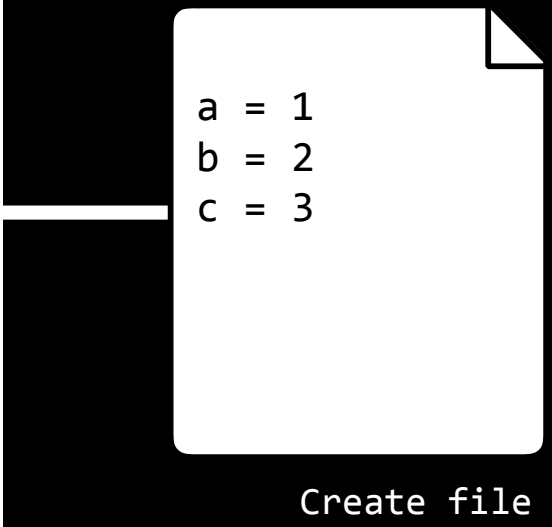
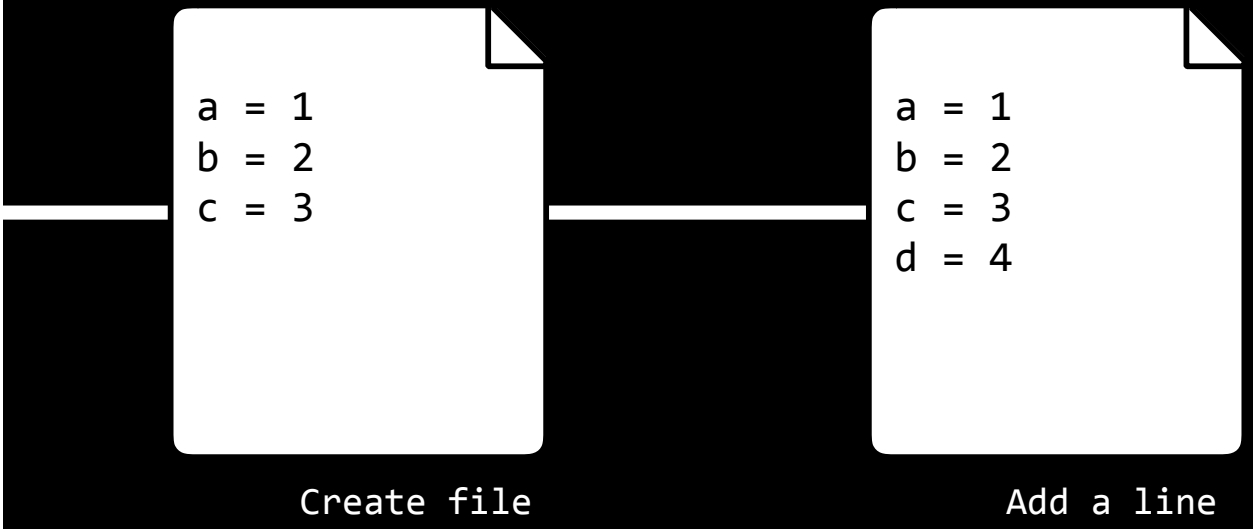
Version Control

git

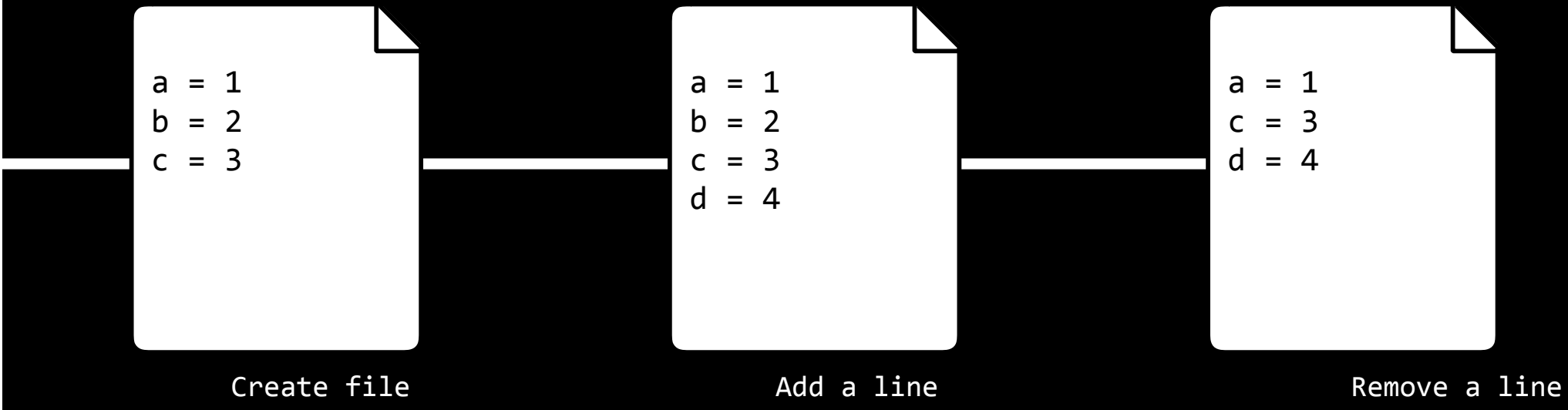
Keep track of changes to code.



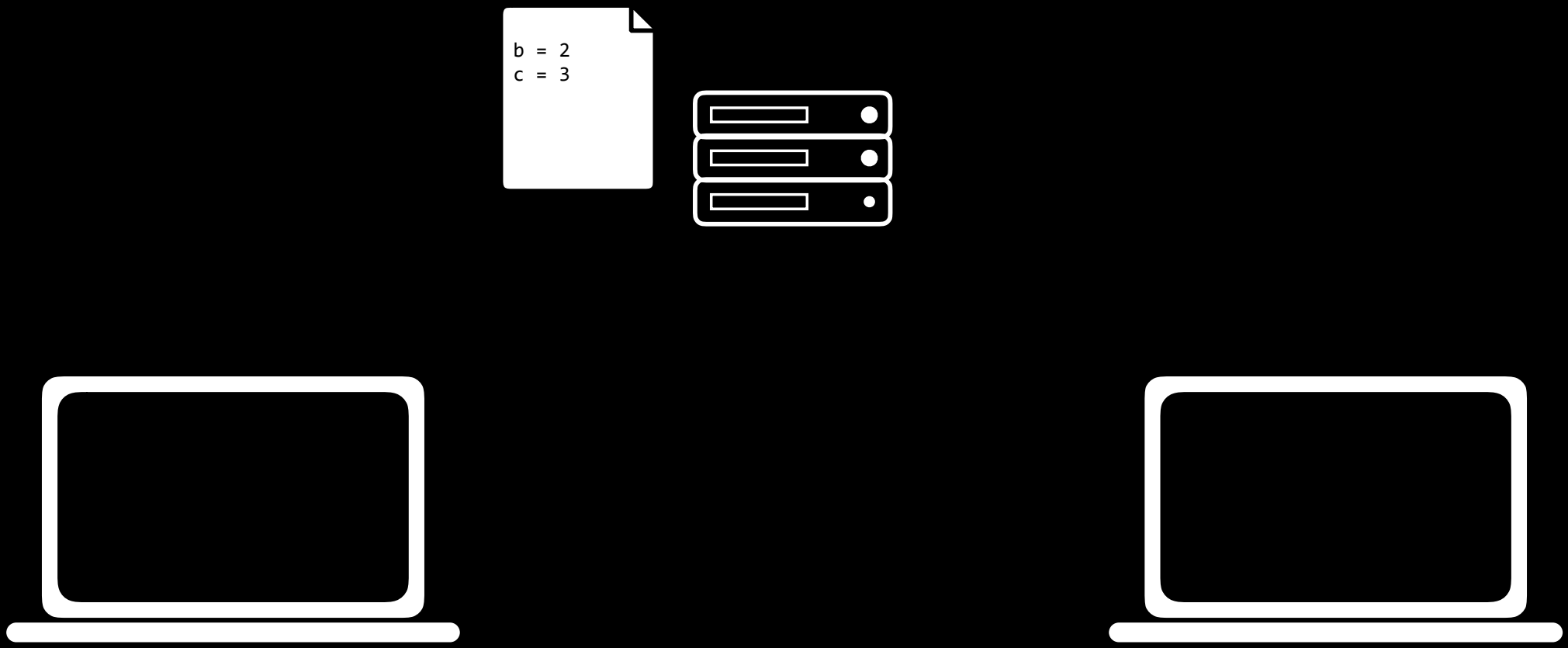
Keep track of changes to code.



