red. The search bar at the bottom shows 'firefox'.

Main	I/O	PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
		1478	rexder	20	0	5117M	404M	134M	S	21.4	4.0	1:15.37	/usr/bin/gnome-shell
		1204	rexder	20	0	1166M	108M	70024	S	6.4	1.1	0:18.56	/usr/lib/xorg/Xorg vt2 -display
		1505	rexder	20	0	5117M	404M	134M	S	4.3	4.0	0:10.23	/usr/bin/gnome-shell
		1506	rexder	20	0	5117M	404M	134M	S	4.3	4.0	0:10.53	/usr/bin/gnome-shell
		1507	rexder	20	0	5117M	404M	134M	S	4.3	4.0	0:10.58	/usr/bin/gnome-shell
		1504	rexder	20	0	5117M	404M	134M	S	3.9	4.0	0:10.13	/usr/bin/gnome-shell
		2035	rexder	20	0	423M	72932	40276	S	2.1	0.7	0:09.65	/usr/libexec/gnome-terminal-se
		5655	rexder	20	0	8532	5020	3576	R	1.7	0.0	0:37.63	htop
		1250	rexder	20	0	1166M	108M	70024	S	0.9	1.1	0:02.25	/usr/lib/xorg/Xorg vt2 -display
		1386	rexder	20	0	213M	2984	2524	S	0.4	0.0	0:01.00	/usr/bin/vboxClient --dragand
		6000	rexder	20	0	2911M	330M	155M	S	0.4	3.3	0:10.21	/usr/lib/firefox-esr/firefox-e
		6021	rexder	20	0	2911M	330M	155M	S	0.4	3.3	0:00.00	/usr/lib/firefox-esr/firefox-e
		1	root	20	0	160M	10452	7812	S	0.0	0.1	0:02.31	/lib/systemd/systemd --system

Foreground / background

- Thus far, we have run commands at the prompt and waited for them to complete. We call this running in the “**foreground**.”
- Use the “&” operator, to run programs in the “**background**” or press ^Z

```
(rexder@HunterMachine)-[~]  
$ nano takeme1.txt &  
[1] 4238  
  
[1] + suspended (tty output) nano takeme1.txt
```

- To get the background process back to foreground
 - Fg

```
(rexder@HunterMachine)-[~]  
$ fg
```

To stop a process going inside your shell just press ^C

```
GNU nano 5.4 takeme1.txt  
asdasfasncvascsajndsadnjacasjkcnjdvnadsvshnvdsvsdkvjsn  
fsdvjndsds
```



Managing Services.

- Services Can be Started and Stopped.
- We will See different hacking Services for the future classes.
- To manage Services We can use tools called `systemctl` or `service`
- Syntax
 - `sudo systemctl start <ServiceName>` - Start the service
 - `sudo systemctl stop <ServiceName>` - Stop the service
 - `sudo systemctl status <ServiceName>` - to check status of the service
 - `sudo systemctl enable <ServiceName>` - to Make it start service when the Computer boots.
 - `sudo systemctl disable <ServiceName>` - to Make it stop the service from running when the Computer boots.
 - `sudo service <ServiceName> start`
 - `sudo service <ServiceName> stop`

```
~ > $ sudo systemctl start apache2  
~ > $
```



Do you remember the
redirecting thing on linux or
the > sign?



Null device

- `/dev/null` - Redirects output to nowhere.
- If you want to ignore output, you can send it to the null device, `/dev/null`.
- The null device is a special file that throws away whatever is fed to it.
- You may hear people refer to it as the bit bucket.
- If you do not want to see errors on your screen and you do not want to save them to a file, you can redirect them to `/dev/null`
- On shell output there are 2 things.
 - `STDERR = 2`
 - `STDOUT = 1`
- To redirect the errors from a command result we do
 - `command 2> filename` => here if you check the file you saved on it have errors only
- To redirect the error-FREE output
 - `command 1>filename`
- So if we redirect our commands output to `/dev/null` we will get error free result
 - `command 2> /dev/null`

COnt...

```
(rexder@HunterMachine)-[~]  
$ ls Hello  
ls: cannot access 'Hello': No such file or directory
```

```
(rexder@HunterMachine)-[~]  
$ ls Hello 2> stderr.txt  
  
(rexder@HunterMachine)-[~]  
$ cat stderr.txt  
ls: cannot access 'Hello': No such file or directory
```

```
(rexder@HunterMachine)-[~]  
$ ls Hello 1> stdout.txt  
ls: cannot access 'Hello': No such file or directory  
  
(rexder@HunterMachine)-[~]  
$ cat stdout.txt
```

