Web Programming with Python and JavaScript

Git

HTML, CSS

Flask

SQL

APIs

JavaScript

Front Ends

Django

Testing, CI/CD

Scalability

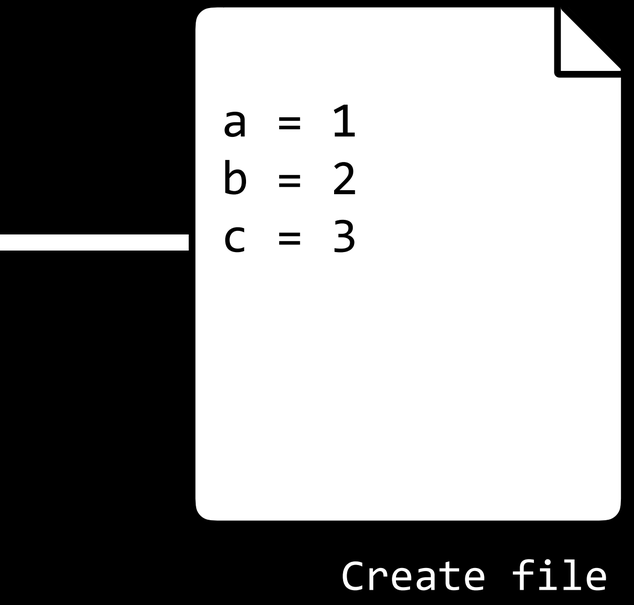
Security

- Project 0
- Project 1
- Project 2
- Project 3
- Final Project

Version Control

git

Keep track of changes to code.



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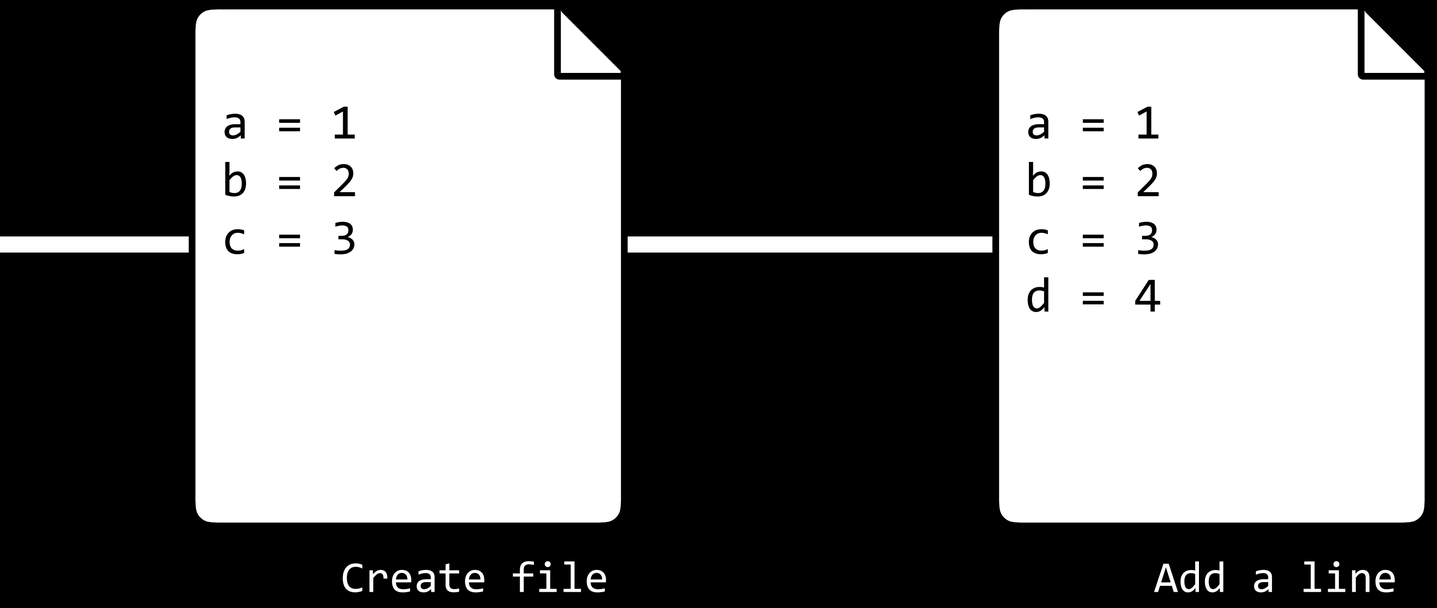

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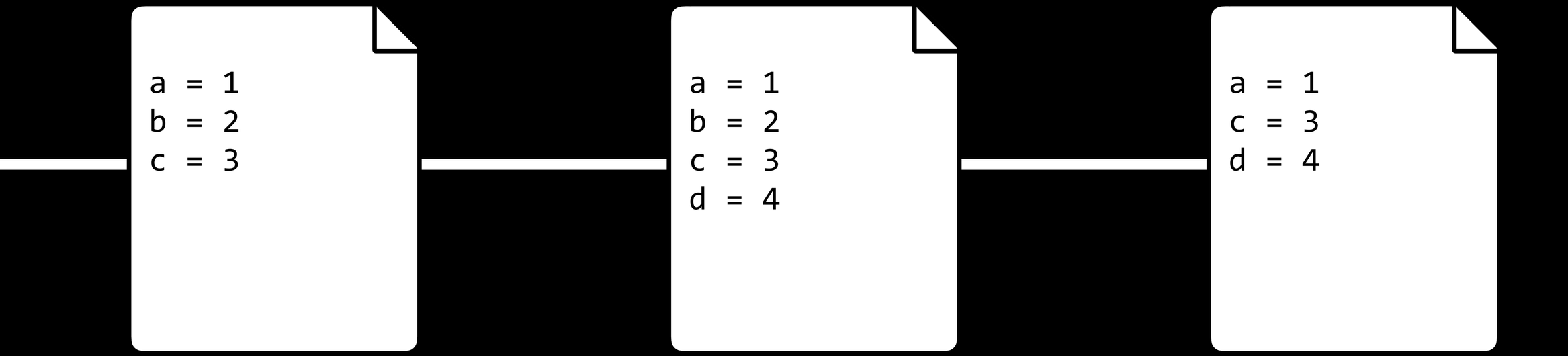
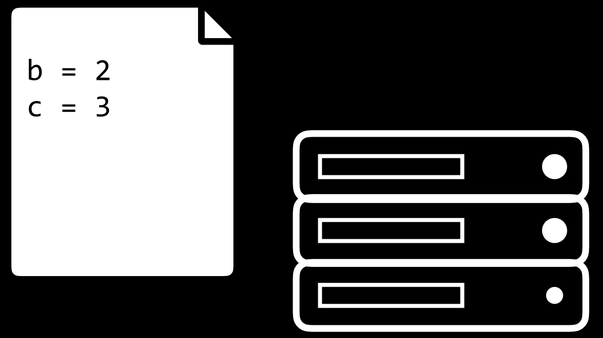
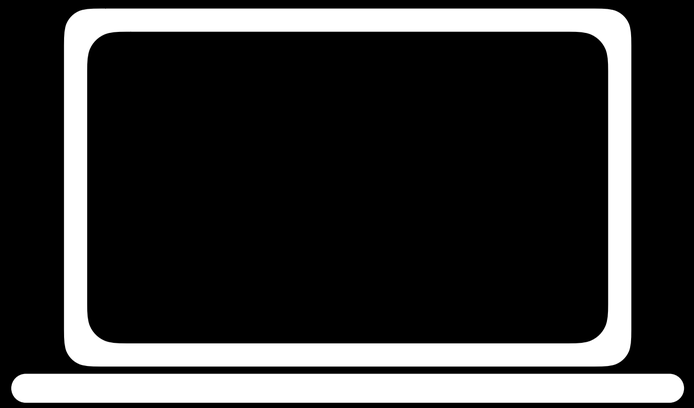
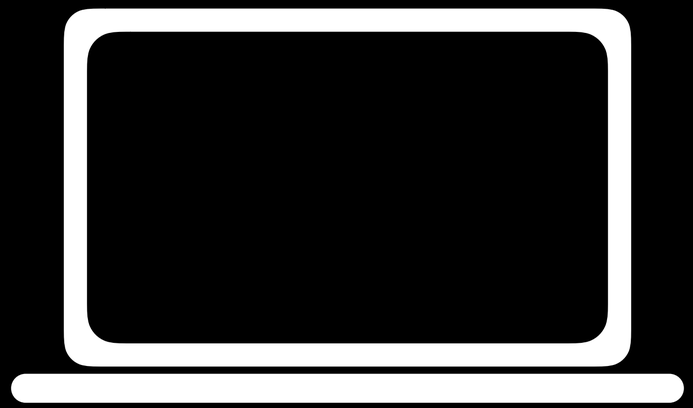


Synchronizes code between different people.