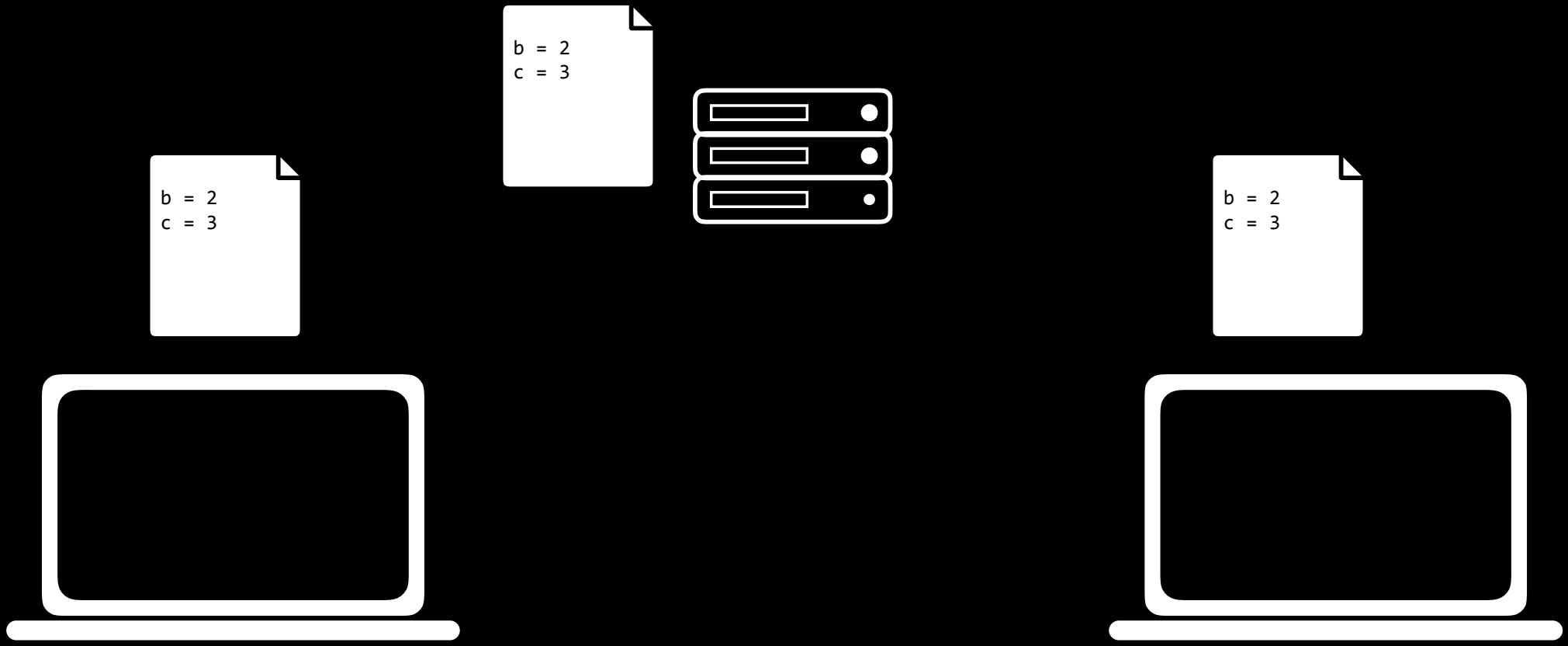
Keep track of changes to code.



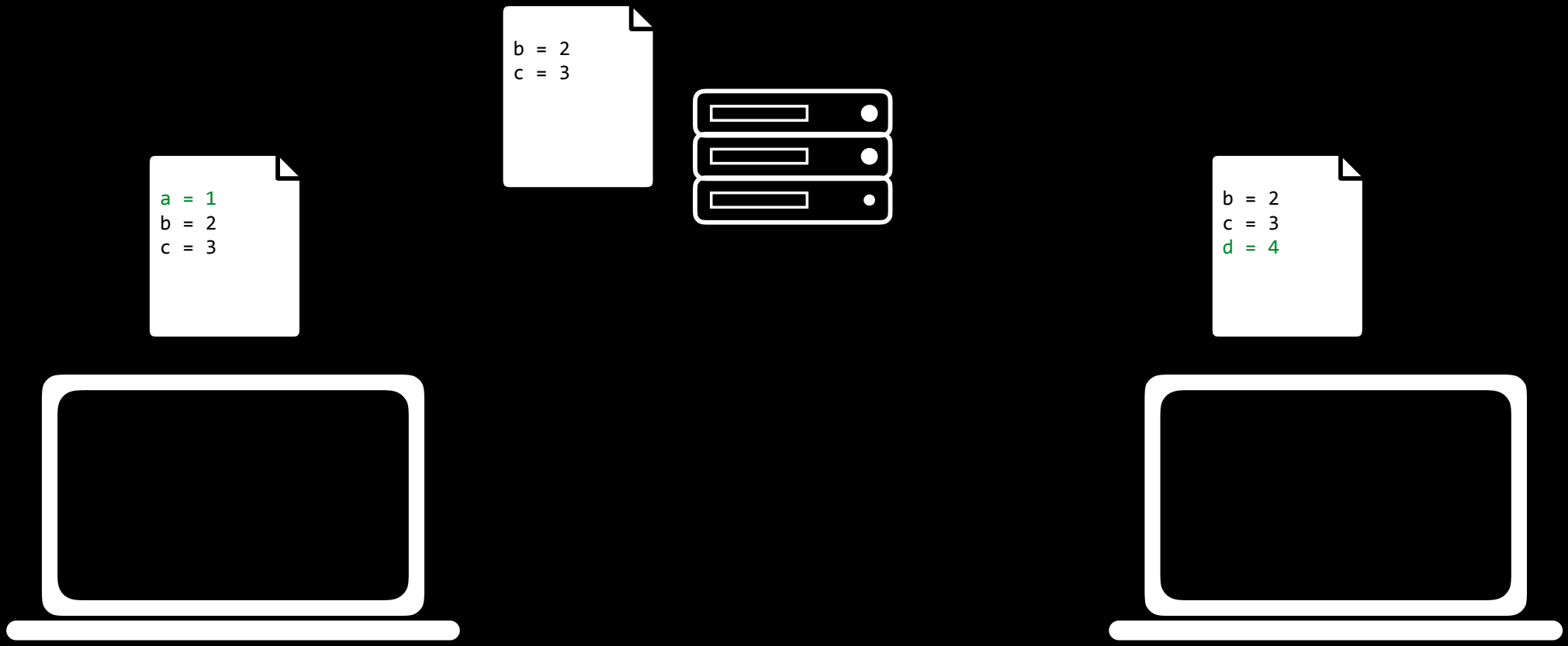
Synchronizes code between different people.



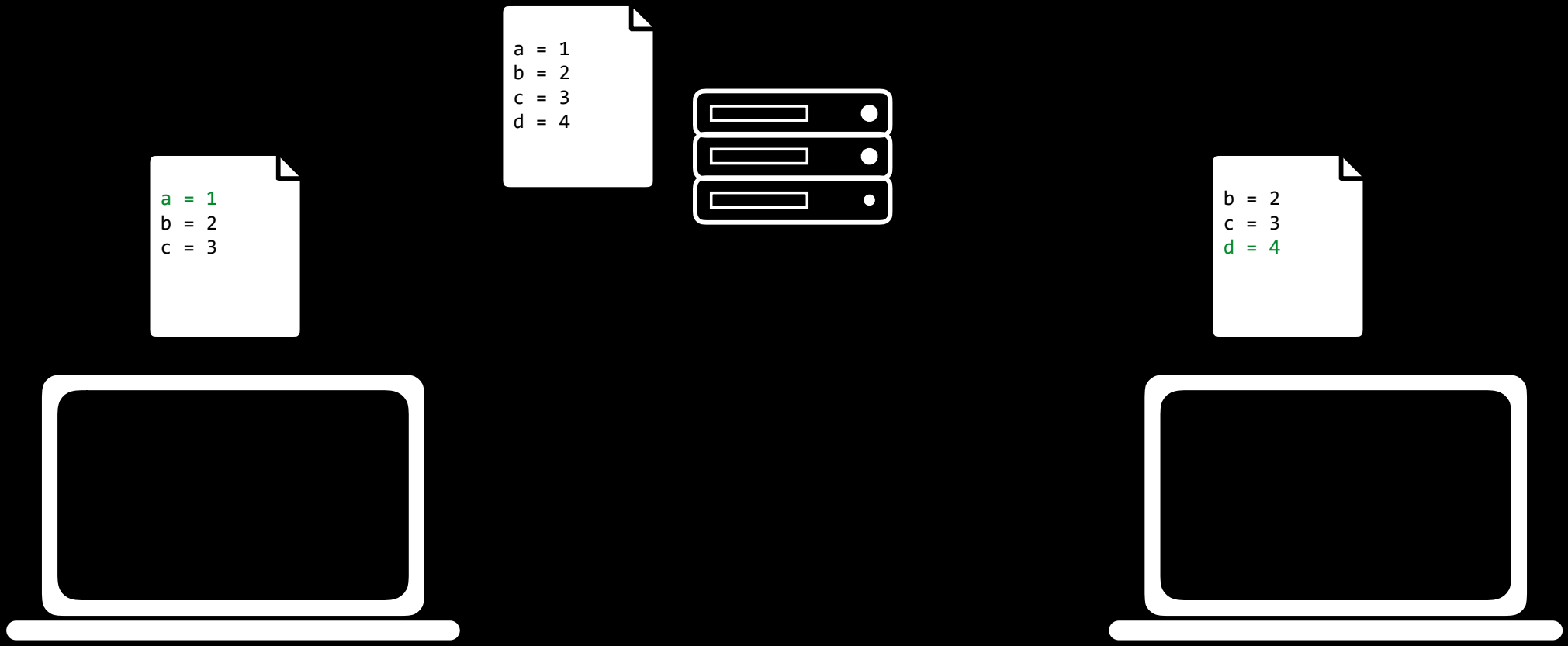
Synchronizes code between different people.



