Lecture # 5&6

CSC336 Web Technologies

Credit Hours: 3(2, 1)

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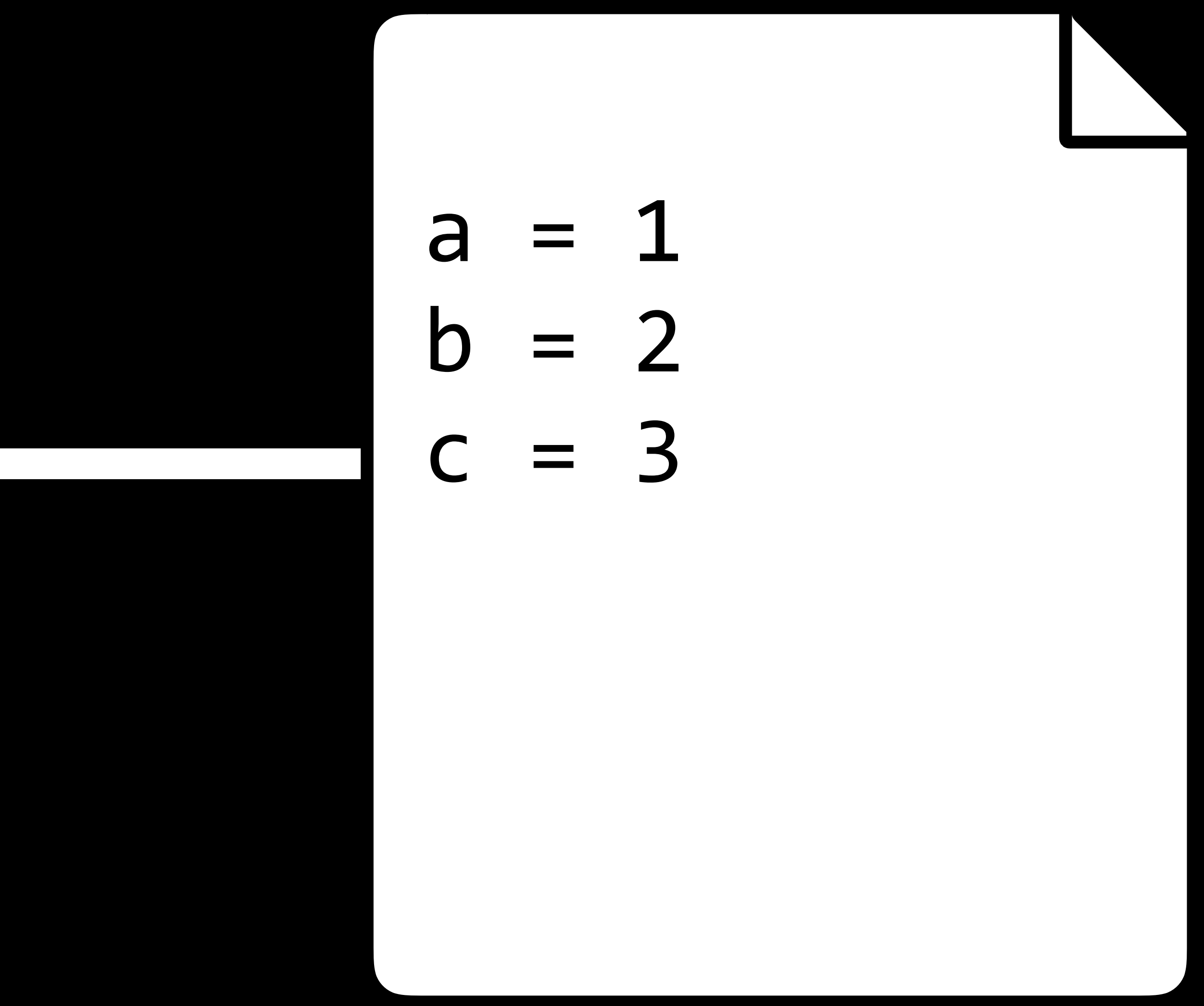
BSc COMSATS University Islamabad

Git

git

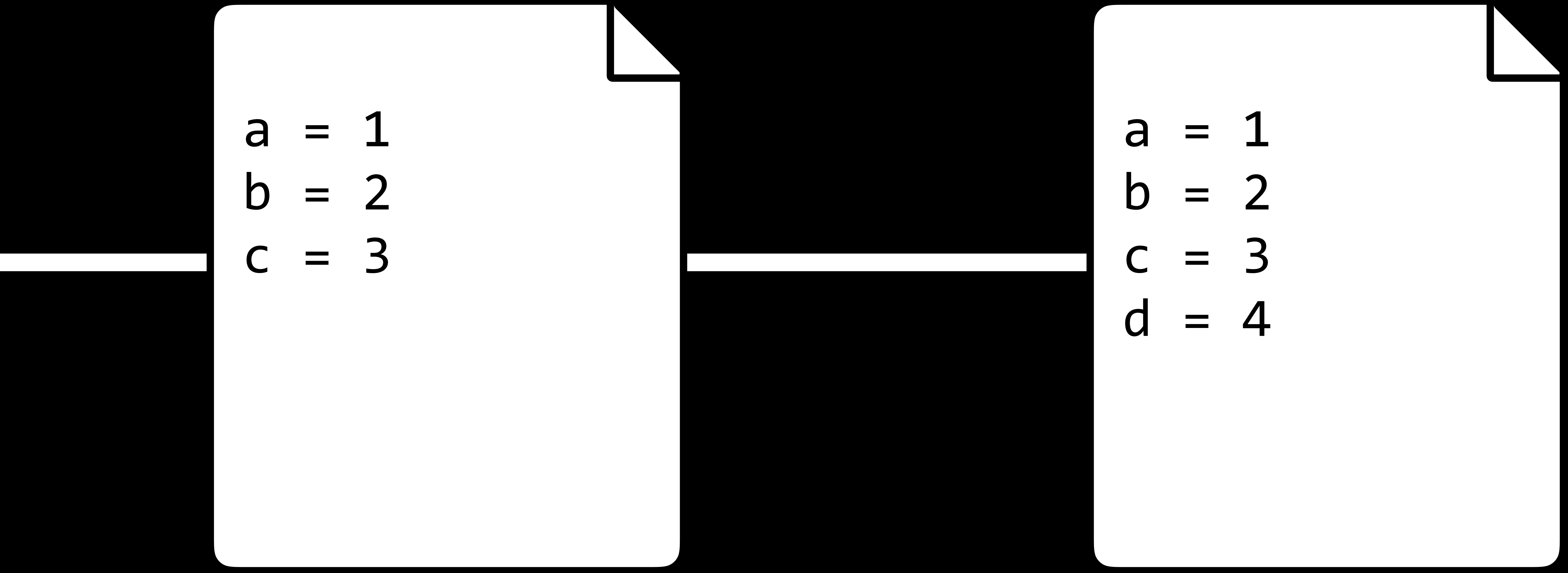
Keep track of changes to code.



```
a = 1
b = 2
c = 3
```

Create file

Keep track of changes to code.



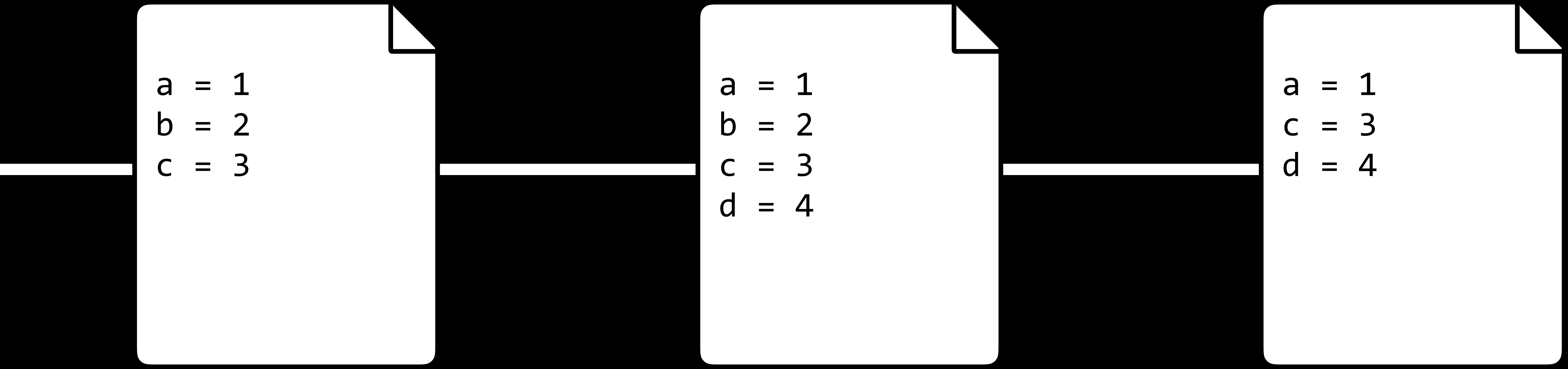
```
a = 1
b = 2
c = 3
```

Create file

```
a = 1
b = 2
c = 3
d = 4
```

Add a line

Keep track of changes to code.



```
a = 1
b = 2
c = 3
```

Create file

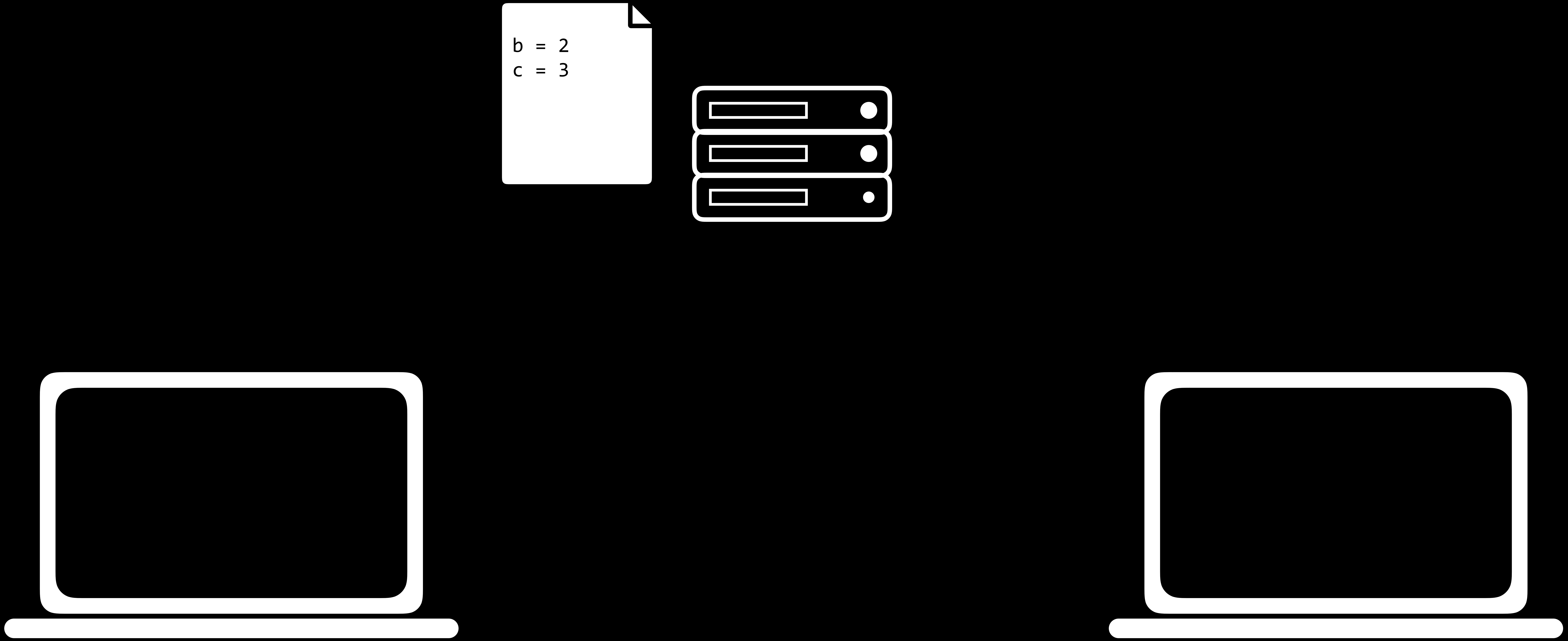
```
a = 1
b = 2
c = 3
d = 4
```

Add a line

```
a = 1
c = 3
d = 4
```

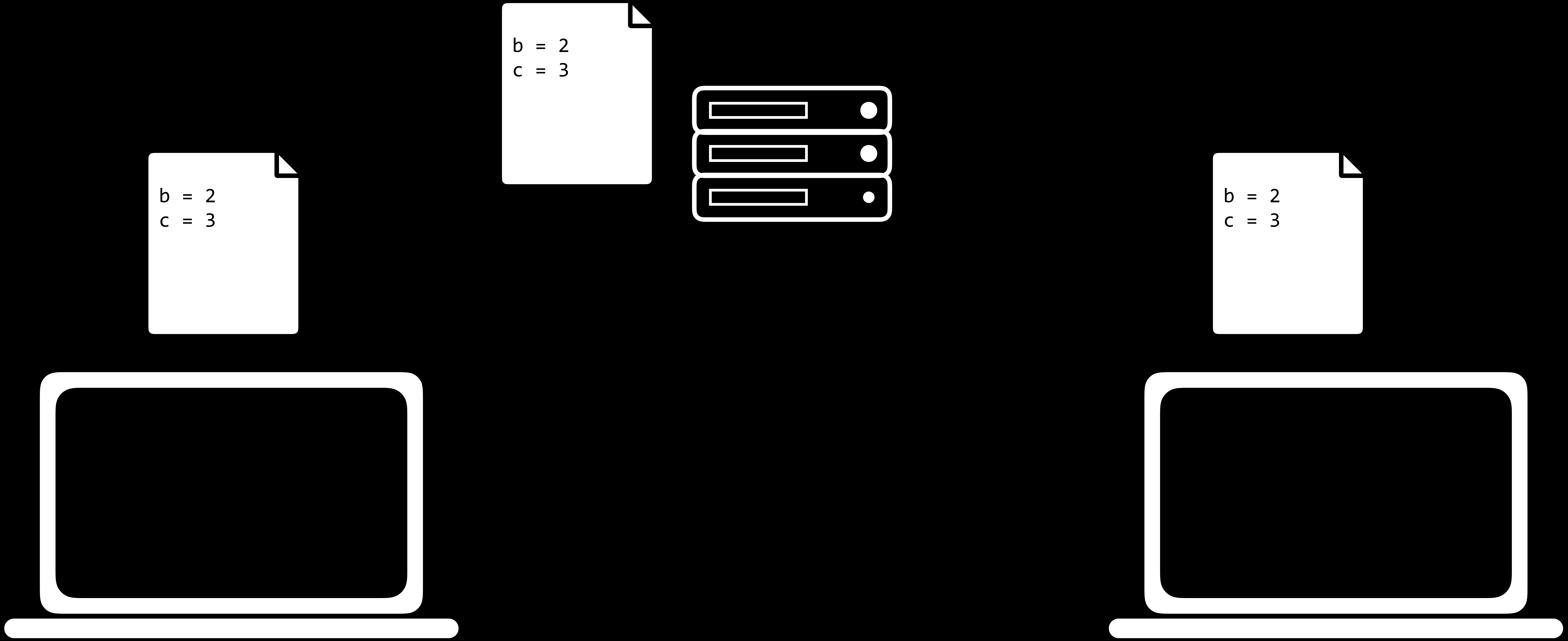
Remove a line

Synchronizes code between different people.



```
b = 2
c = 3
```

Synchronizes code between different people.

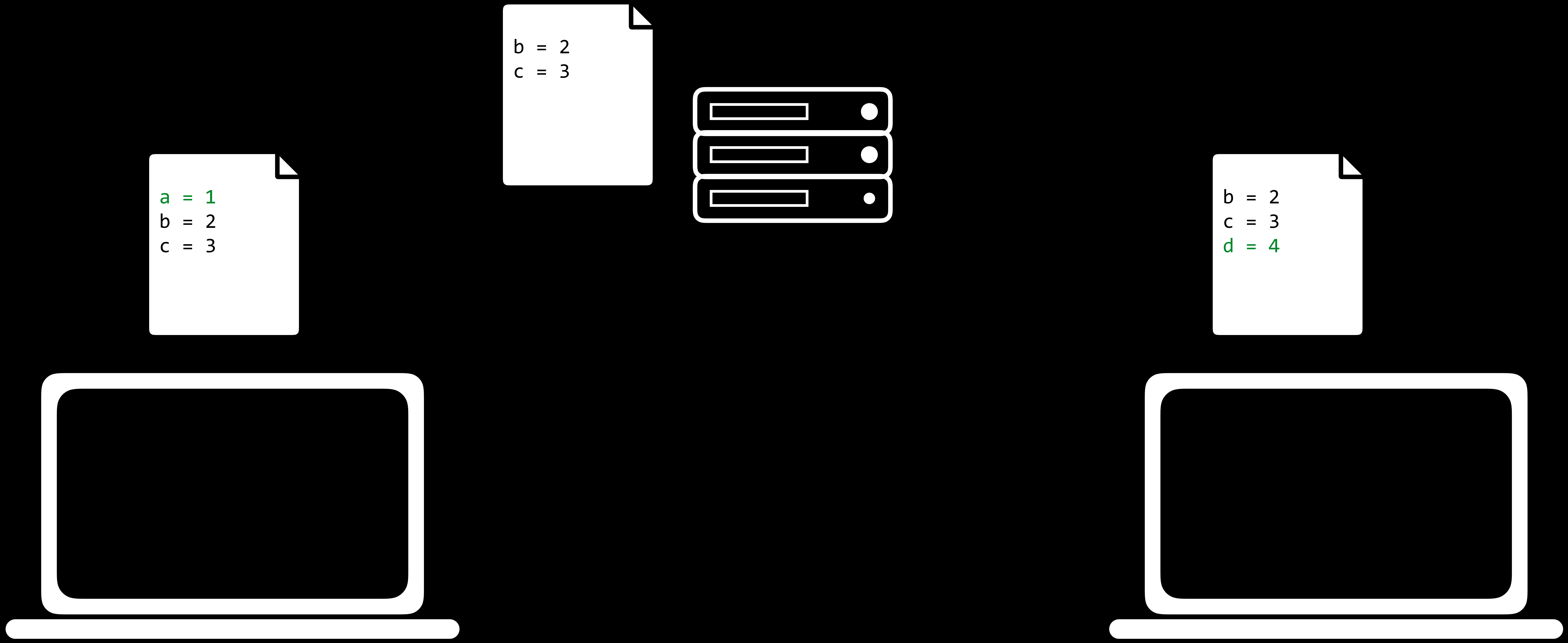


```
b = 2
c = 3
```

```
b = 2
c = 3
```

```
b = 2
c = 3
```

Synchronizes code between different people.

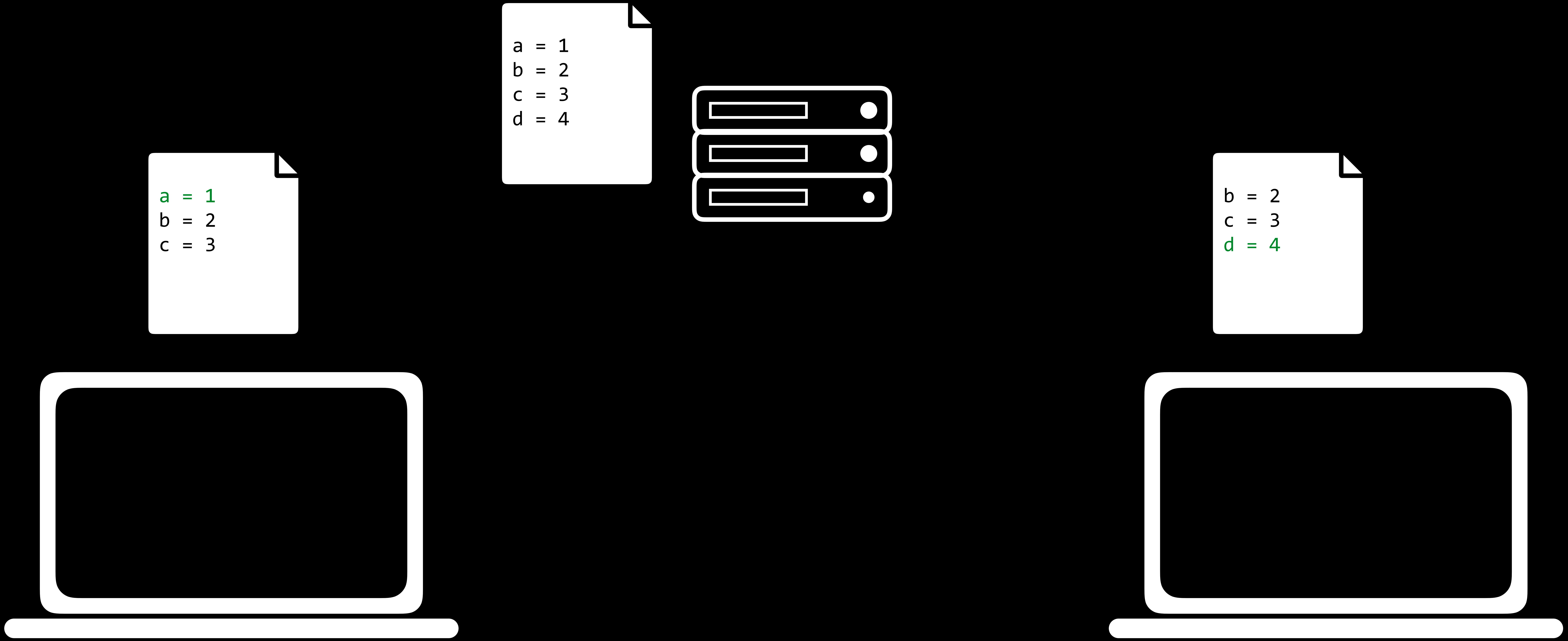


```
a = 1
b = 2
c = 3
```

```
b = 2
c = 3
```

```
b = 2
c = 3
d = 4
```

Synchronizes code between different people.

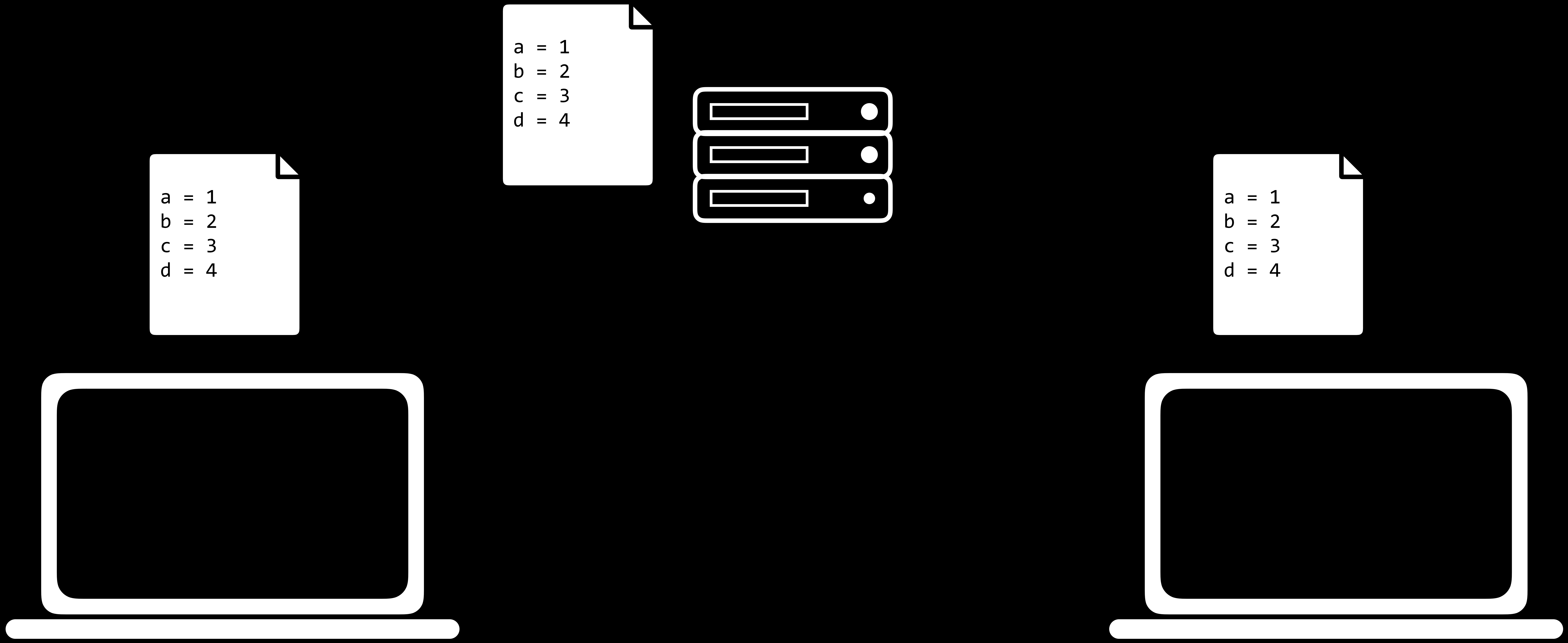


```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
```

```
b = 2
c = 3
d = 4
```

Synchronizes code between different people.