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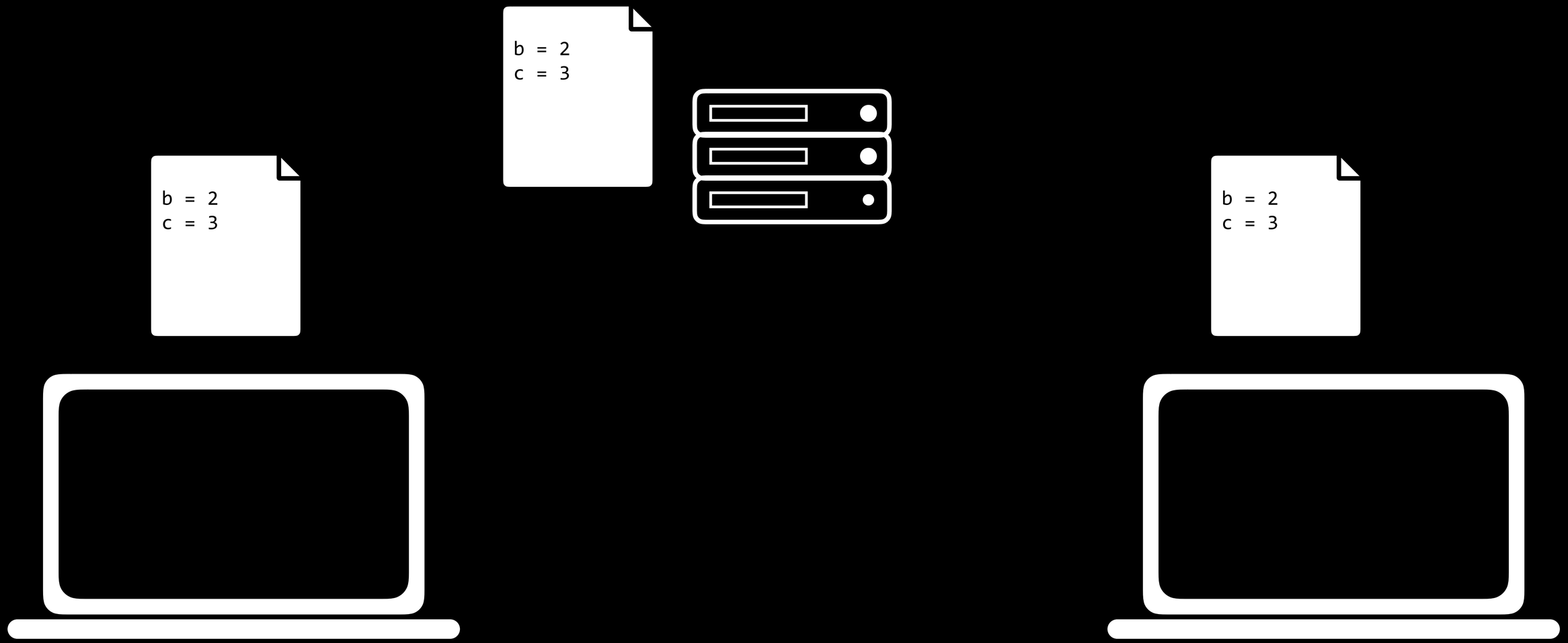

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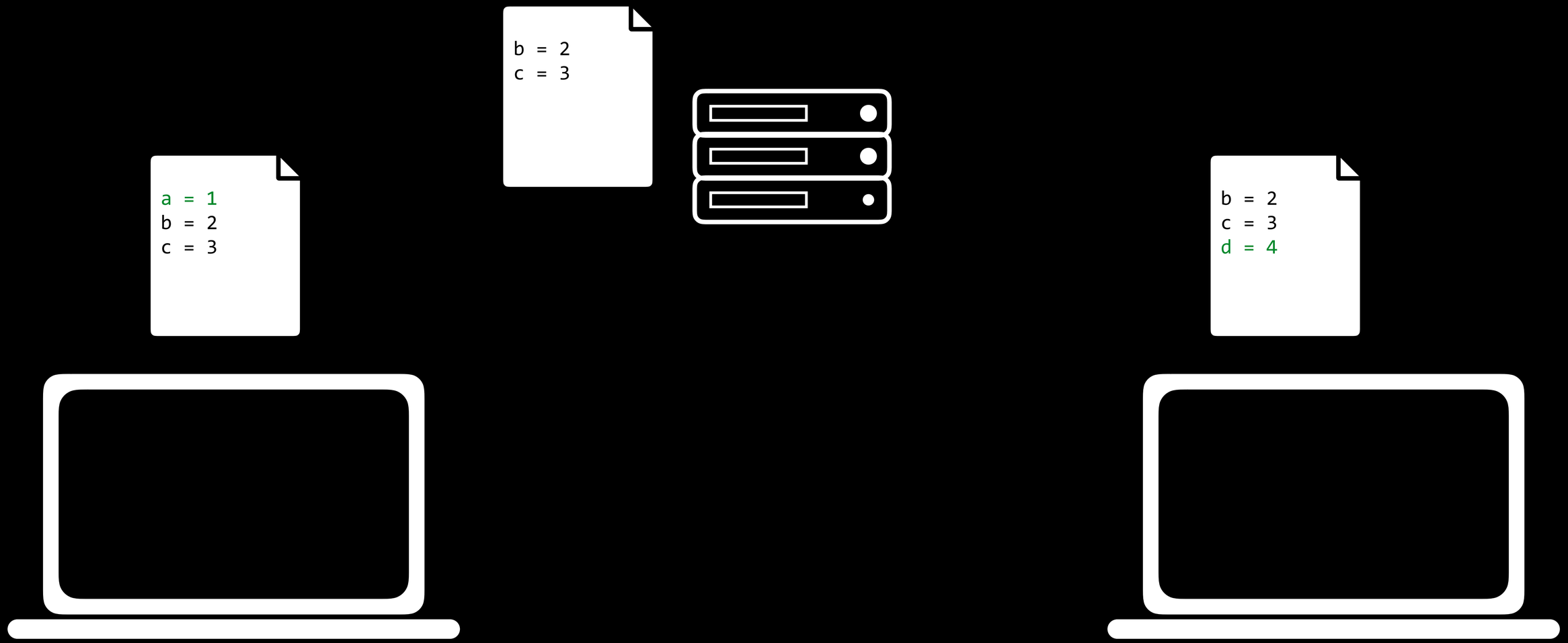

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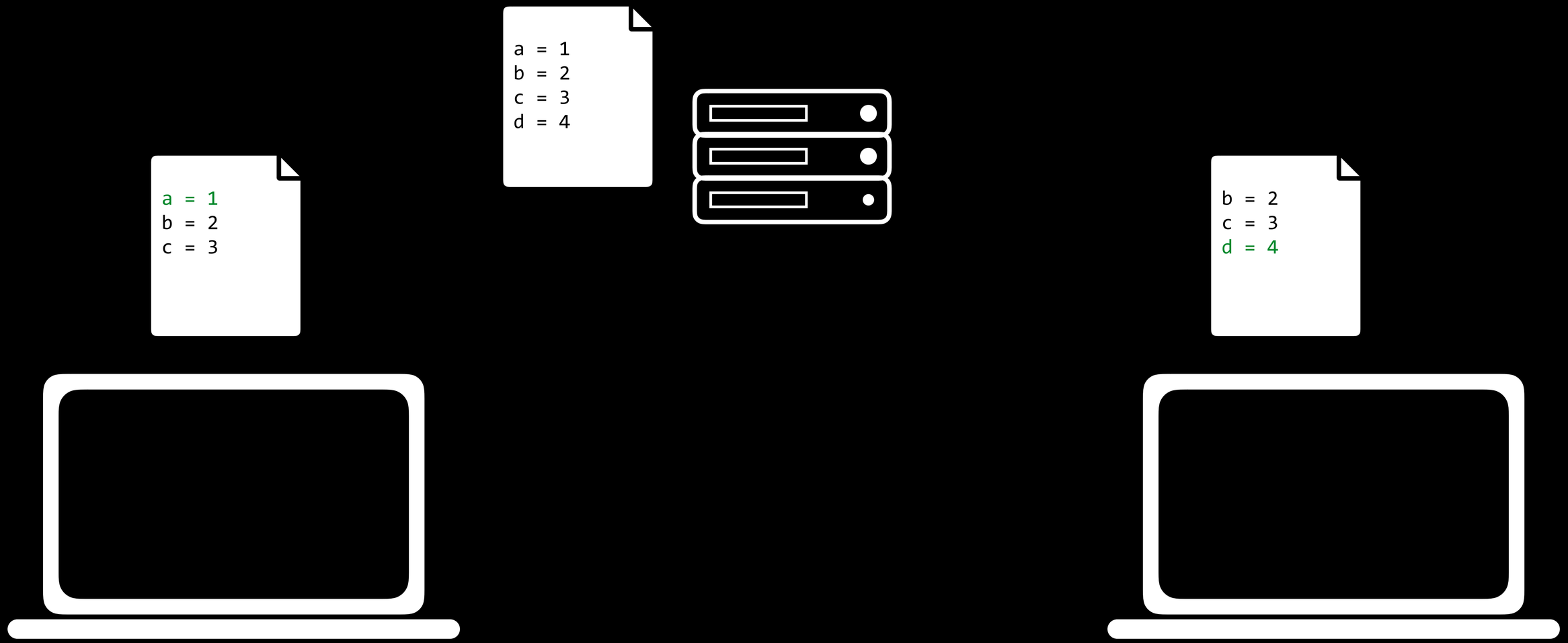
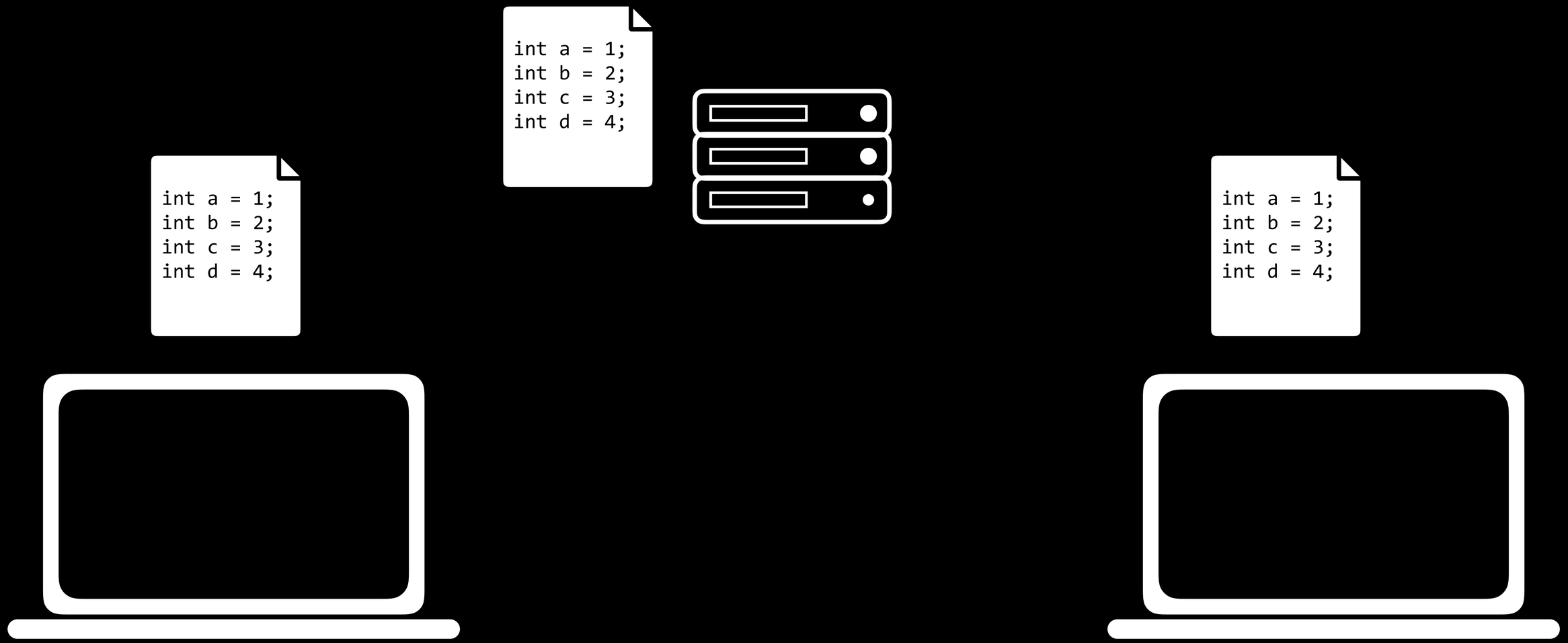
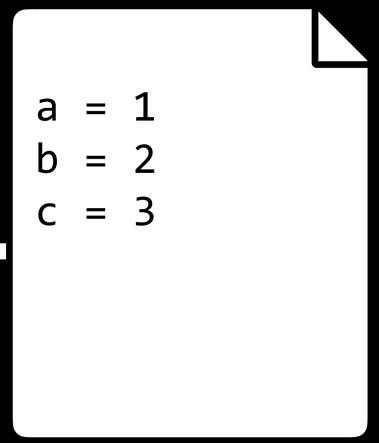