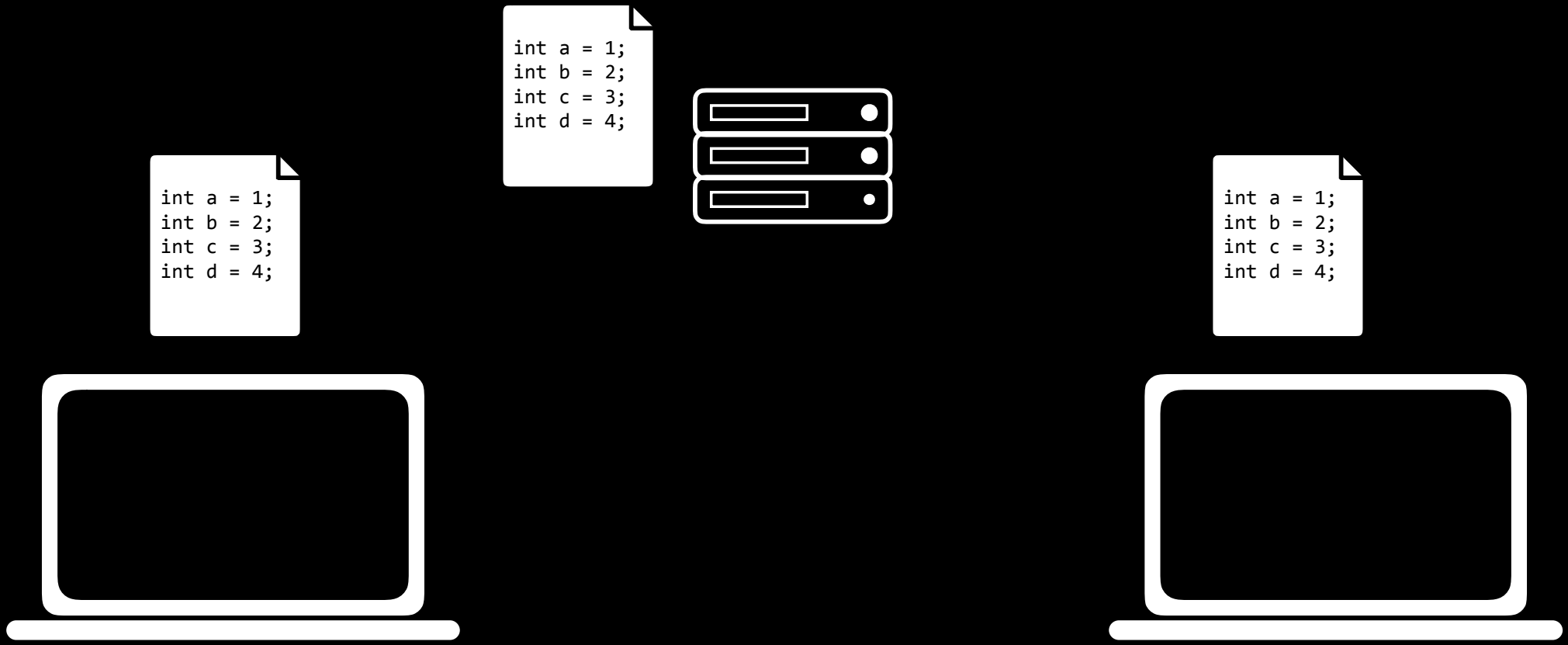
Synchronizes code between different people.



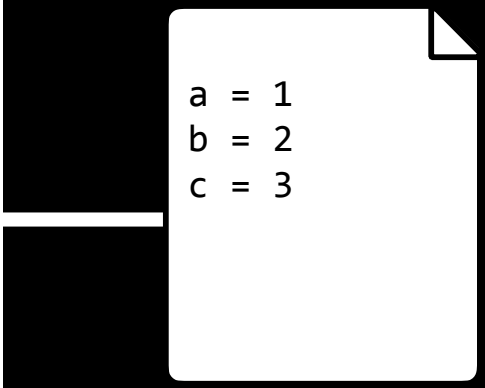
Synchronizes code between different people.



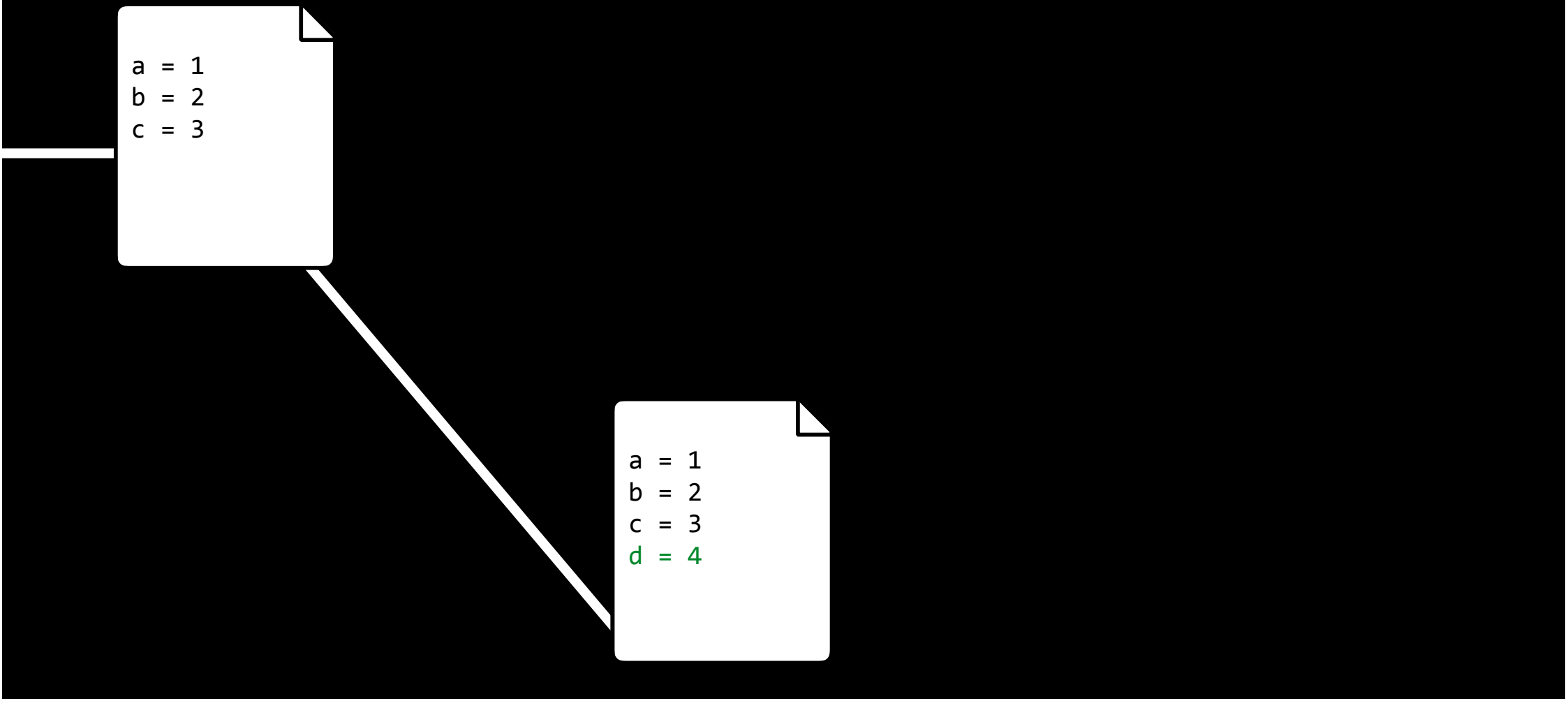
Synchronizes code between different people.



