

Repository fetching

```
$ git clone https://github.com/torvalds/linux.git # Clone the Linux repo
Cloning into 'linux'...
remote: Counting objects: 4478865, done.
remote: Compressing objects: 100% (482/482), done.
remote: Total 4478865 (delta 397), reused 129 (delta 129), pack-reused 4478253
Receiving objects: 100% (4478865/4478865), 1.27 GiB | 11.51 MiB/s, done.
Resolving deltas: 100% (3734690/3734690), done.
Checking connectivity... done.
Checking out files: 100% (52221/52221), done.
$ cd linux
$ git log v5.6-rc2 | head -12 # List commits
commit 11a48a5a18c63fd7621bb050228cebf13566e4d8
Author: Linus Torvalds <torvalds@linux-foundation.org>
Date: Sun Feb 16 13:16:59 2020 -0800
```

Linux 5.6-rc2

```
commit ab02b61f24c76b1659086fcc8b00cbeeb6e95ac7
Merge: 44024adb4aab e0354d147e58
Author: Linus Torvalds <torvalds@linux-foundation.org>
Date: Sun Feb 16 13:05:46 2020 -0800
```

```
Merge tag 'for-linus-5.6-1' of https://github.com/cminyard/linux-ipmi
$
```

Commit log

```
$ git log --pretty=format:%an | # List author name of each commit
> grep -v Torvalds | # Omitting Linus Torvalds
> head # First ten
Peter Zijlstra
Qais Yousef
Dmitry V. Levin
Junxiao Bi
Chen Jie
Seth Jennings
Hugh Dickins
Mike Kravetz
Naoya Horiguchi
Chris Wilson
$
```

Process the commit log

```
$ git log --pretty=format:%ae | # List each commit's author email
> sort | # Bring emails together
> uniq -c | # Count occurrences
> sort -rn | # Order by number
> head # List first ten
16101 torvalds@linux-foundation.org
6078 davem@davemloft.net
5582 tiwai@suse.de
3948 broonie@opensource.wolfsonmicro.com
3865 viro@zeniv.linux.org.uk
3844 hsweeten@visionengravers.com
3518 mingo@elte.hu
3172 tglx@linutronix.de
2835 arnd@arndb.de
2739 joe@perches.com
$
```

Obtain details for each file

```
$ find kernel -type f -print | # Find kernel source code files
> while read f ; do # For each file
>   echo -n "$f " # Print its name on a single line
>   git log --oneline $f | wc -l # Count number of changes
> done |
> head -3 # Print first three entries
kernel/.gitignore 5
kernel/acct.c 89
kernel/async.c 34
$ find kernel -type f -print |
> while read f ; do
>   echo -n "$f "
>   git log --oneline $f | wc -l
> done |
> sort -k 2nr | # Sort by the second field in reverse numerical order
> head
kernel/trace/trace.c 811
kernel/cgroup.c 807
kernel/fork.c 686
kernel/sched/core.c 647
```

```
kernel/workqueue.c 529
kernel/sysctl.c 513
kernel/exit.c 509
kernel/trace/ftrace.c 476
kernel/sched/fair.c 474
kernel/signal.c 457
$
```

Obtain details for each line

```
$ git blame kernel/fork.c | sed -n 20,40p # List attribution of lines 20-40
8703e8a465b1e (Ingo Molnar | 2017-02-08 18:51:30 +0100 20) #include <linux/sched/user.h>
6a3827d7509cb (Ingo Molnar | 2017-02-08 18:51:31 +0100 21) #include <linux/sched/numa_balancing.h>
03441a3482a31 (Ingo Molnar | 2017-02-08 18:51:35 +0100 22) #include <linux/sched/stat.h>
299300258d1bc (Ingo Molnar | 2017-02-08 18:51:36 +0100 23) #include <linux/sched/task.h>
68db0cf106786 (Ingo Molnar | 2017-02-08 18:51:37 +0100 24) #include <linux/sched/task_stack.h>
32ef5517c2980 (Ingo Molnar | 2017-02-05 11:48:36 +0100 25) #include <linux/sched/cputime.h>
b3e5838252665 (Christian Brauner | 2019-03-27 13:04:15 +0100 26) #include <linux/seq_file.h>
037741a6d4ab2 (Ingo Molnar | 2017-02-03 10:08:30 +0100 27) #include <linux/rtmutex.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 28) #include <linux/init.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 29) #include <linux/unistd.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 30) #include <linux/module.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 31) #include <linux/vmalloc.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 32) #include <linux/completion.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 33) #include <linux/personality.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 34) #include <linux/mempolicy.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 35) #include <linux/sem.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 36) #include <linux/file.h>
9f3acc3140444 (Al Viro | 2008-04-24 07:44:08 -0400 37) #include <linux/fdtable.h>
da9cbc8739530 (Jens Axboe | 2008-06-30 20:42:08 +0200 38) #include <linux/iocontext.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 39) #include <linux/key.h>
^1da177e4c3f4 (Linus Torvalds | 2005-04-16 15:20:36 -0700 40) #include <linux/binfmts.h>
$
```

Process blame details

```
$ git blame --line-porcelain kernel/fork.c | head -15
1da177e4c3f41524e886b7f1b8a0c1fc7321cac2 1 1 13
author Linus Torvalds
author-mail <torvalds@ppc970.osdl.org>
author-time 1113690036
author-tz -0700
committer Linus Torvalds
committer-mail <torvalds@ppc970.osdl.org>
committer-time 1113690036
committer-tz -0700
summary Linux-2.6.12-rc2
boundary
filename kernel/fork.c
/*
1da177e4c3f41524e886b7f1b8a0c1fc7321cac2 2 2
author Linus Torvalds
$
```

Who knows best this file?

```
$ git blame --line-porcelain kernel/fork.c | # Obtain line metadata
> grep '^author ' | # Show each line's author
> sort | # Order by author
> uniq -c | # Count author instances
> sort -rn | # Order by count
> head # Show first ten
 572 author Linus Torvalds
 207 author Oleg Nesterov
 135 author JANAK DESAI
  95 author Al Viro
  67 author Eric W. Biederman
  59 author Heinrich Schuchardt
  58 author Ingo Molnar
  53 author Konstantin Khlebnikov
  48 author Kees Cook
  47 author Thomas Gleixner
$
```

Average age of file's lines

```
$ date +%s # Show date in seconds since Epoch (1/1/1970)
1582286183
$ date -d @1582286183 # Print the date for this number of Epoch seconds
Fri, Feb 21, 2020 13:56:23
$ date -d @0 # Print the date at Epoch
Thu, Jan 01, 1970 2:00:00 AM
$ date -d @$( # Print the date corresponding to the output of:
git blame --line-porcelain kernel/fork.c |
awk '/^author-time / {sum += $2; count++;} # Maintain sum and count of commit times
```

```
    END {printf("%d", sum / count)}' # Print mean authorship time
)
Tue, Aug 20, 2013 20:42:48
$
```

Track file size growth

```
$ file=drivers/thermal/of-thermal.c # File to examine
$ git log --pretty=format:%H -n 3 $file # Show SHA of commits
285249884ec19480f99c011d223760bb1fc865a2
17e8351a77397e8a83727eb17e3a3e9b8ab5257a
$ git log --pretty=format:%H $file | # Obtain commits' SHA
> while read sha ; do # For each SHA
>   git show $sha:$file | # List file state at that commit
>   wc -l # Count number of lines
> done |
> head -15 # First 15 entries
988
988
988
966
962
958
957
954
954
930
908
923
902
881
886
$
```