



git

data model



```
$> git init  
$> tree .git/objects  
.git/objects  
|   └── info  
└── pack
```

2 directories



```
$> touch some-file.txt  
$> git add some-file.txt
```



```
$> tree .git/objects
```

```
.git/objects
```

```
├── e6
```

```
│   └── 9de29bb2d1d6434b8b29ae775ad8c2e48c5391
```

```
├── info
```

```
└── pack
```

```
3 directories, 1 file
```

zLib compressed
SHA1



master

fad3d..



98ca9..



bab1e..



run "git commit -m 'comment'" first to have "master" created

```
$ cat .git/refs/heads/master
```

```
fad3dd41d0cf3d1b6aa2d8ad0549ab2fcb1575d1
```

“Directed Acyclic Graph”



master

fad3d..



98ca9..



bab1e..



\$ git cat-file -p ~~98ca9~~

~~fad3dd41d0cf3d1b6aa2d8ac~~

parent

bab1e..

tree

434bb..

committer

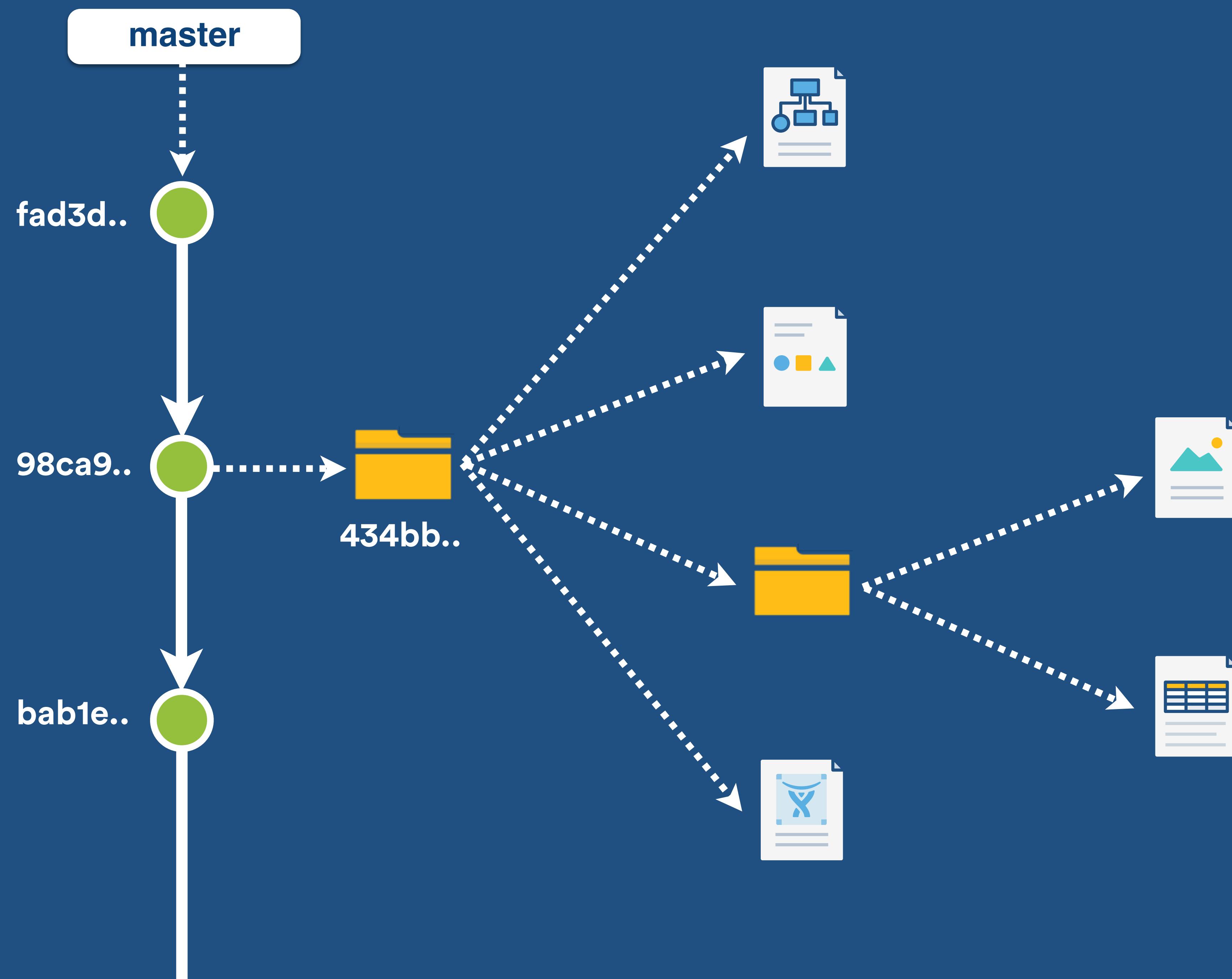
Tim P <kannonboy@...> 1455209277 -0800

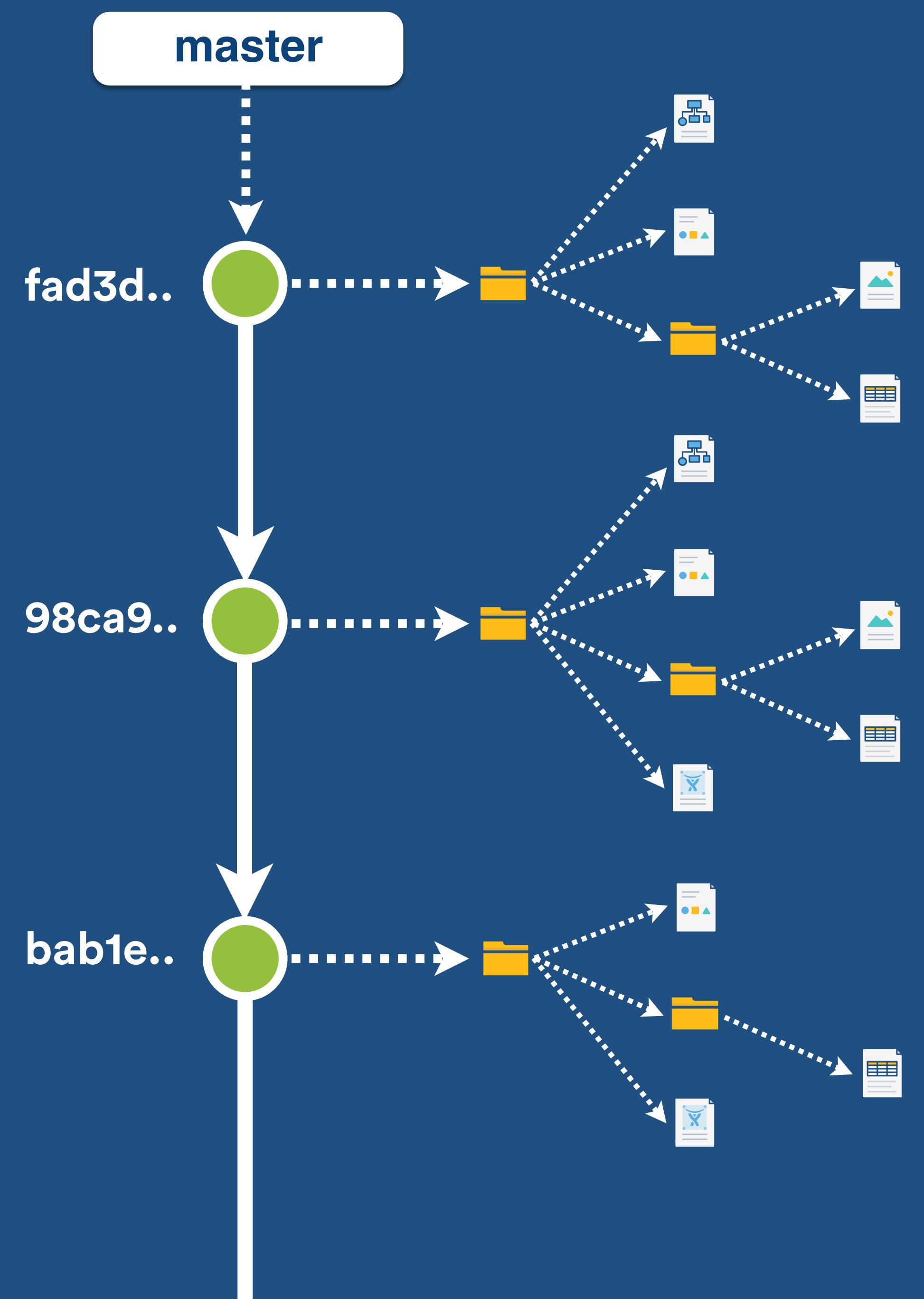
author

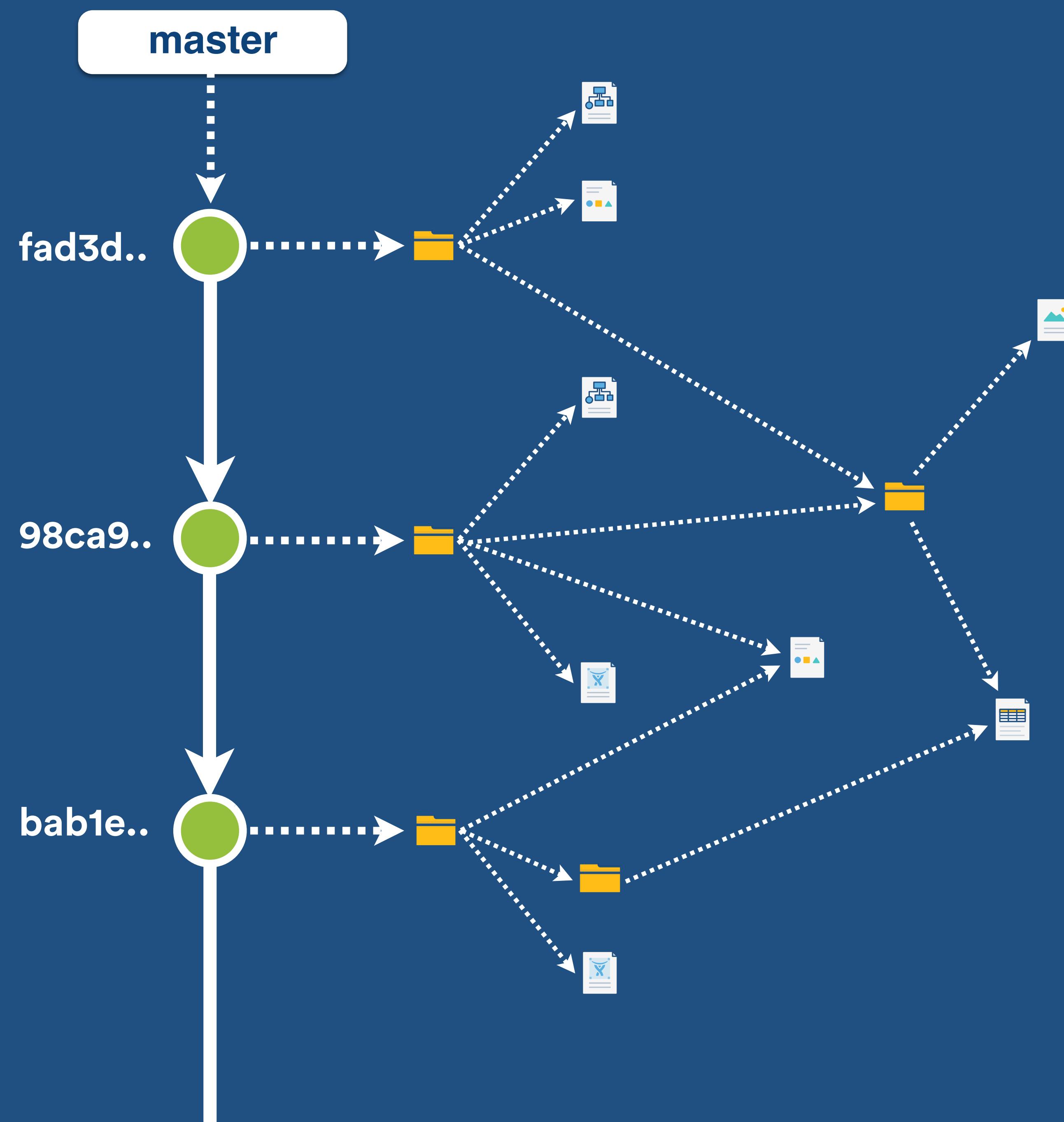
Tim P <kannonboy@...> 1455209277 -0800

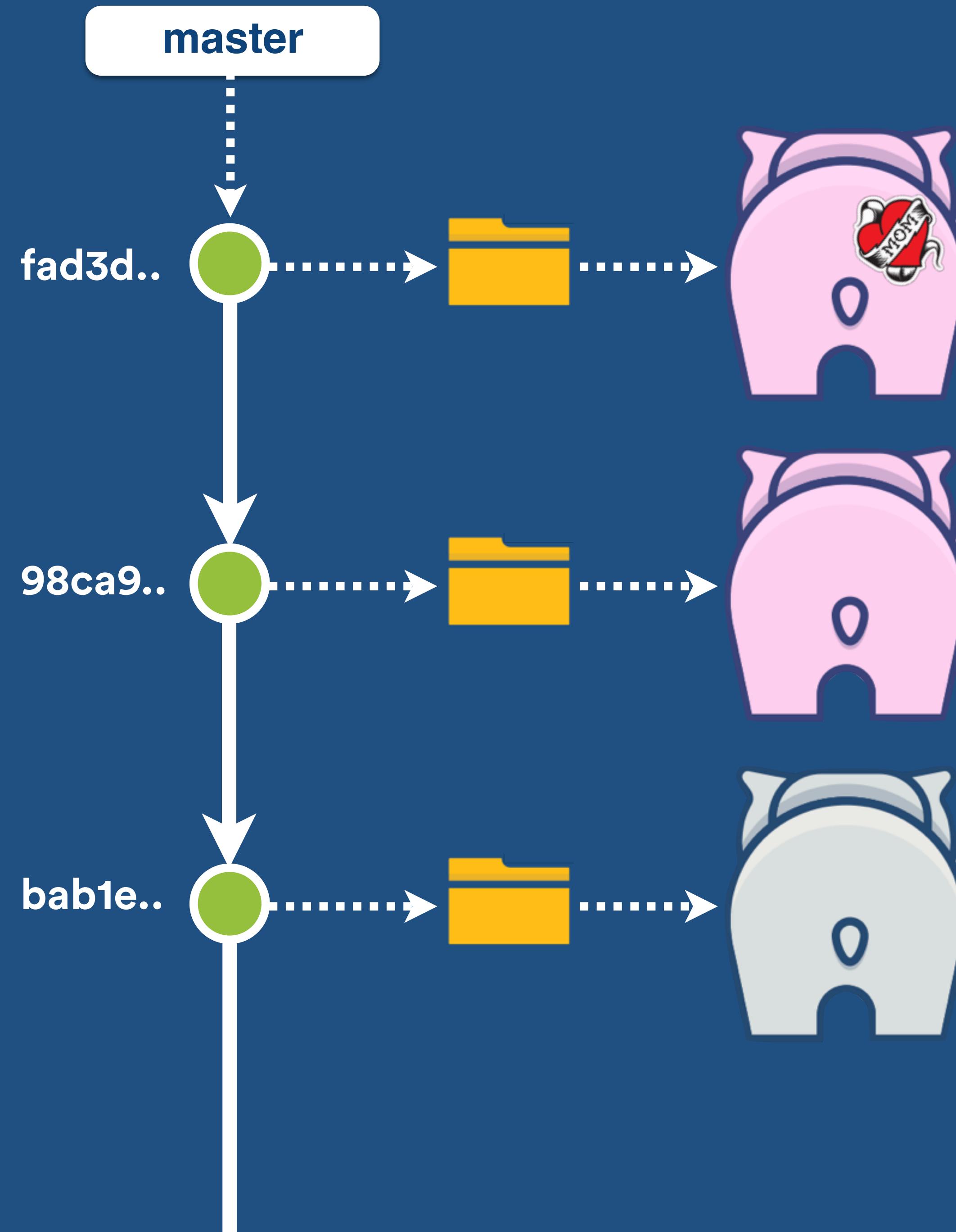
My life is my commit message.