Synchronizes code between different people.



Test changes to code without losing the original.



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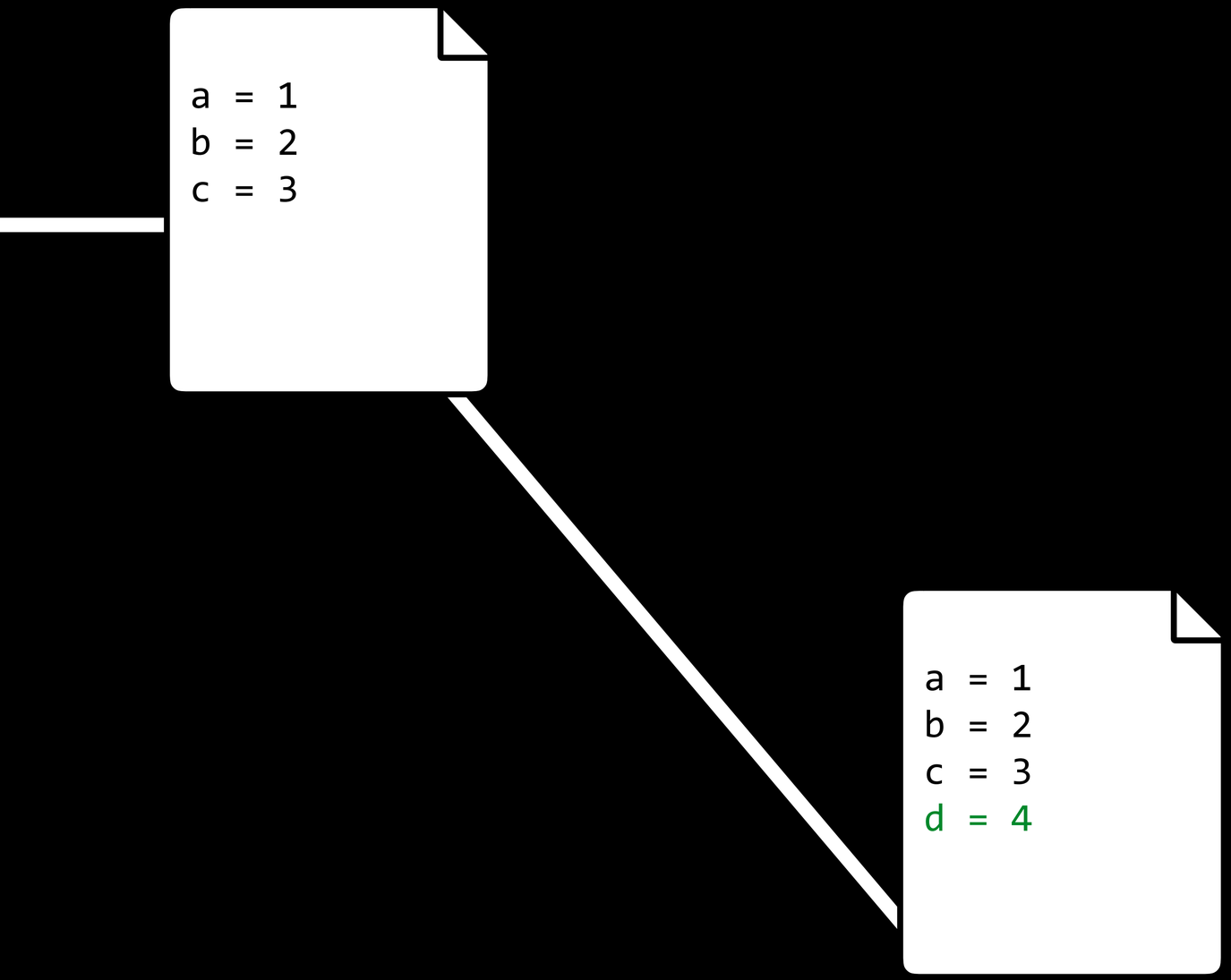

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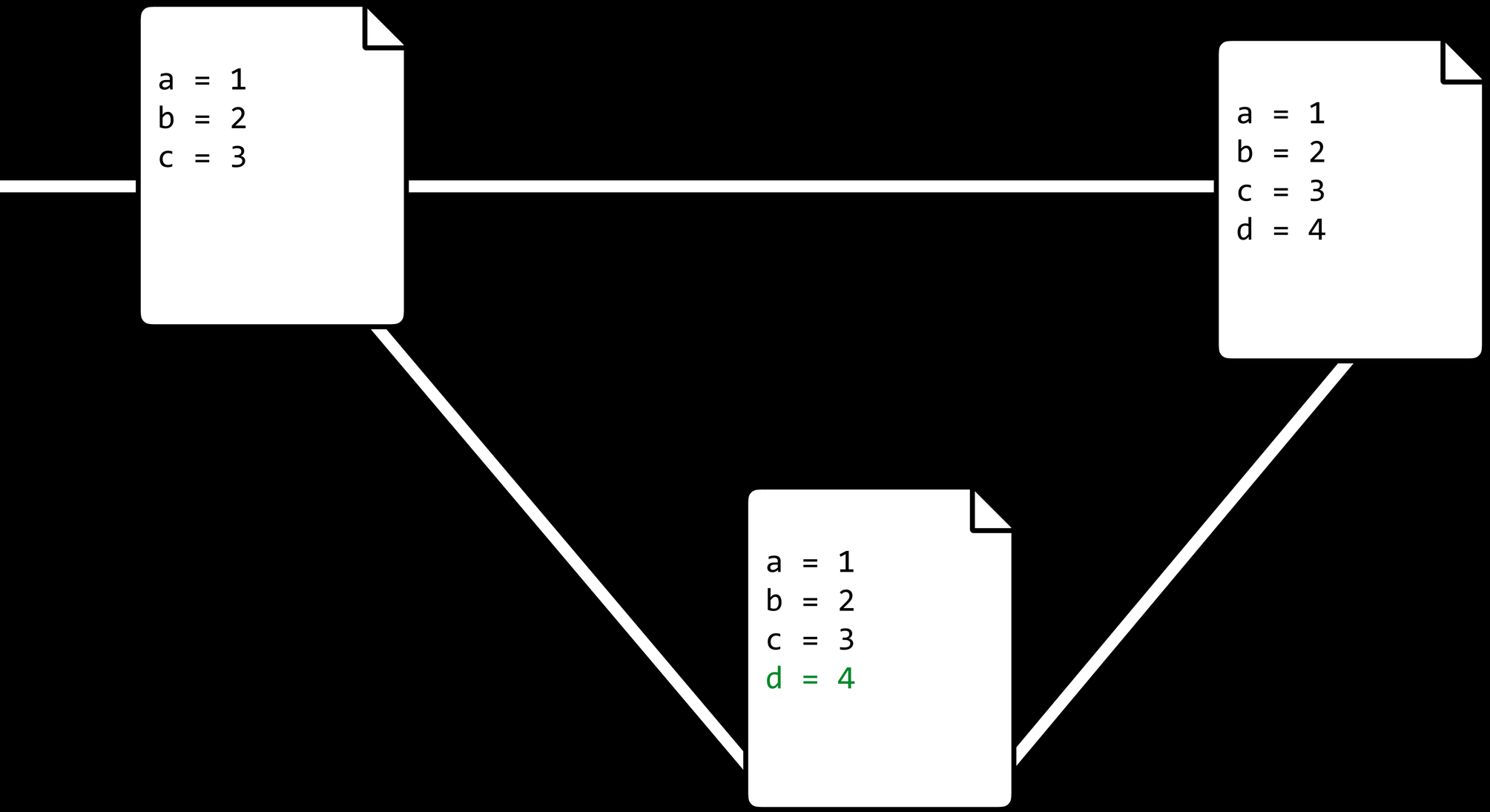
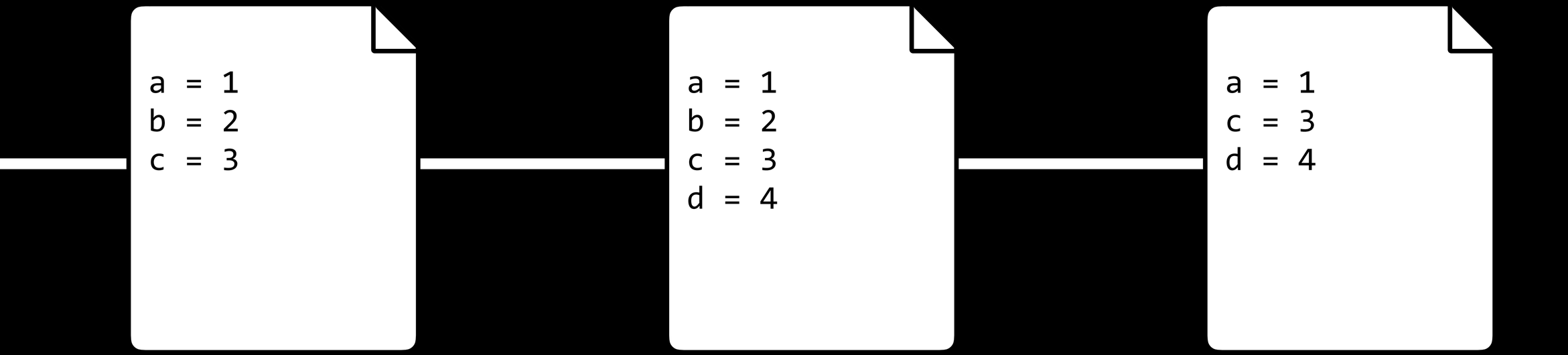