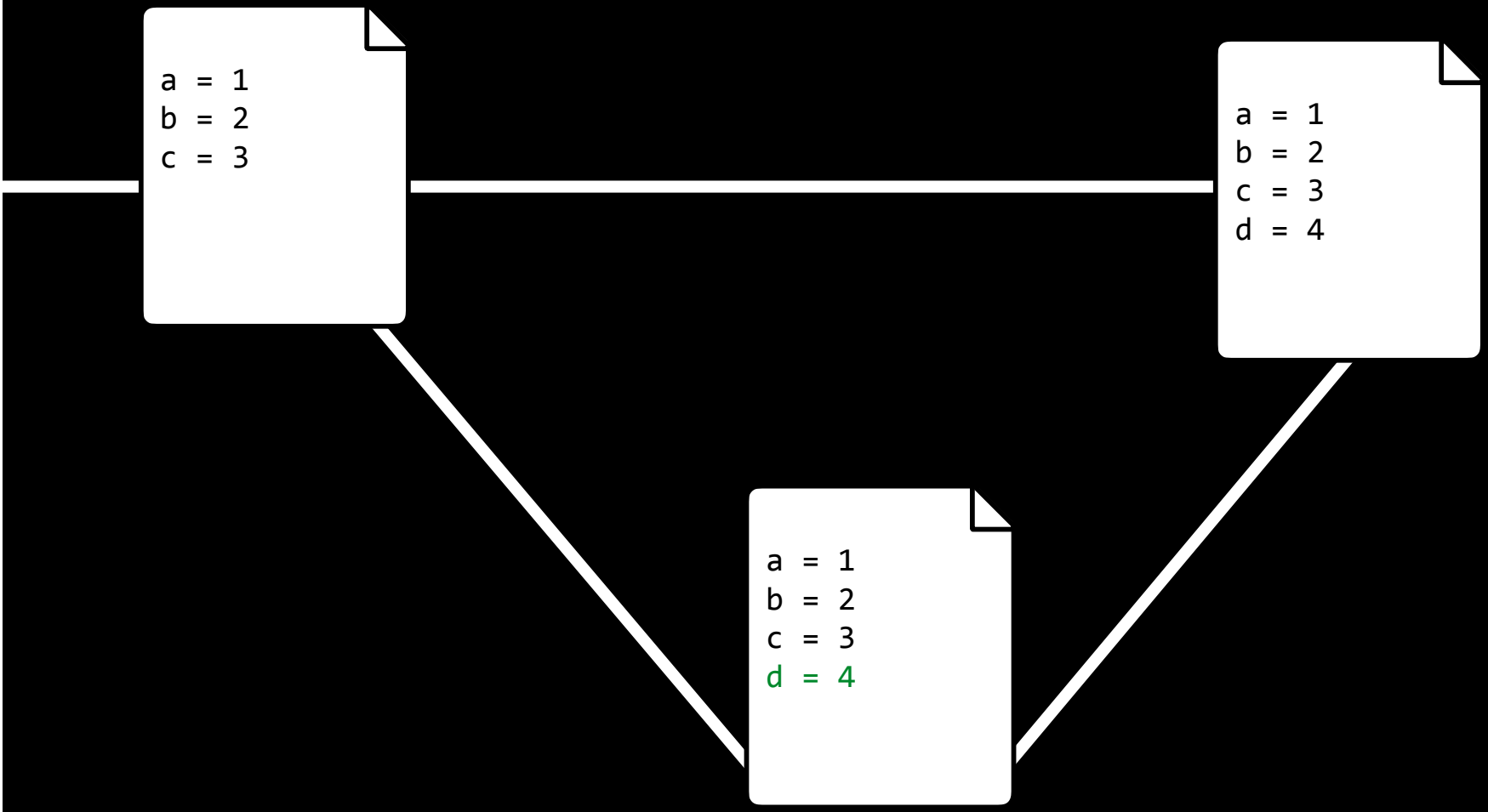
Test changes to code without losing the original.



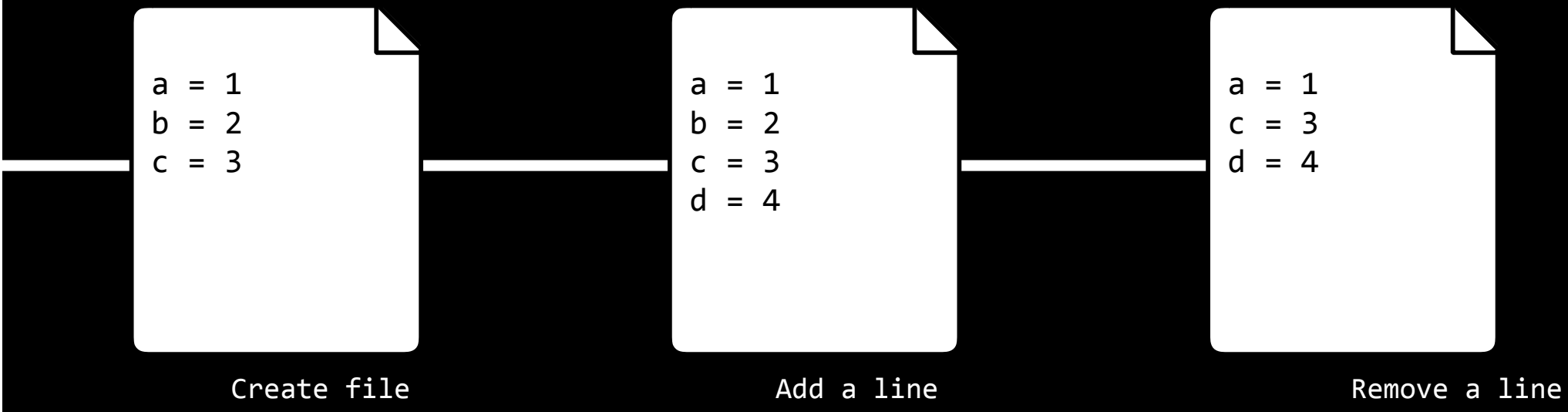
Test changes to code without losing the original.



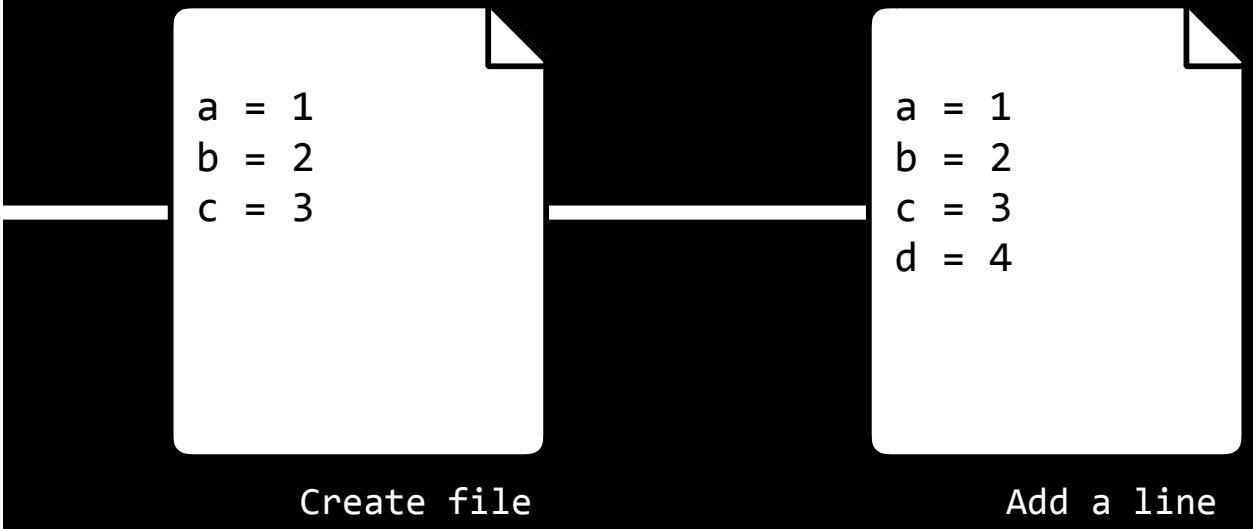
Test changes to code without losing the original.



Revert back to old versions of code.



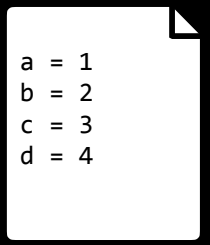
Revert back to old versions of code.