150mb

~~100mb~~

~~50mb~~



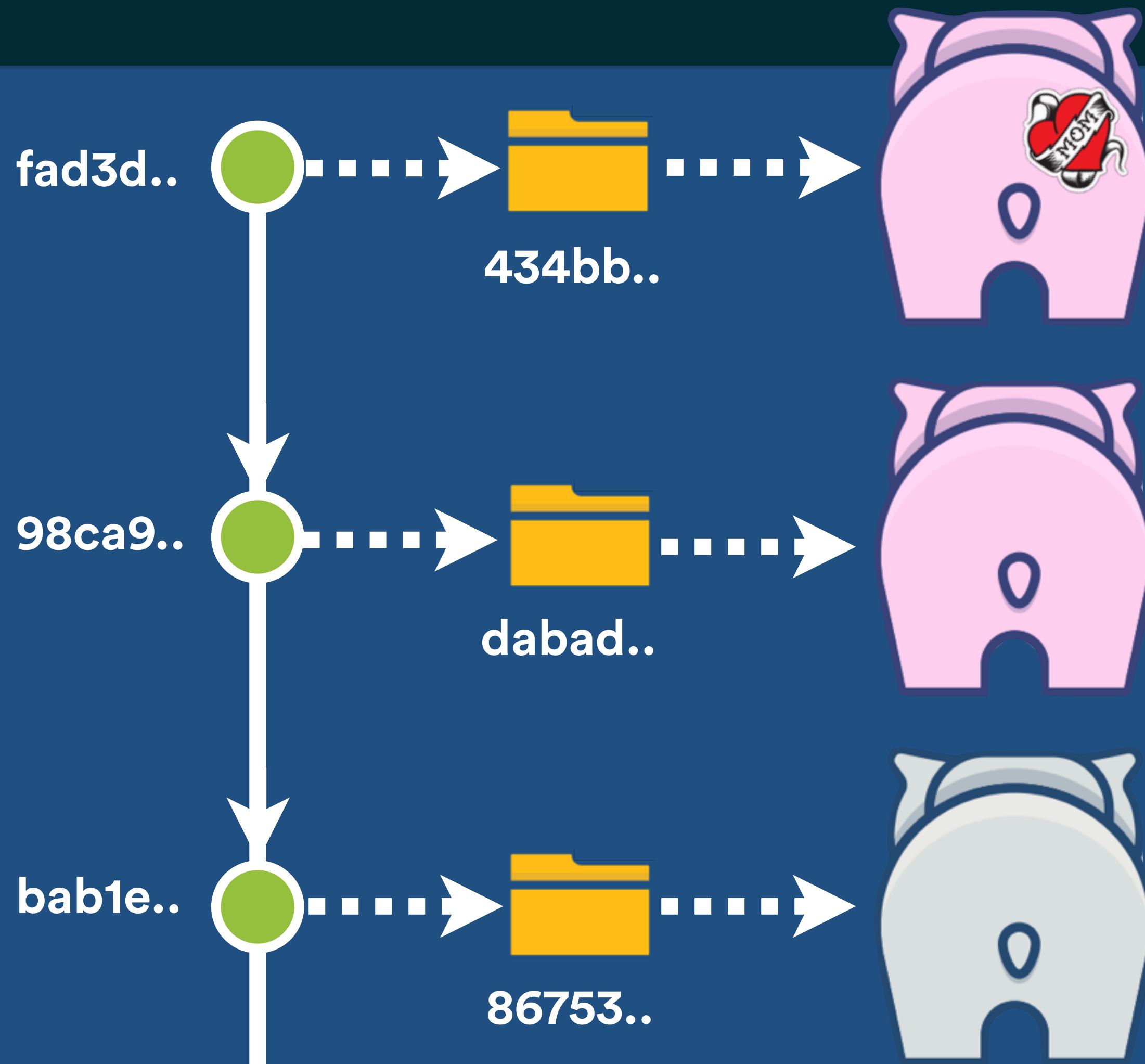


Git LFS

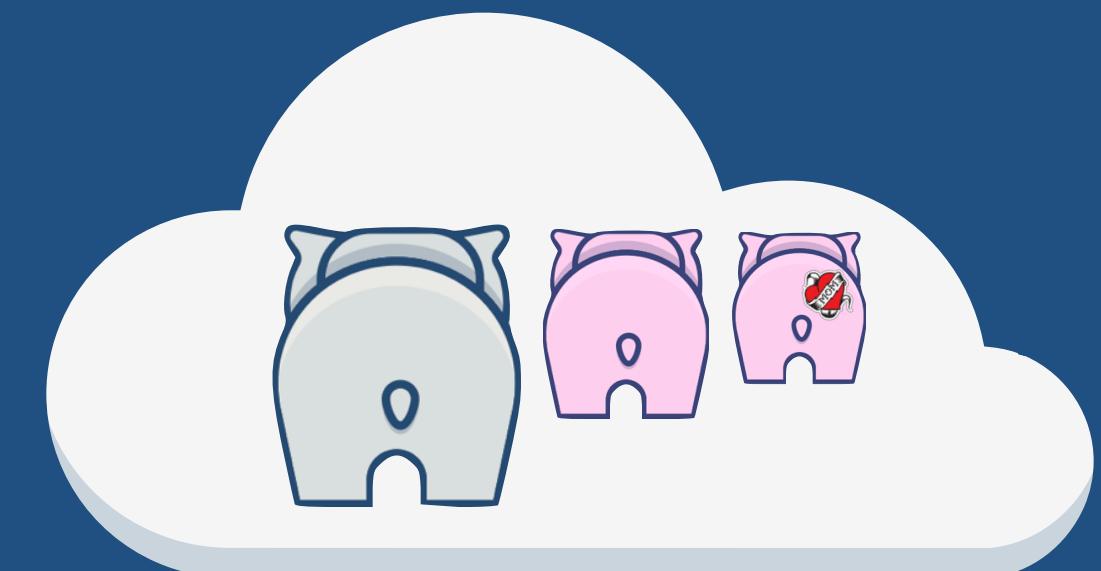
(Large File Storage)



\$



Git host



LFS store



\$

fad3d..



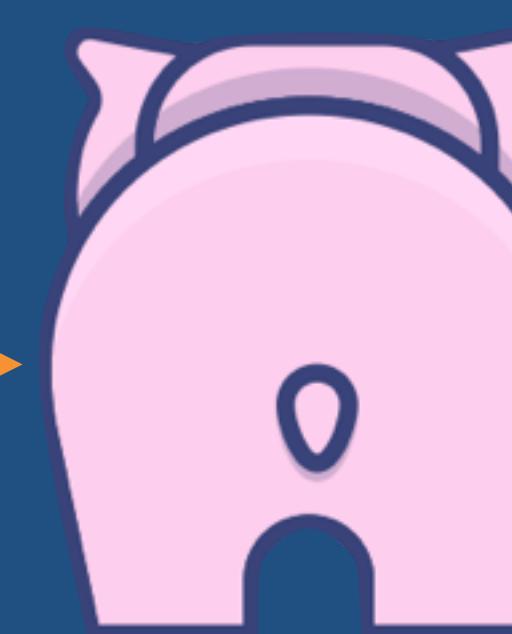
434bb..



98ca9..



dabad..



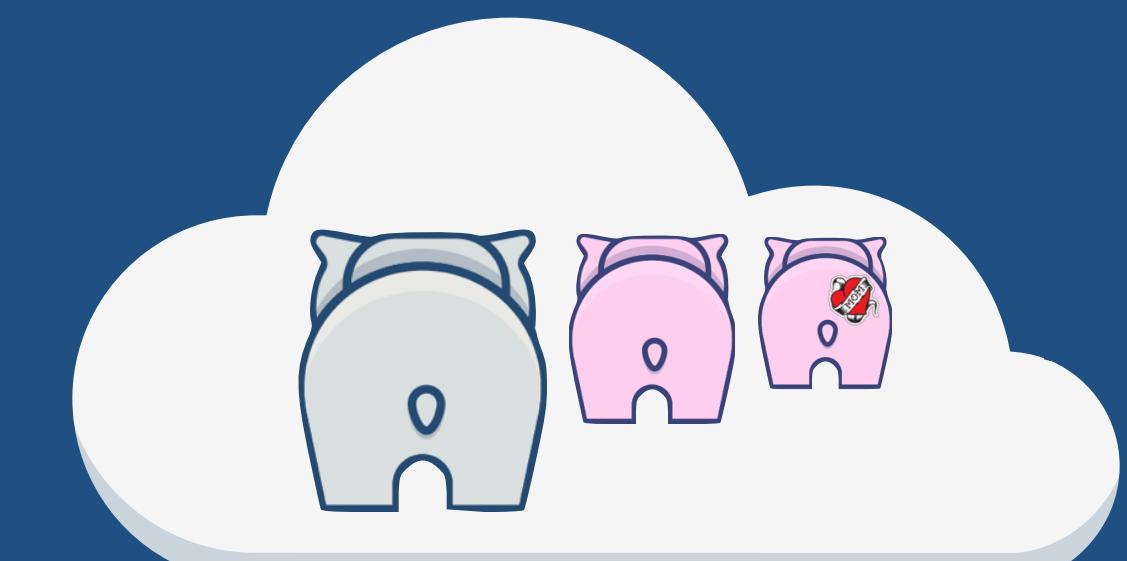
bab1e..



86753..