Revert back to old versions of code.



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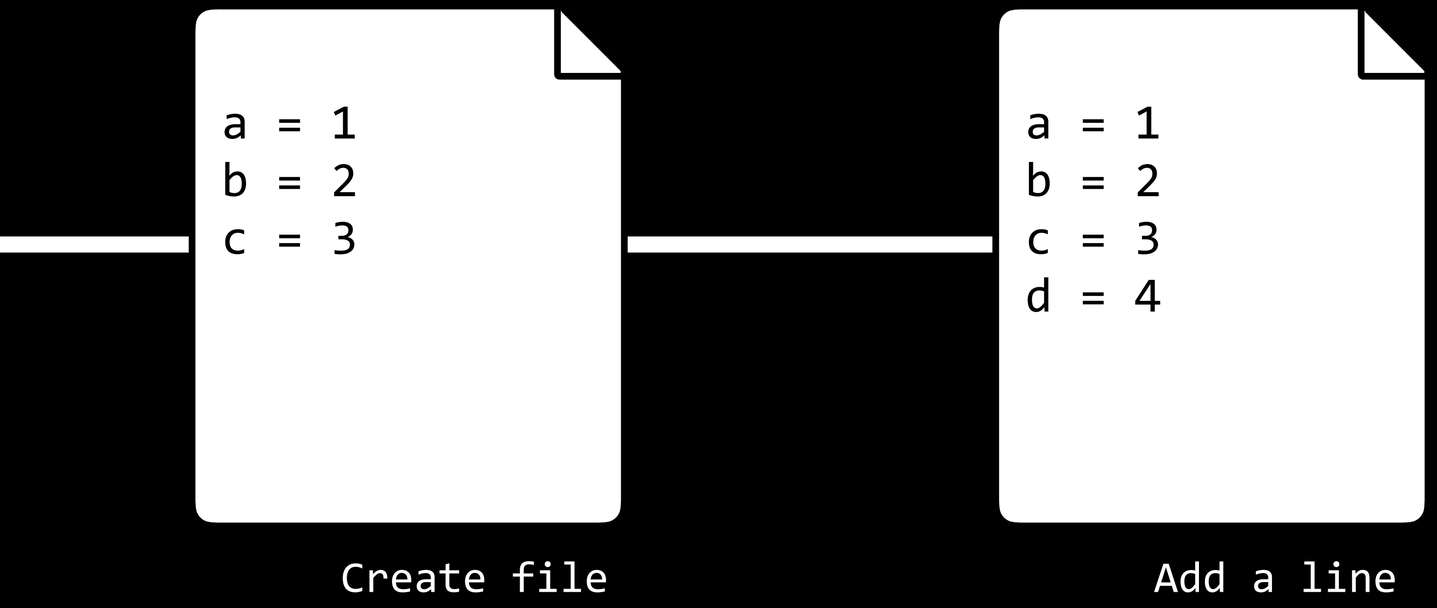
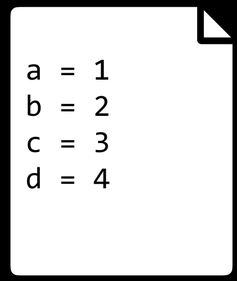
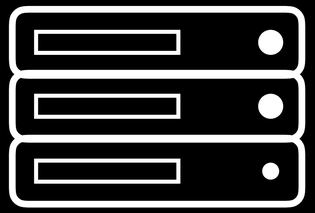


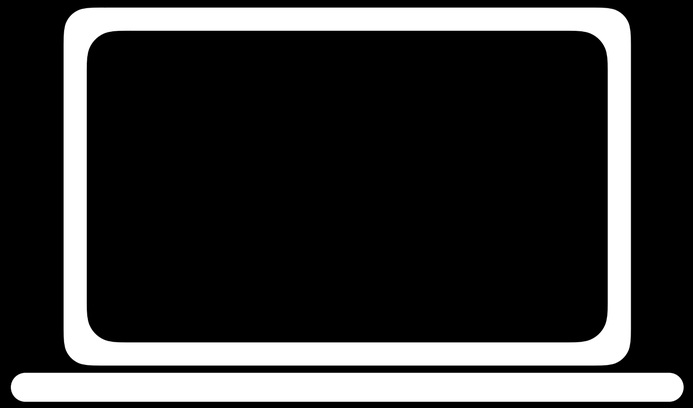
GitHub

git clone

git clone <url>







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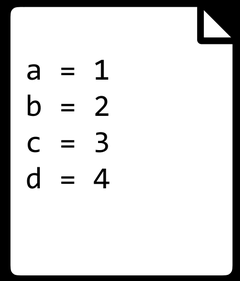

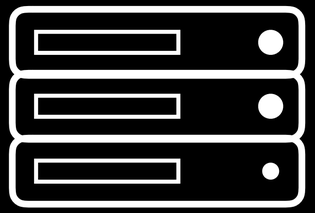

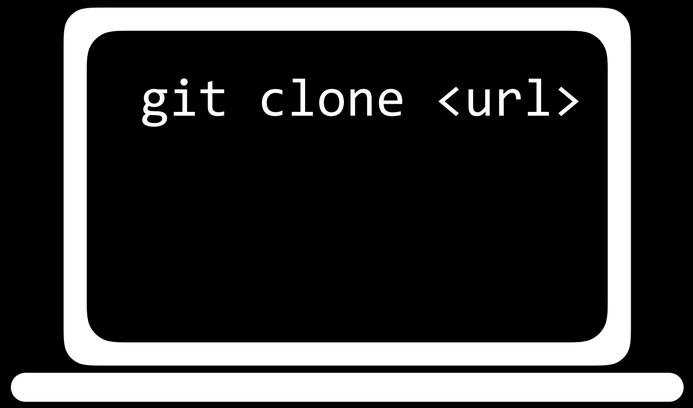

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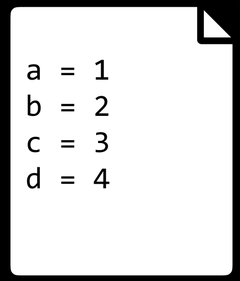

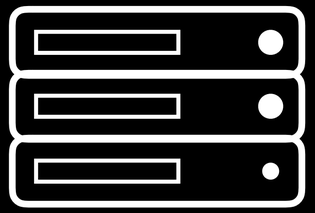

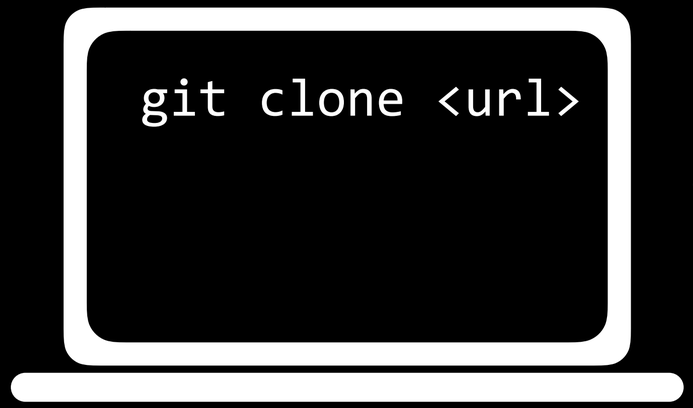

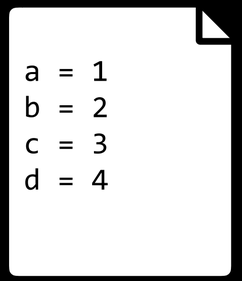

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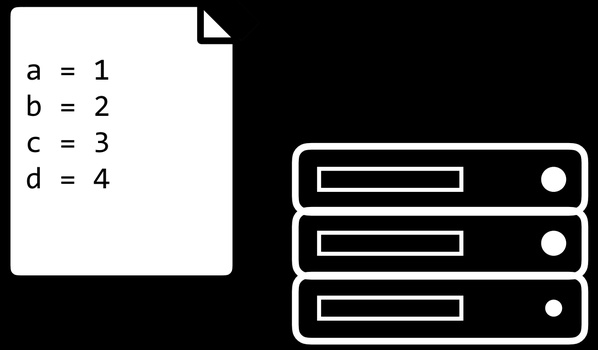