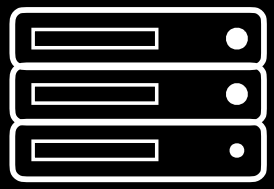


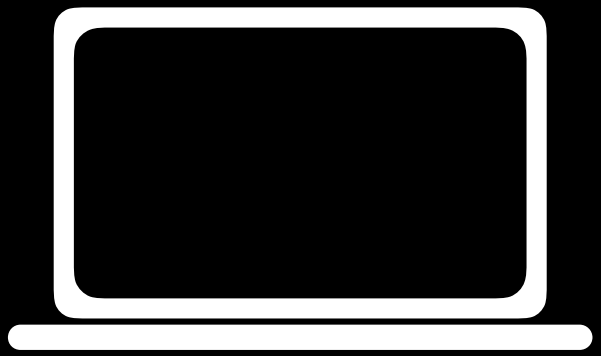
GitHub

git clone

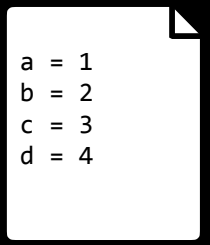
```
git clone <url>
```

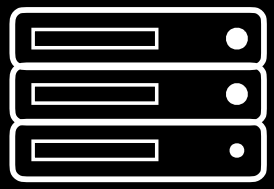


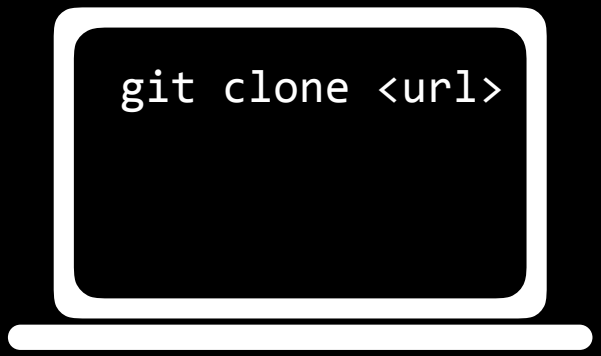




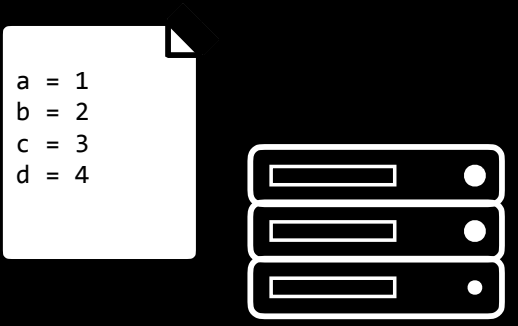
git clone <url>





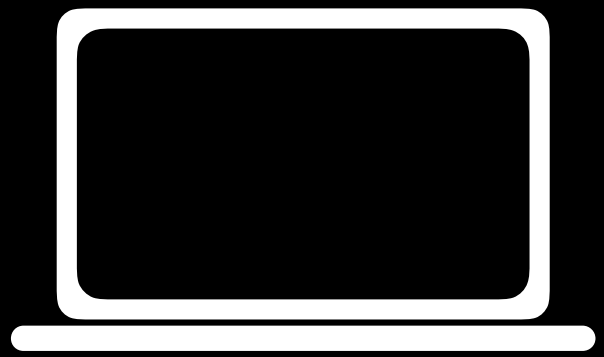


git clone <url>

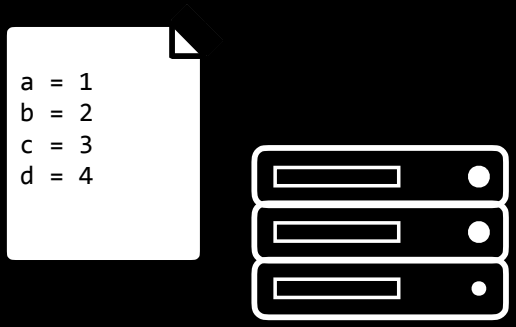


```
git add
```

git add <filename>

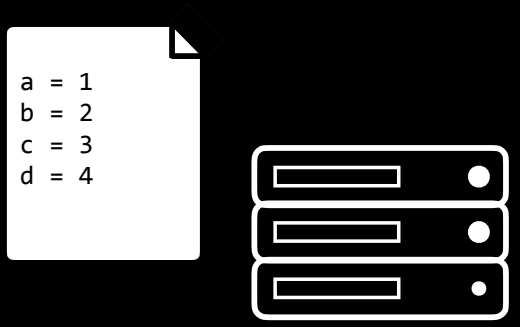


```
a = 1
b = 2
c = 3
d = 4
```

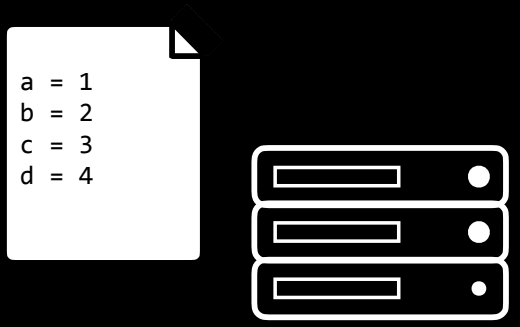


```
a = 1
b = 2
c = 3
d = 4
```

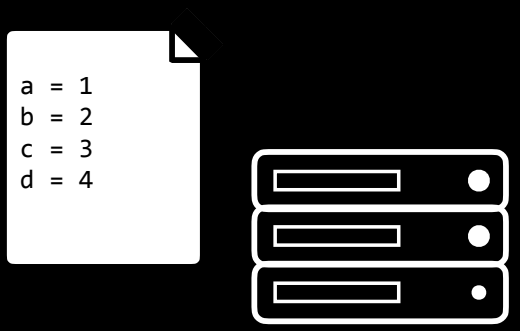
git add <filename>



git add <filename>



git add <filename>

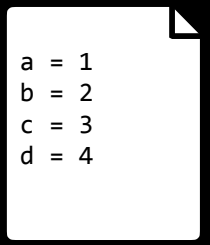


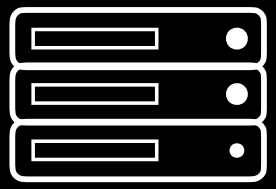
Changes to be committed:

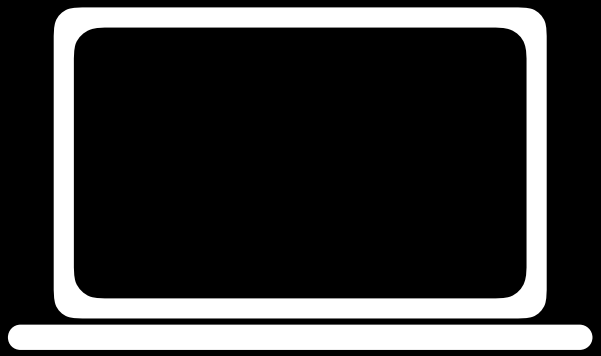
modified: foo.py

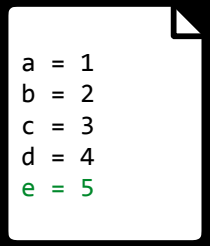
git commit

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

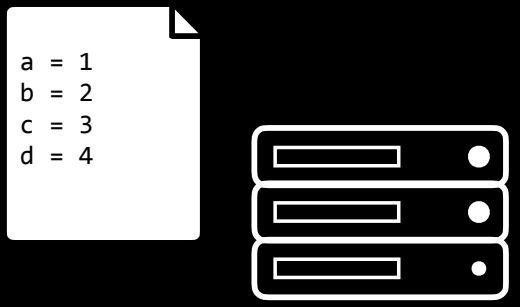


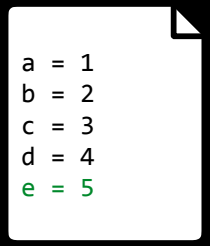




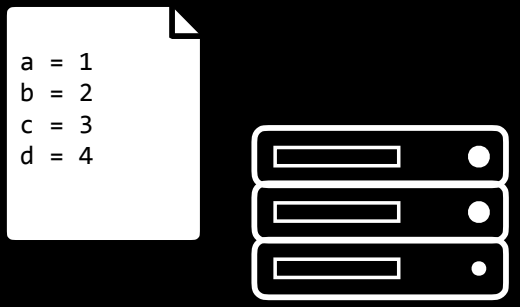


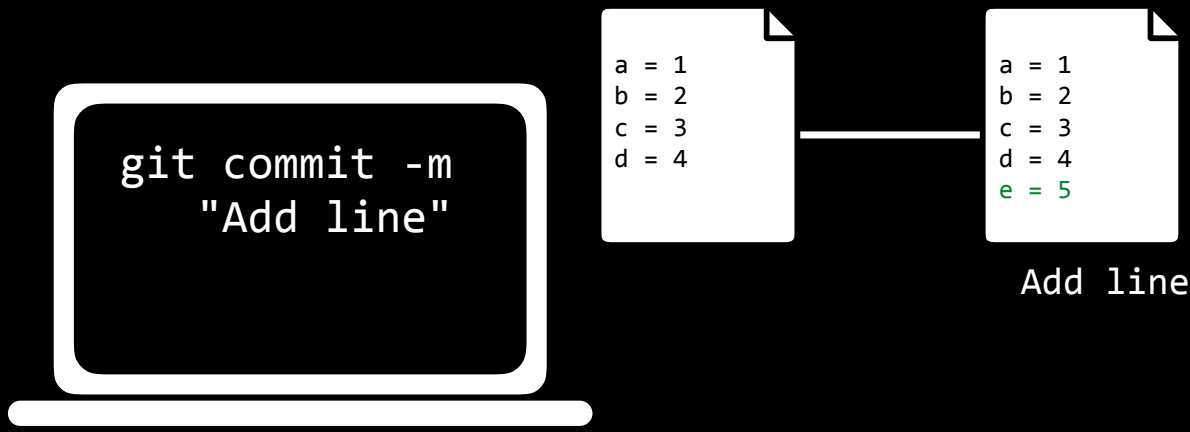
git commit -m "message"





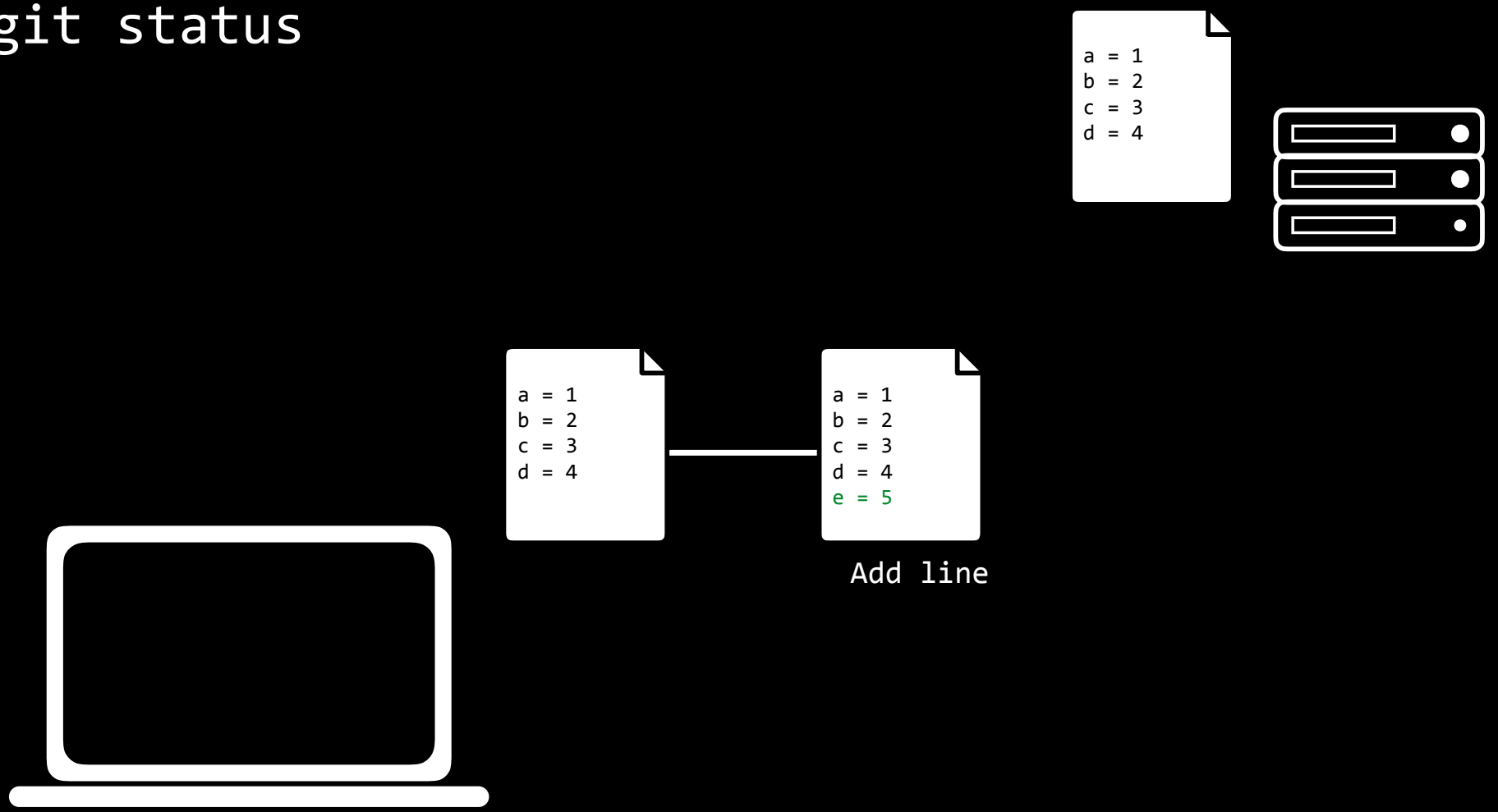
git commit -m "message"