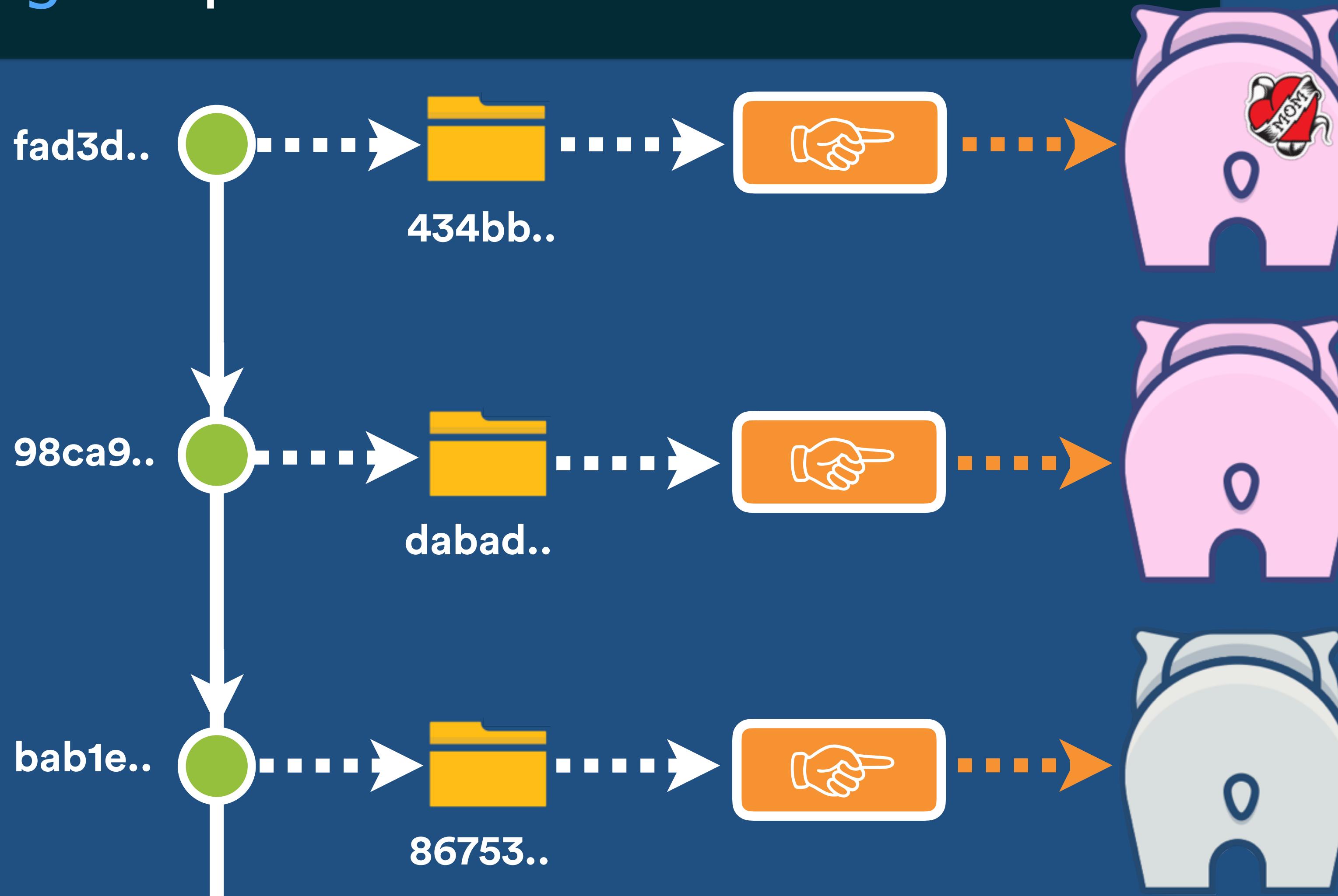
Git host



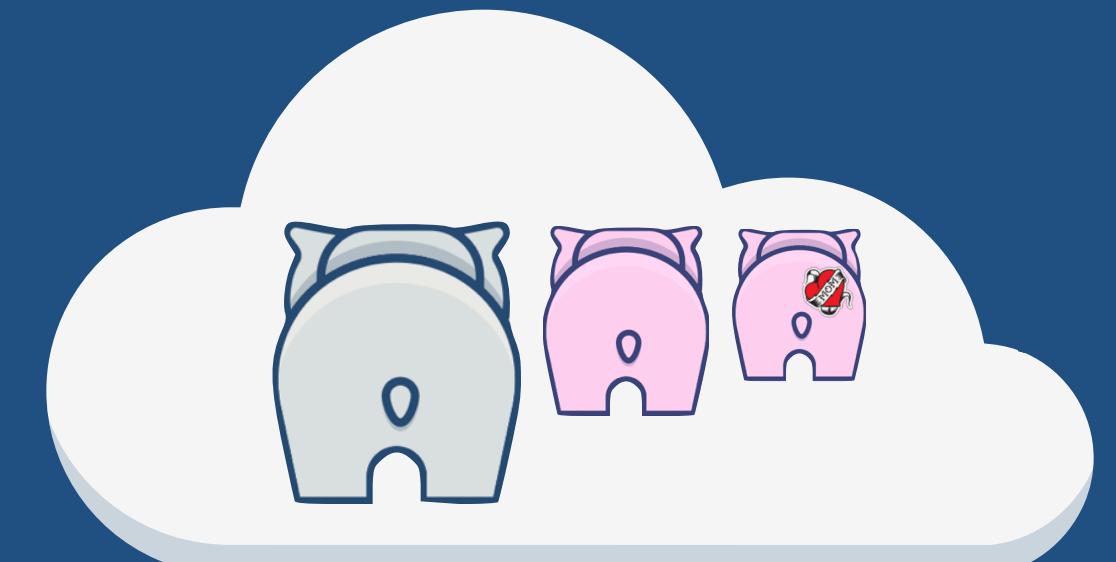
LFS store



```
$ git push
```



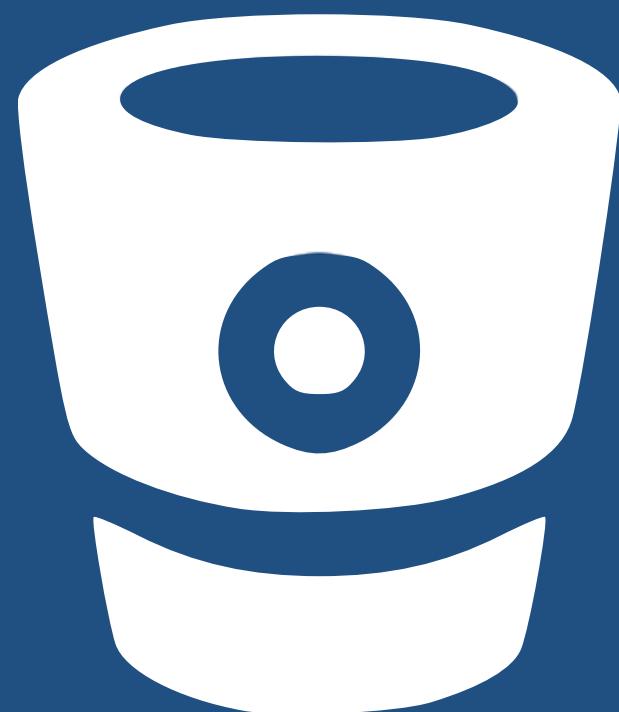
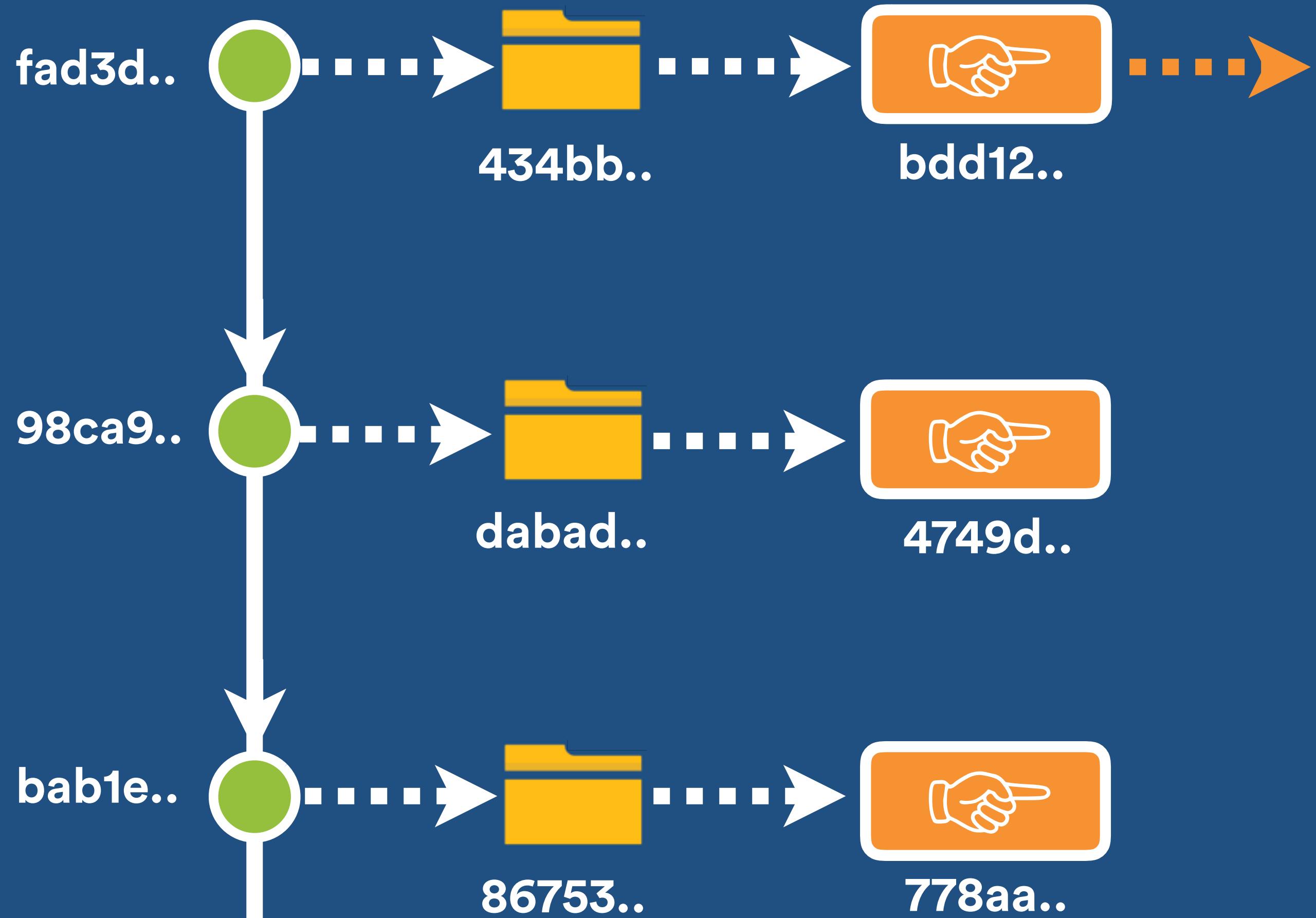
Git host