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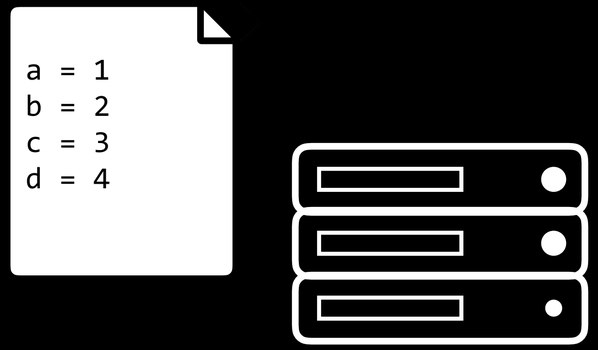

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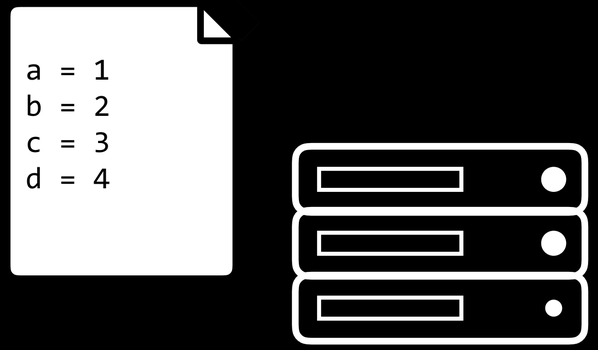

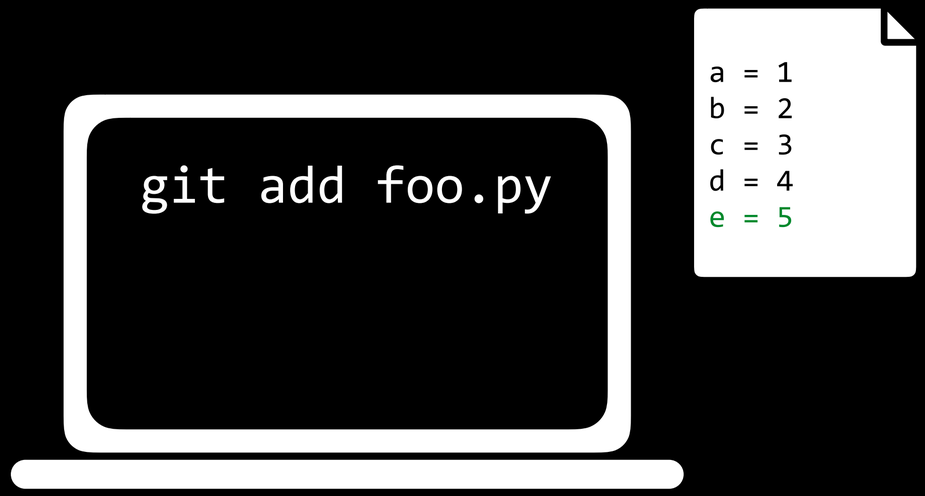

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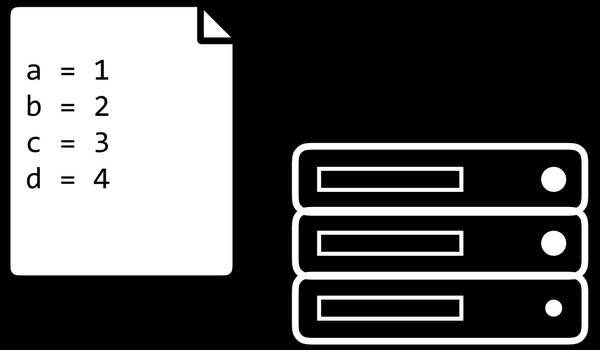
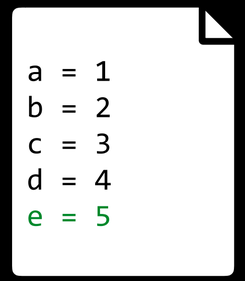


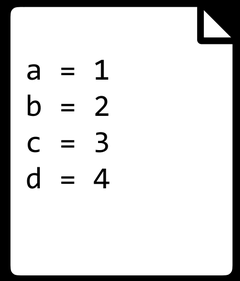


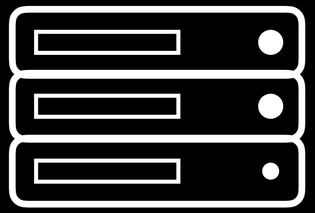
Changes to be committed:

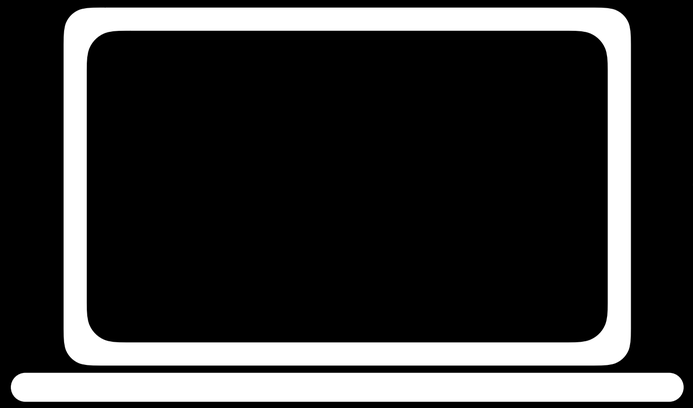
modified: foo.py

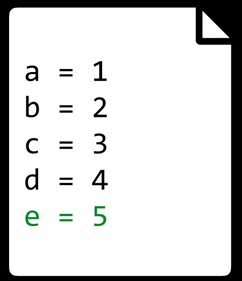
git commit

git commit -m "message"









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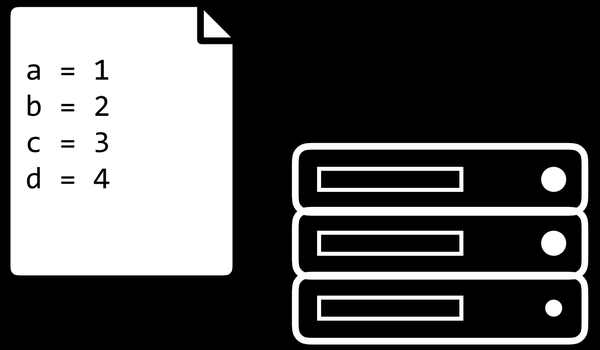

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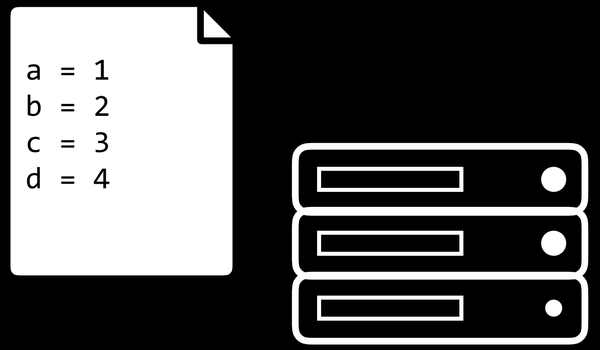
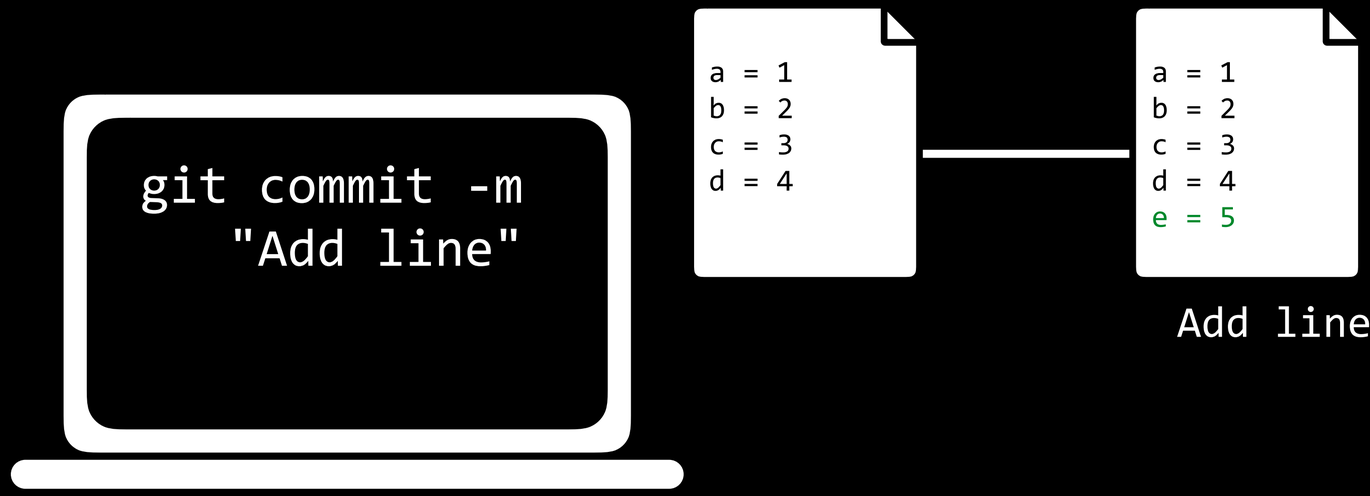
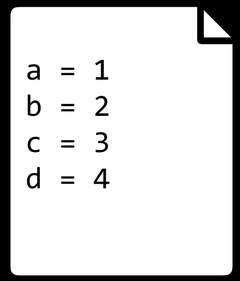
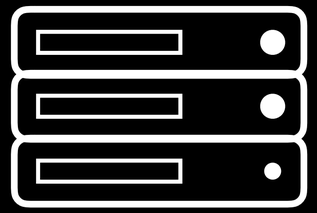