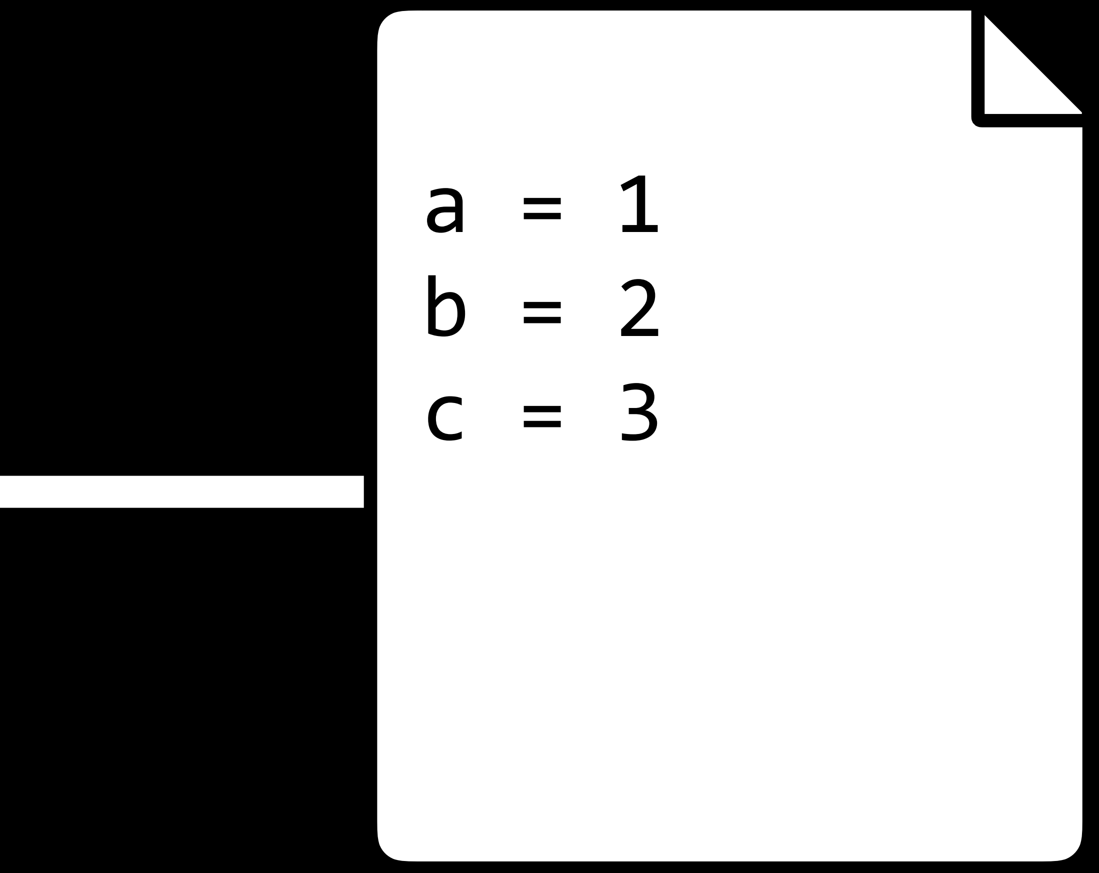


```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
```

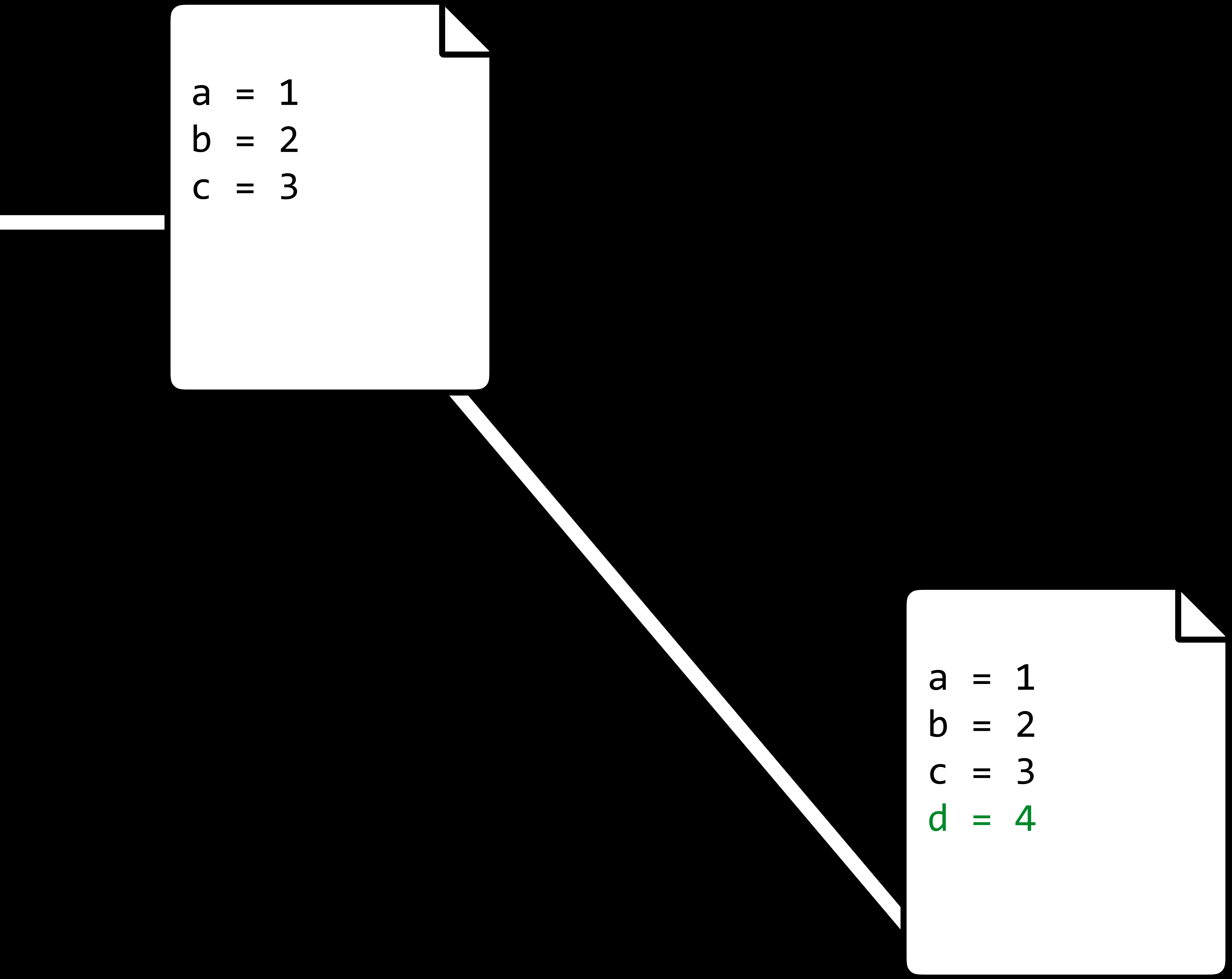
```
a = 1
b = 2
c = 3
d = 4
```

Test changes to code without losing the original.



```
a = 1
b = 2
c = 3
```

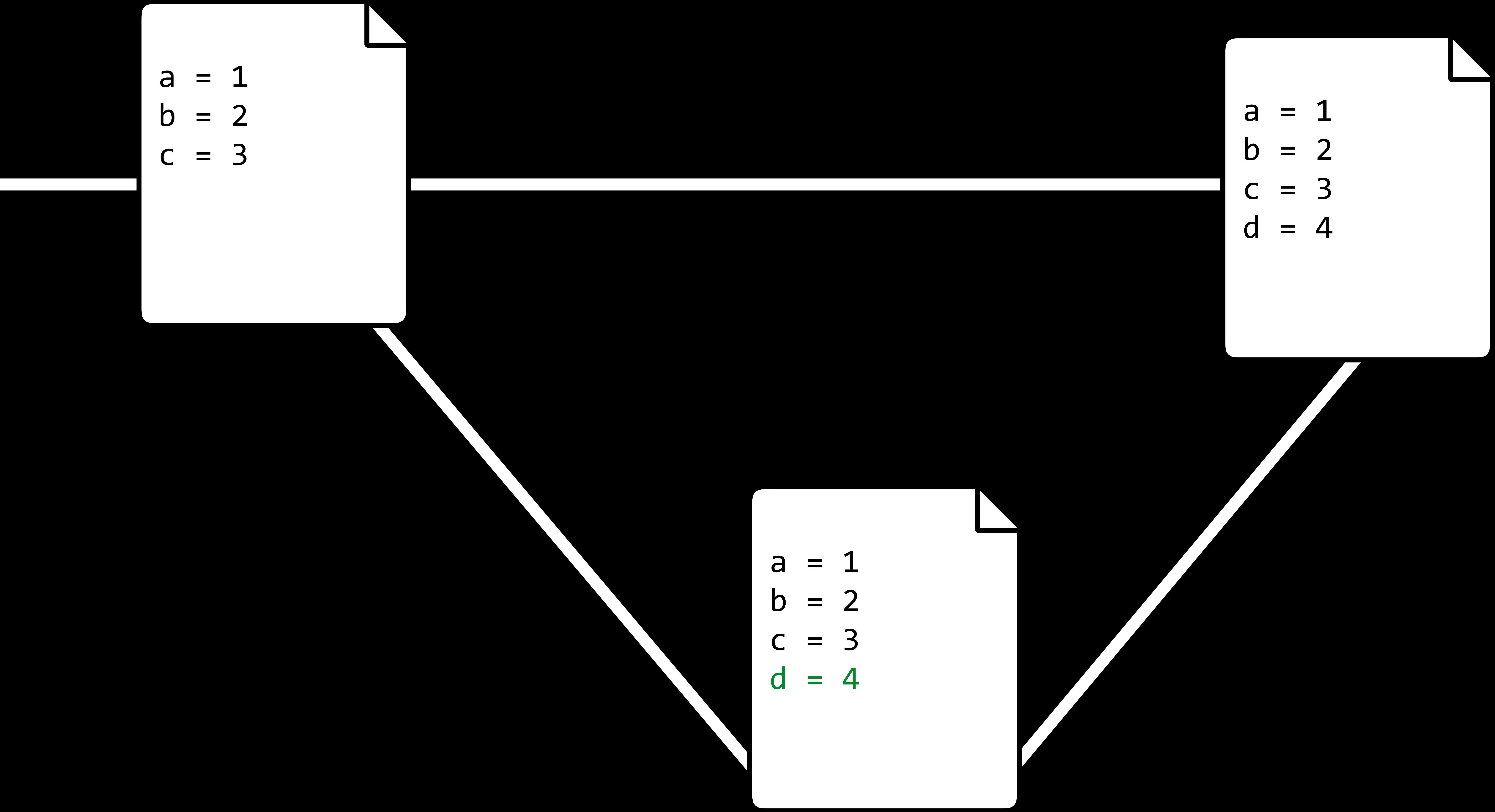
Test changes to code without losing the original.



```
a = 1
b = 2
c = 3
```

```
a = 1
b = 2
c = 3
d = 4
```

Test changes to code without losing the original.

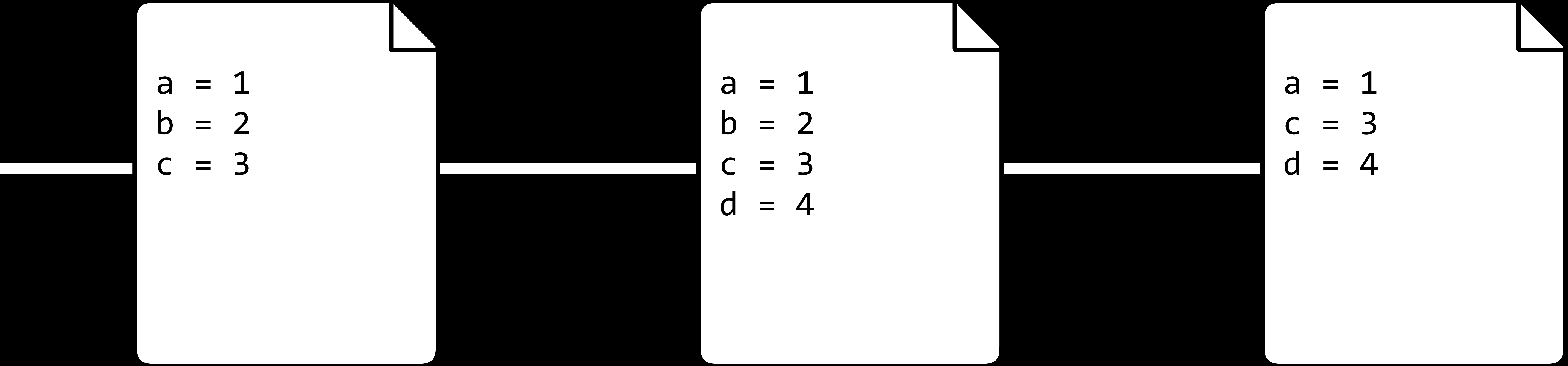


```
a = 1
b = 2
c = 3
```

```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
```

Revert back to old versions of code.



```
a = 1
b = 2
c = 3
```

Create file

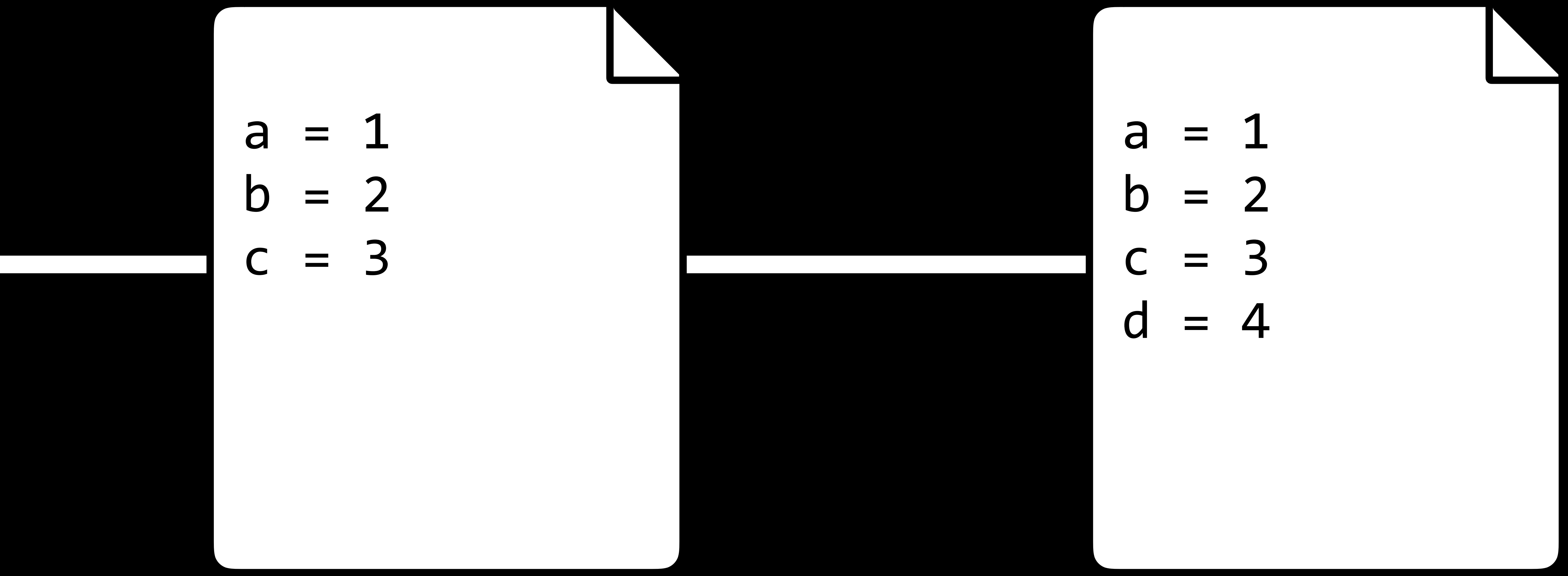
```
a = 1
b = 2
c = 3
d = 4
```

Add a line

```
a = 1
c = 3
d = 4
```

Remove a line

Revert back to old versions of code.



```
a = 1
b = 2
c = 3
```

Create file

```
a = 1
b = 2
c = 3
d = 4
```

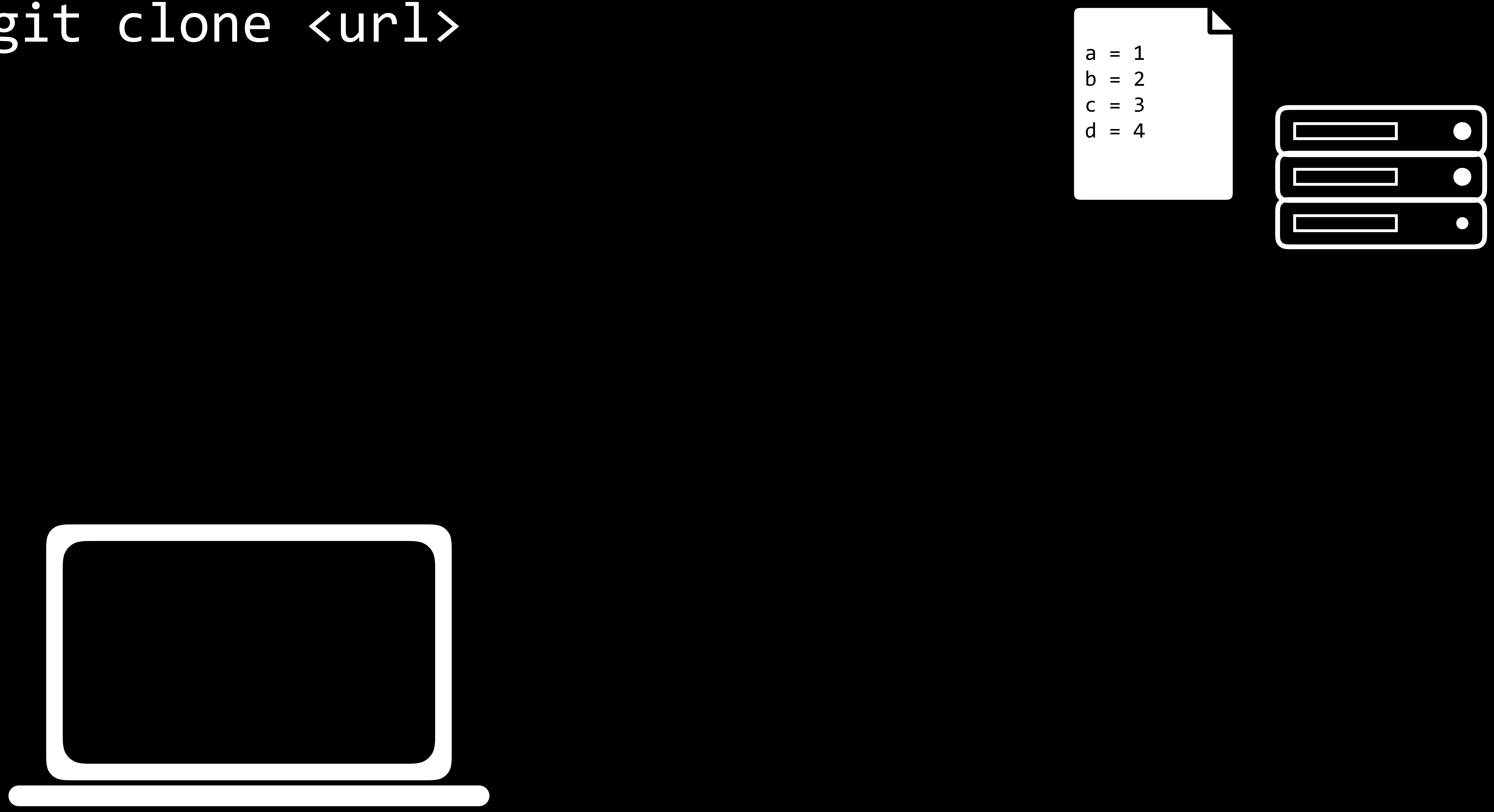
Add a line

GitHub

Git Vs GitHub

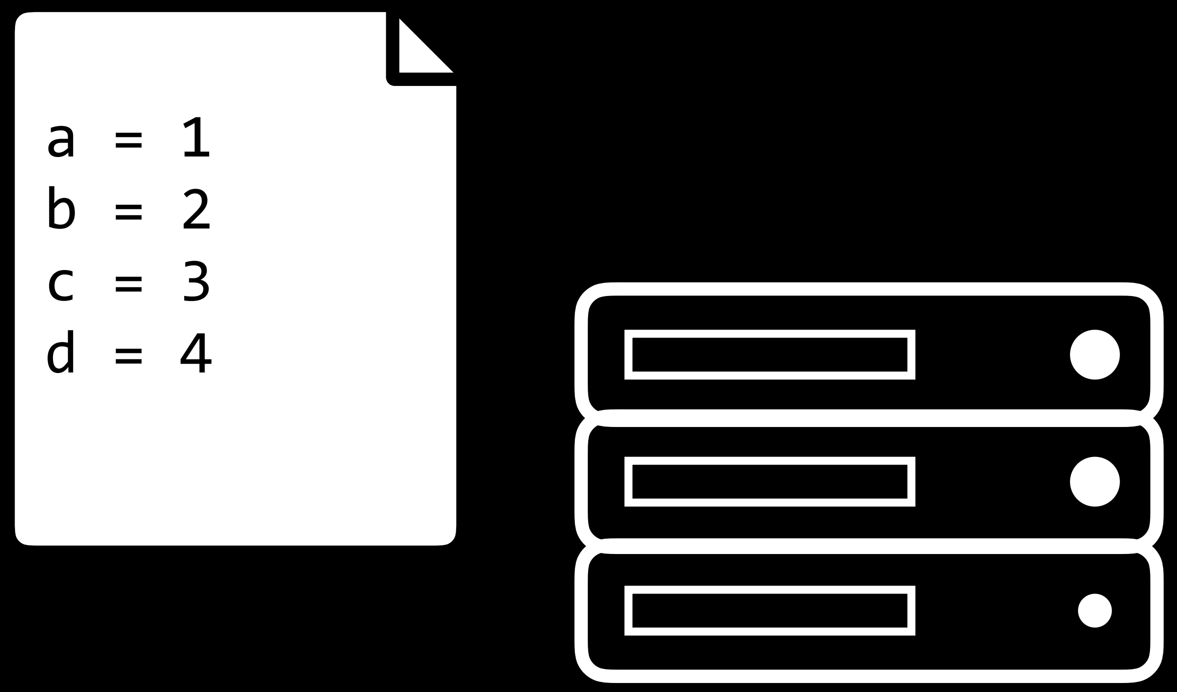
GIT	GITHUB
It is a software	It is a service
It is installed locally on the system	It is hosted on Web
It is a tool to manage different versions of edits, made to files in a git repository	It is a space to upload a copy of the Git repository
It is a command-line tool	It provides a graphical interface

```
git clone
git clone <url>
```

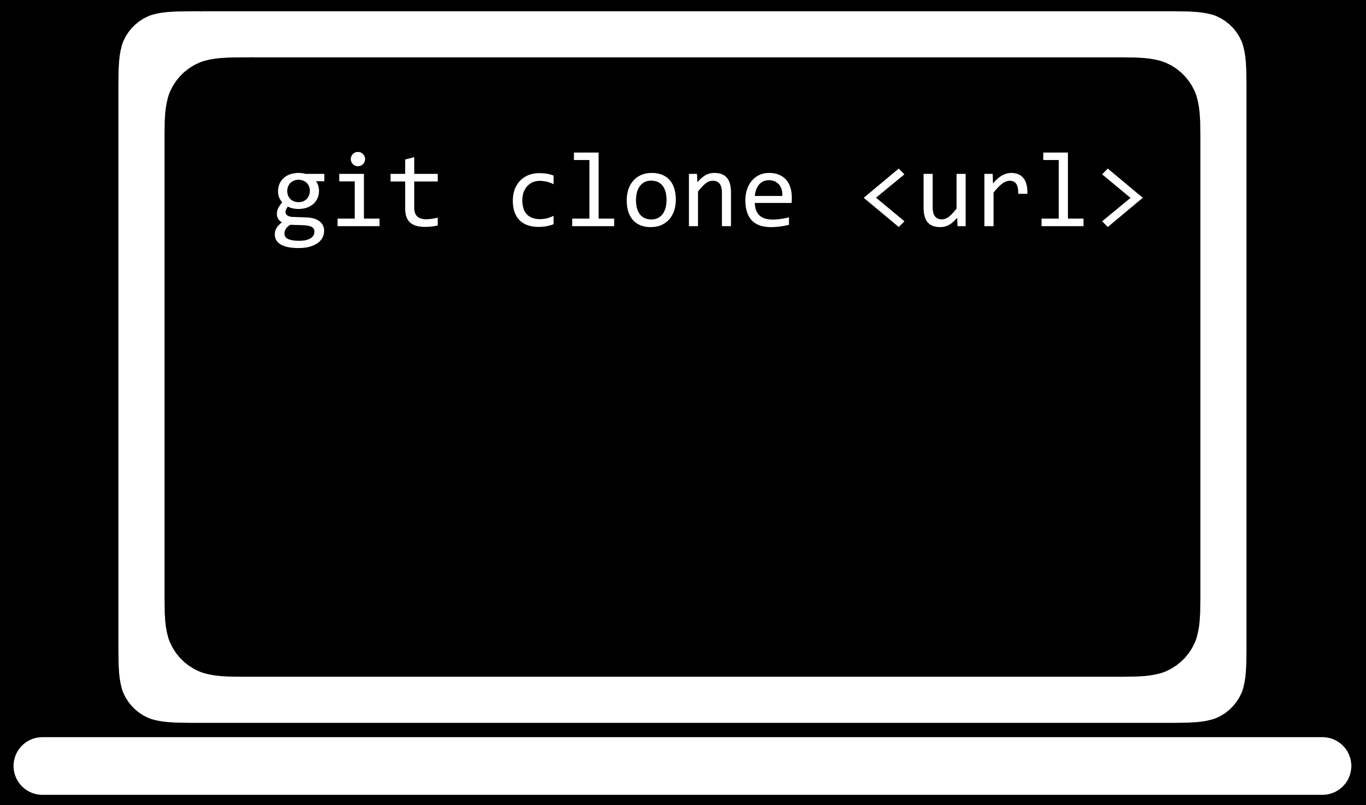


```
a = 1
b = 2
c = 3
d = 4
```

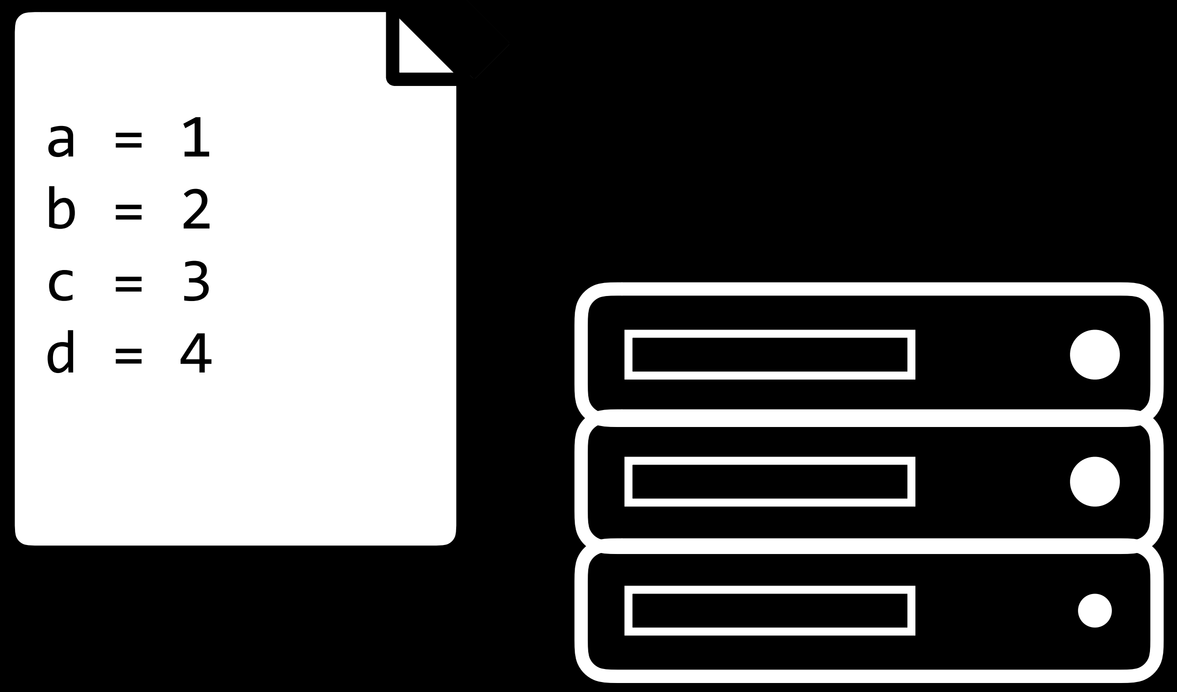
```
git clone <url>
```



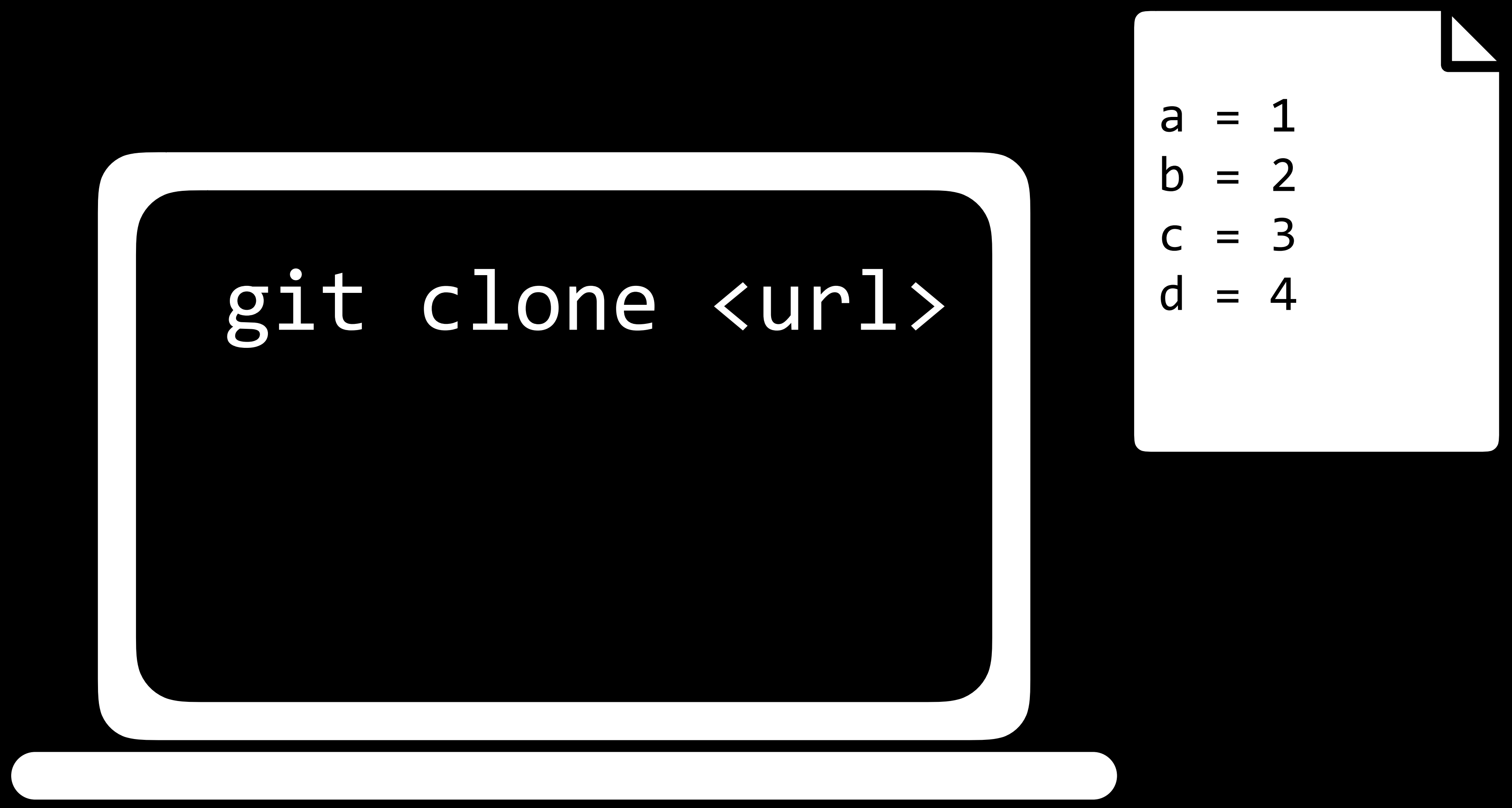
```
a = 1
b = 2
c = 3
d = 4
```



```
git clone <url>
git clone <url>
```