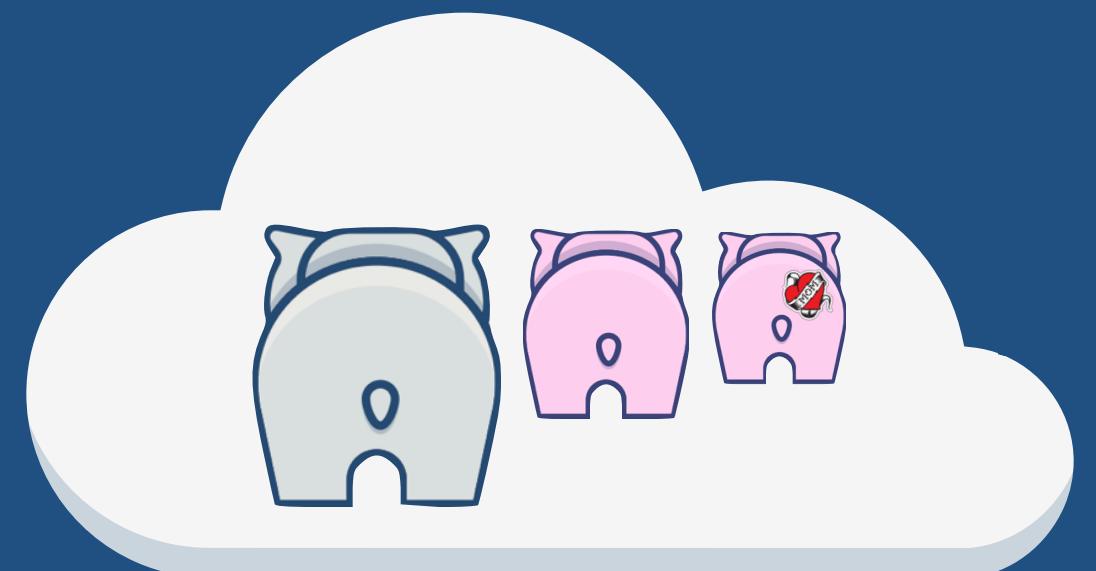
LFS store



```
$ git pull
```

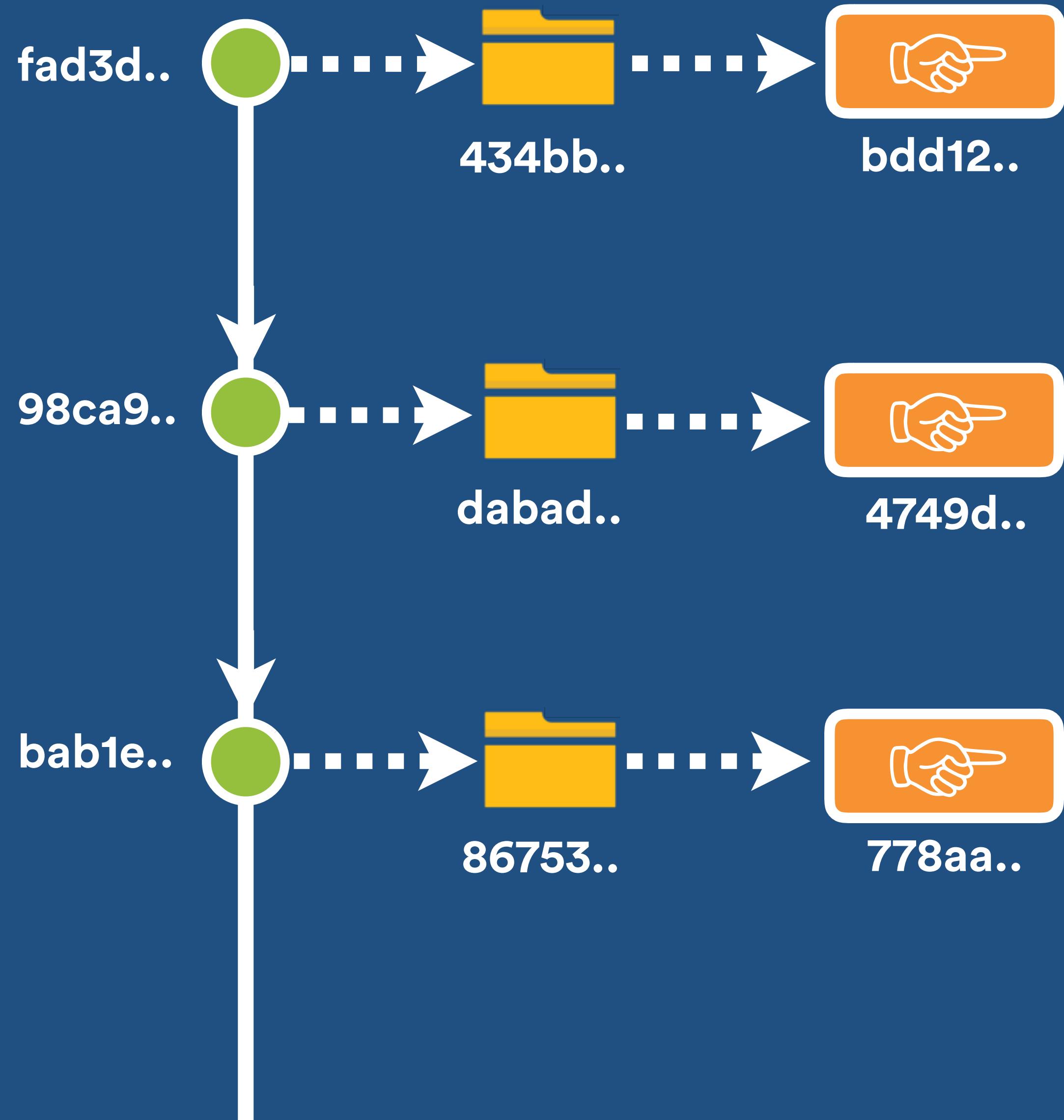


Git host



LFS store



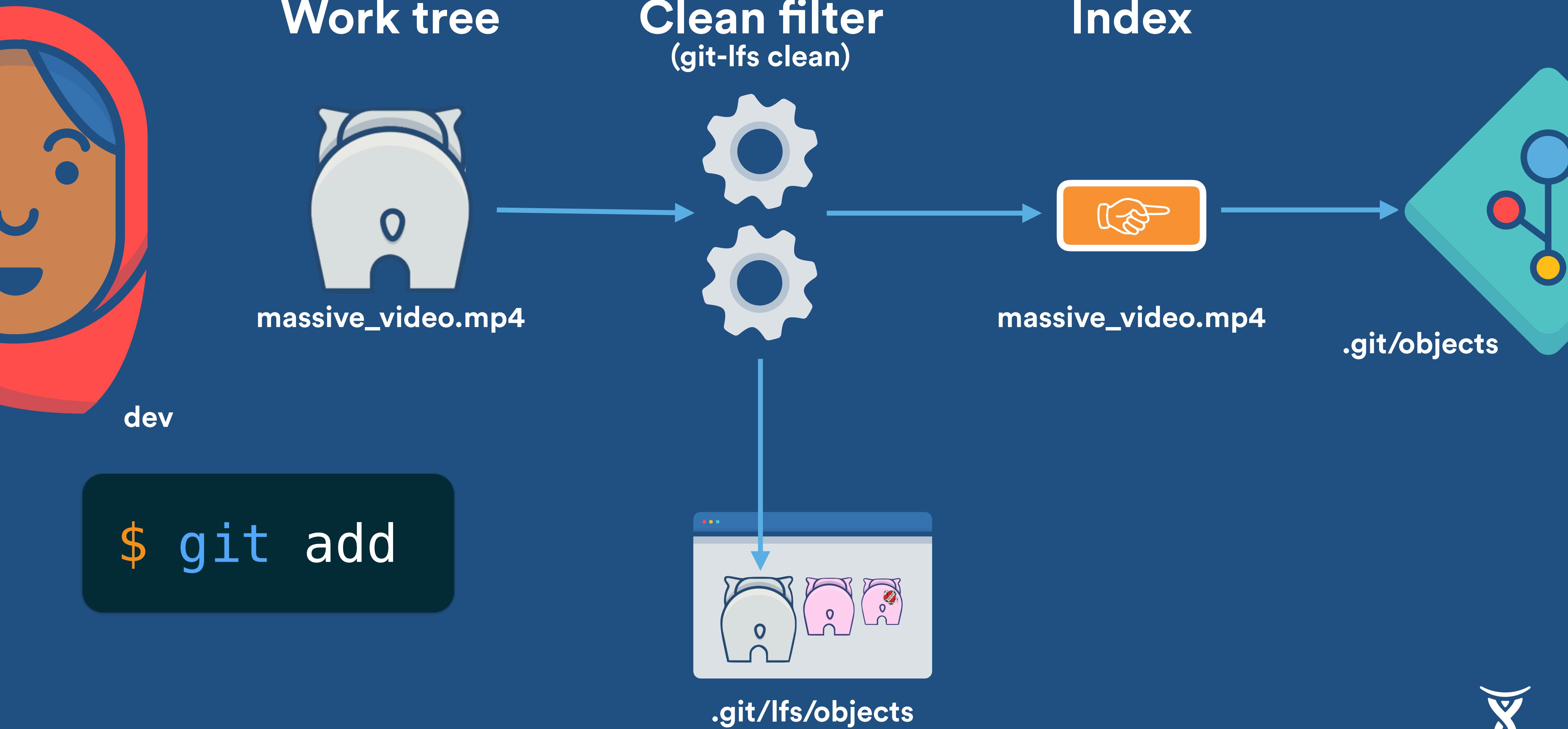


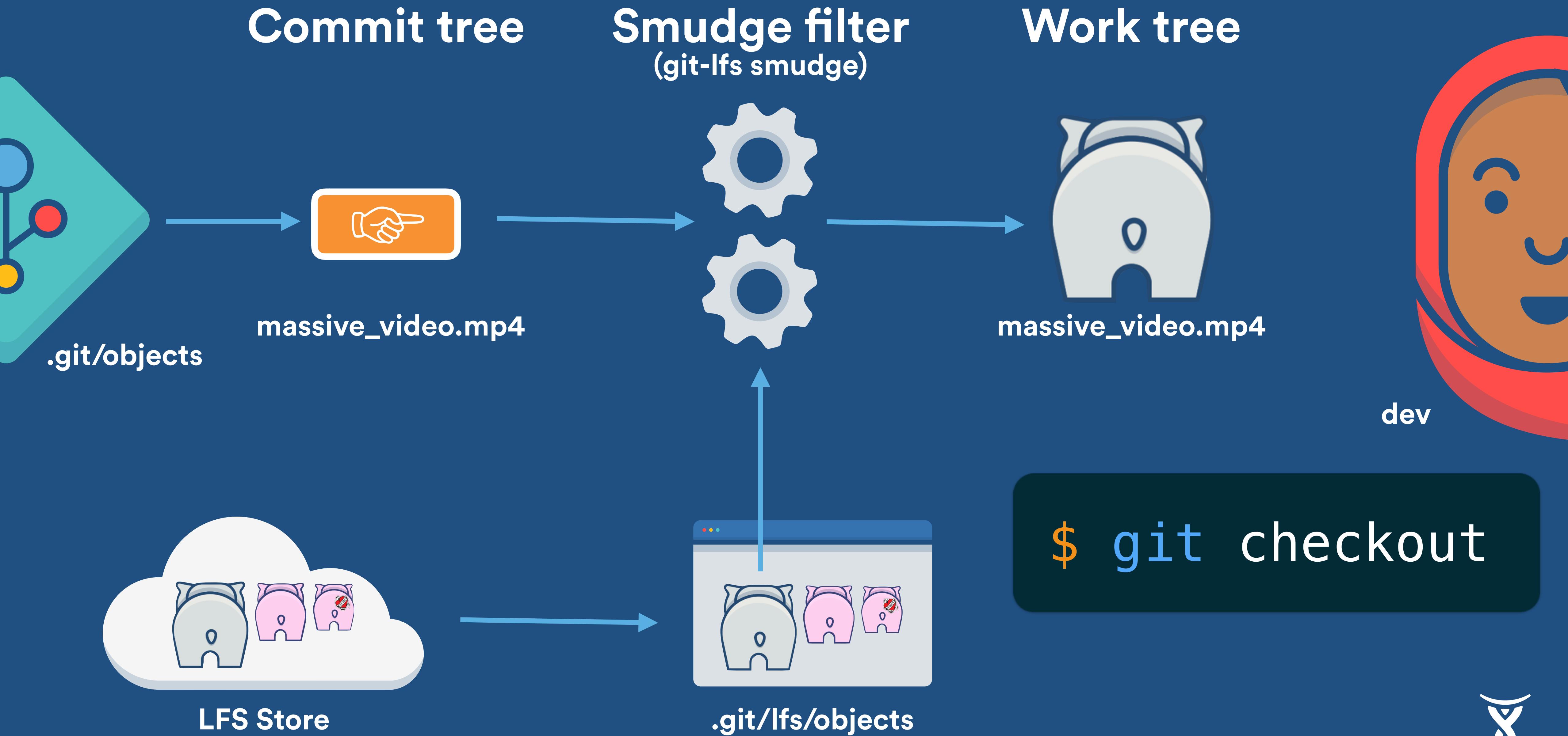
```
$ git cat-file -p 4749d
```

git lfs pointer --file=bigfile

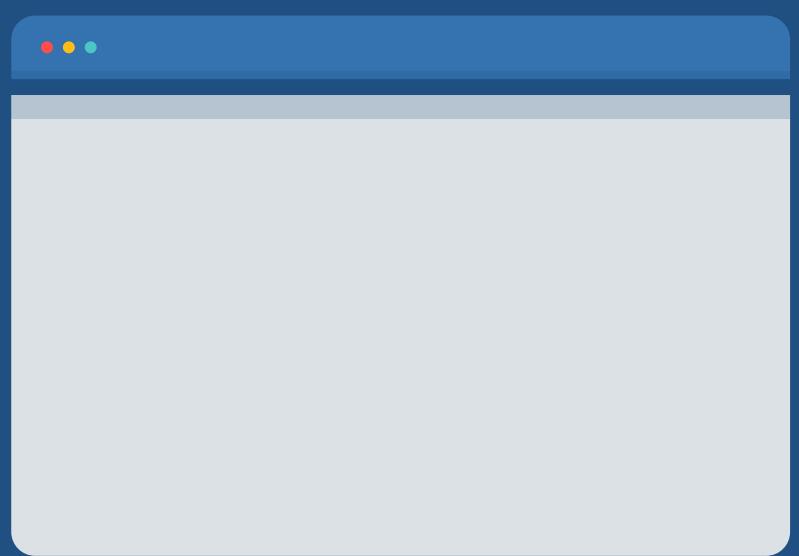
version	https://git-lfs.github.com/spec/v1
oid	sha256:325ddfb...
size	29342295







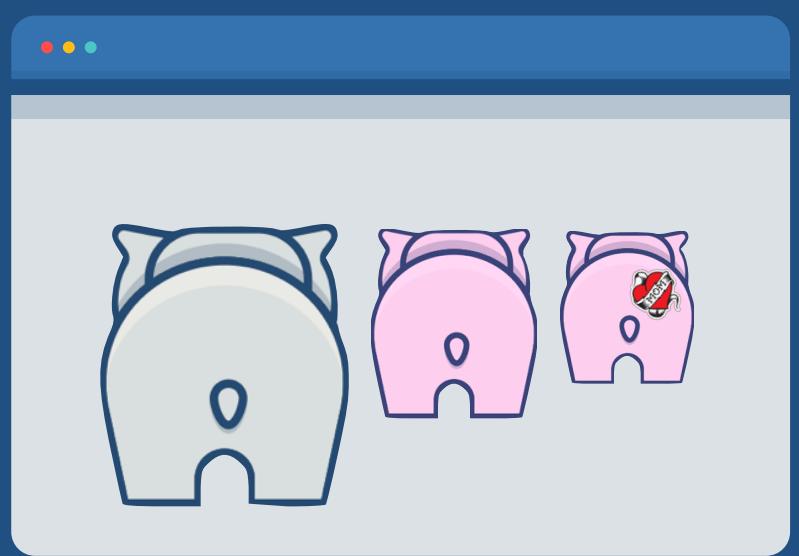
git push / pull



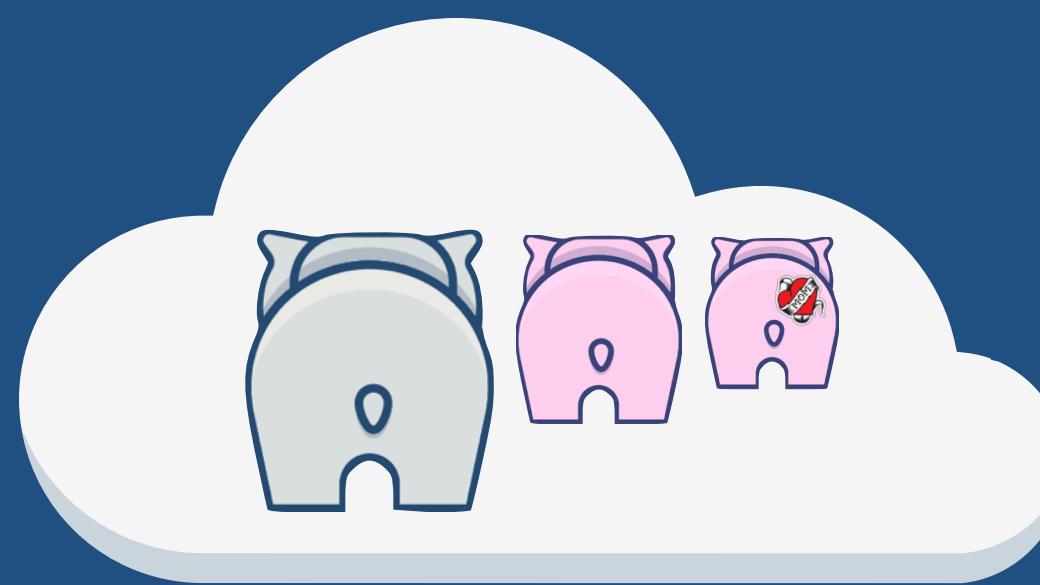
.git/objects