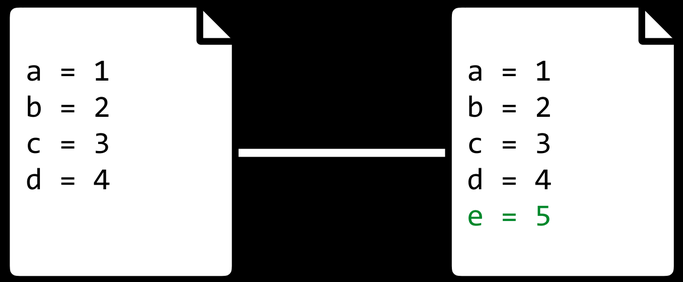


git status

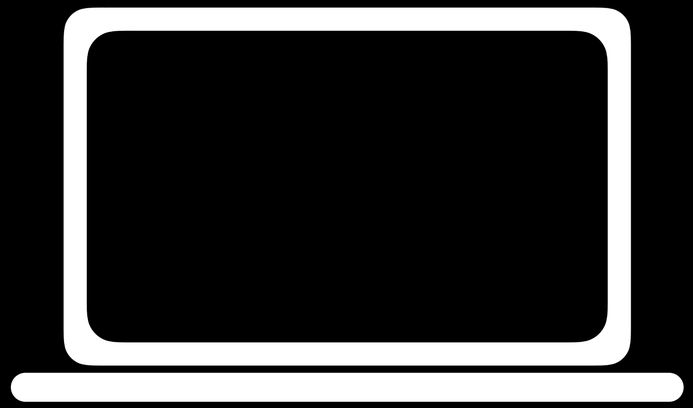
git status



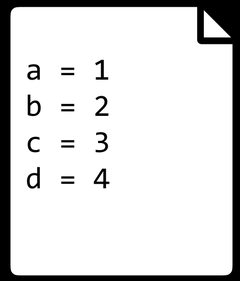


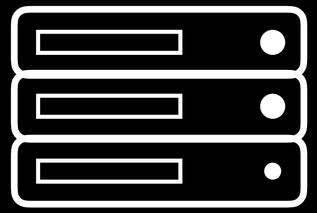


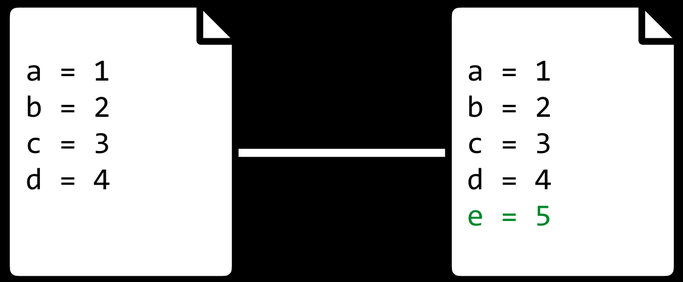
Add line



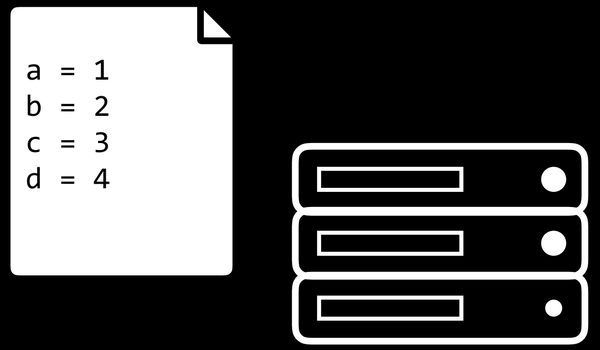
git status

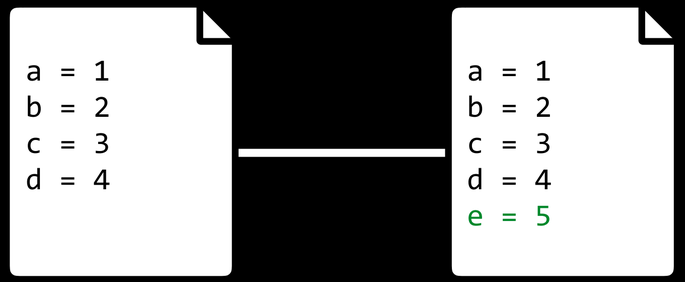






git status





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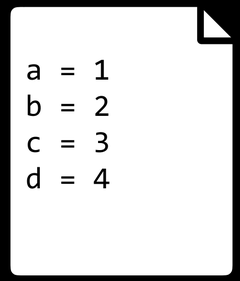
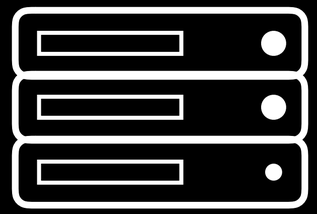
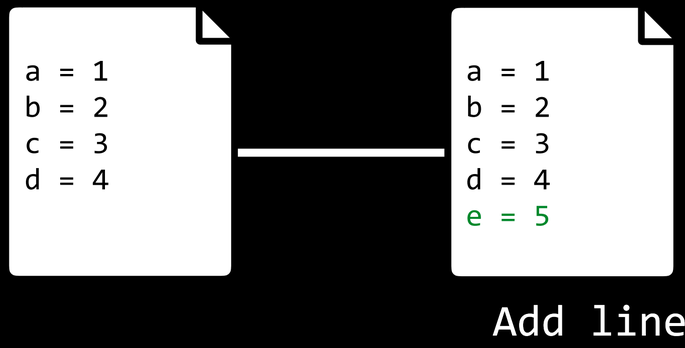
git push







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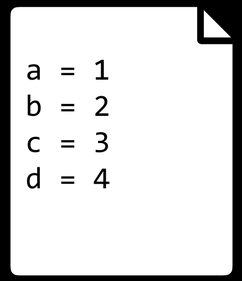

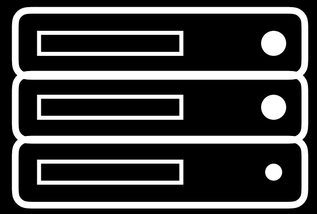

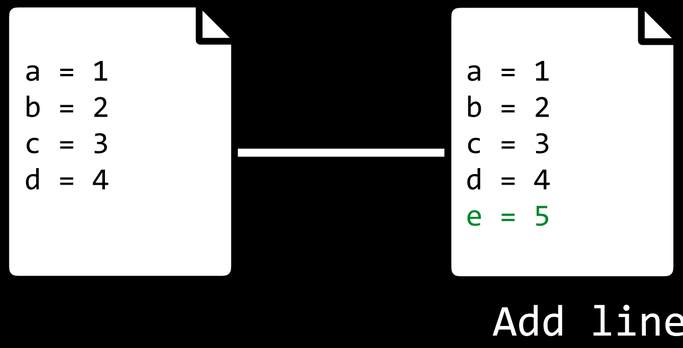

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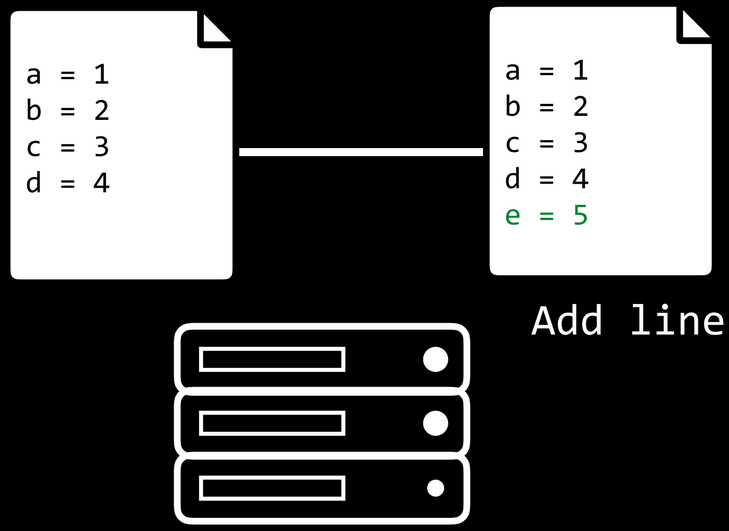
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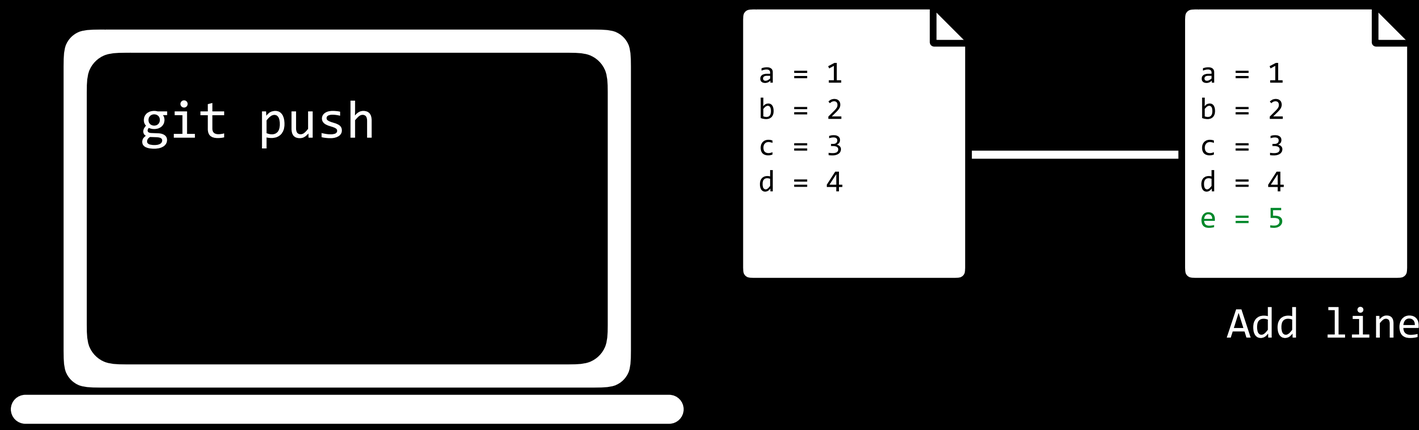
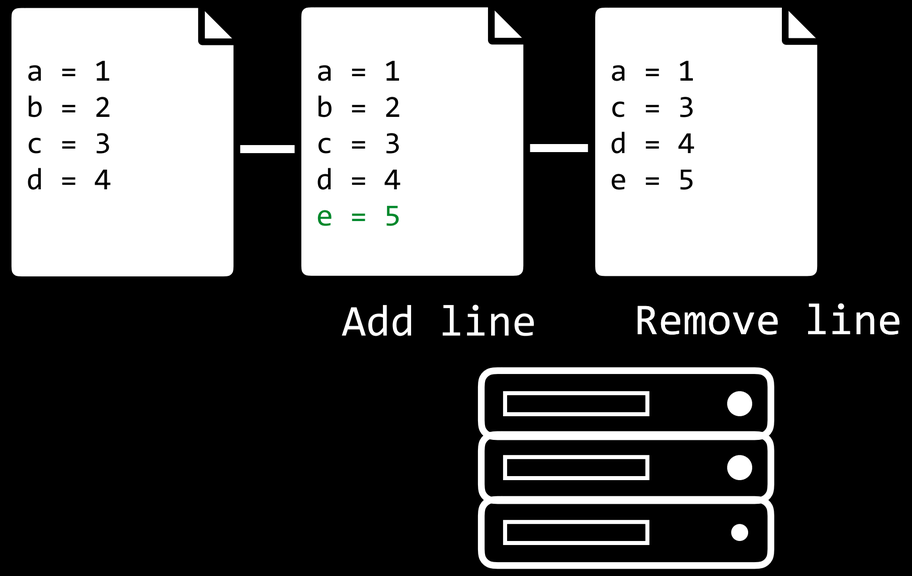
b = 2
c = 3
d = 4
a = 1
b = 2
c = 3
d = 4
e = 5
Add line