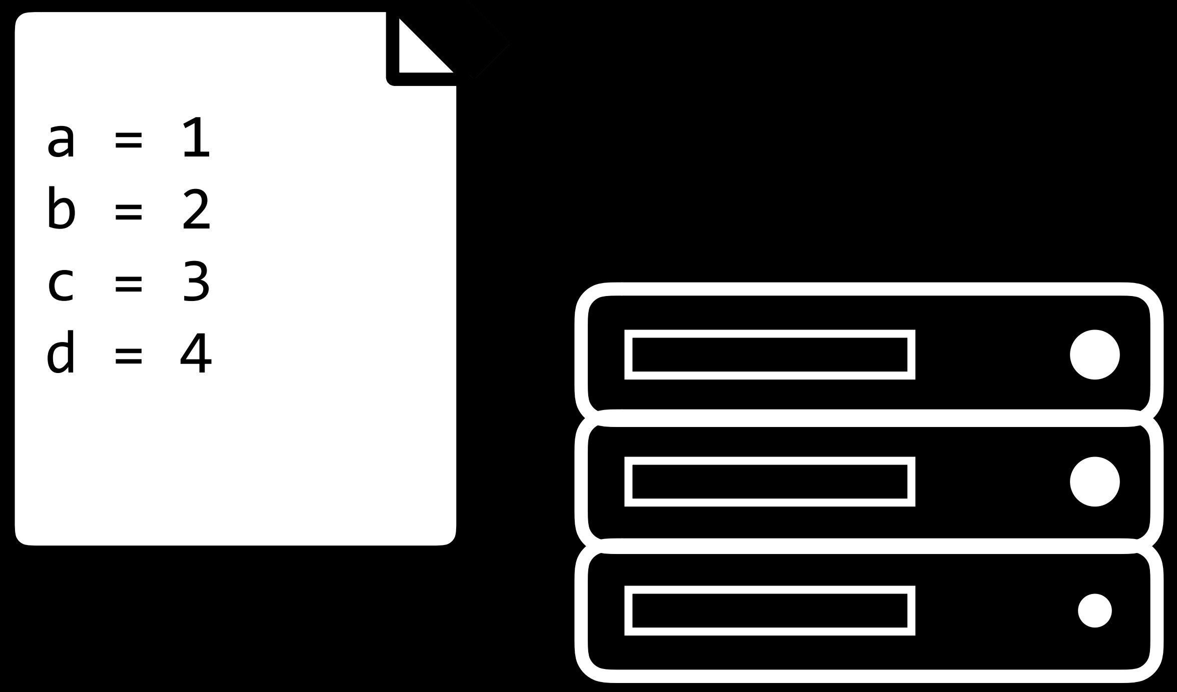
```
a = 1
b = 2
c = 3
d = 4
```



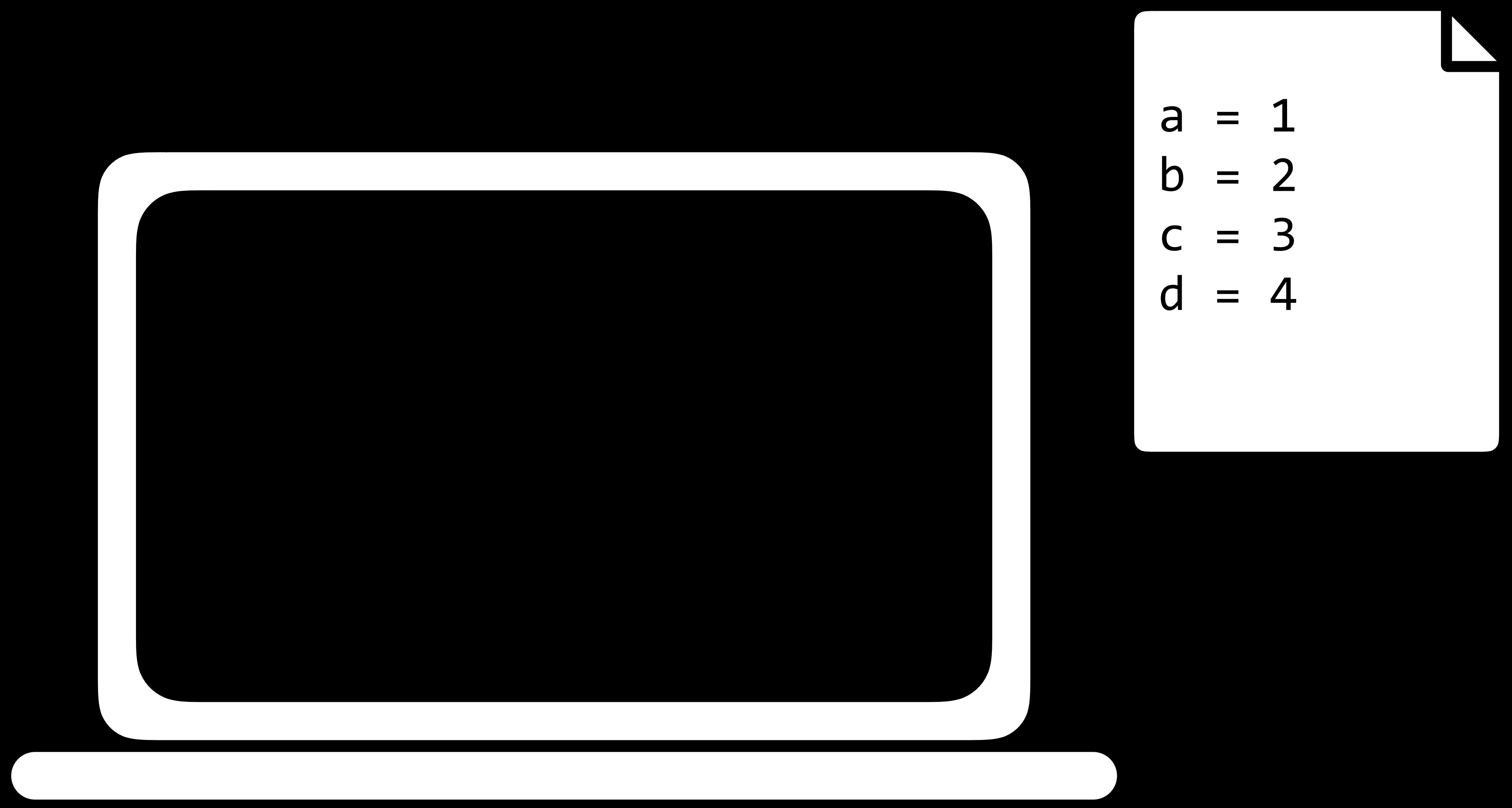
```
git clone <url>
```

```
a = 1
b = 2
c = 3
d = 4
```

```
git add
git add <filename>
```

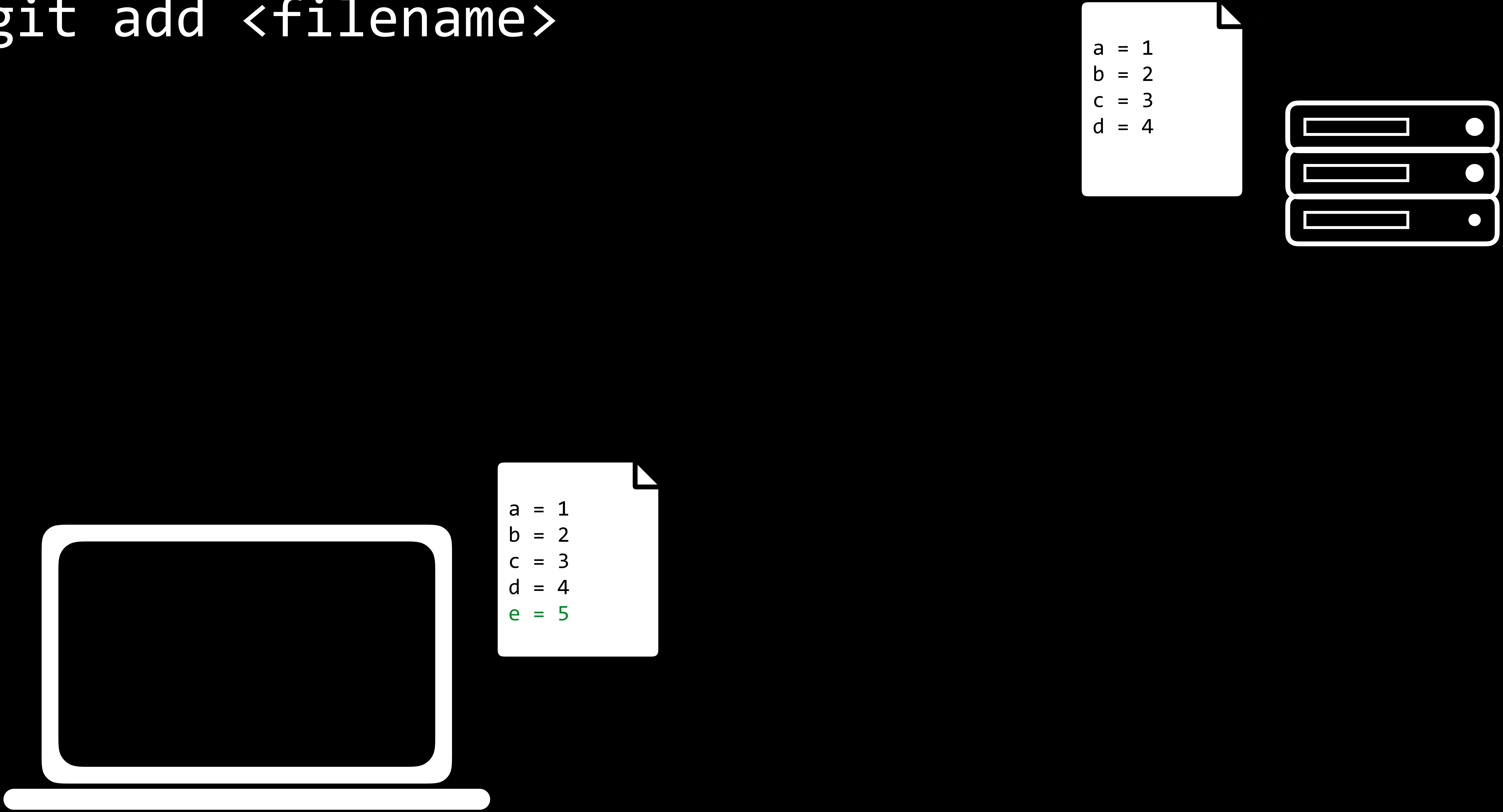


```
a = 1
b = 2
c = 3
d = 4
```



```
a = 1
b = 2
c = 3
d = 4
```

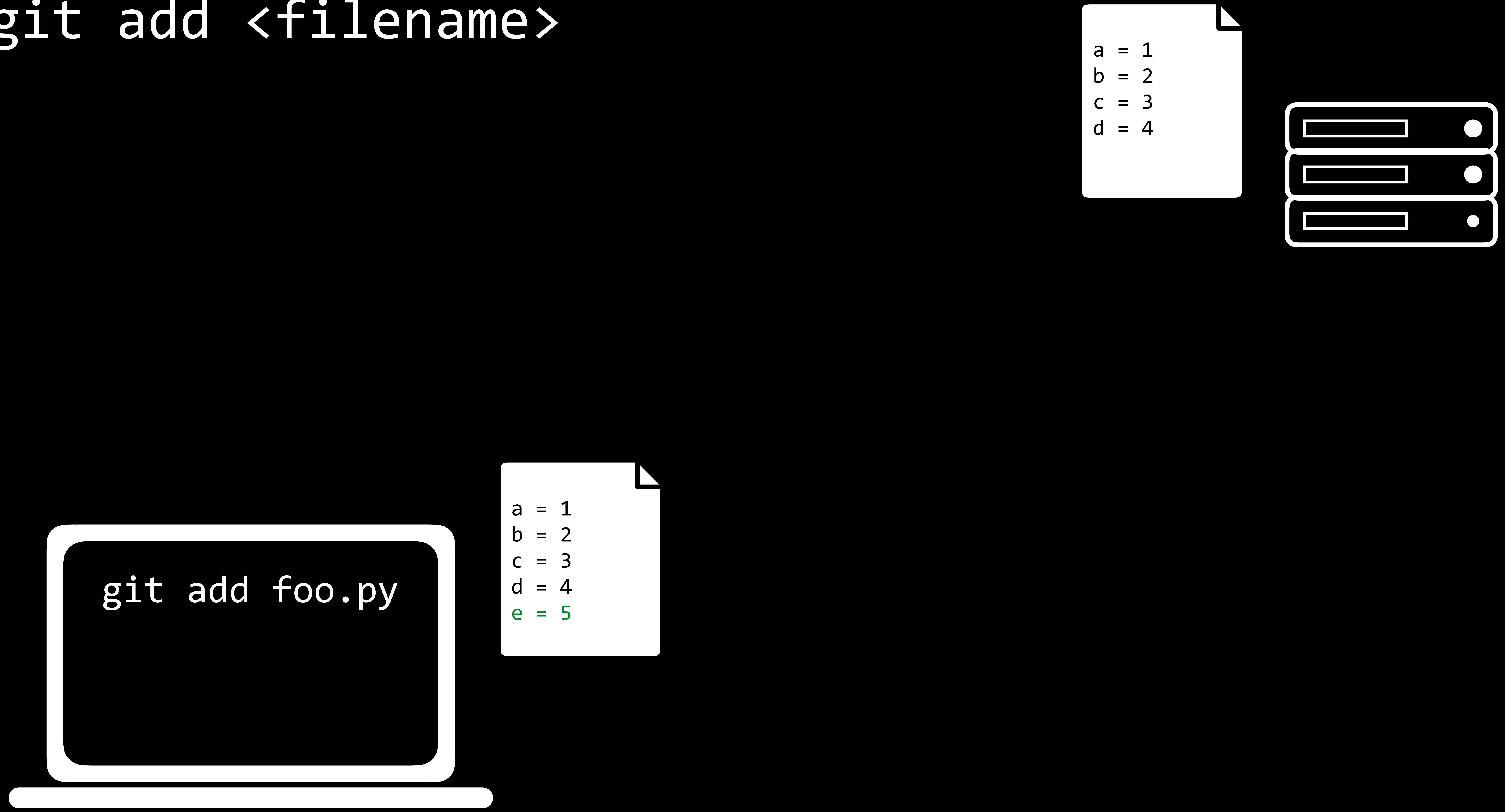
```
git add <filename>
```



```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

git add <filename>

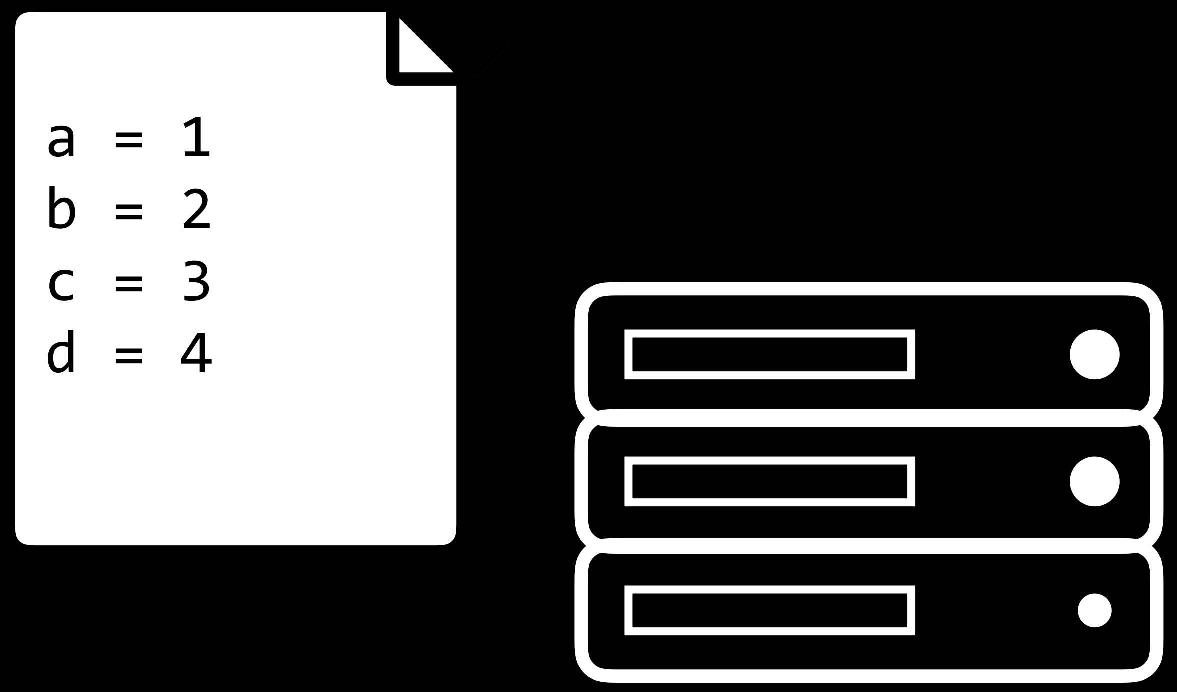


```
a = 1
b = 2
c = 3
d = 4
```

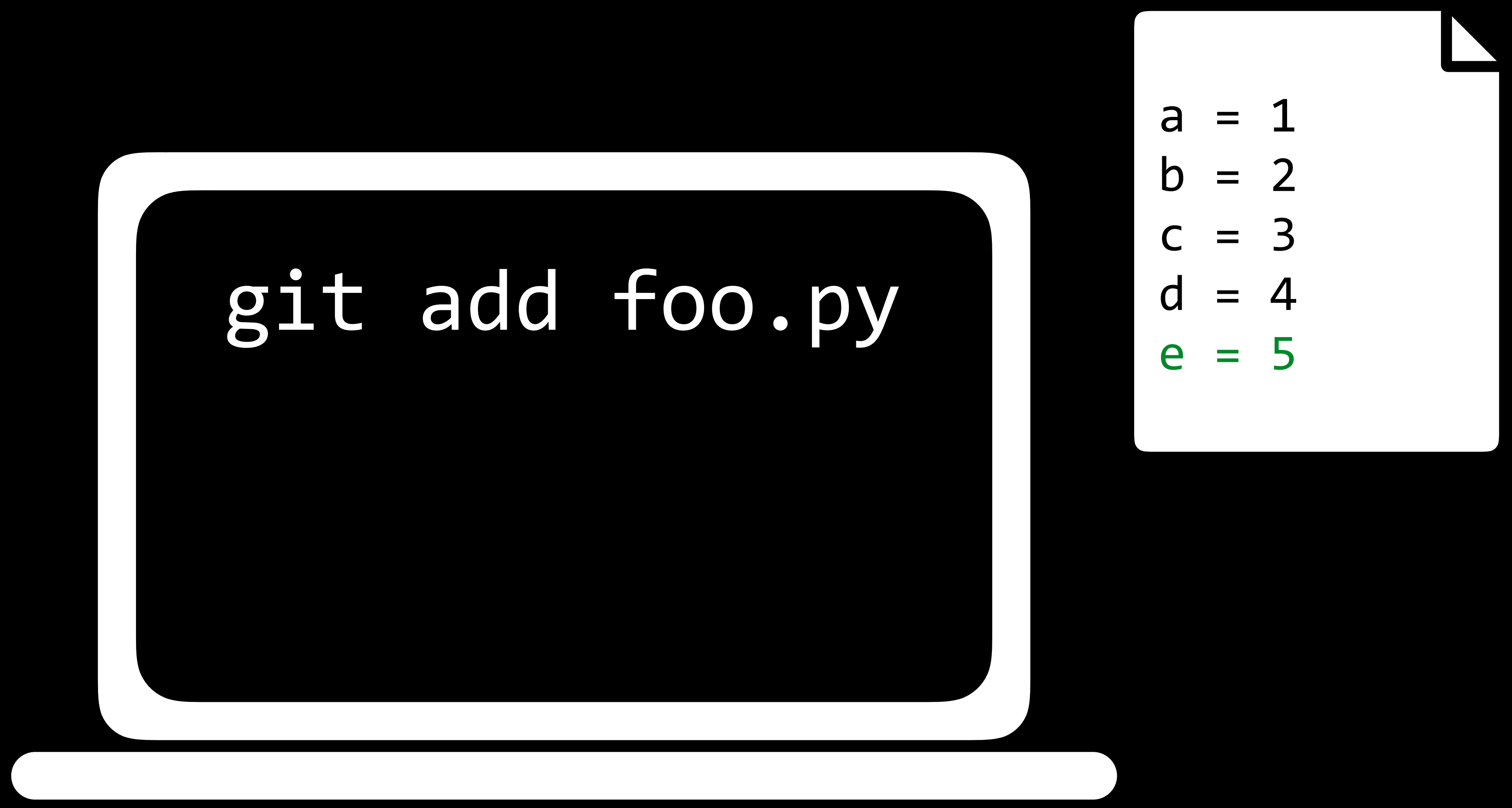
```
git add foo.py
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

git add <filename>



```
a = 1
b = 2
c = 3
d = 4
```

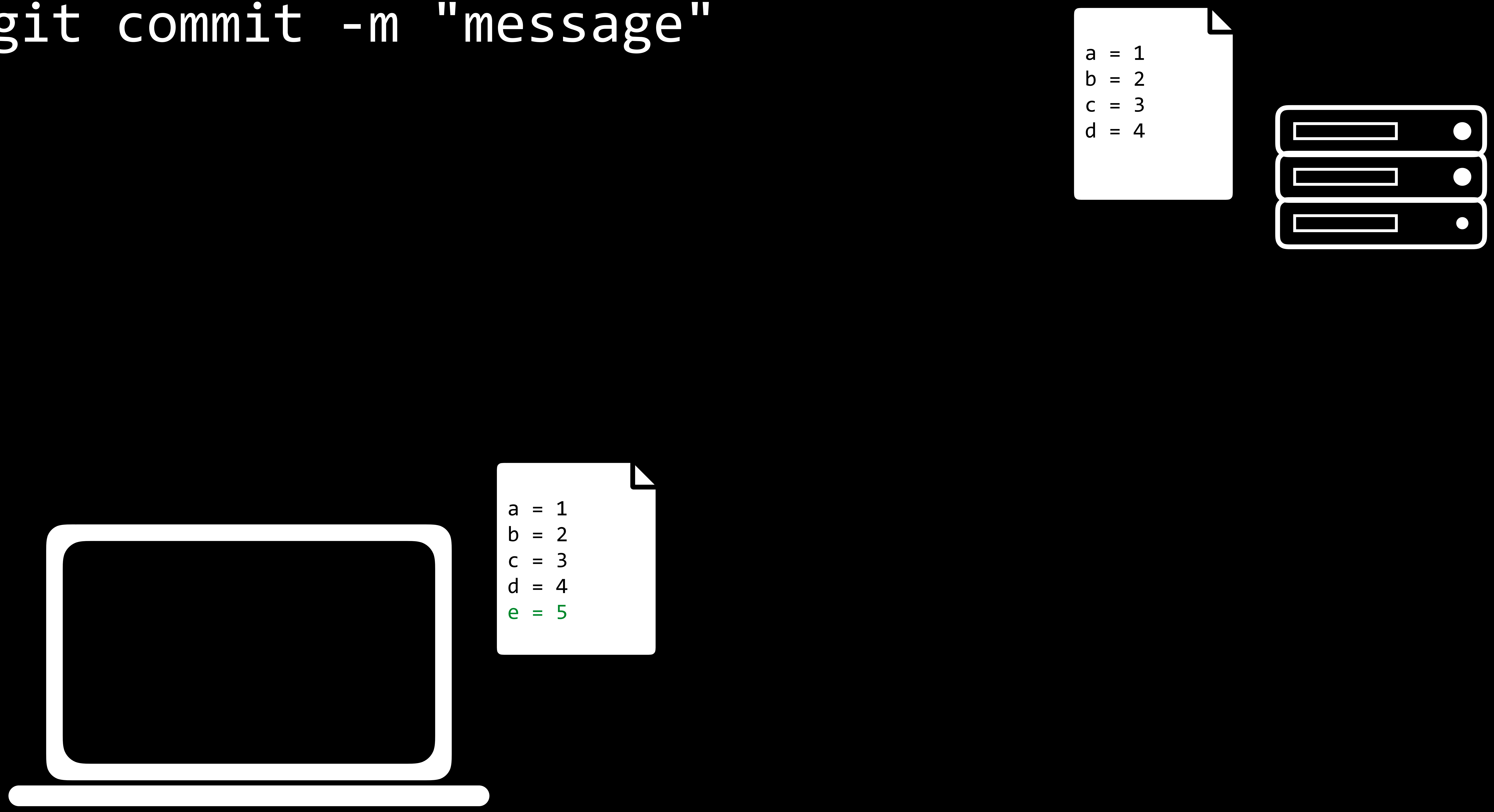


```
git add foo.py
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