Hosted repo



.git/lfs/objects



LFS store



```
$ brew install git-lfs
```

```
$ git lfs install
```



```
$ cat ~/.gitconfig
```

```
[filter "lfs"]
  clean = git-lfs clean %f
  smudge = git-lfs smudge %f
  required = true
```

```
git config --global filter.lfs.required truegit config --global filter.lfs.clean "git-lf
```



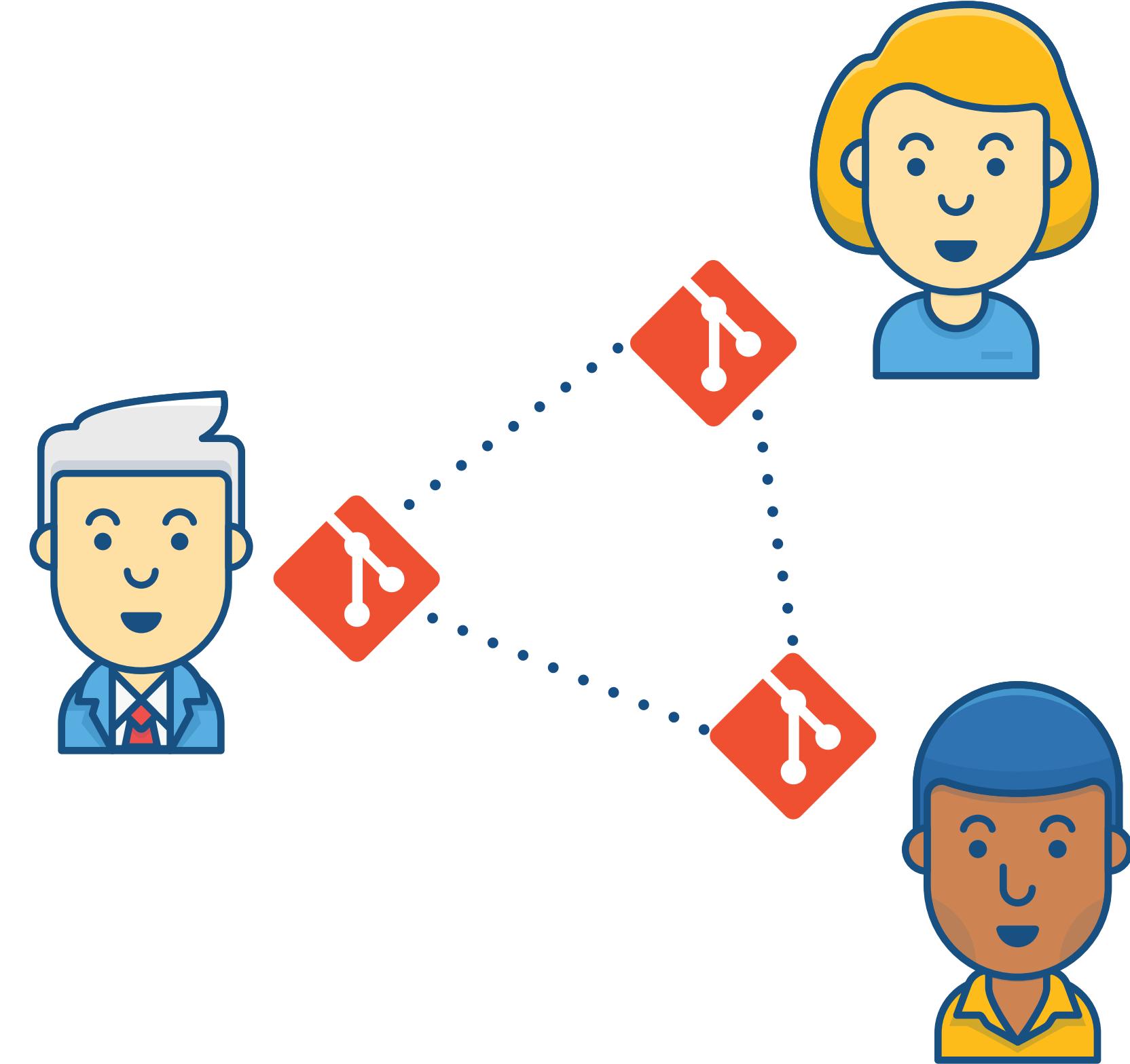
```
$ git lfs track “*.mp4”
```

```
$ cat .gitattributes
```

```
*.mp4 filter=lfs diff=lfs merge=lfs -text
```



Teach why "Large" files are a problem!