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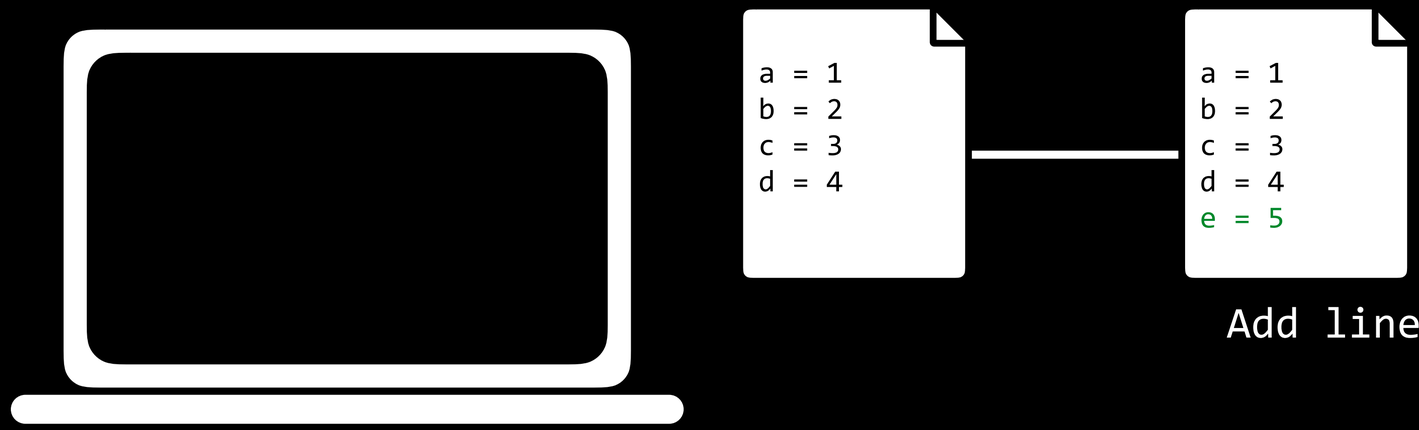
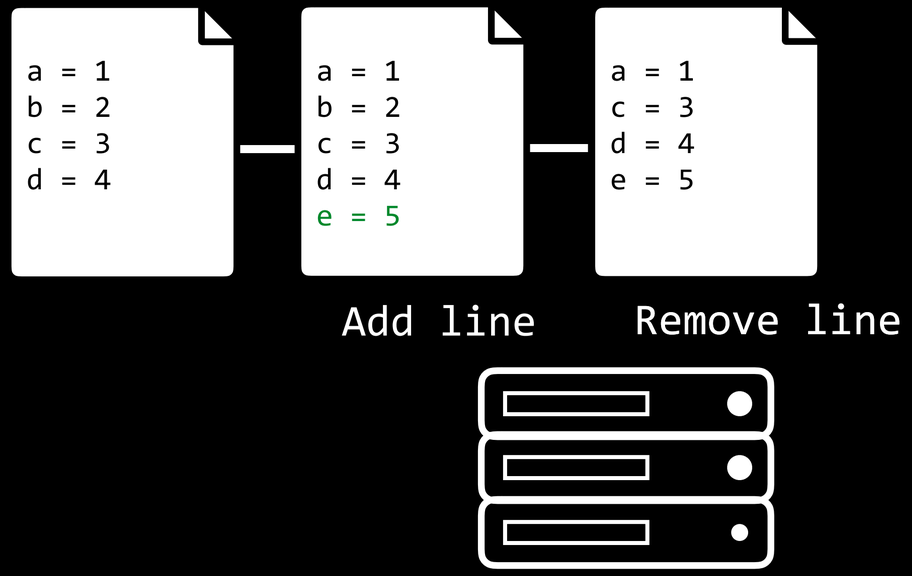
b = 2
c = 3
d = 4
e = 5
a = 1
c = 3
d = 4
e = 5
Add line
Remove line


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

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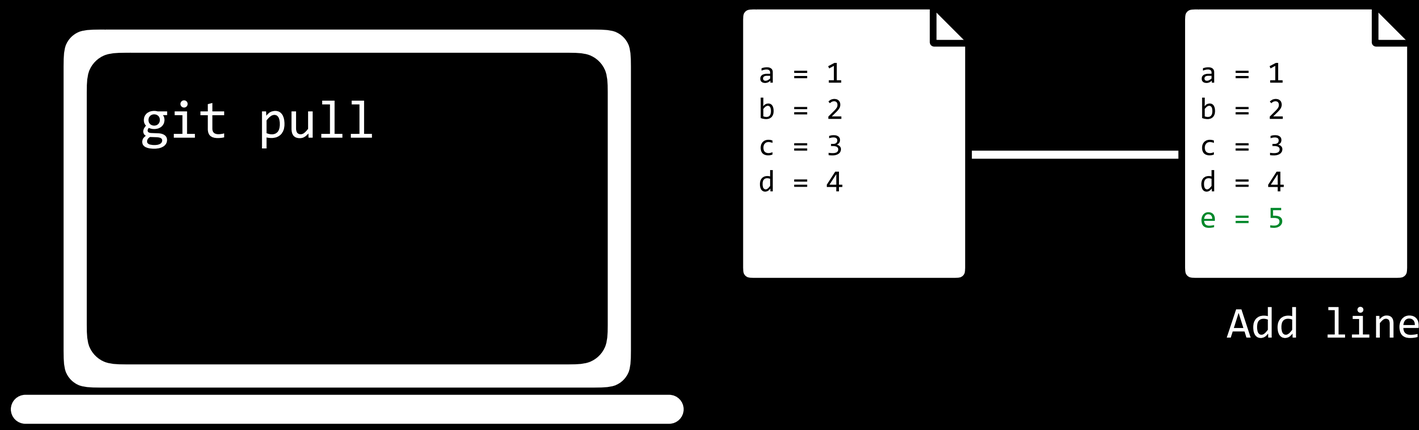
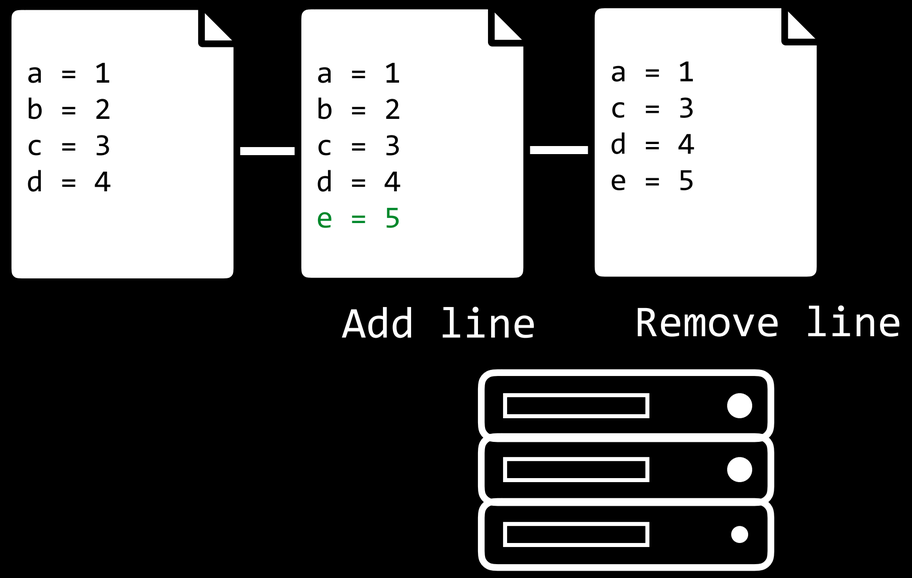
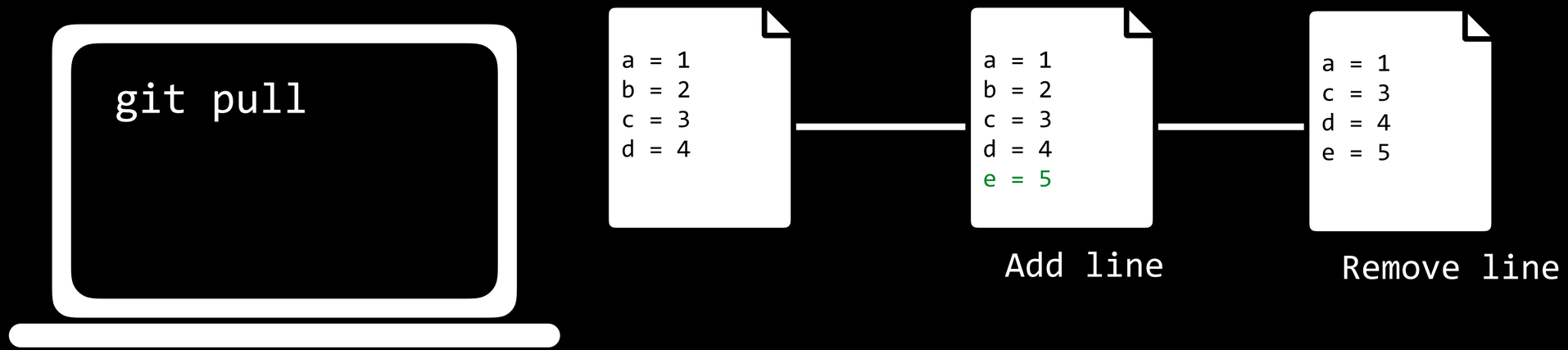
a = 1
b = 2
c = 3
d = 4
e = 5
a = 1
c = 3
d = 4
e = 5
Add line
Remove line