```
Changes to be committed:

    modified: foo.py
```

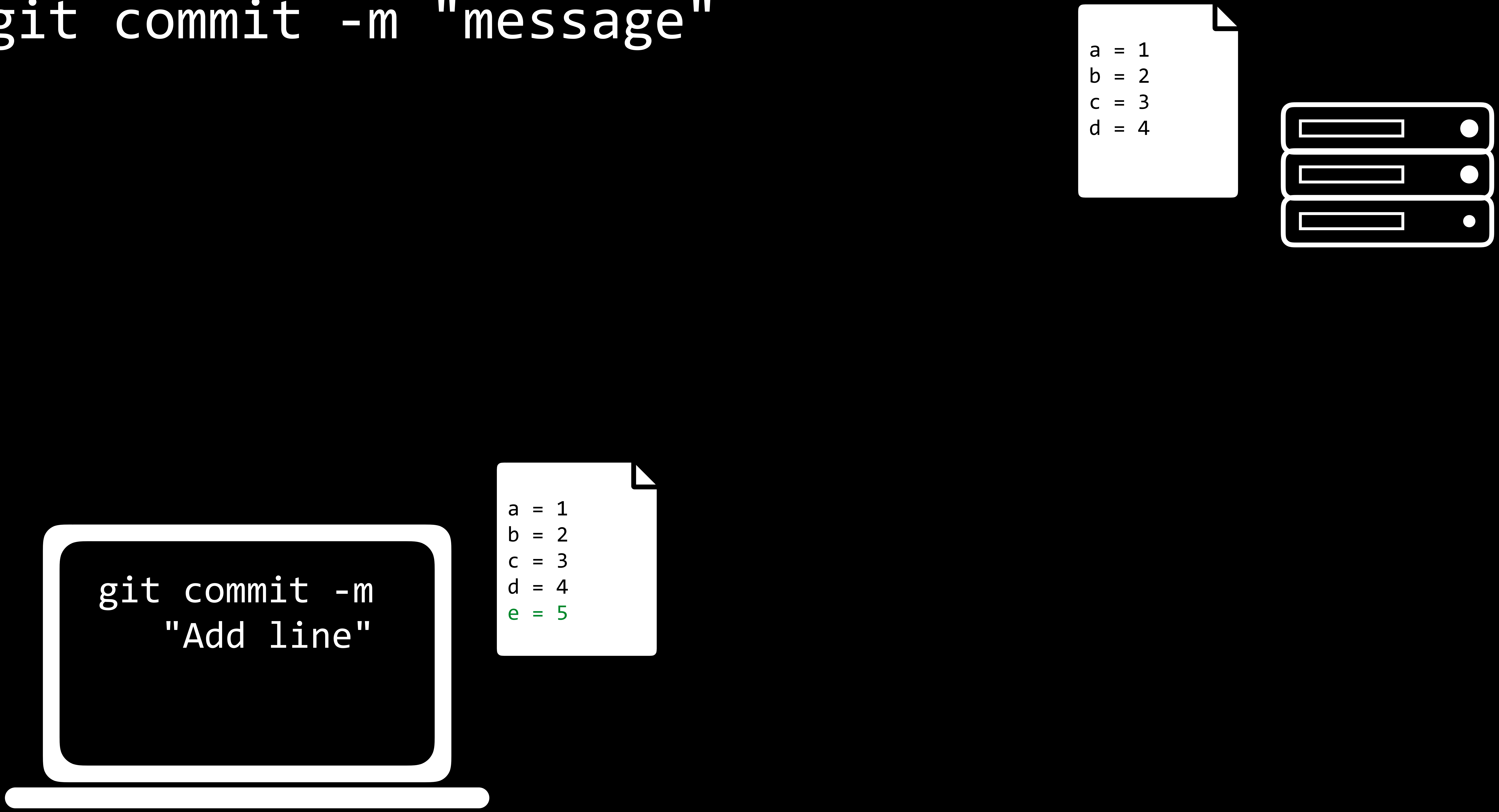
```
git commit
git commit -m "message"
```



```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

git commit -m "message"

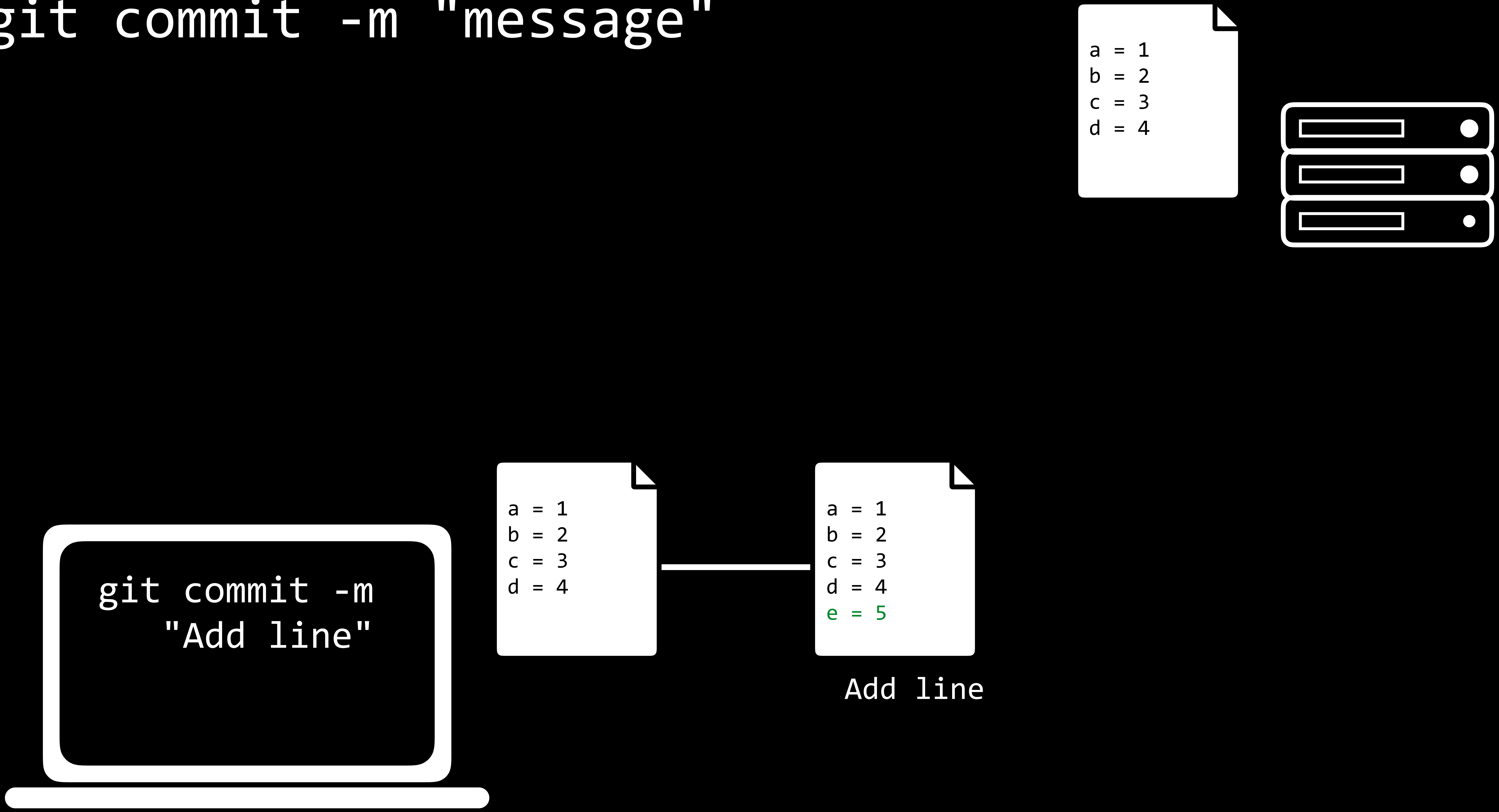


```
a = 1
b = 2
c = 3
d = 4
```

```
git commit -m
   "Add line"
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

git commit -m "message"



```
a = 1
b = 2
c = 3
d = 4
```

```
git commit -m
   "Add line"
```

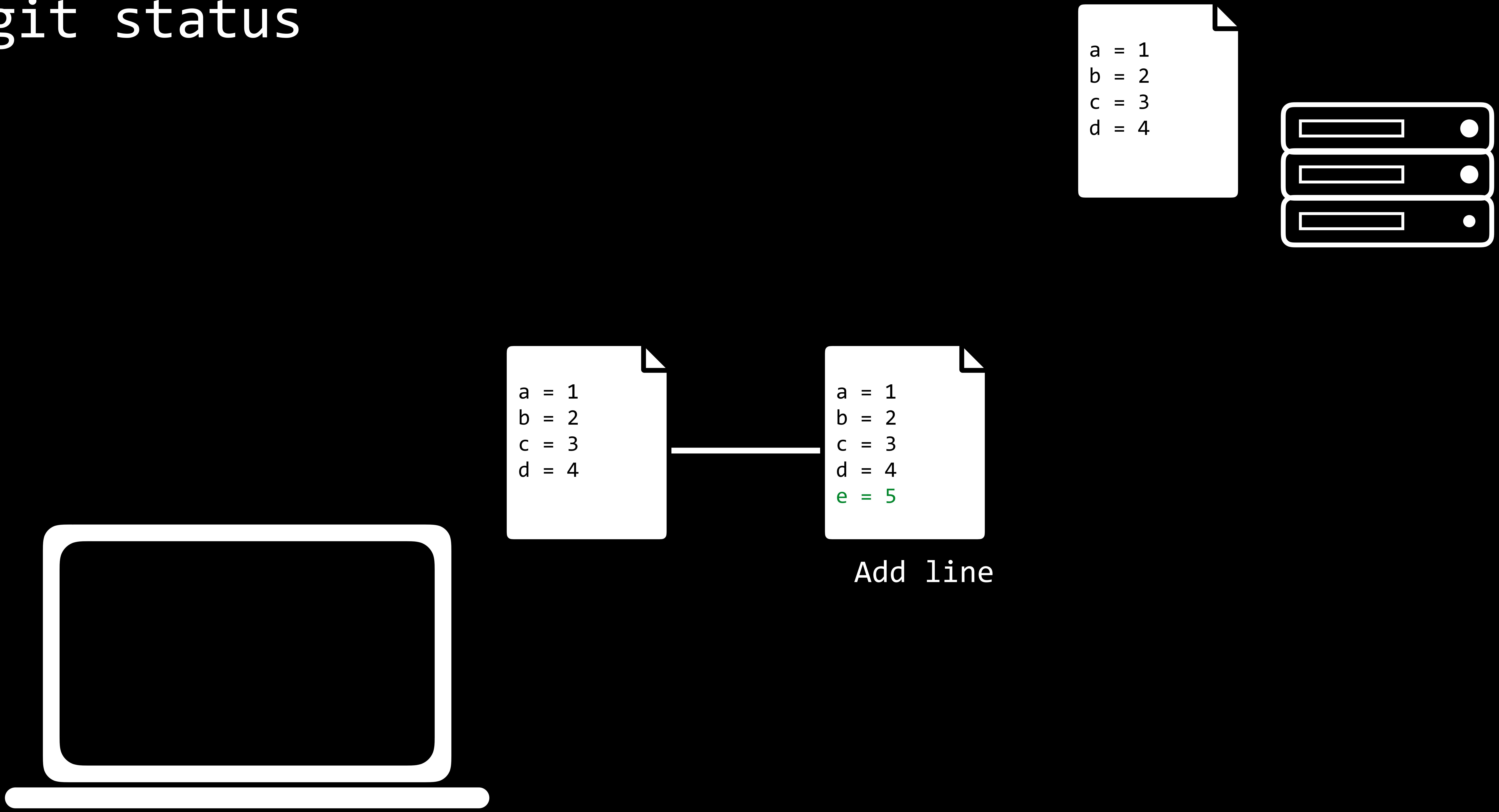
```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

```
git status
```

git status



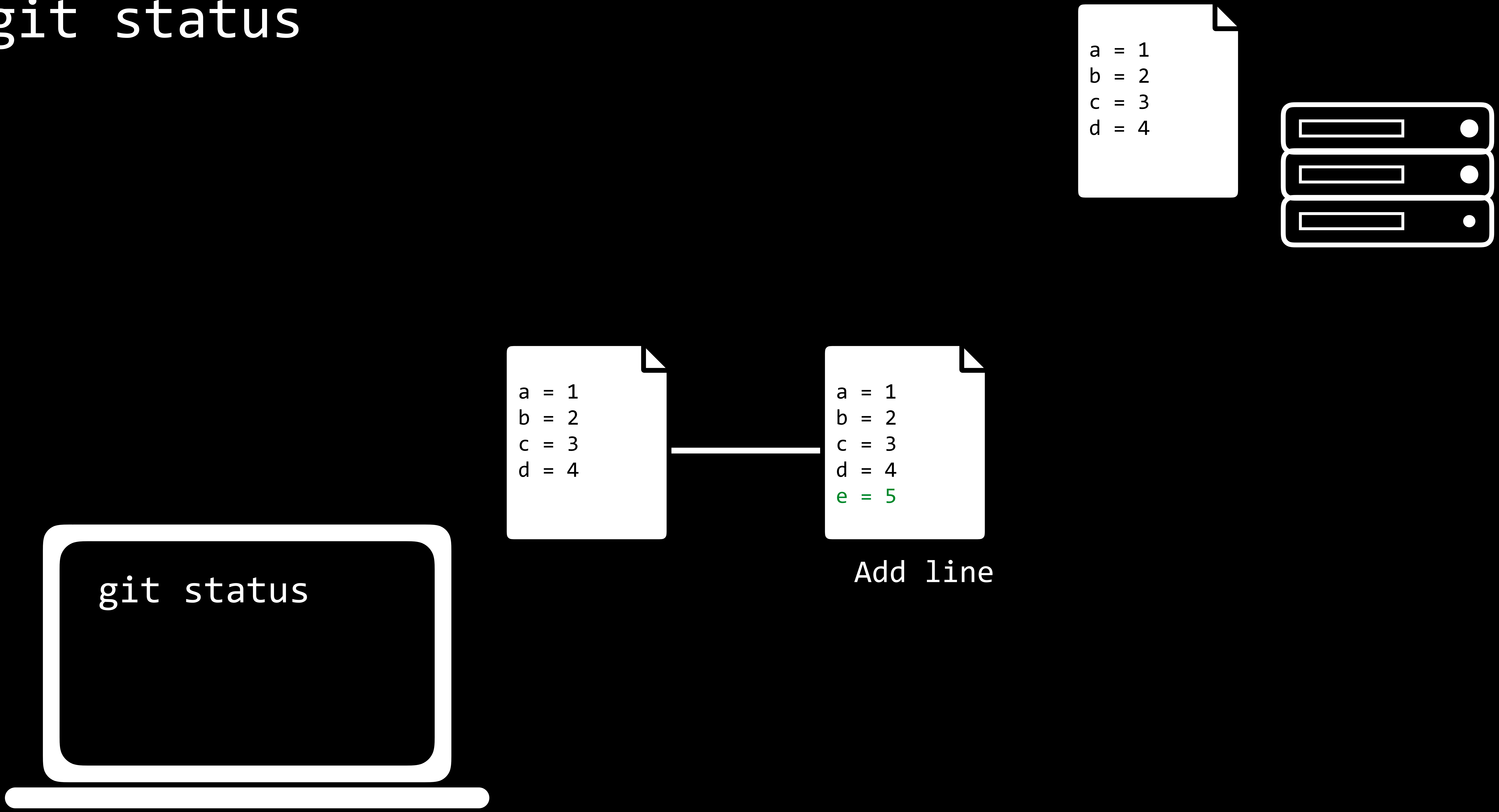
```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

git status



```
a = 1
b = 2
c = 3
d = 4
```

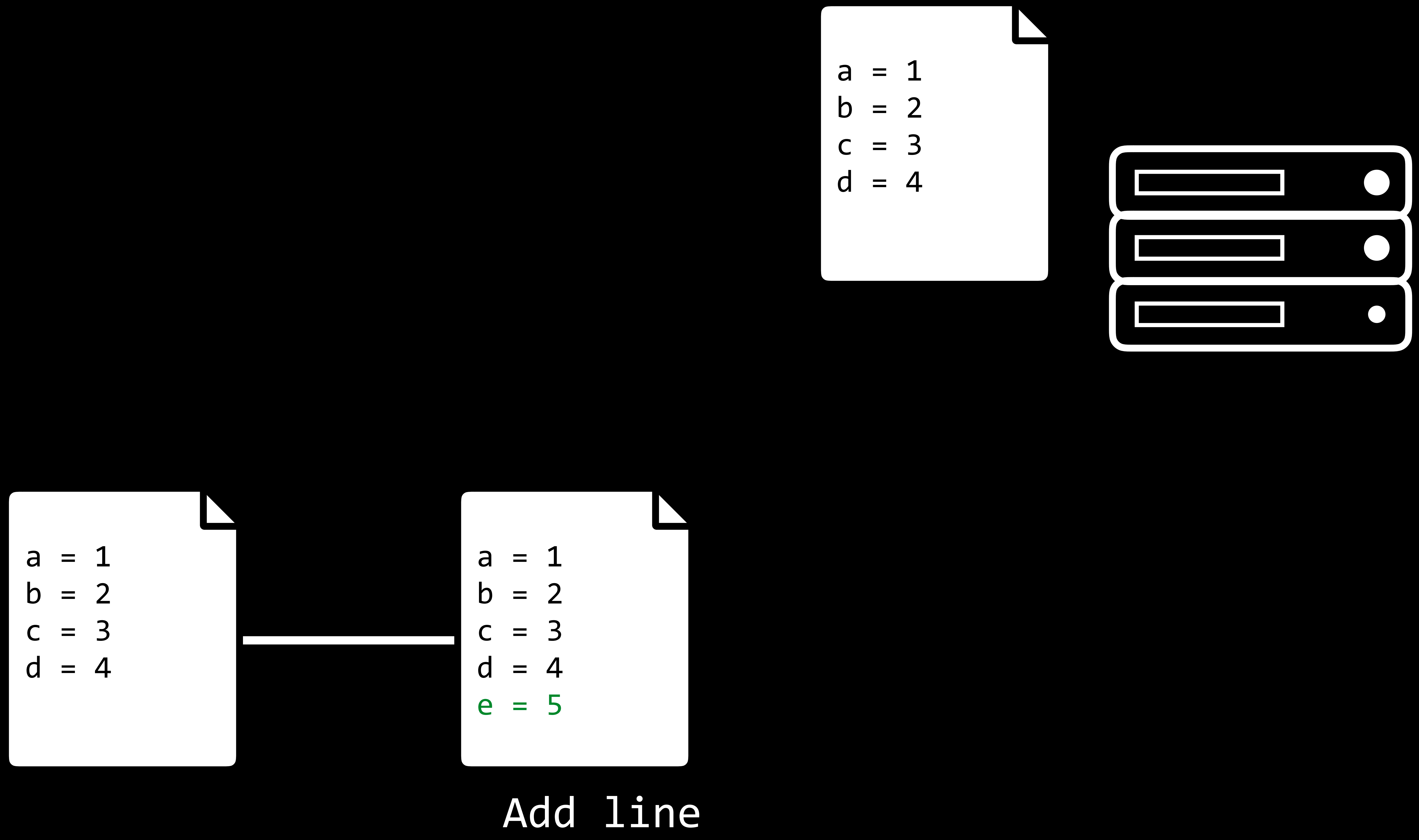
```
git status
```

```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

git status

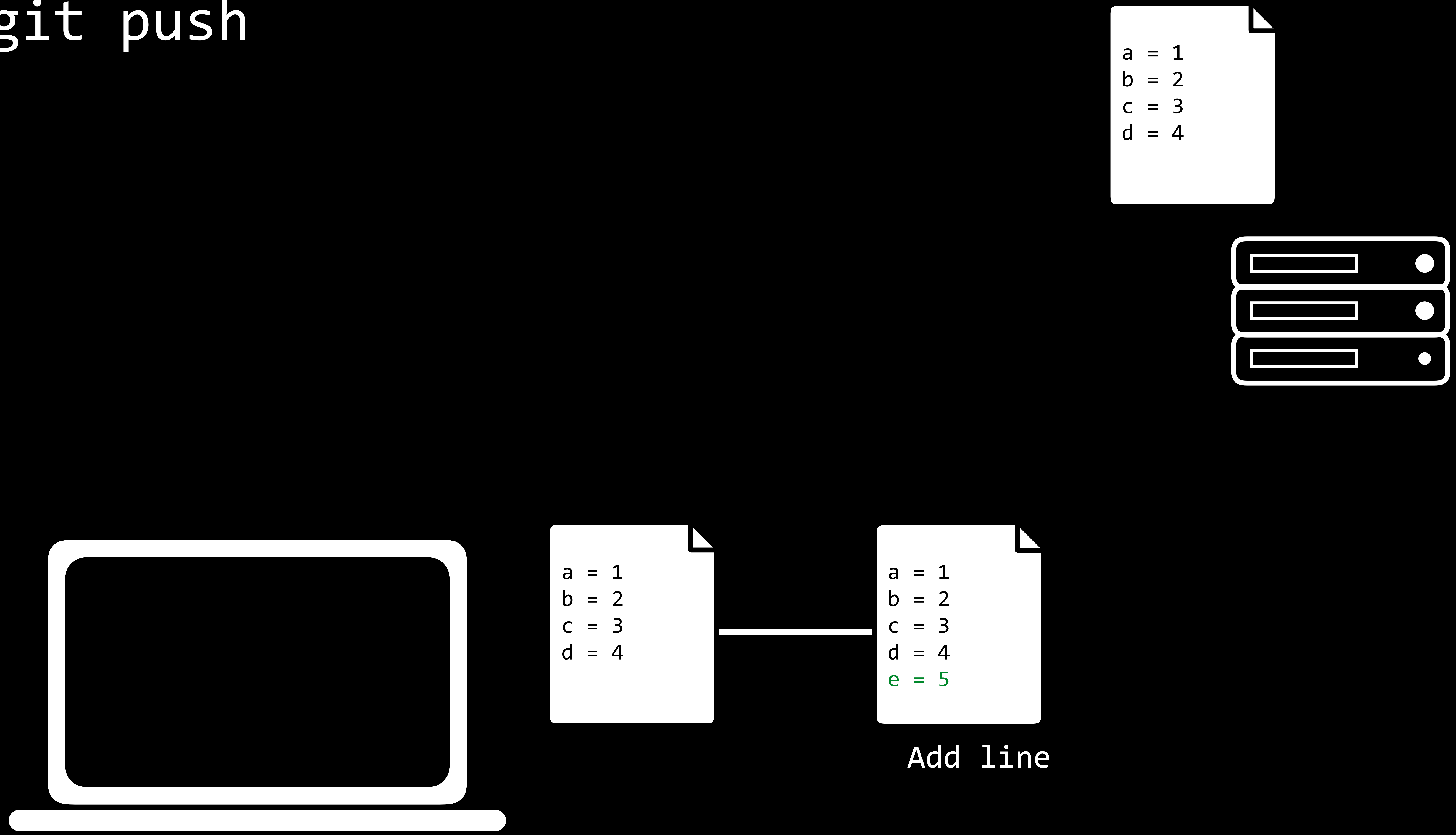


```
git status
```

```
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)
```

```
git push
```