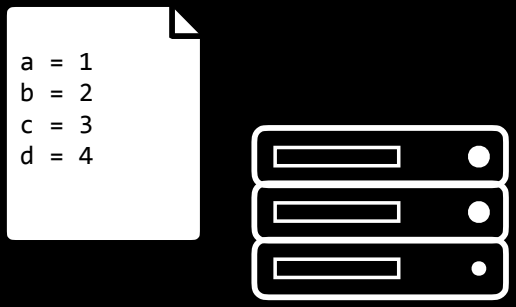


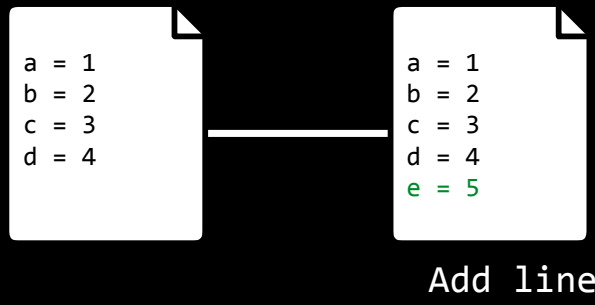
```
git status
```

git status

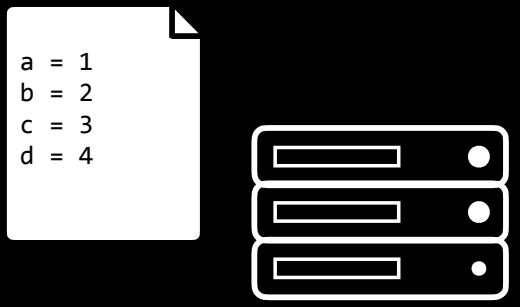


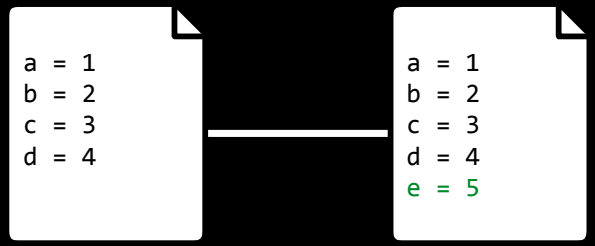
git status





git status



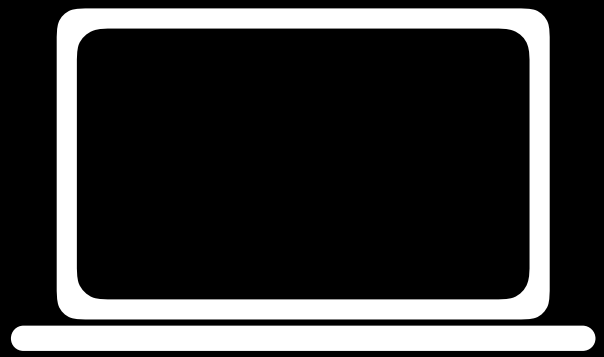


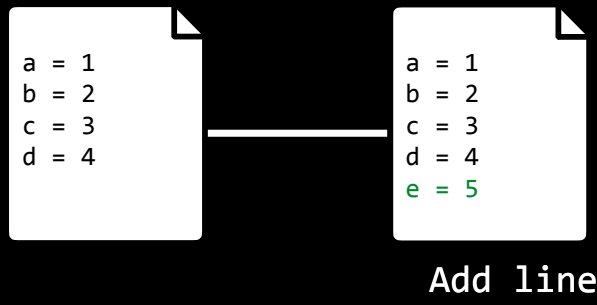
Add line

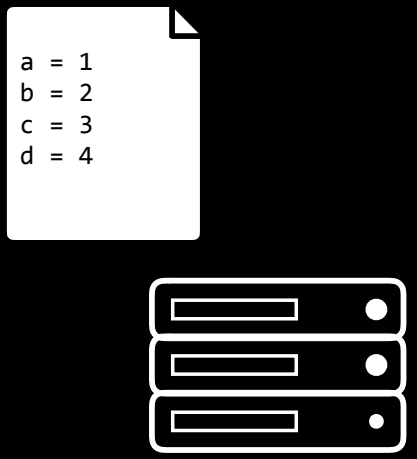
```
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)
```

```
git push
```