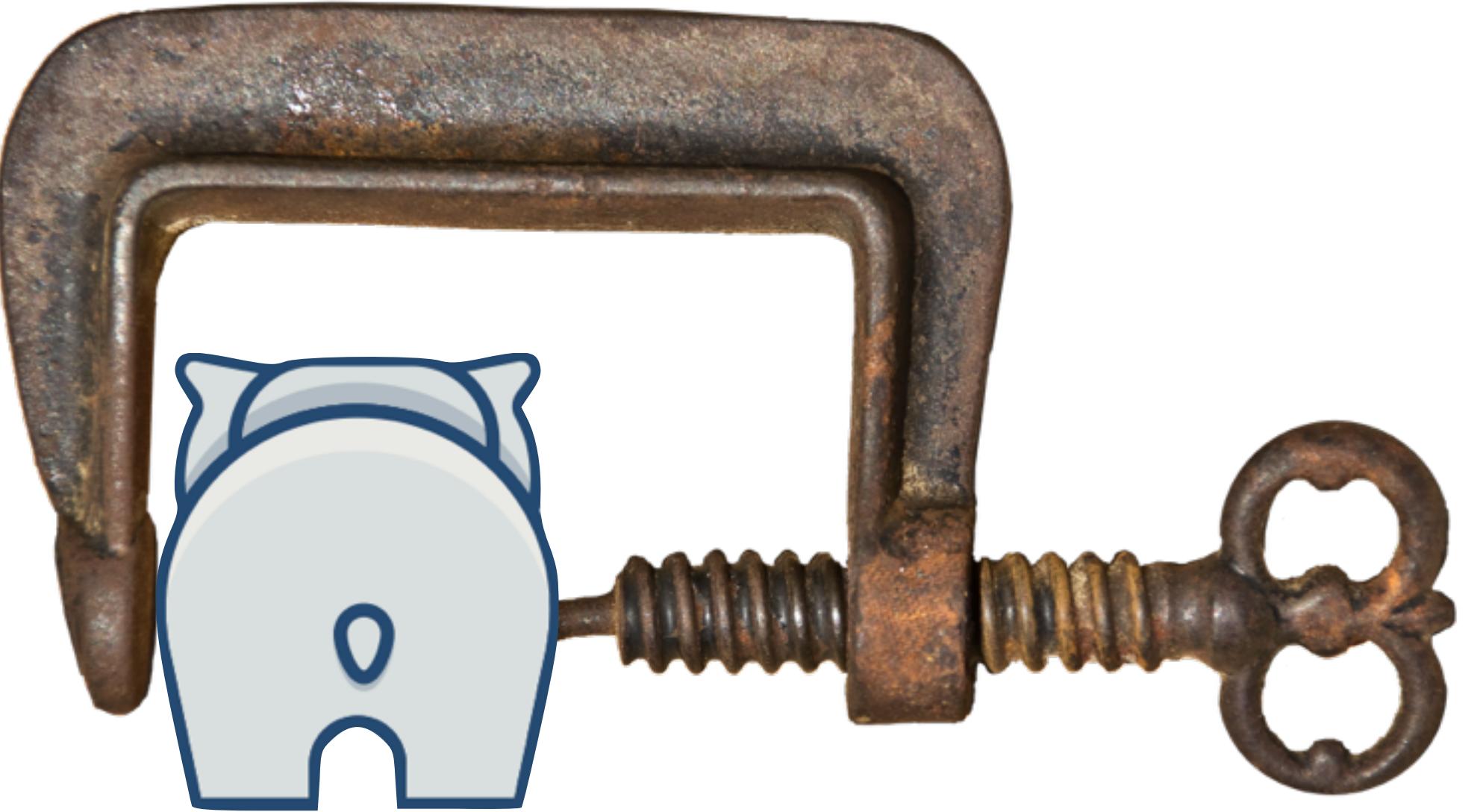


All history is local.

Good for source files.

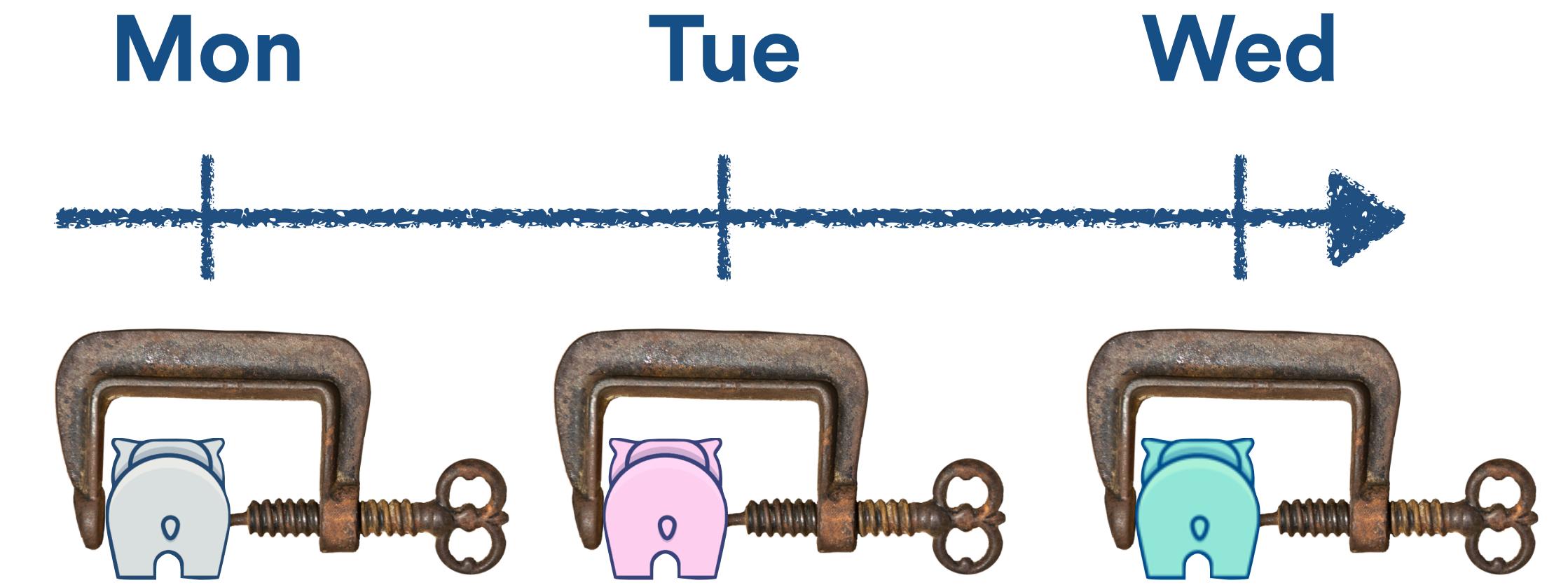
Problem for large files.

What is a "problematic" file?



**Files that do not
compress well...**

What is a "problematic" file?



... and change
frequently.

What is a "problematic" file?

Files smaller than
500kb are OK.



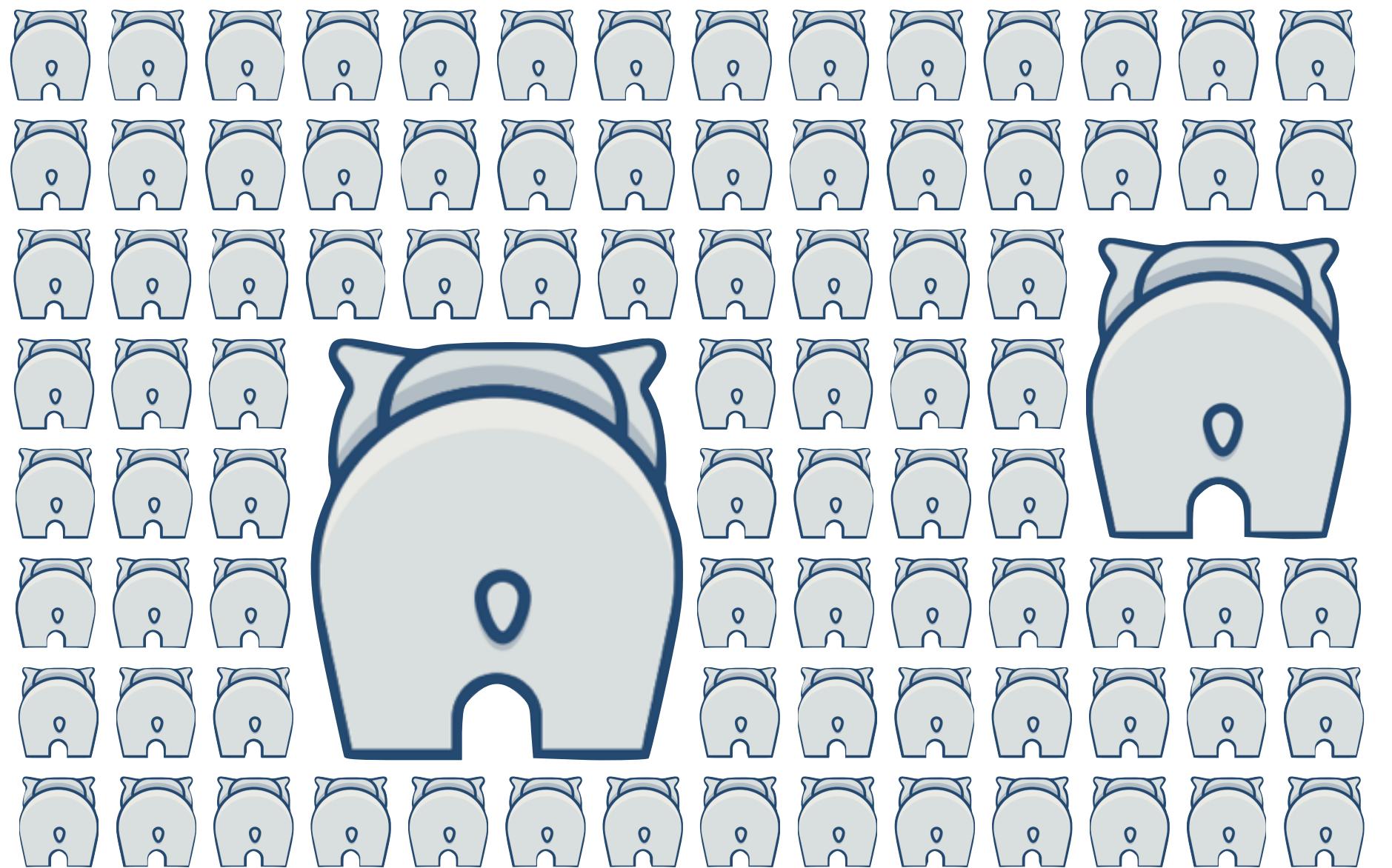
How to track Git LFS files?

```
git lfs track "*.png"
```



How to track Git LFS files?