git push



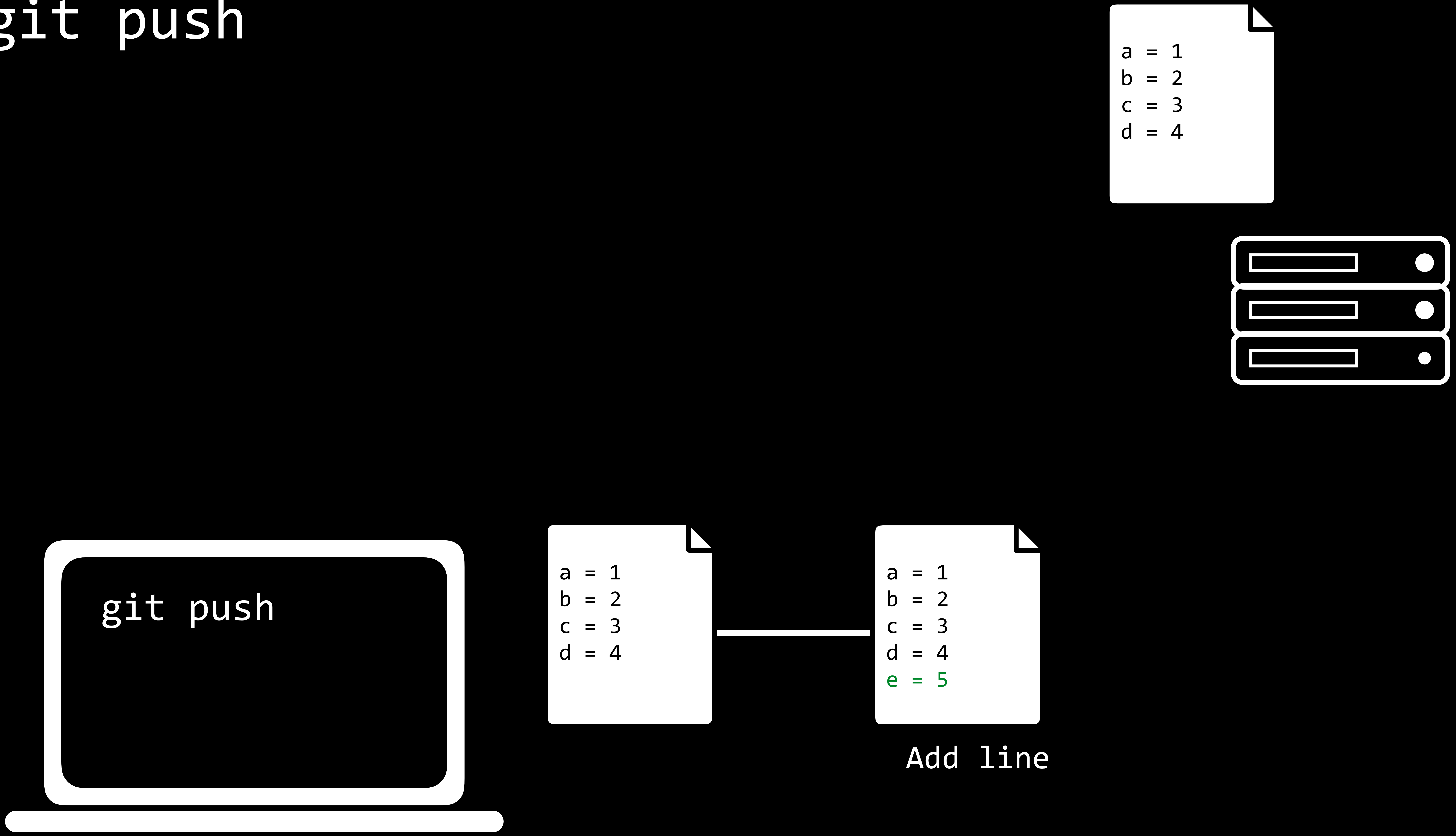
```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

git push



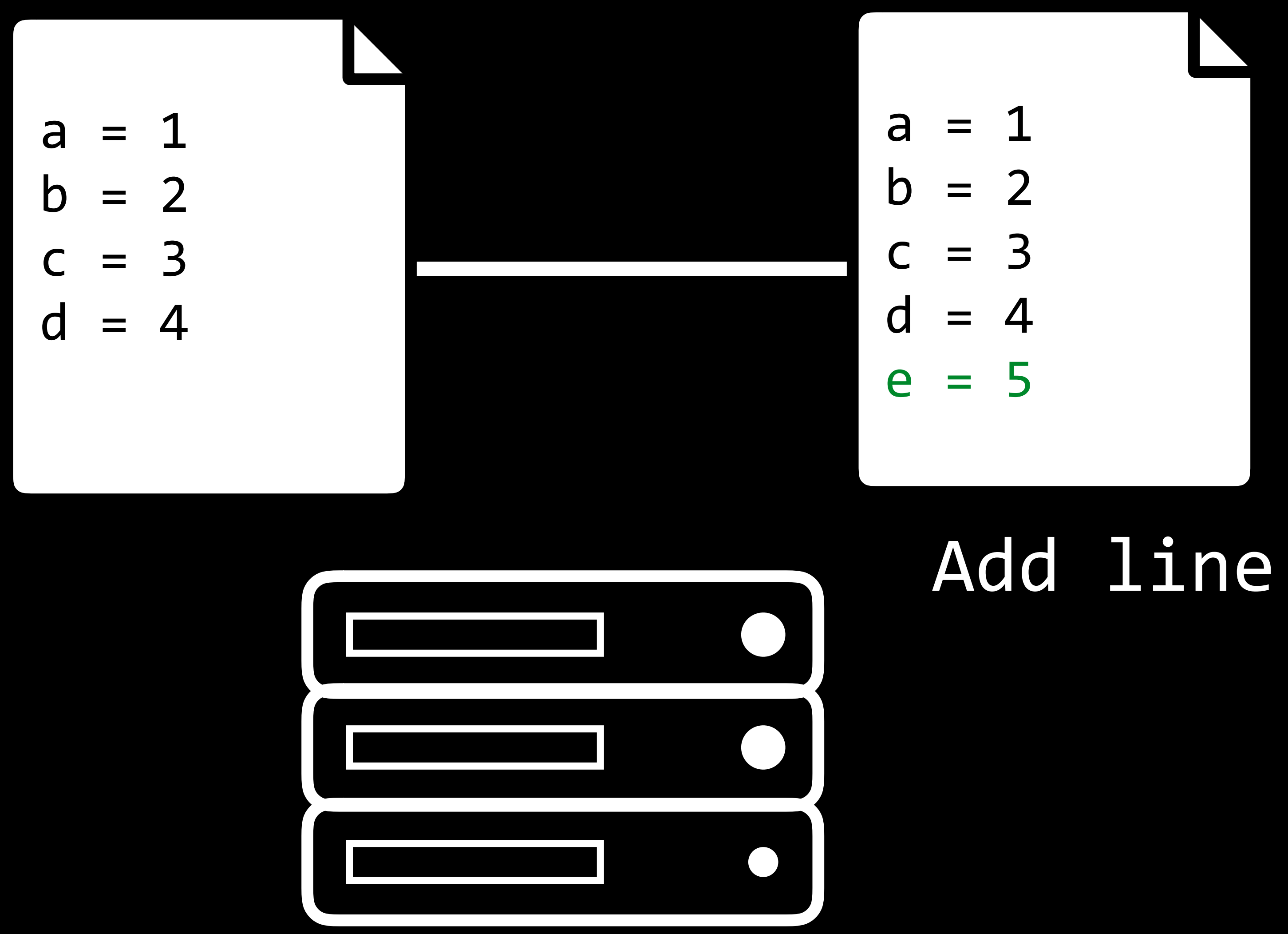
```
a = 1
b = 2
c = 3
d = 4
```

```
git push
```

```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

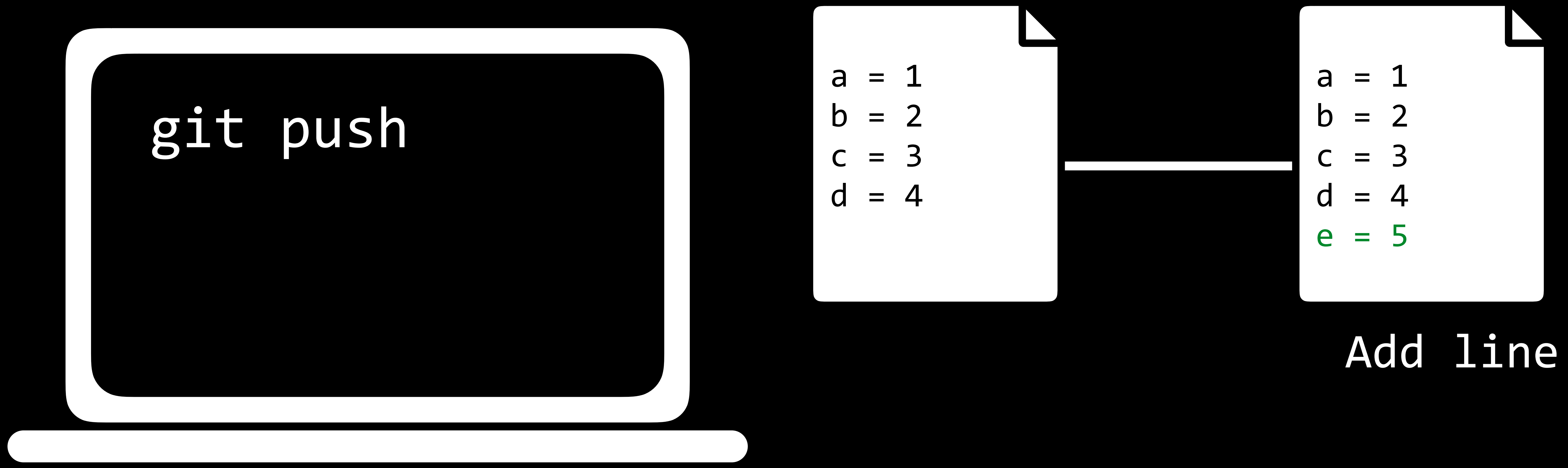
git push



```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line



```
git push
```

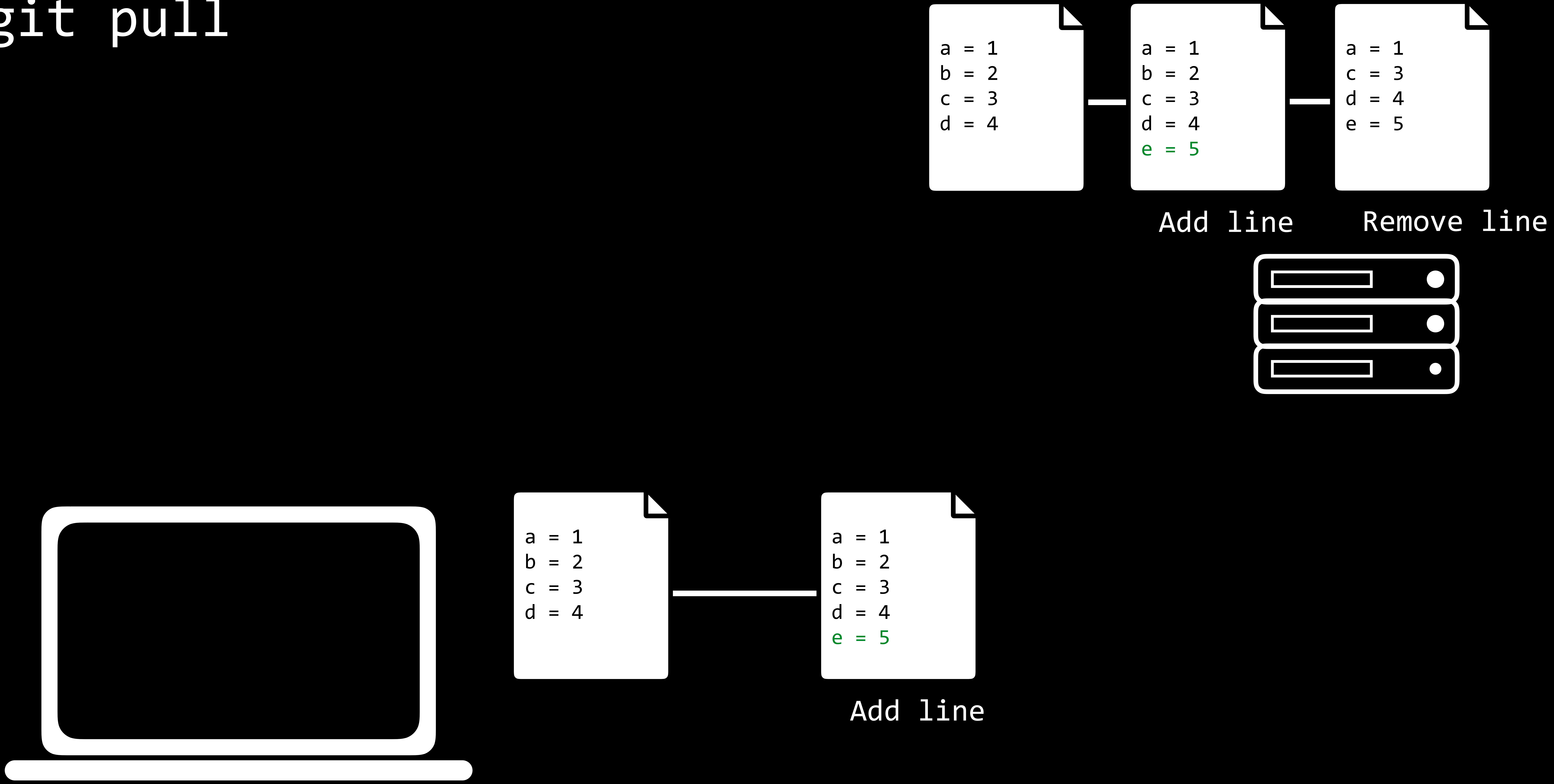
```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

```
git pull
```

git pull



```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

```
a = 1
c = 3
d = 4
e = 5
```

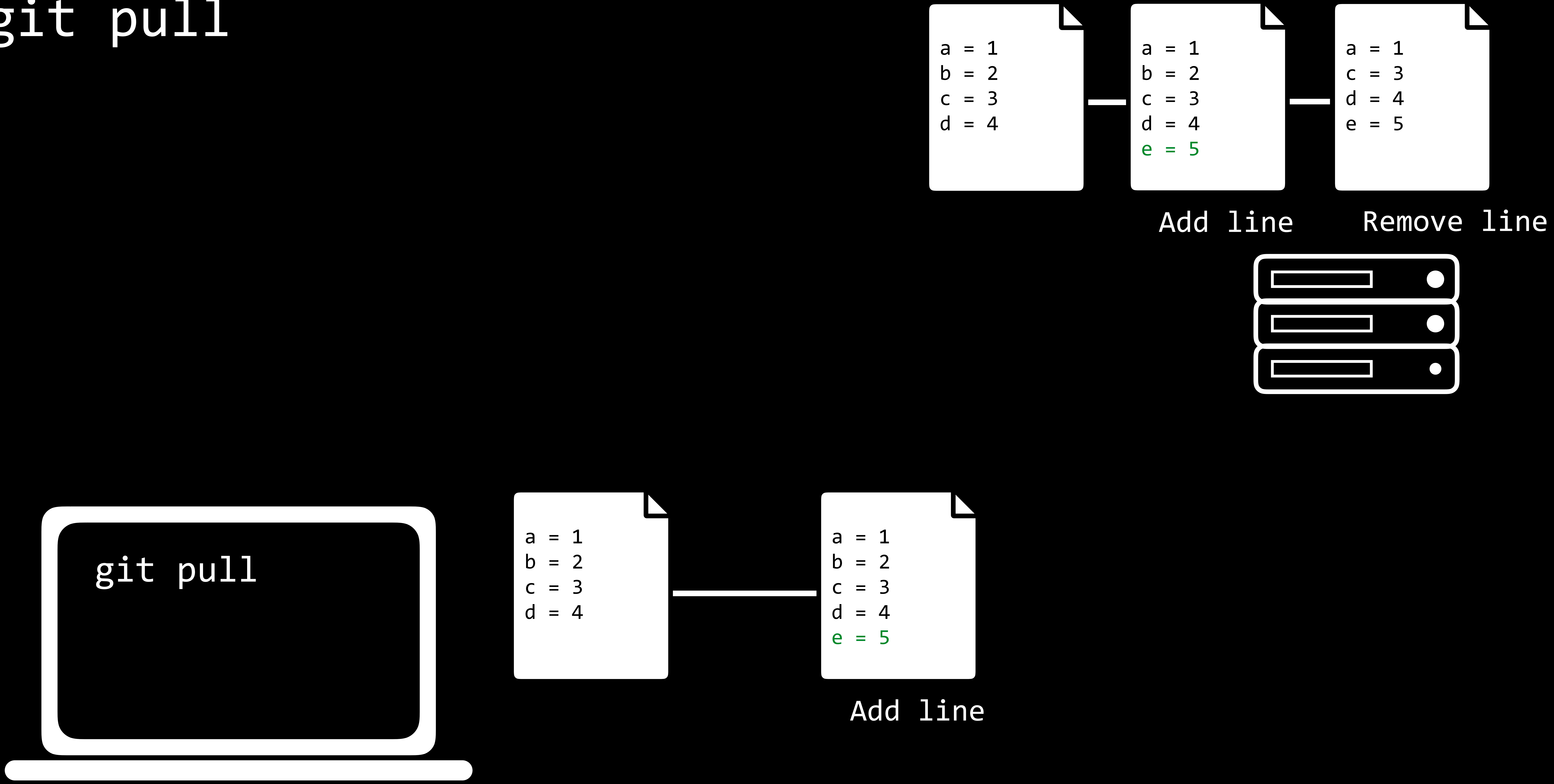
Remove line

```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

git pull



```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

```
a = 1
c = 3
d = 4
e = 5
```

Remove line

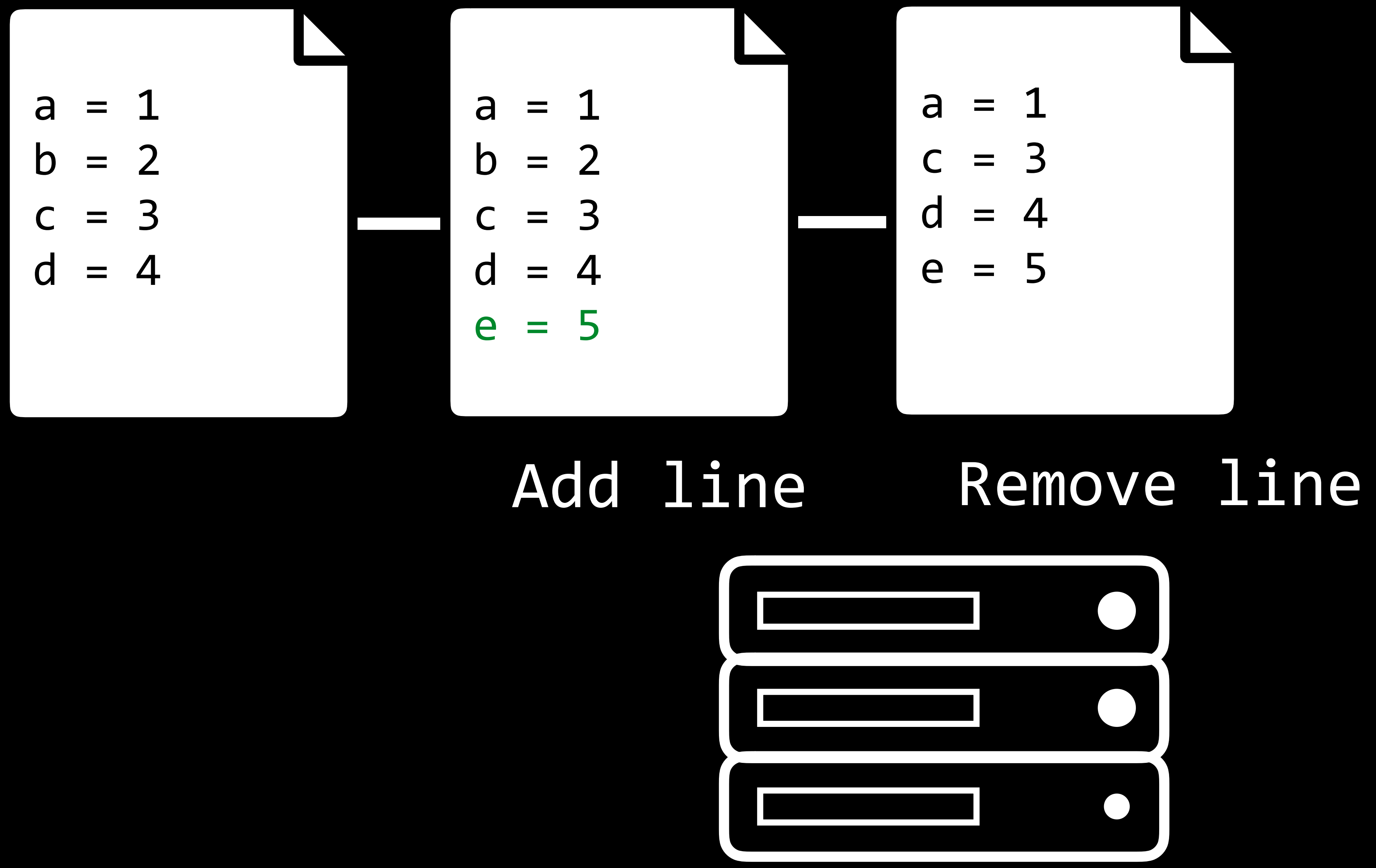
```
git pull
```

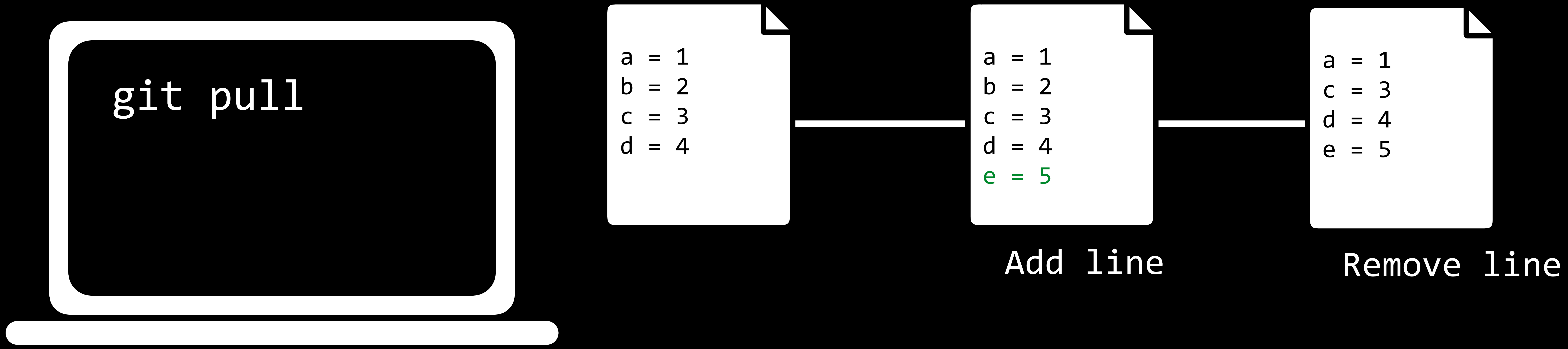
```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line

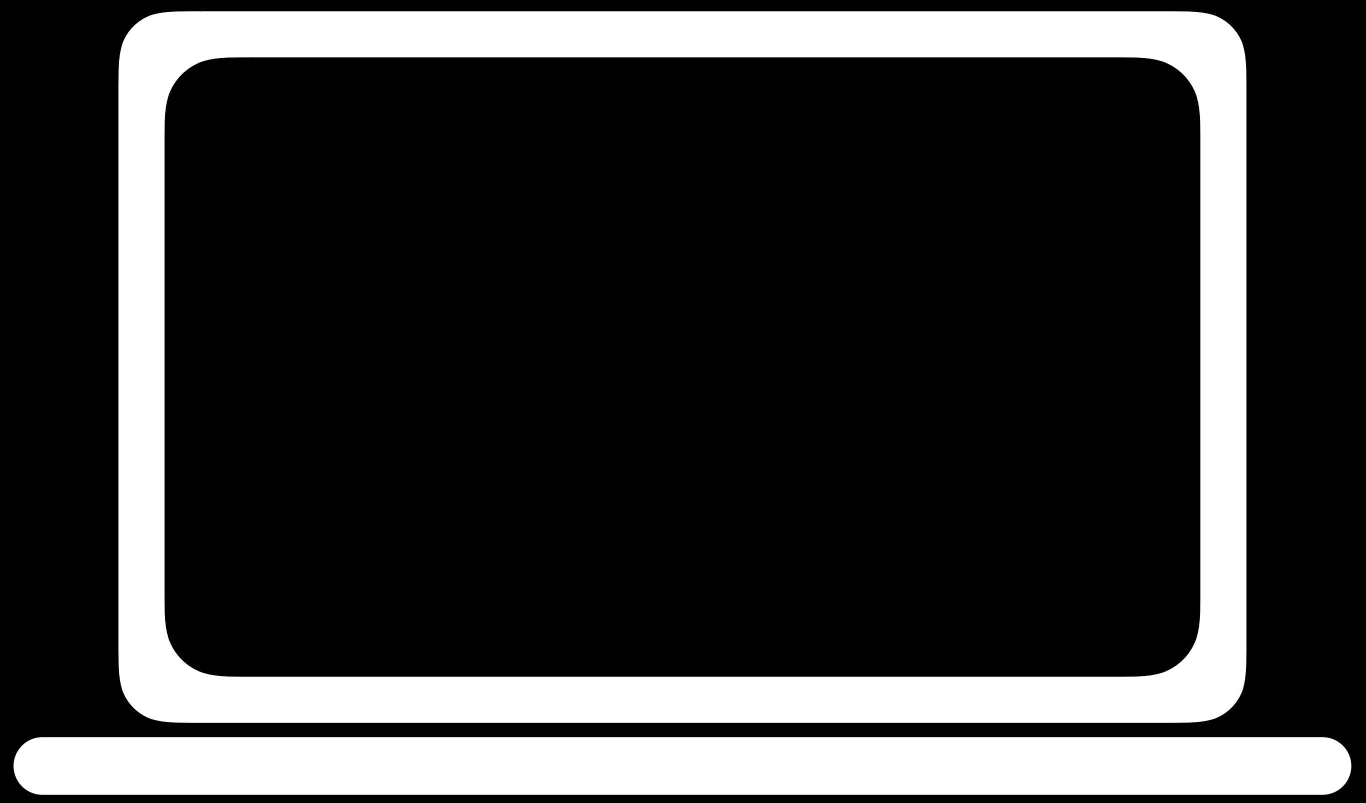
git pull


a = 1
b = 2
c = 3
d = 4
a = 1
b = 2
c = 3
d = 4
e = 5
Add line
a = 1
c = 3
d = 4
e = 5
Remove line


git pull
a = 1
b = 2
c = 3
d = 4
a = 1
b = 2
c = 3
d = 4
e = 5
Add line
a = 1
c = 3
d = 4
e = 5
Remove line

Merge Conflicts

Merge Conflicts



Merge Conflicts

```
git pull
```

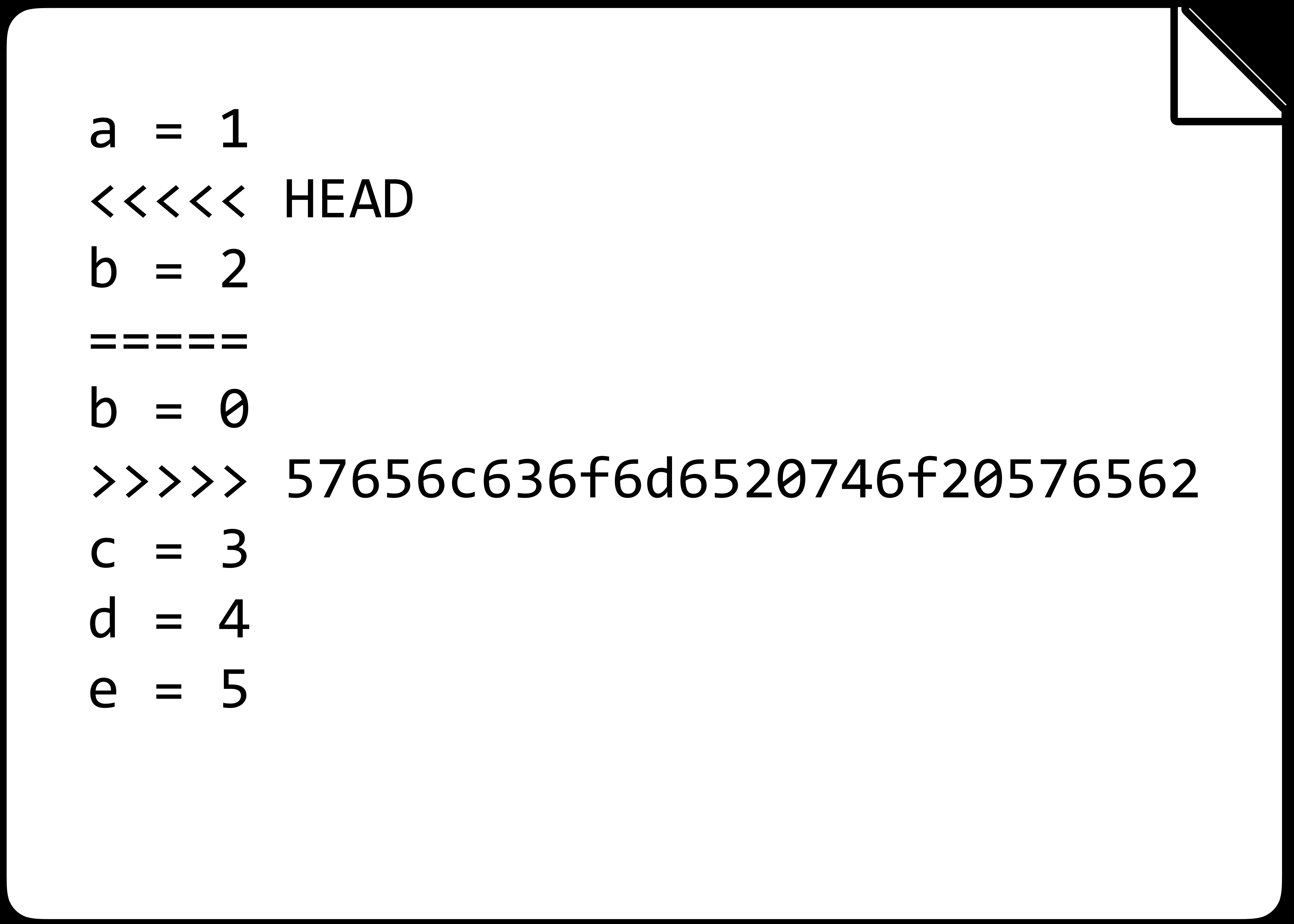
Merge Conflicts

```
git pull
```

```
CONFLICT (content): Merge conflict in foo.py
Automatic merge failed; fix conflicts and then
commit the result.
```