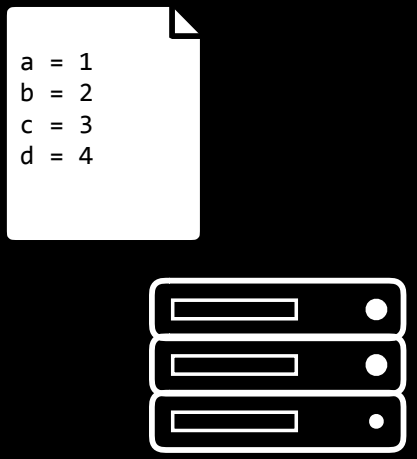
git push

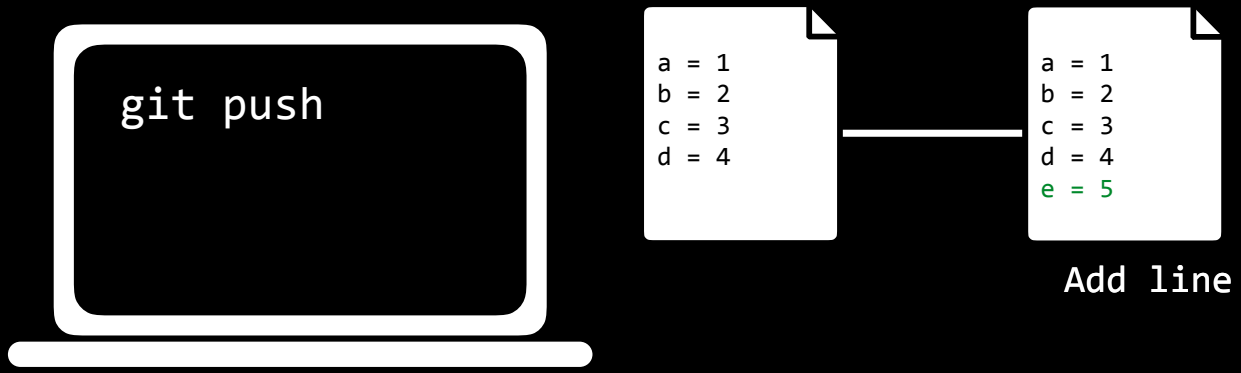




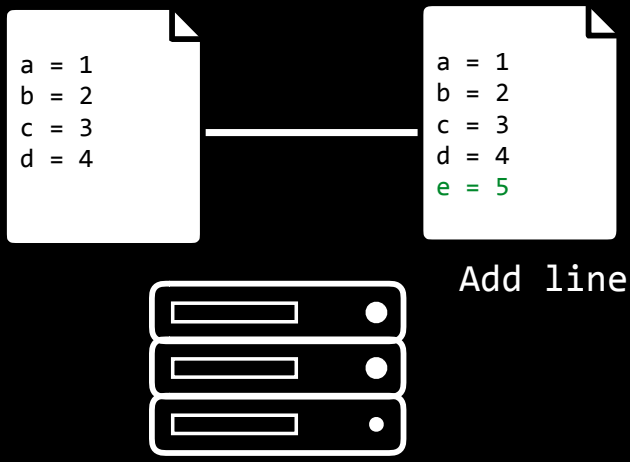


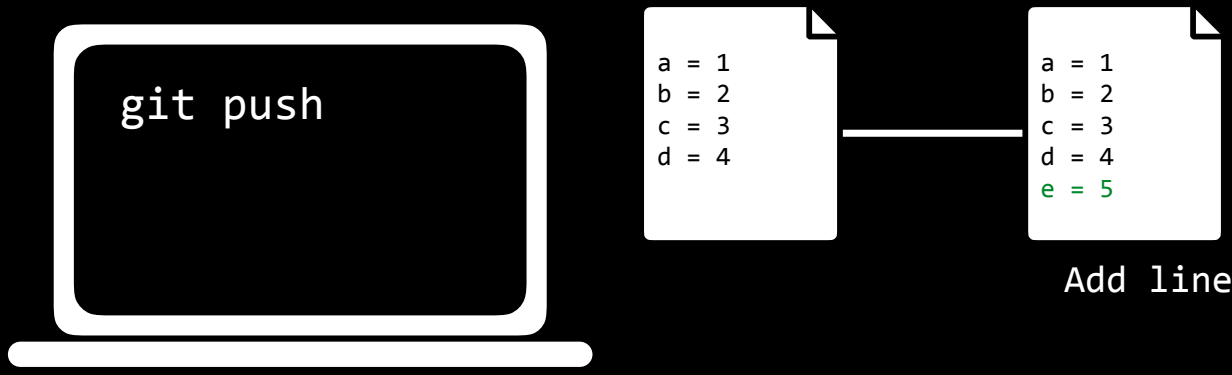
git push





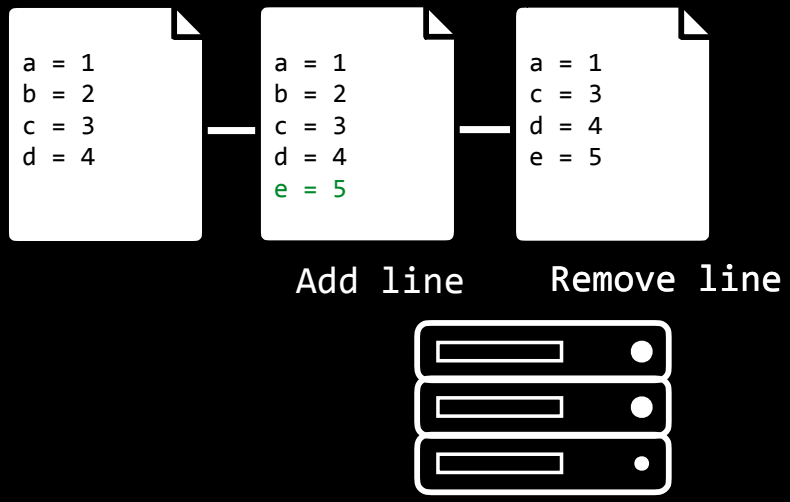
git push

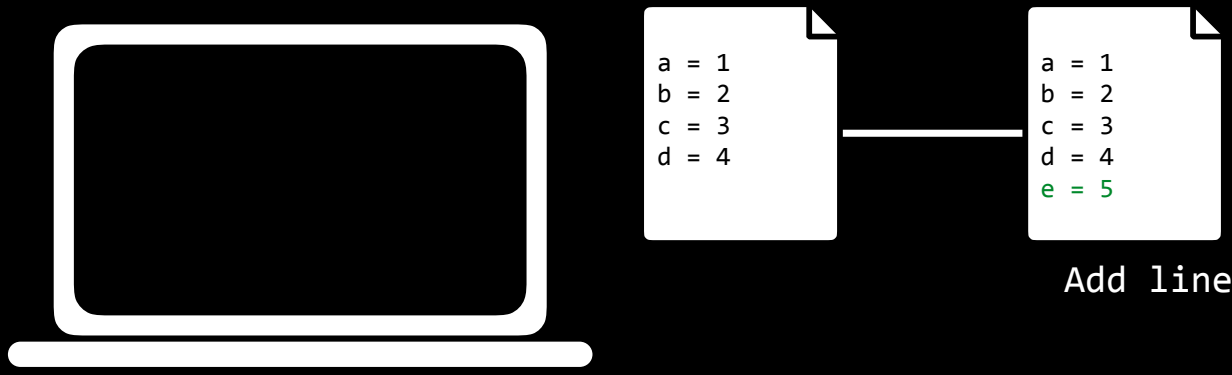

a = 1
b = 2
c = 3
d = 4
a = 1
b = 2
c = 3
d = 4
e = 5
Add line


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

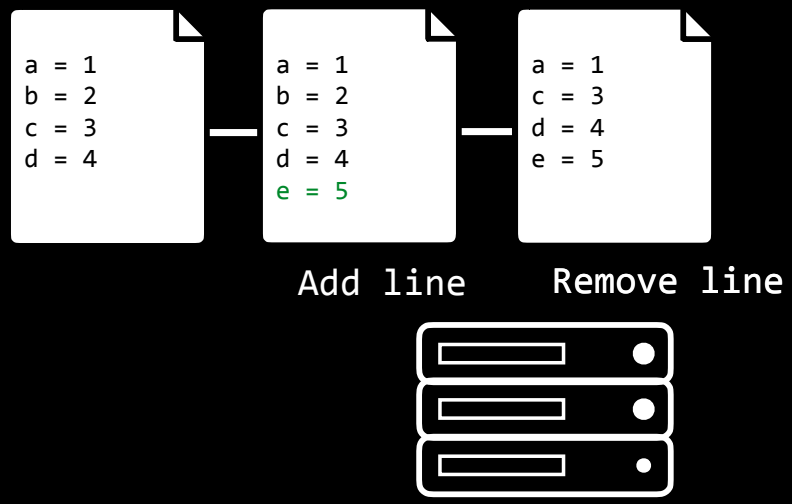
```
git pull
```

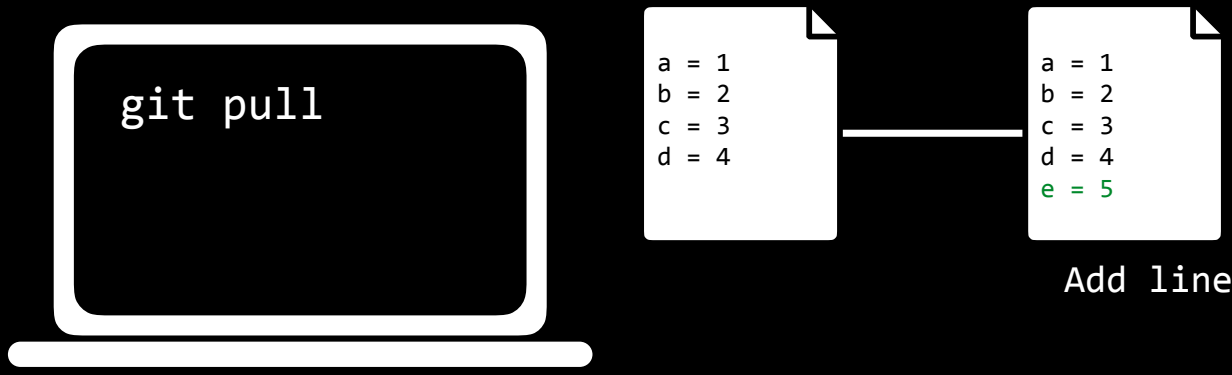
git pull


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

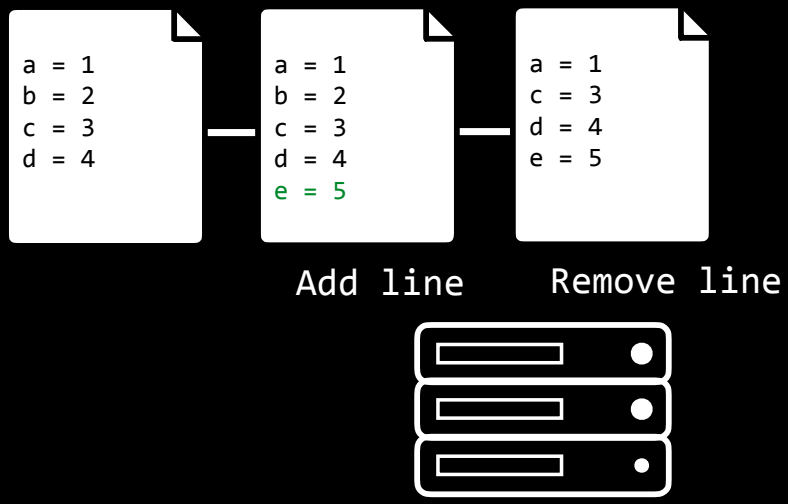

a = 1
b = 2
c = 3
d = 4
a = 1
b = 2
c = 3
d = 4
e = 5
Add line

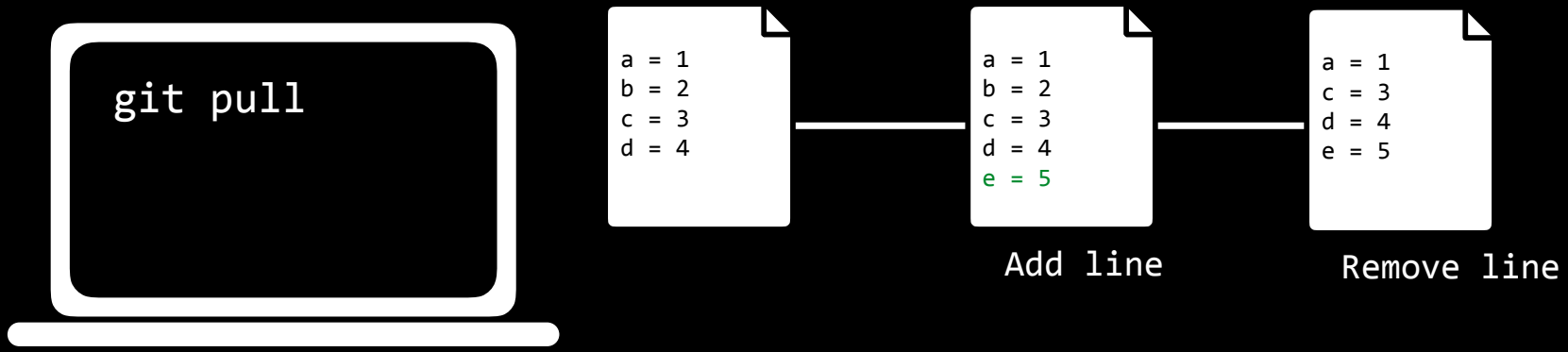
git pull


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


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

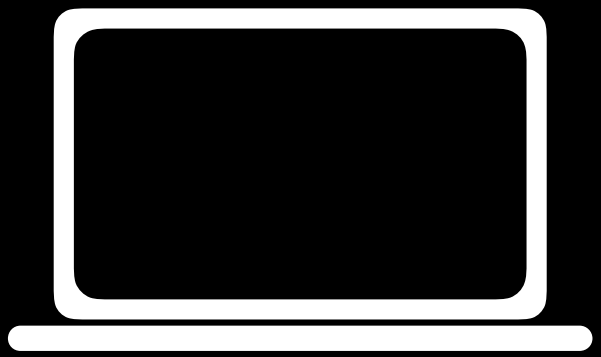
git pull


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


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

Merge Conflicts

Merge Conflicts



Merge Conflicts

Merge Conflicts

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

Merge Conflicts