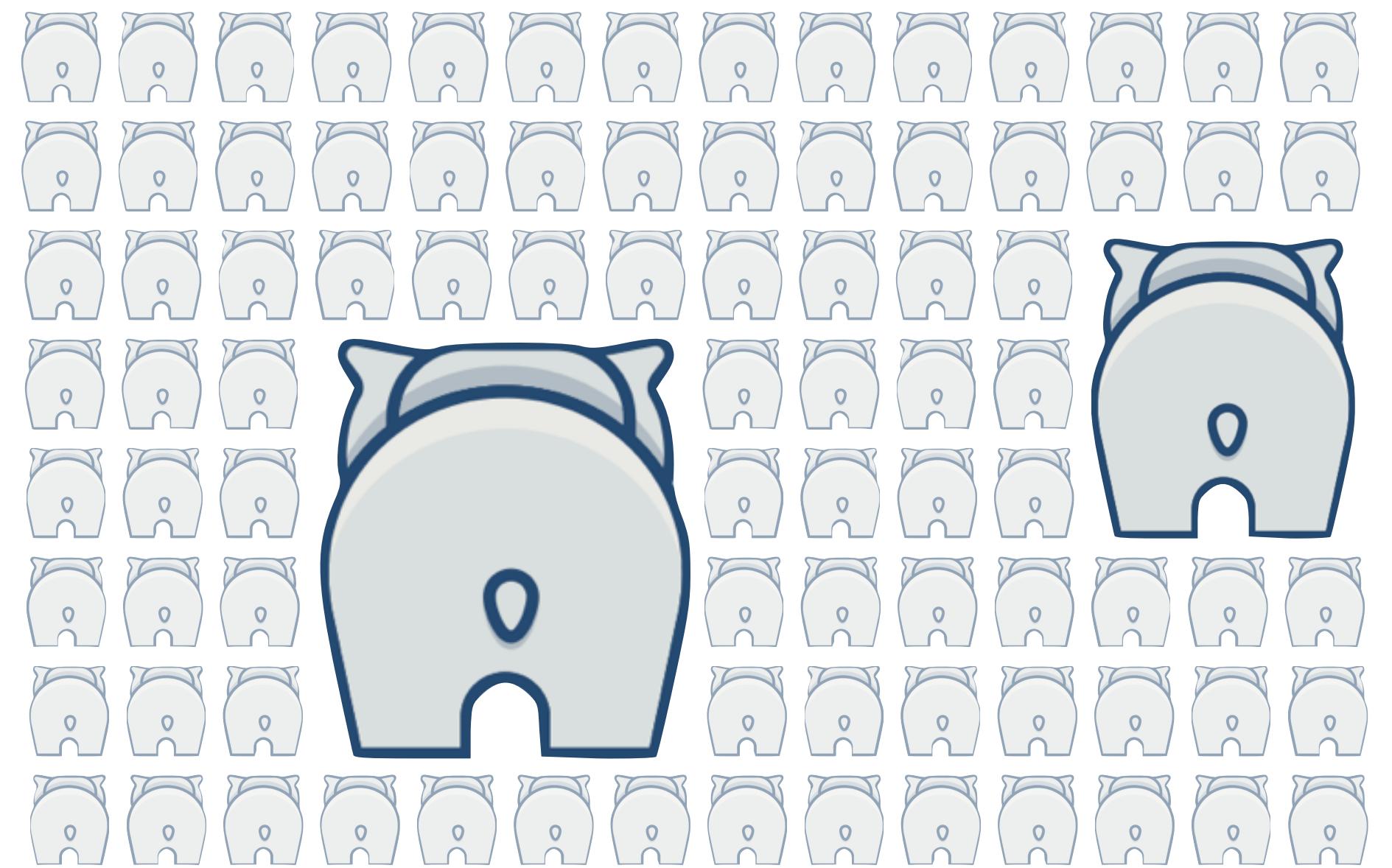
`git lfs track "*.png"`





How to track Git LFS files?

git lfs track "/big/*"



e.g. /big/elephant.png

How to track Git LFS files?

Less than 1000
files in LFS are OK.



*Up to 70x speed improvement
pending!*



Git LFS Gotchas

Case sensitive:

git lfs track "*.png"

Case in-sensitive:

git lfs track "*.[pP][nN][gG]"

Git LFS Gotchas



**No line ending
conversions on
LFS files!**

Git LFS Tips & Tricks

**Setup your Git
credential helper
(or use SSH)!**

**Watch out for the
"administrator" shell!**

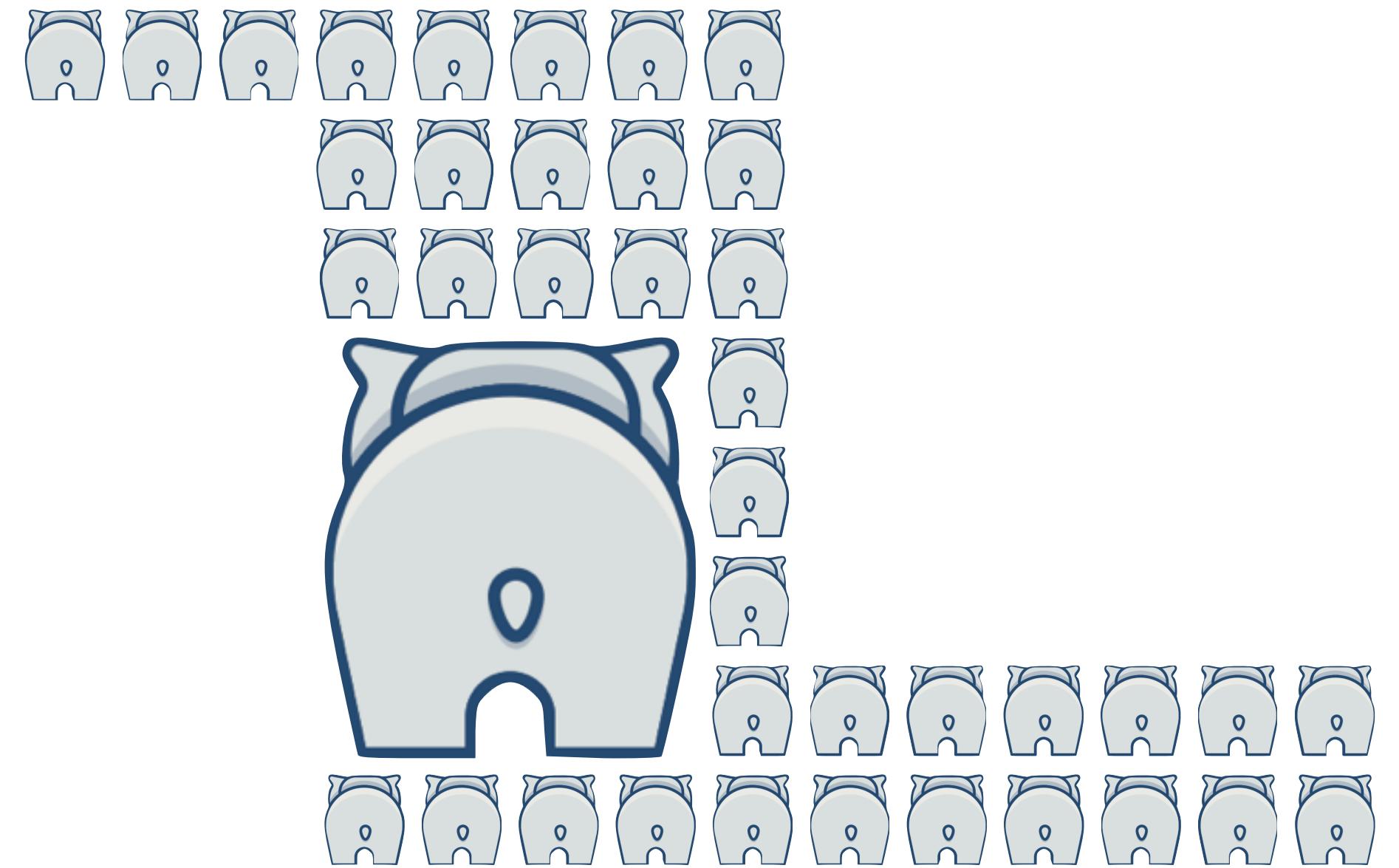




Git LFS Tips & Tricks



**Use Git Sparse Checkout if
you have too many LFS files!**



To checkout faster `GIT_LFS_SKIP_SMUDGE=1` `git clone https://github.com/su`