Merge Conflicts

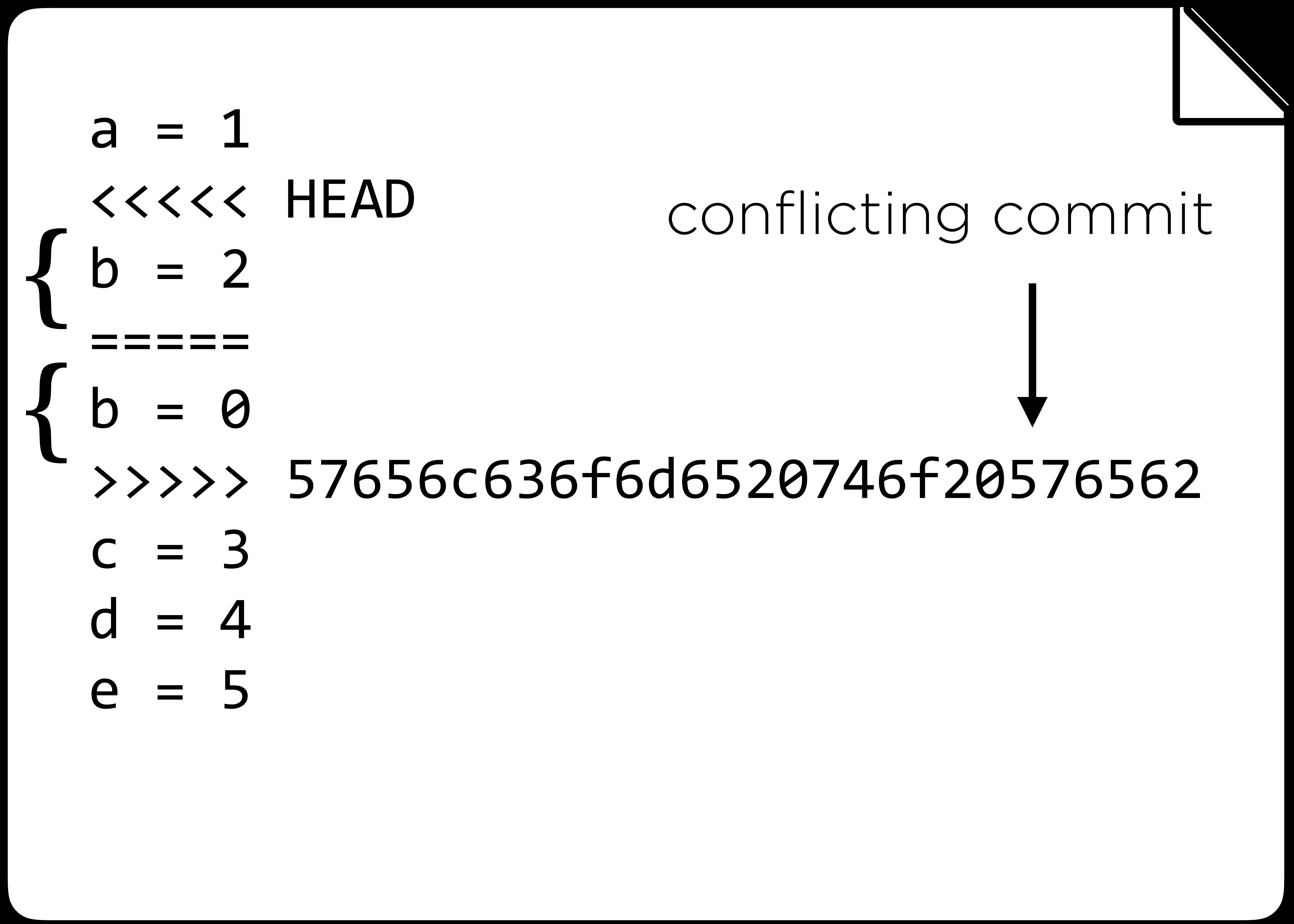
```
git pull
```



```
a = 1
<<<<< HEAD
b = 2
=====
b = 0
>>>>> 57656c636f6d6520746f20576562
c = 3
d = 4
e = 5
```

Merge Conflicts

```
git pull
```



```
a = 1
<<<<< HEAD
b = 2
=====
b = 0
>>>>> 57656c636f6d6520746f20576562
c = 3
d = 4
e = 5
```

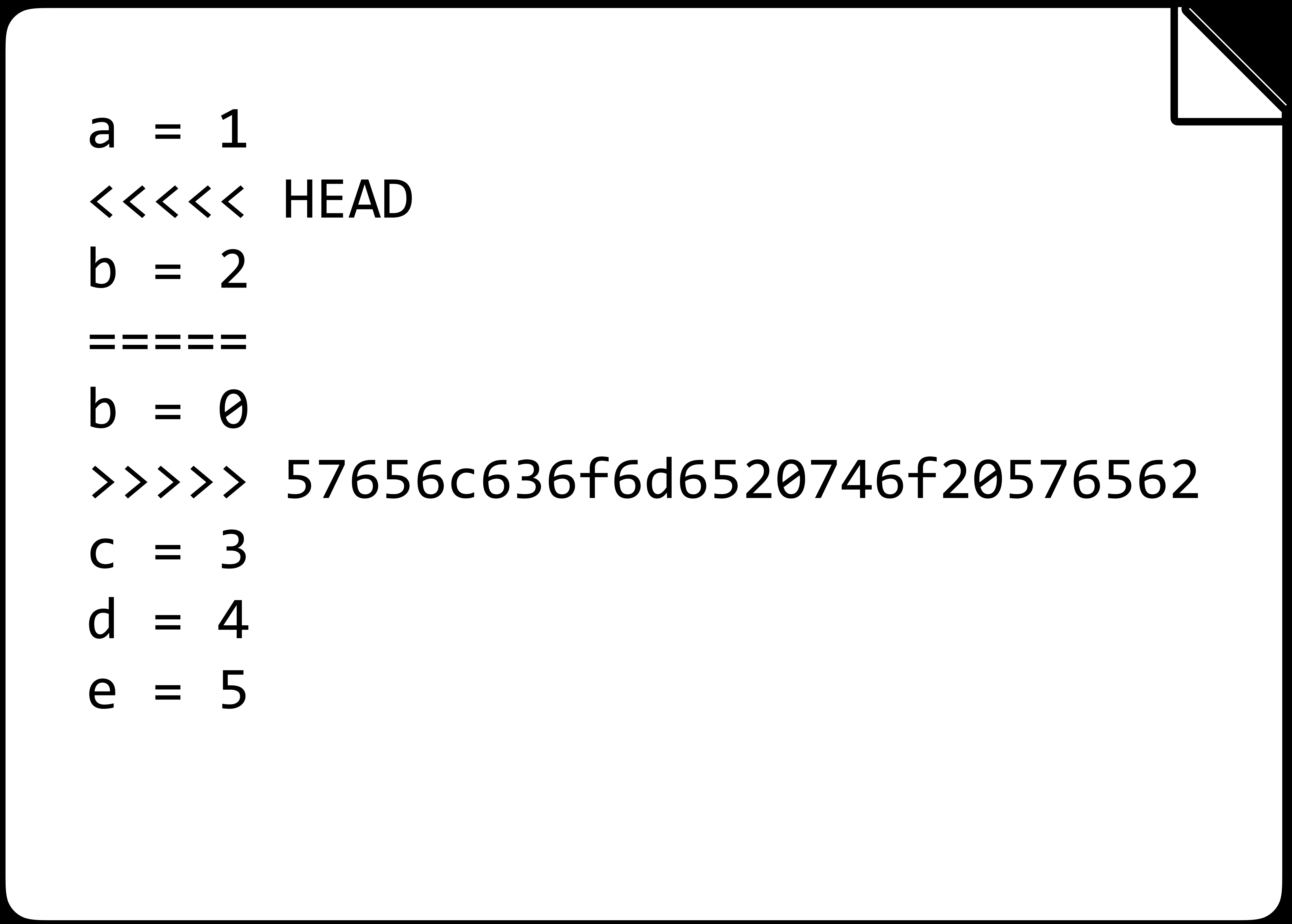
your changes

remote changes

conflicting commit

Merge Conflicts

```
git pull
```



```
a = 1
<<<<< HEAD
b = 2
=====
b = 0
>>>>> 57656c636f6d6520746f20576562
c = 3
d = 4
e = 5
```

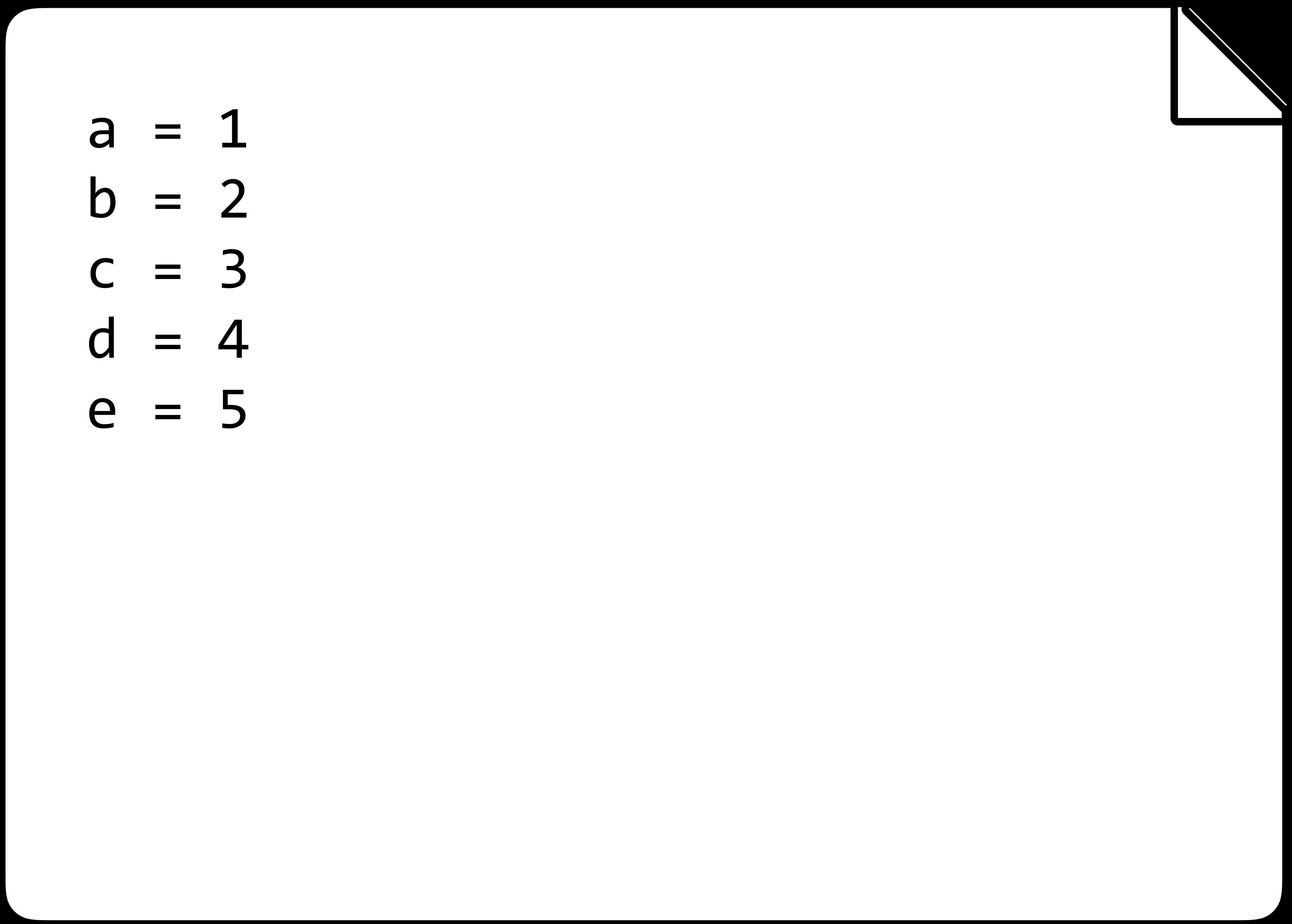
Merge Conflicts

```
git pull
```

```
a = 1

b = 2




c = 3
d = 4
e = 5
```

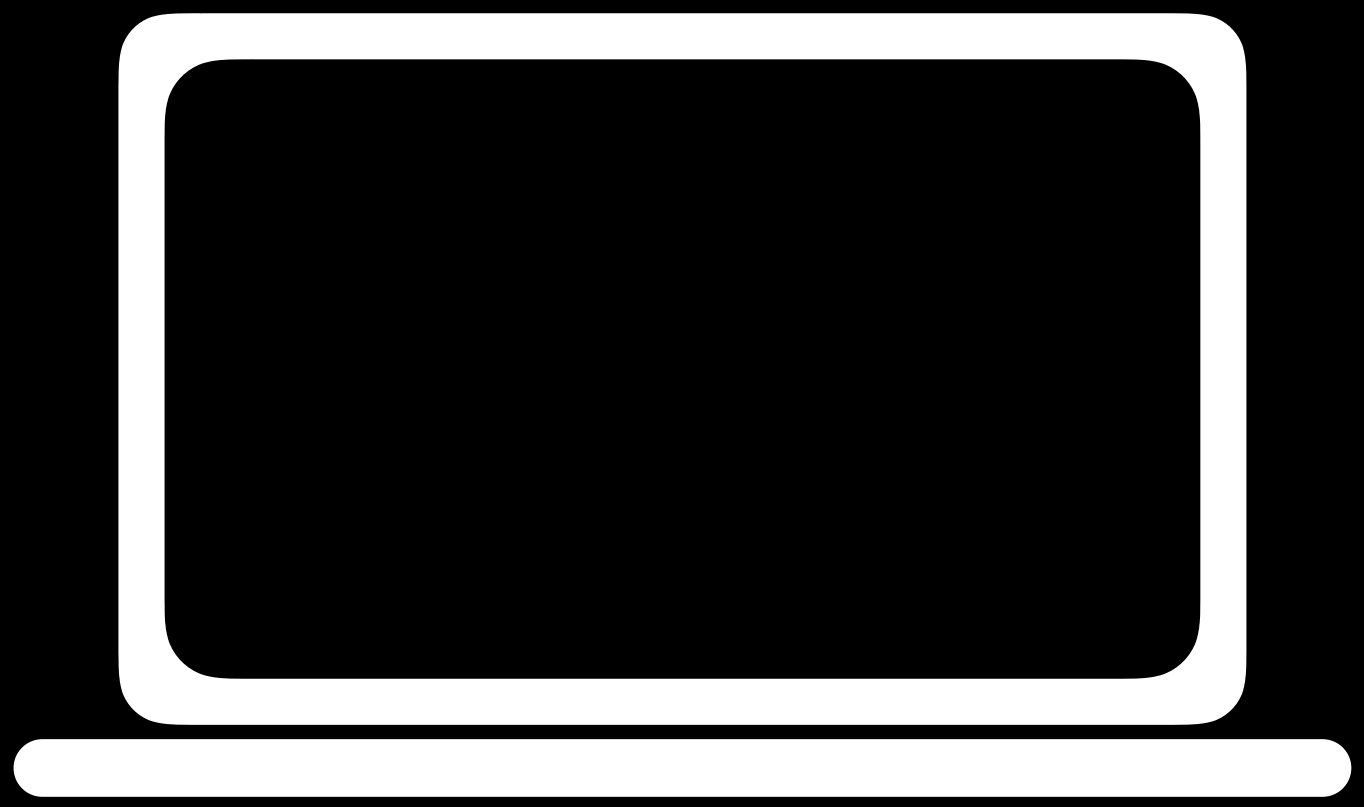
Merge Conflicts

```
git pull
```



```
a = 1
b = 2
c = 3
d = 4
e = 5
```

```
git log
git log
```



git log

```
git log
```

git log

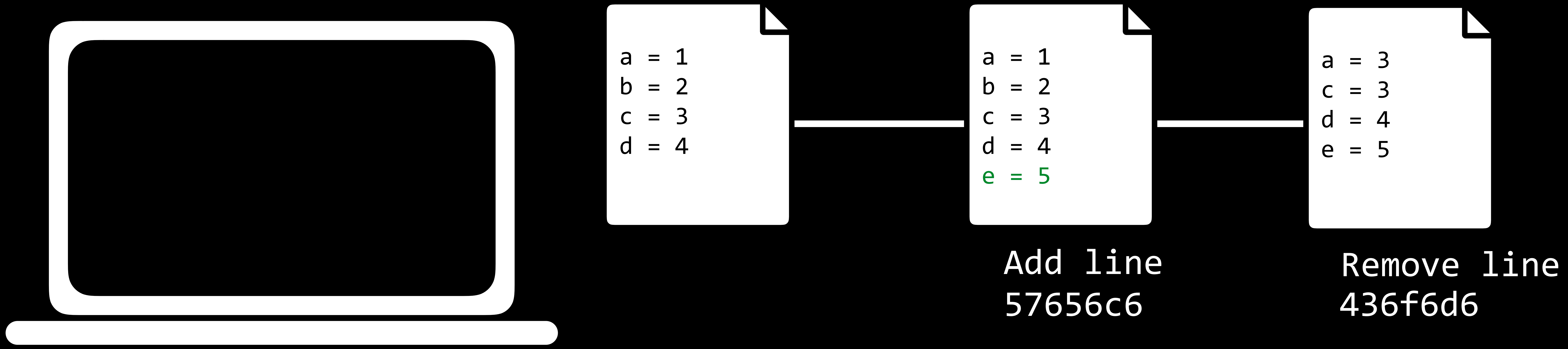
```
git log
```

```
commit 436f6d6974204d73672048657265
Author: Brian Yu <brian@cs.harvard.edu>
Date:   Tue Jan 14 14:06:28 2020 -0400

    Remove a line

commit 57656c636f6d6520746f20576562
Author: Brian Yu <brian@cs.harvard.edu>
Date:   Tue Jan 14 14:05:28 2020 -0400

    Add a line
```

```
git reset
```

git reset

- git reset --hard <commit>
- git reset --hard origin/master



```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

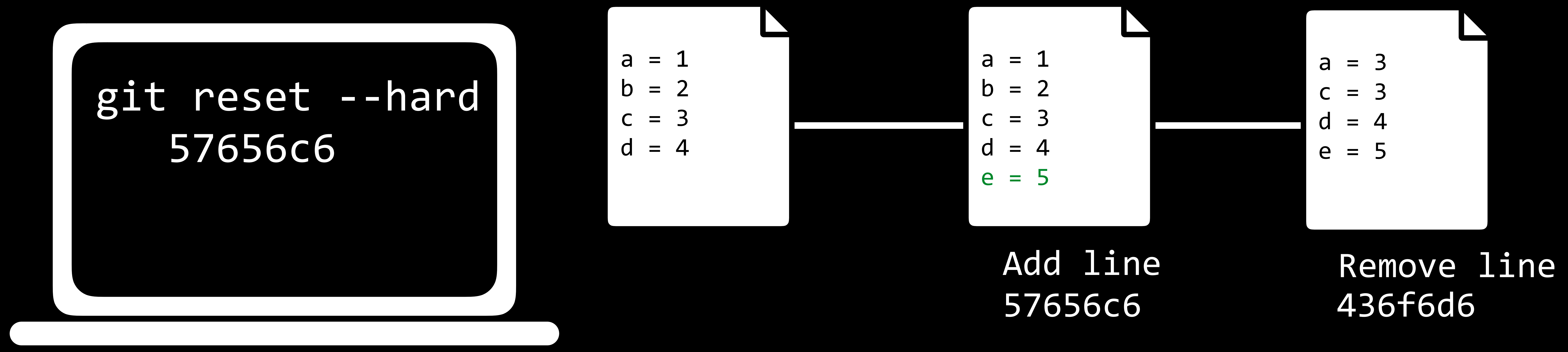
```
a = 3
c = 3
d = 4
e = 5
```

Add line
57656c6

Remove line
436f6d6

git reset

- `git reset --hard <commit>`
- `git reset --hard origin/master`



```
git reset --hard
    57656c6
```

```
a = 1
b = 2
c = 3
d = 4
```

```
a = 1
b = 2
c = 3
d = 4
e = 5
```

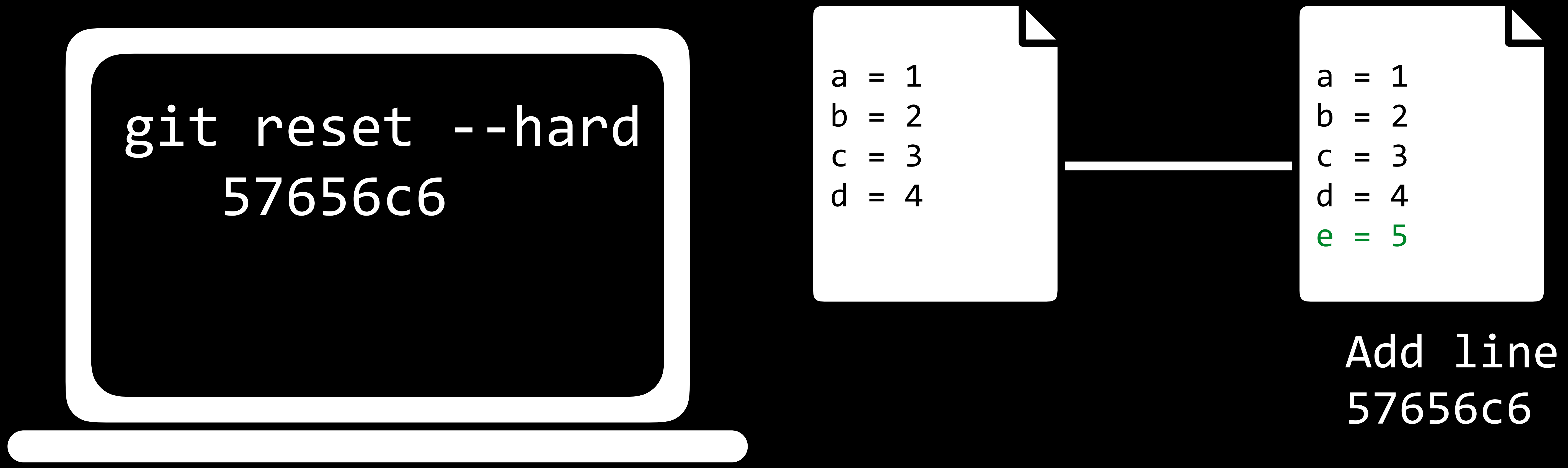
Add line
57656c6

```
a = 3
c = 3
d = 4
e = 5
```

Remove line
436f6d6

git reset

- `git reset --hard <commit>`
- `git reset --hard origin/master`



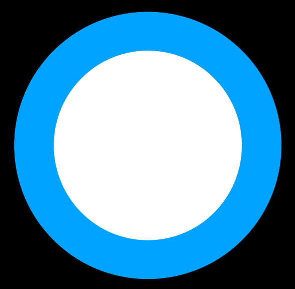
```
git reset --hard
   57656c6
```