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

Merge Conflicts

your changes

remote changes

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

conflicting commit

Merge Conflicts

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

Merge Conflicts

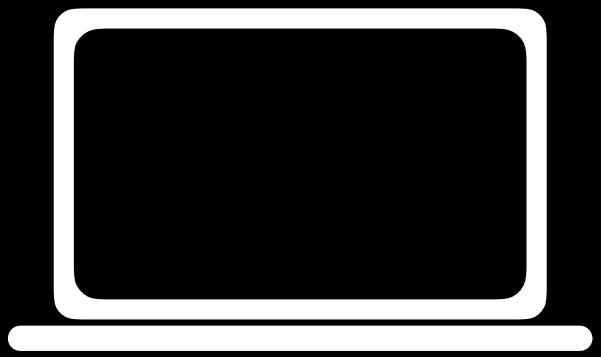
```
a = 1

b = 2



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

Merge Conflicts

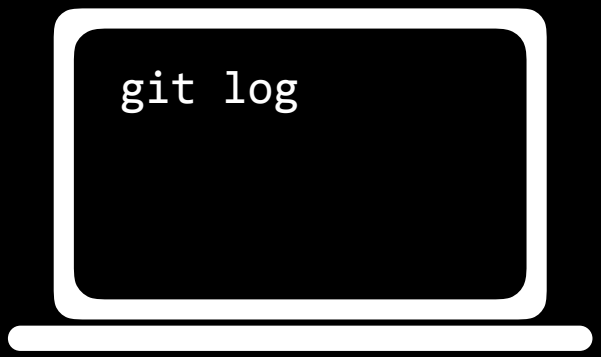
```
a = 1
b = 2
c = 3
d = 4
e = 5
```

```
git log
```

```
git log
```



git log



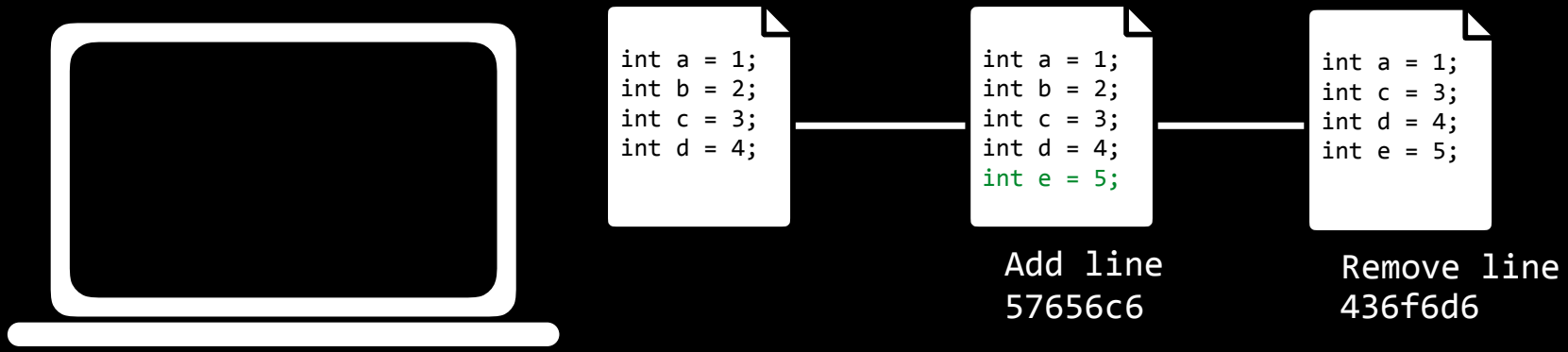
git log

```
commit 436f6d6d6974204d73672048657265
Author: Brian Yu <brian@cs.harvard.edu>
Date:   Mon Jan 22 14:06:28 2018 -0400

    Remove a line

commit 57656c636f6d6520746f20576562
Author: Brian Yu <brian@cs.harvard.edu>
Date:   Mon Jan 22 14:05:28 2018 -0400

    Add a line
```

git reset

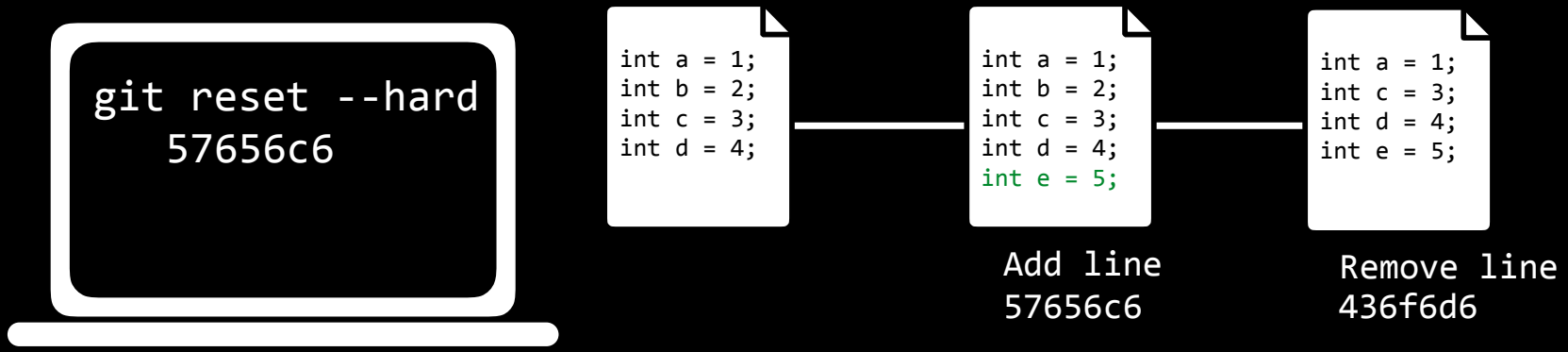
git reset

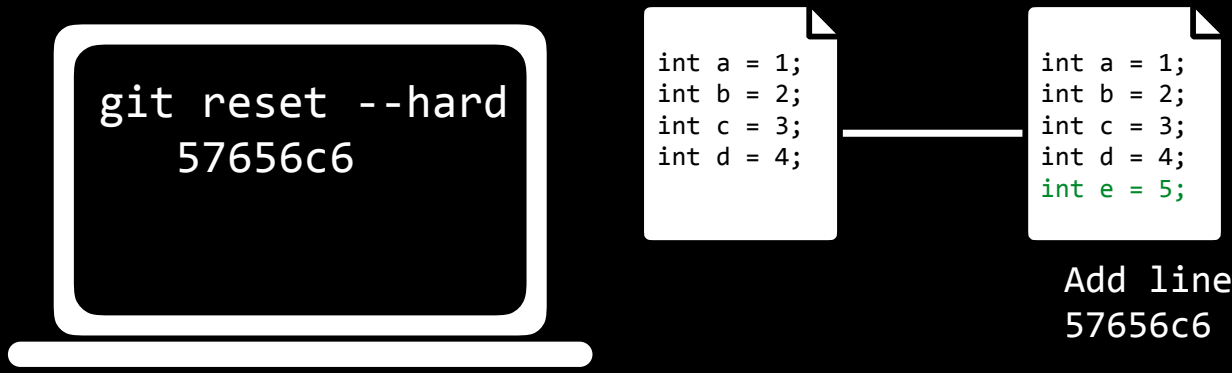
- git reset --hard <commit>
- git reset --hard origin/master



git reset

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



git reset

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