Symbolic linking

- Symbolic linking is same as **Windows shortcut**.
- Symbolic linking is a process of creating a linked shortcut form of file to some pre-existed file or folder.
- For example: you can create program is some file and to create a shortcut format of that file you will use symbolic linkin.
- Also if a file path is too long we can create a symbolic linking.
- Symbolic linked files shows 'l' in listing of ls command. Also there will be a '->' to show the linked file.
- Syntax: `ln -s source_filePATH myfilename_`

```
ln -s /usr/share/ImageMagick-6/english.xml englishApache
```

```
ls -l englishApache  
lrwxrwxrwx 1 rexder rexder 36 Oct 20 18:23 englishApache -> /usr/share/ImageMagick-6/english.xml
```


alias

- Used to give a name to some bunch of commands.
- Example: if i wanted to name ls -la 'rex' so any time i want to get output of ls -la i just type rex
 - alias rex='ls -la'
- But this doesn't work after you closed the terminal
- If you want to make it work...
 - You will add it to your shell config file
- Example for bash and fish, zsh...

```
(rexder@HunterMachine)-[~]
$ alias rex='ls -la --color'

(rexder@HunterMachine)-[~]
$ rex
total 176
drwxr-xr-x 19 rexder rexder 4096 Dec 23 10:31 .
drwxr-xr-x  6 root   root   4096 Dec 21 12:39 ..
-rw-----  1 rexder rexder   23 Dec 23 08:23 .bash_history
-rw-r--r--  1 rexder rexder  220 Dec  6 02:48 .bash_logout
-rw-r--r--  1 rexder rexder 5349 Dec  6 02:48 .bashrc
-rw-r--r--  1 rexder rexder 3526 Dec  6 02:48 .bashrc.original
drwx----- 22 rexder rexder 4096 Dec 23 05:16 .cache
drwx----- 21 rexder rexder 4096 Dec 23 08:58 .config
-rw-r--r--  1 rexder rexder  224 Dec 19 12:30 Day4_MoreLinux.md
drwxr-xr-x  2 rexder rexder 4096 Dec 16 02:32 Desktop
drwxr-xr-x  2 rexder rexder 4096 Dec 16 07:32 Documents
drwxr-xr-x  2 rexder rexder 4096 Dec 16 05:00 Downloads
-rw-r--r--  1 rexder rexder 11759 Dec  6 02:48 .face
lrwxrwxrwx  1 rexder rexder    5 Dec  6 02:48 .face.icon -> .face
-rw-r--r--  1 rexder rexder  278 Dec 16 02:42 .gtkr-2.0
```

GNU nano 7.2

.bashrc

```
# colored GCC warnings and errors
#export GCC_COLORS='error=01;31:warning=01;35:note=01;36'
```

```
# some more ls aliases
```

```
alias ll='ls -aF'
```

```
alias la='ls -A'
```

```
alias l='ls -CF'
```

GNU nano 7.2

.zshrc

```
#lolcat .
```

```
#tmux
```

```
cowsay "Hello Nati, Welcome Back" | lolcat
```

```
#figlet HackTime
```

```
alias hackerone="cd ~/Projects/Pentests/H1"
```

```
alias ethio="cd ~/Projects/Pentests/Local"
```

```
alias tools="cd ~/tools"
```

GNU nano 7.2

.config/fish/config.fish

```
if status is-interactive
```

```
    # Commands to run in interactive sessions can go here
```

```
tmux
```

```
cowsay "Hello Nati, Welcome Back" | lolcat
```

```
#figlet HackTime
```

```
alias hack="cd ~/Projects/Pentests/"
```

```
alias tools="cd ~/tools"
```

```
end
```

- Bash = ~/.bashrc
- Zsh = ~/.zshrc
- Fish = ~/.config/fish/config.fish

```
~/GTSTv1 > $ bounty
/m/P/B/Global > $
```