```
a = 1
b = 2
c = 3
d = 4
```

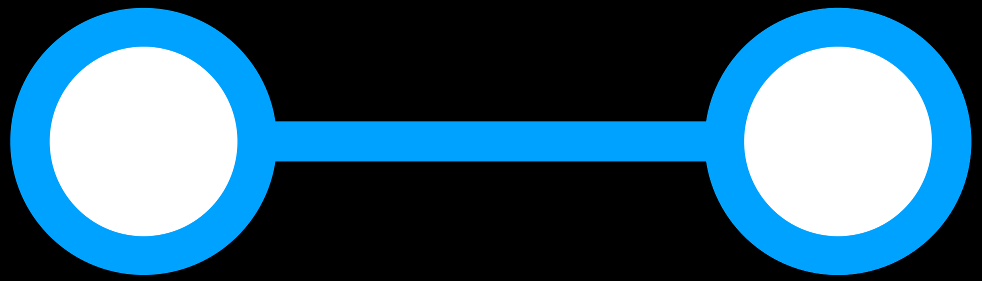
```
a = 1
b = 2
c = 3
d = 4
e = 5
```

Add line
57656c6

Making Changes

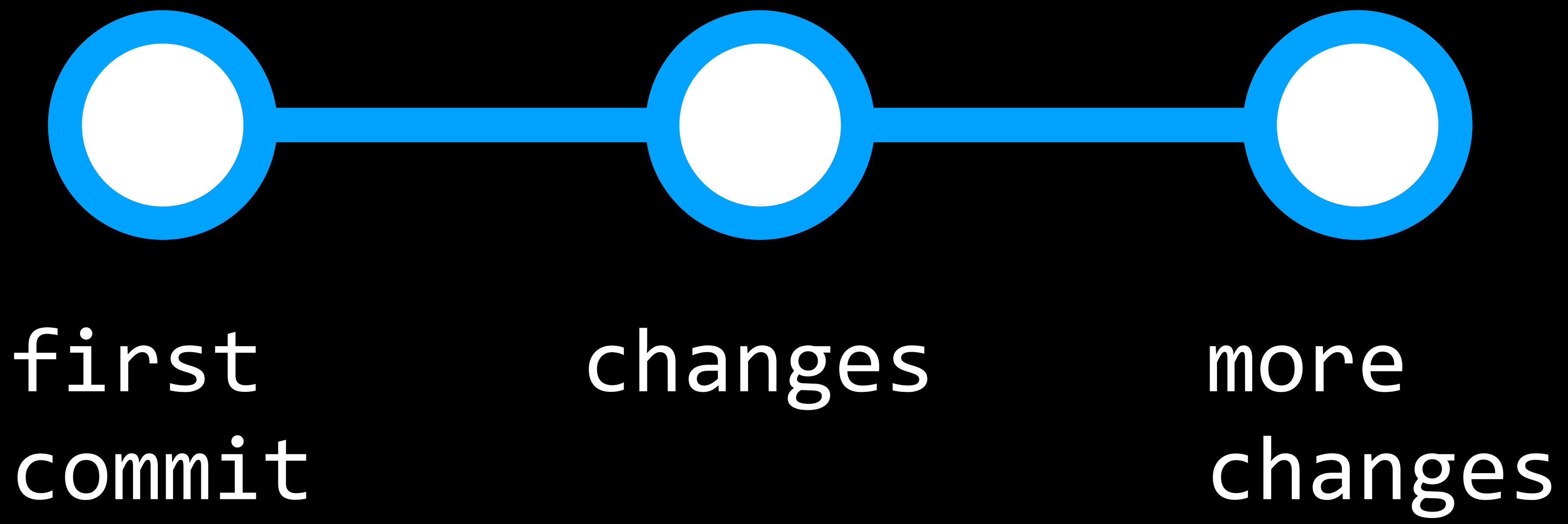


first
commit



first commit

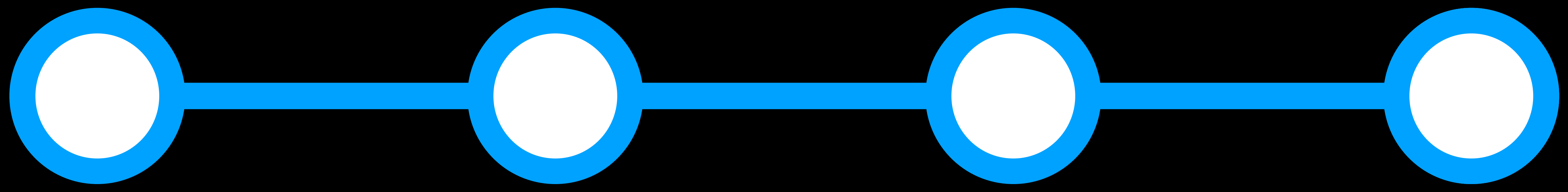
changes



first commit

changes

more changes

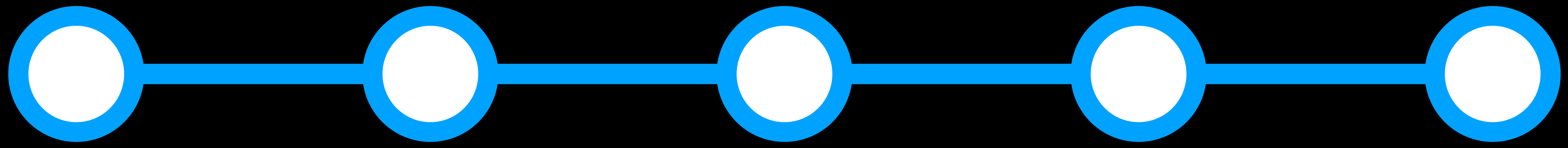


first
commit

changes

more
changes

start new
feature



first commit

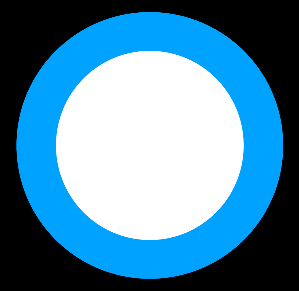
changes

more changes

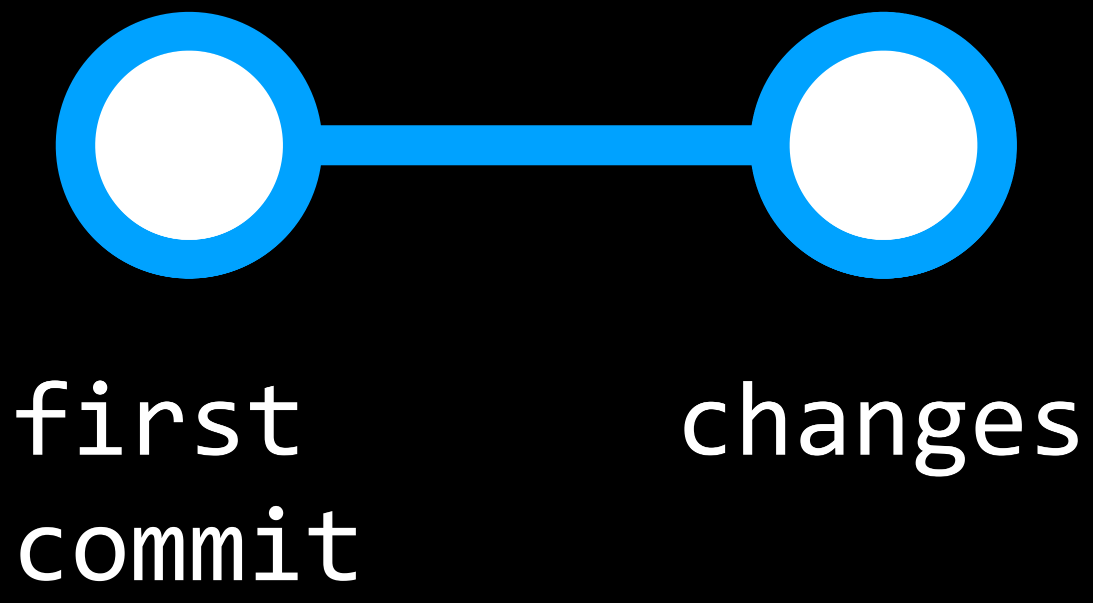
start new feature

keep working on new feature

Branching

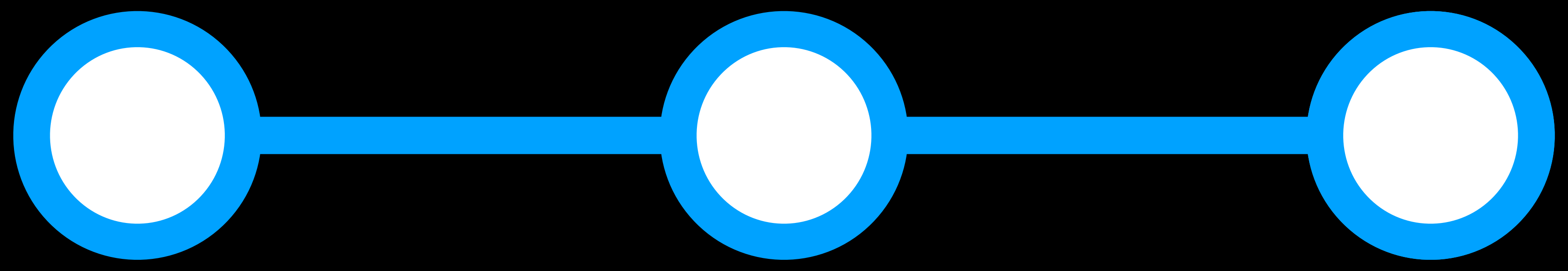


first
commit



first commit

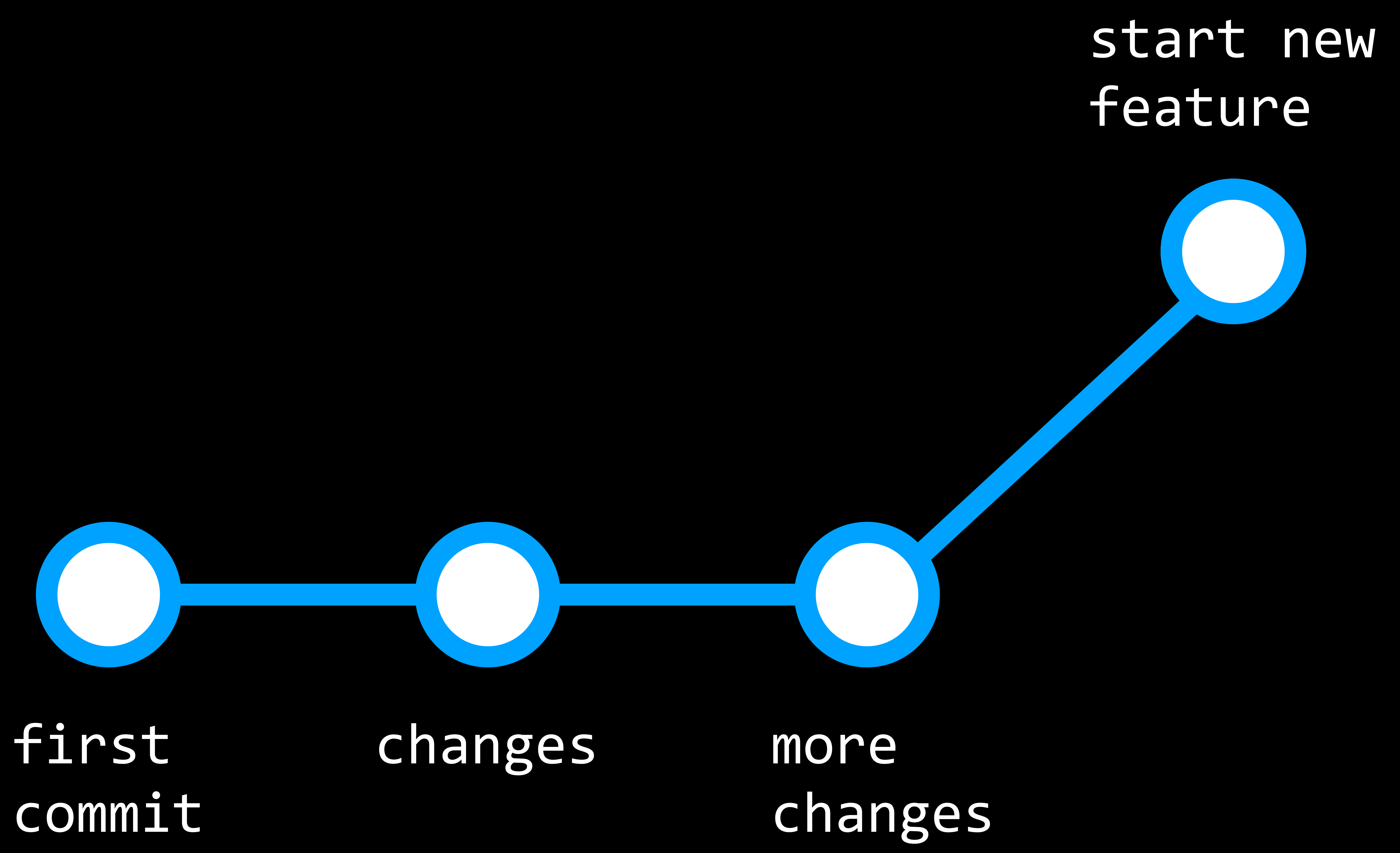
changes

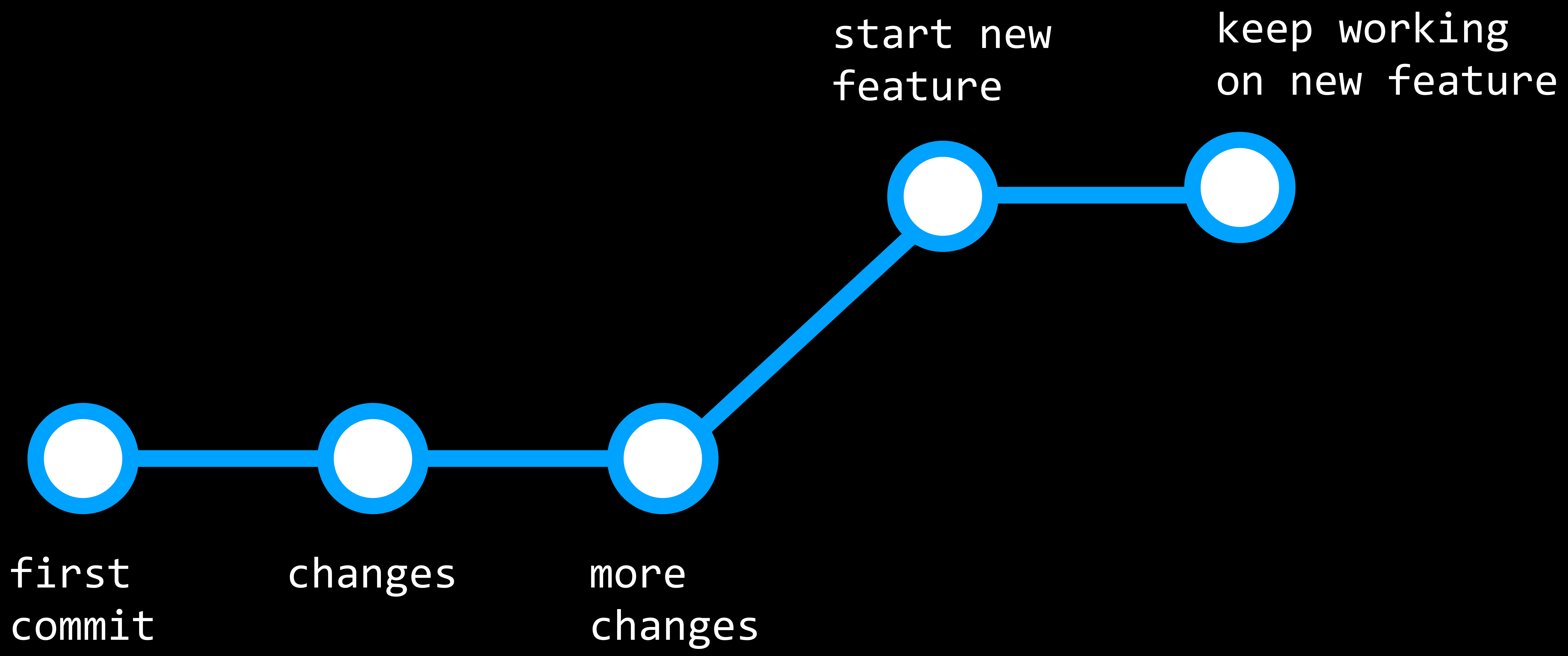


first commit

changes

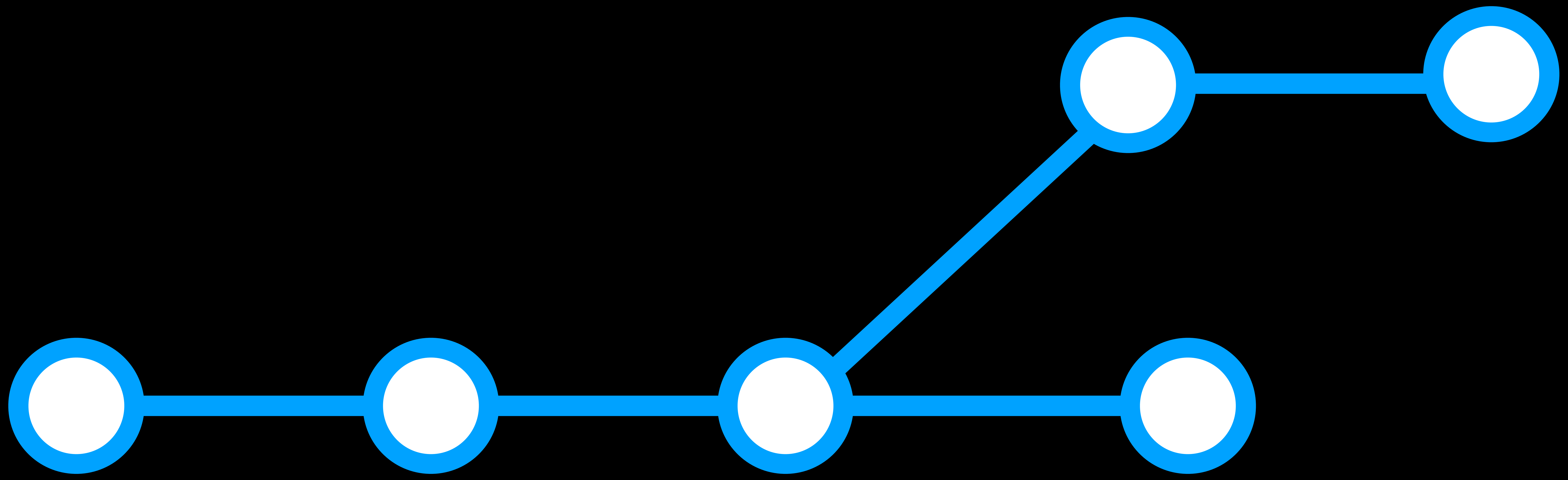
more changes


start new feature
first commit
changes
more changes


start new feature
keep working on new feature
first commit
changes
more changes

start new feature

keep working on new feature

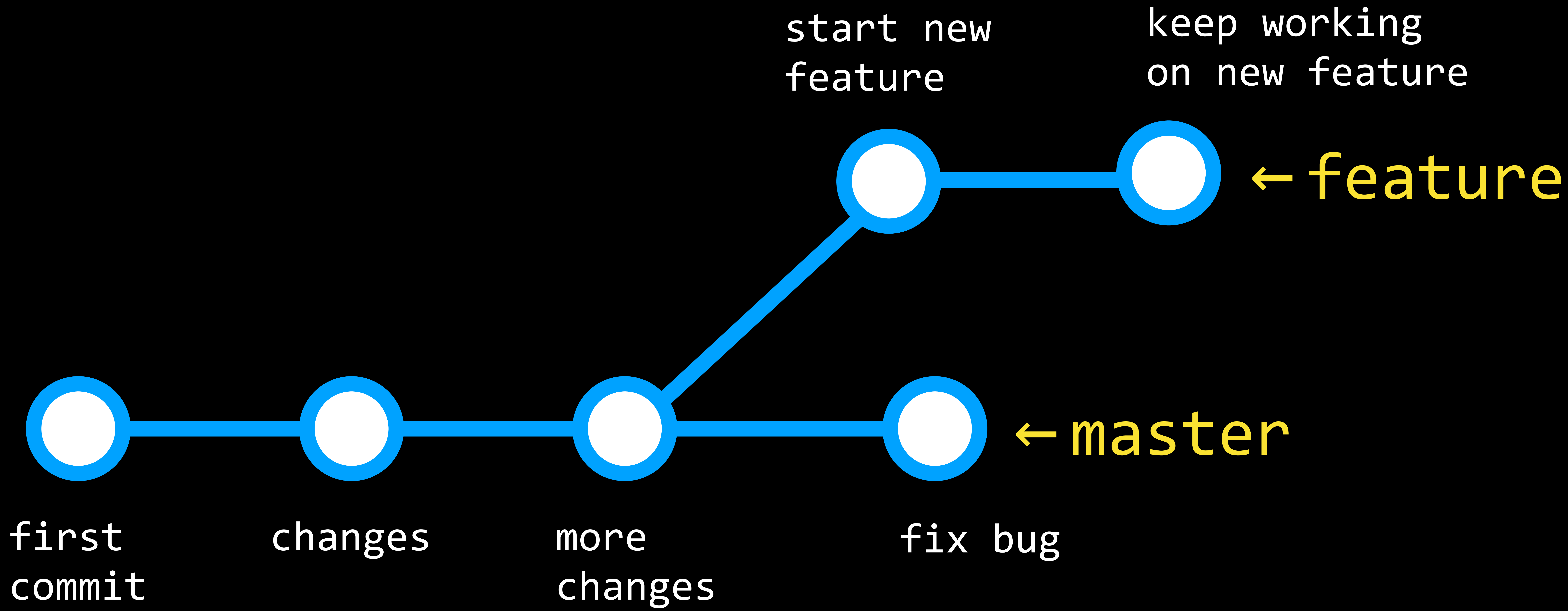


first commit

changes

more changes

fix bug



start new feature

keep working on new feature

← feature