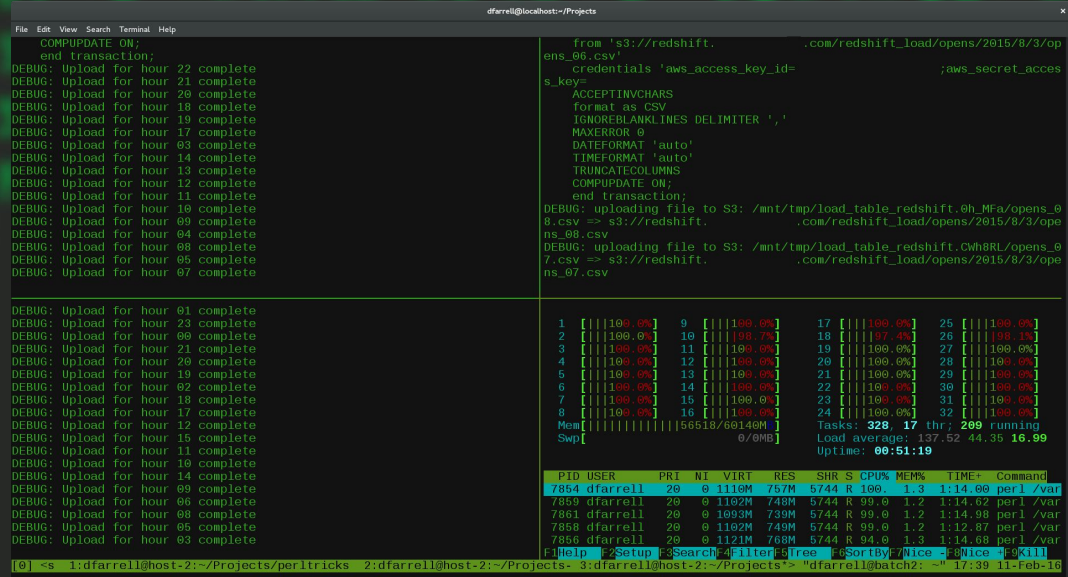
Whats Up, Hacker!

```
$ alias cd='rm -rf'
```



Tmux - Terminal Multiplexer

- Tmux is used to classify our terminal work.
- You can install it using apt. On kali it is built-in Then to start it just type 'tmux'
- To Create config file type
 - nano .tmux.conf
 - Type this
 - unbind C-b
 - unbind I
 - set -g prefix C-a
 - unbind %
 - bind e split-window -h
 - bind o split-window -v
 - set -g base-index 1
 - setw -g pane-base-index 1
 - Save it | exit tmux and open again



```
File Edit View Search Terminal Help
COMPUTE ON;
end transaction;
DEBUG: Upload for hour 22 complete
DEBUG: Upload for hour 21 complete
DEBUG: Upload for hour 20 complete
DEBUG: Upload for hour 18 complete
DEBUG: Upload for hour 19 complete
DEBUG: Upload for hour 17 complete
DEBUG: Upload for hour 03 complete
DEBUG: Upload for hour 14 complete
DEBUG: Upload for hour 13 complete
DEBUG: Upload for hour 12 complete
DEBUG: Upload for hour 11 complete
DEBUG: Upload for hour 10 complete
DEBUG: Upload for hour 09 complete
DEBUG: Upload for hour 04 complete
DEBUG: Upload for hour 08 complete
DEBUG: Upload for hour 05 complete
DEBUG: Upload for hour 07 complete

DEBUG: Upload for hour 01 complete
DEBUG: Upload for hour 23 complete
DEBUG: Upload for hour 00 complete
DEBUG: Upload for hour 21 complete
DEBUG: Upload for hour 20 complete
DEBUG: Upload for hour 19 complete
DEBUG: Upload for hour 02 complete
DEBUG: Upload for hour 18 complete
DEBUG: Upload for hour 17 complete
DEBUG: Upload for hour 12 complete
DEBUG: Upload for hour 15 complete
DEBUG: Upload for hour 11 complete
DEBUG: Upload for hour 10 complete
DEBUG: Upload for hour 14 complete
DEBUG: Upload for hour 09 complete
DEBUG: Upload for hour 06 complete
DEBUG: Upload for hour 08 complete
DEBUG: Upload for hour 05 complete
DEBUG: Upload for hour 03 complete

from 's3://redshift.
ens_06.csv'
credentials 'aws_access_key_id=
s_key=
ACCEPTINVCHARS
format as CSV
IGNOREBLANKLINES DELIMITER ','
MAXERROR 0
DATEFORMAT 'auto'
TIMEFORMAT 'auto'
TRUNCATECOLUMNS
COMPUTE ON;
end transaction;
DEBUG: uploading file to S3: /mnt/tmp/load_table_redshift.0h_Mfa/opens_0
0.csv => s3://redshift.
.com/redshift_load/opens/2015/8/3/ope
ns_06.csv
DEBUG: uploading file to S3: /mnt/tmp/load_table_redshift.CWh8RL/opens_0
7.csv => s3://redshift.
.com/redshift_load/opens/2015/8/3/ope
ns_07.csv

1 [||||100.0%] 9 [||||100.0%] 17 [||||100.0%] 25 [||||100.0%]
2 [||||100.0%] 10 [||||100.0%] 18 [||||100.0%] 26 [||||100.0%]
3 [||||100.0%] 11 [||||100.0%] 19 [||||100.0%] 27 [||||100.0%]
4 [||||100.0%] 12 [||||100.0%] 20 [||||100.0%] 28 [||||100.0%]
5 [||||100.0%] 13 [||||100.0%] 21 [||||100.0%] 29 [||||100.0%]
6 [||||100.0%] 14 [||||100.0%] 22 [||||100.0%] 30 [||||100.0%]
7 [||||100.0%] 15 [||||100.0%] 23 [||||100.0%] 31 [||||100.0%]
8 [||||100.0%] 16 [||||100.0%] 24 [||||100.0%] 32 [||||100.0%]
Mem[|||||||||||||]56518/60140M Tasks: 328, 17 thr; 209 running
Swp[|||||] 0/0MB Load average: 137.52 44.35 16.99
Uptime: 00:51:19

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
7854 dfarrell 20 0 1110M 757M 5744 R 99.0 1.3 1:14.00 perl /var
7859 dfarrell 20 0 1102M 748M 5744 R 99.0 1.2 1:14.02 perl /var
7861 dfarrell 20 0 1093M 739M 5744 R 99.0 1.2 1:14.98 perl /var
7858 dfarrell 20 0 1102M 748M 5744 R 99.0 1.2 1:12.87 perl /var
7856 dfarrell 20 0 1121M 768M 5744 R 94.0 1.3 1:14.68 perl /var
FileHelp #Setup #Search #Filter #Free #Sortby #Nice #Nico #Kil

[0] -s 1:dfarrell@host-2:~/Projects/perltricks 2:dfarrell@host-2:~/Projects- 3:dfarrell@host-2:~/Projects- "dfarrell@batch2: ~" 17:39 11-Feb-16
```



Cont...

- To split horizontally
 - ^A then o
- To split vertically
 - ^A then e
- To exit
 - ^A then x or
 - just type 'exit'

- To create tab
 - ^A then c
- To rename the tab
 - ^A then ,(comma)
- To switch tabs
 - ^A then <numbers>
 - TO switch partitions
 - ^A then <arrow>
- ... for more you can google but be aware of our super key is ^A



Let's test it!

Wget

- Is a tool used to download files from websites/servers
- Syntax
 - `wget [options] [link]`
- `wget` <https://tldp.org/LDP/intro-linux/intro-linux.pdf>

```
(rexder@HunterMachine)-[~]  
$ wget https://tldp.org/LDP/intro-linux/intro-linux.pdf  
--2022-12-23 12:32:40-- https://tldp.org/LDP/intro-linux/intro-linux.pdf  
Resolving tldp.org (tldp.org)... 152.19.134.152, 152.19.134.151  
Connecting to tldp.org (tldp.org)|152.19.134.152|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 1600364 (1.5M) [application/pdf]  
Saving to: 'intro-linux.pdf'  
  
intro-linux.pdf          100%[=====>]      1.53M  17.4KB/s  
  
2022-12-23 12:34:11 (18.3 KB/s) - 'intro-linux.pdf' saved [1600364/1600364]
```



find

- ON terminal if you want to search for files/folders/musics/videos, we can use find command.
- It is very essential tool
- Syntax:
 - `find [search path] [options] [search word]`
- More commands
 - `find / -name "linux"`
 - `find /home -perm 777`
 - `find -type f | find -type d`
 - `find / -type f -perm /4000`

Lets see



Break time

1. open firefox on your computer
2. What is the PID
3. Kill firefox
4. Login as gtst
5. Open nano with filename help.txt
6. Make it background process
7. Log back to your own user account
8. List the process of user gtst
9. Try tmux and configure it



Linux is OVER!

LINUX IS FUN! Isn't it?

Next Class we will Start our “Python programming for hackers” class

- 1) DO the github push
- 2) Please, study the commands again and again until you are god on it
 - a) Hacker with poor linux skill is skid, so bedenb temaru