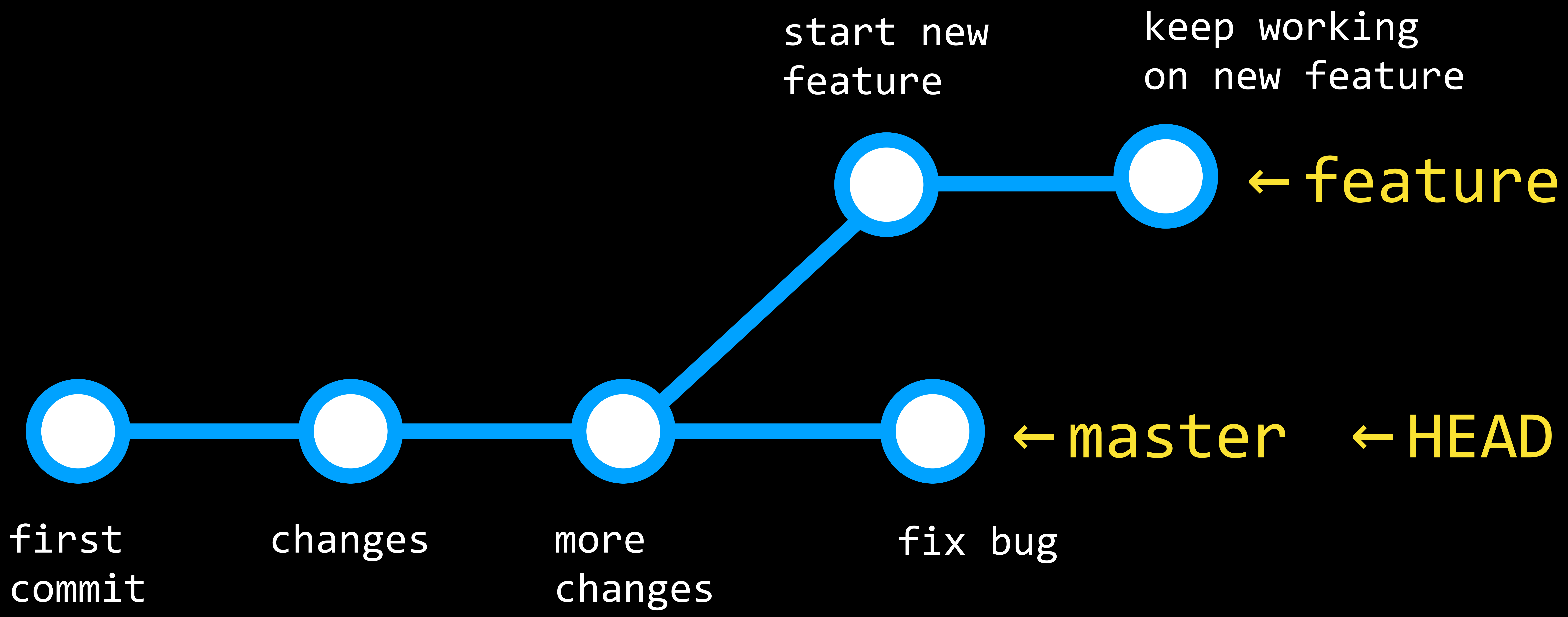
← master

first commit

changes

more changes

fix bug



start new feature

keep working on new feature

← feature

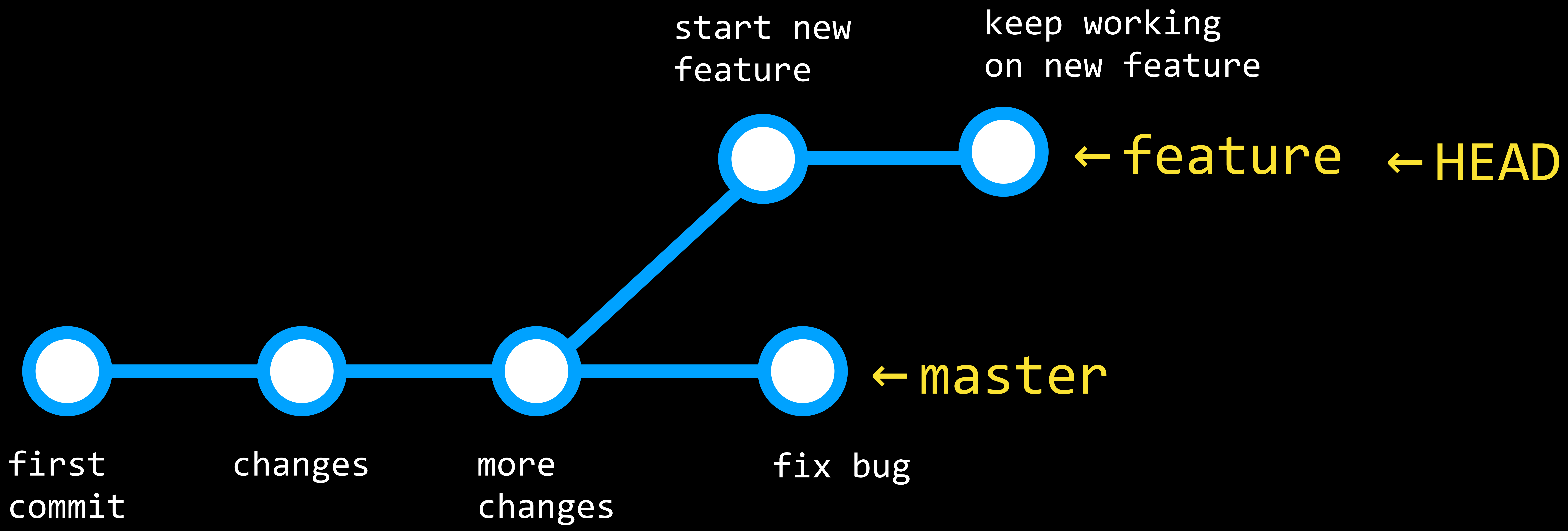
← master ← HEAD

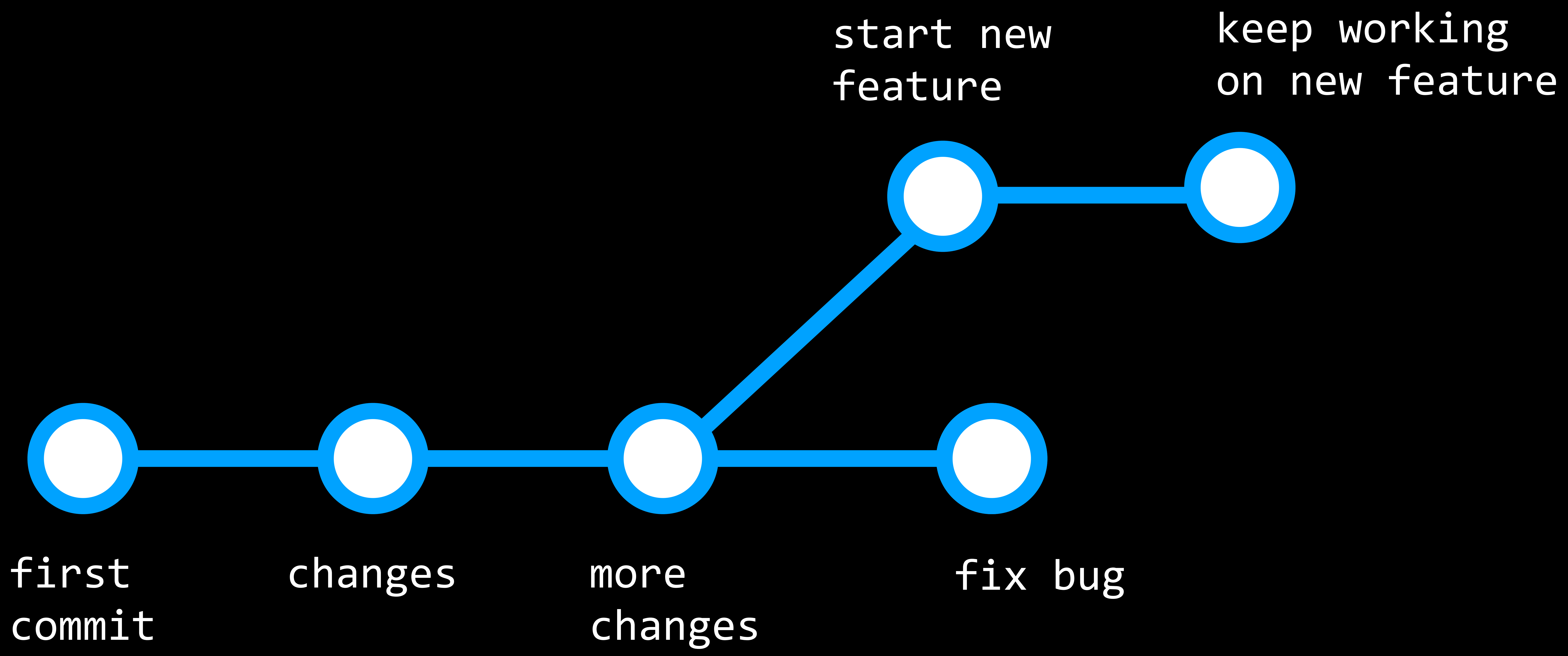
first commit

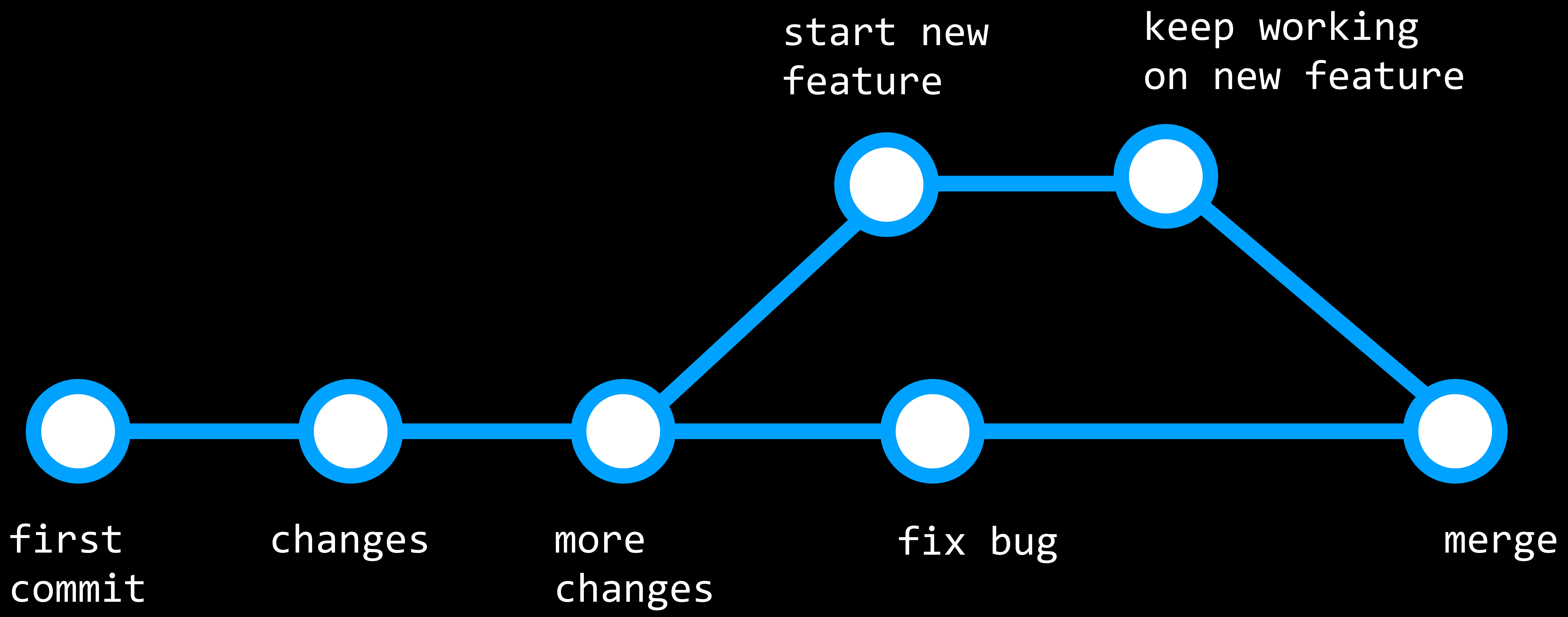
changes

more changes

fix bug


start new feature
keep working on new feature
← feature
← HEAD
← master
first commit
changes
more changes
fix bug


start new feature
keep working on new feature
first commit
changes
more changes
fix bug


start new feature
keep working on new feature
first commit
changes
more changes
fix bug
merge

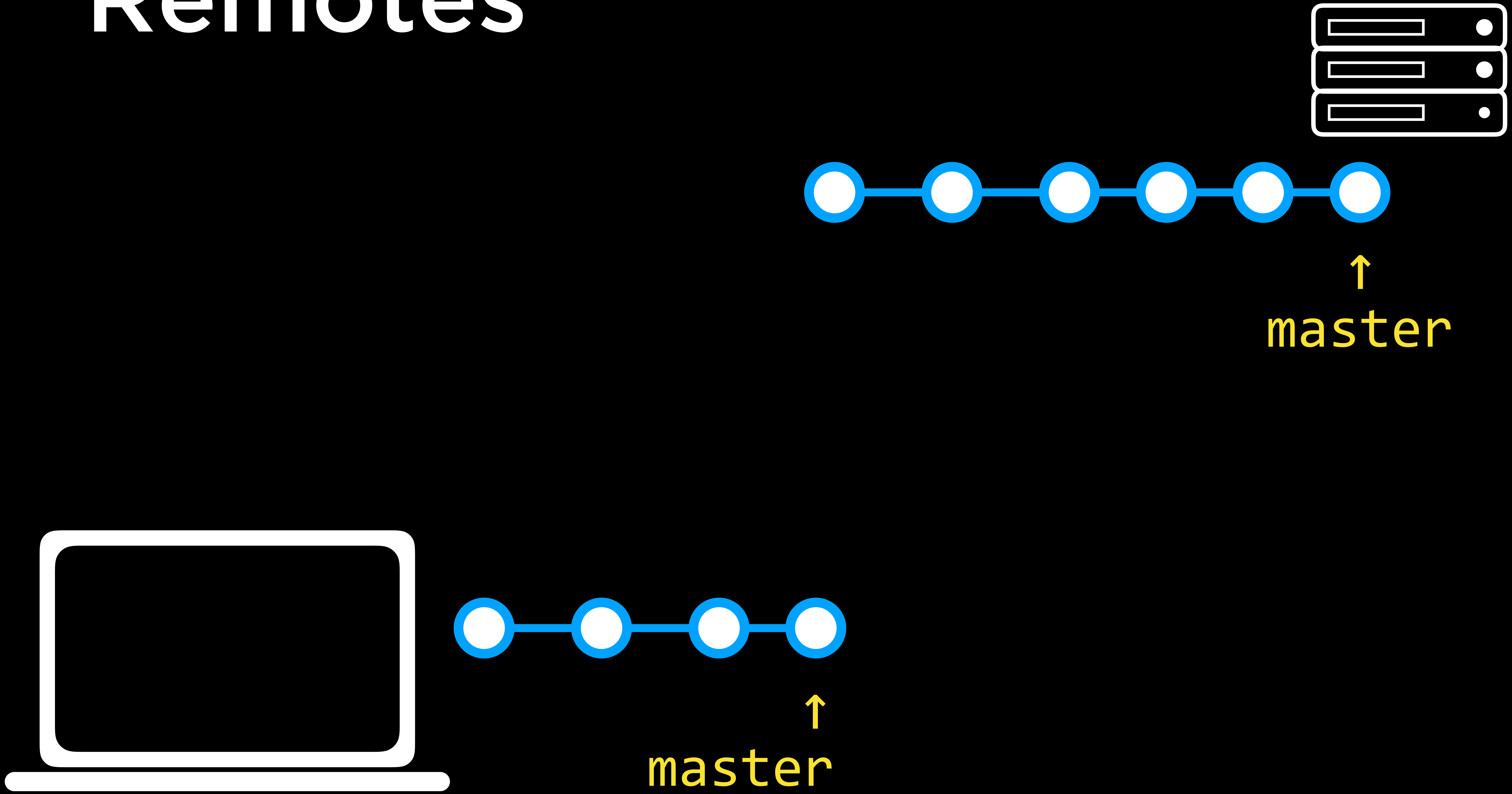
Branching

- `git branch`
- `git checkout`
- `git merge`

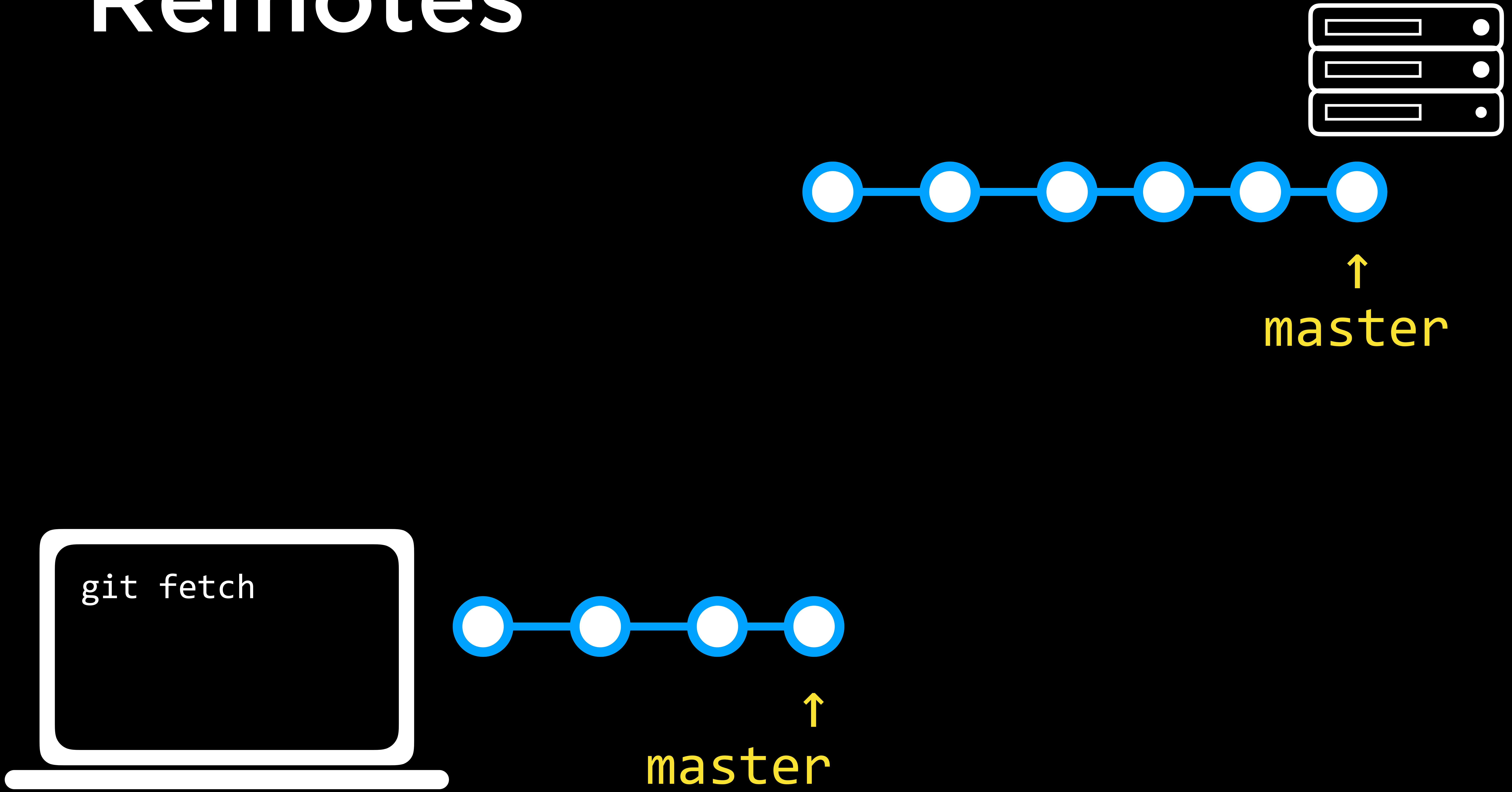
Remotes

Remotes

Remotes

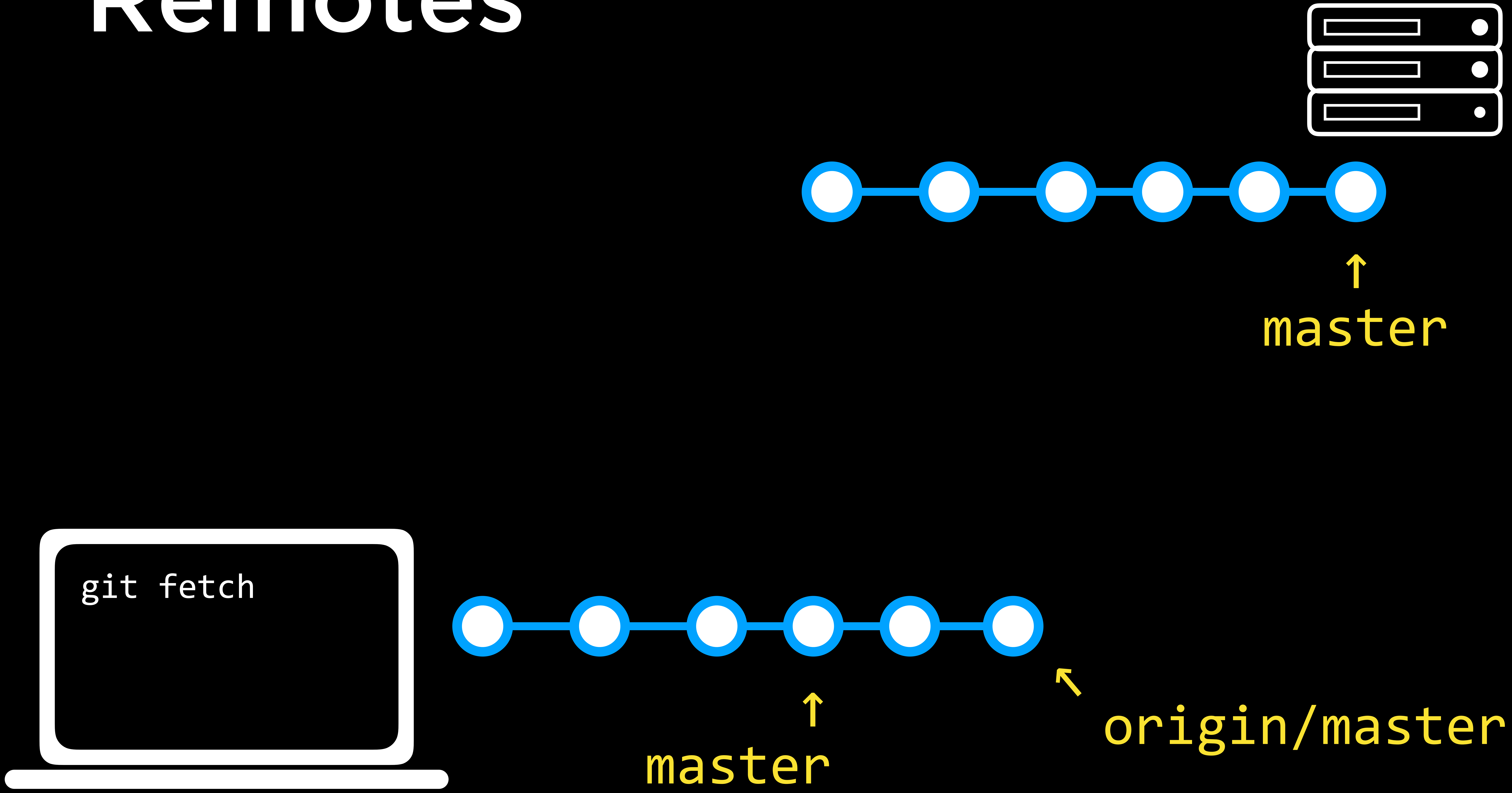


Remotes



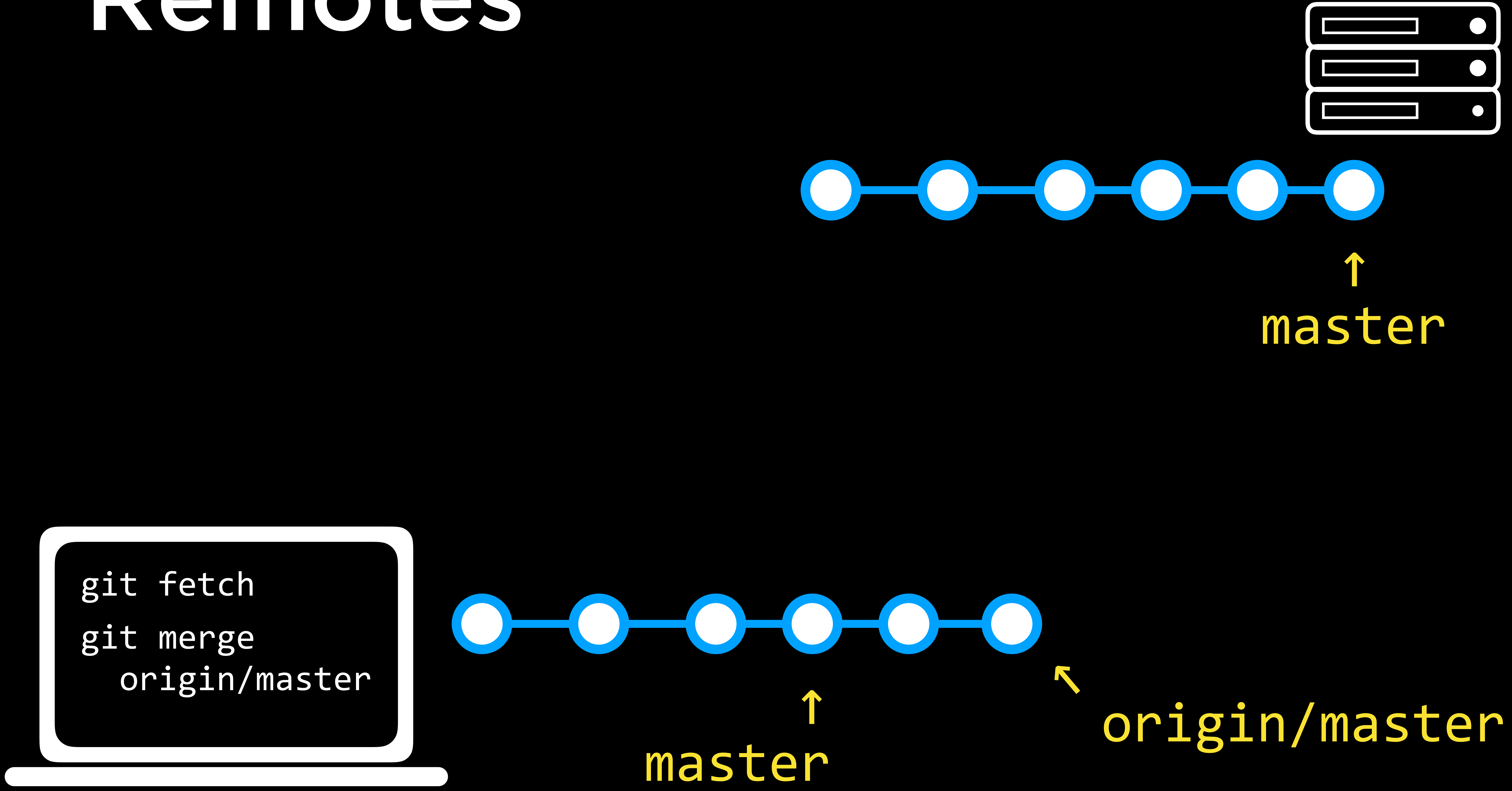
```
git fetch
```

Remotes



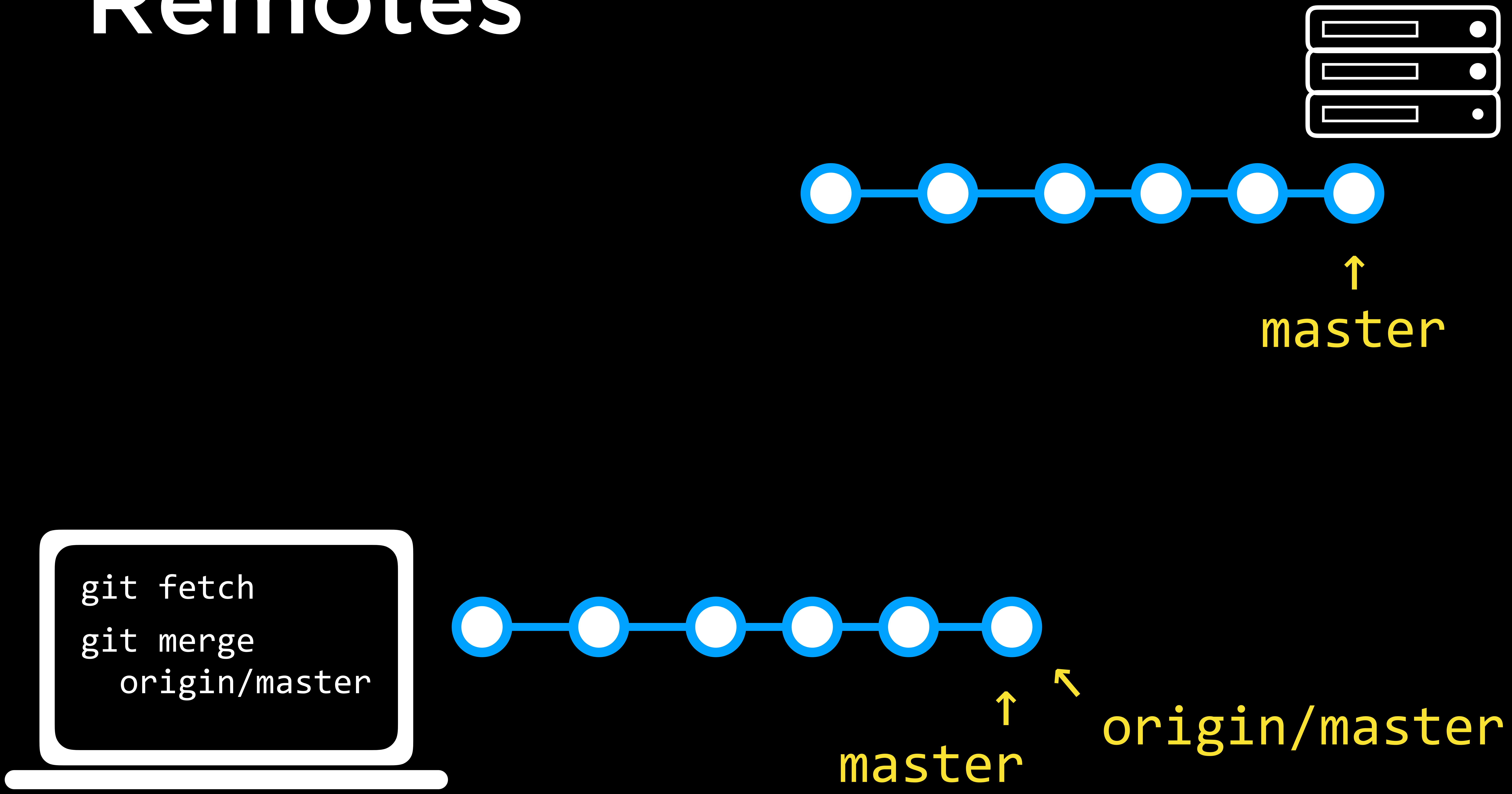
```
git fetch
```

Remotes



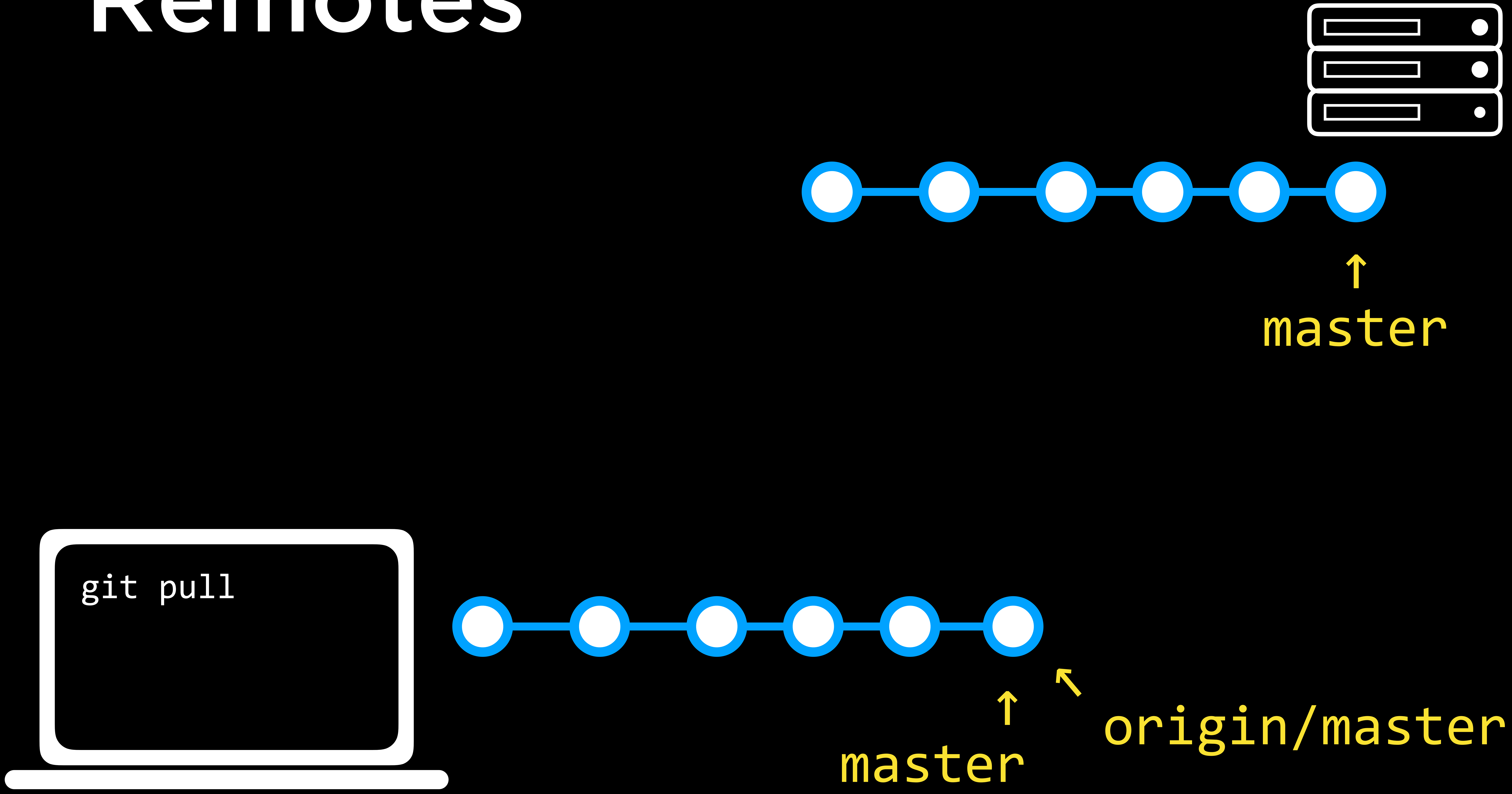
```
git fetch
git merge
  origin/master
```

Remotes



```
git fetch
git merge
  origin/master
```

Remotes



```
git pull
```

Forks

Pull Requests

Q & A