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

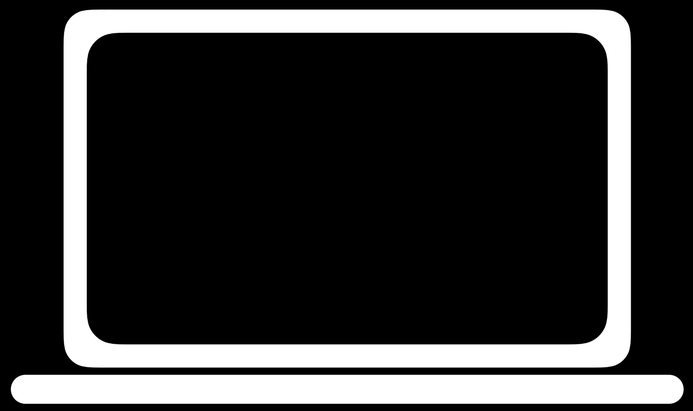
git pull


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

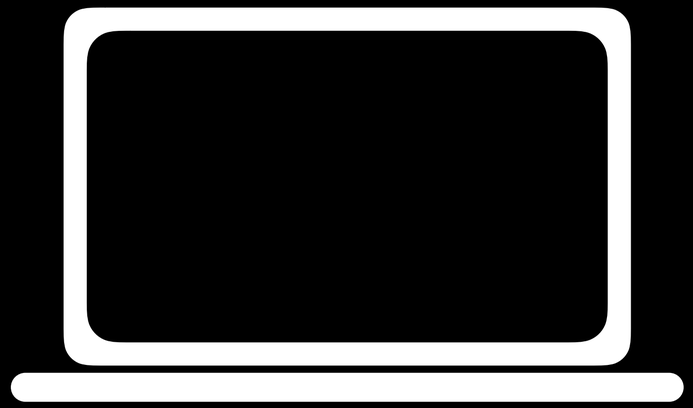

```
a = 1

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

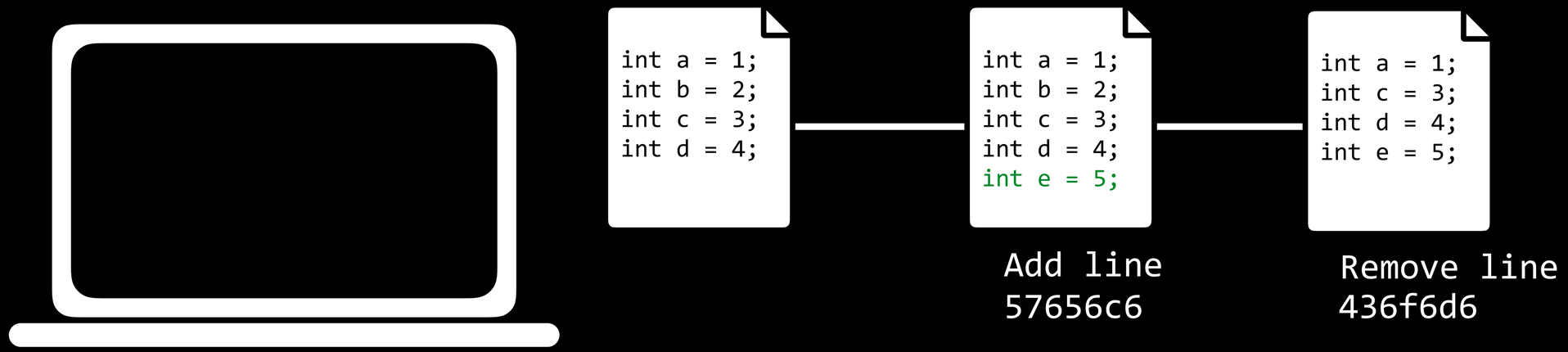
git log


```
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

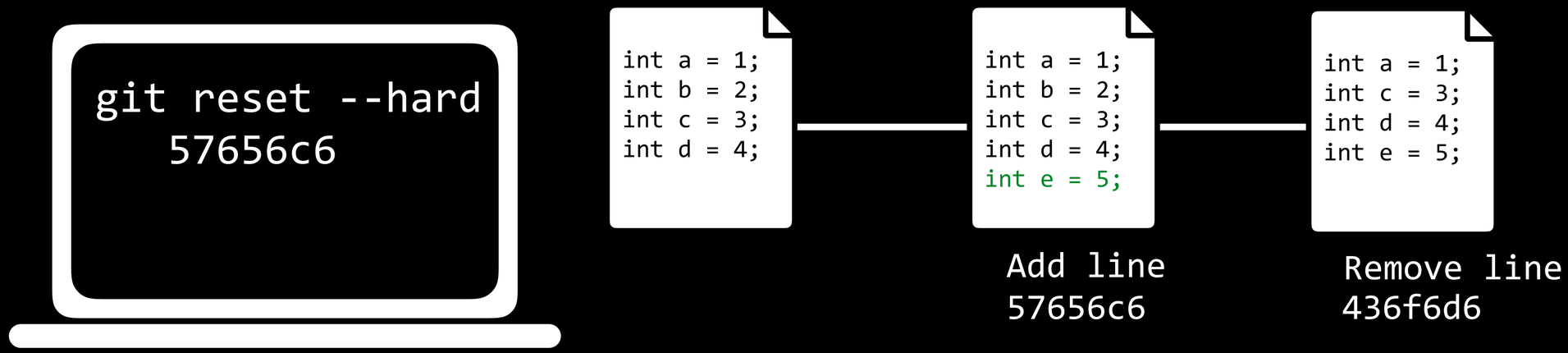
git reset

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



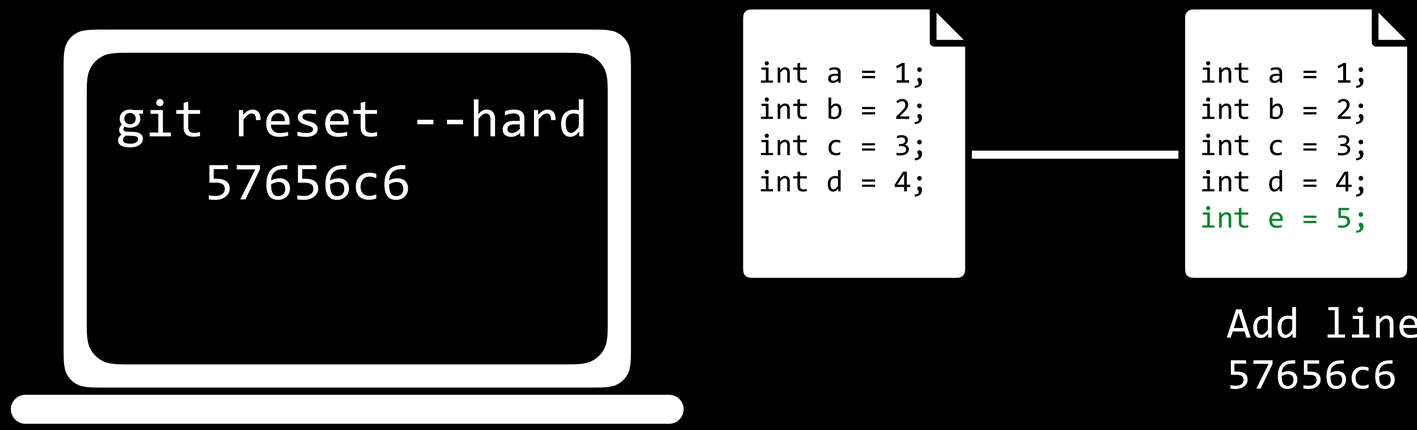
git reset

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



git reset

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



HTML

A First Webpage

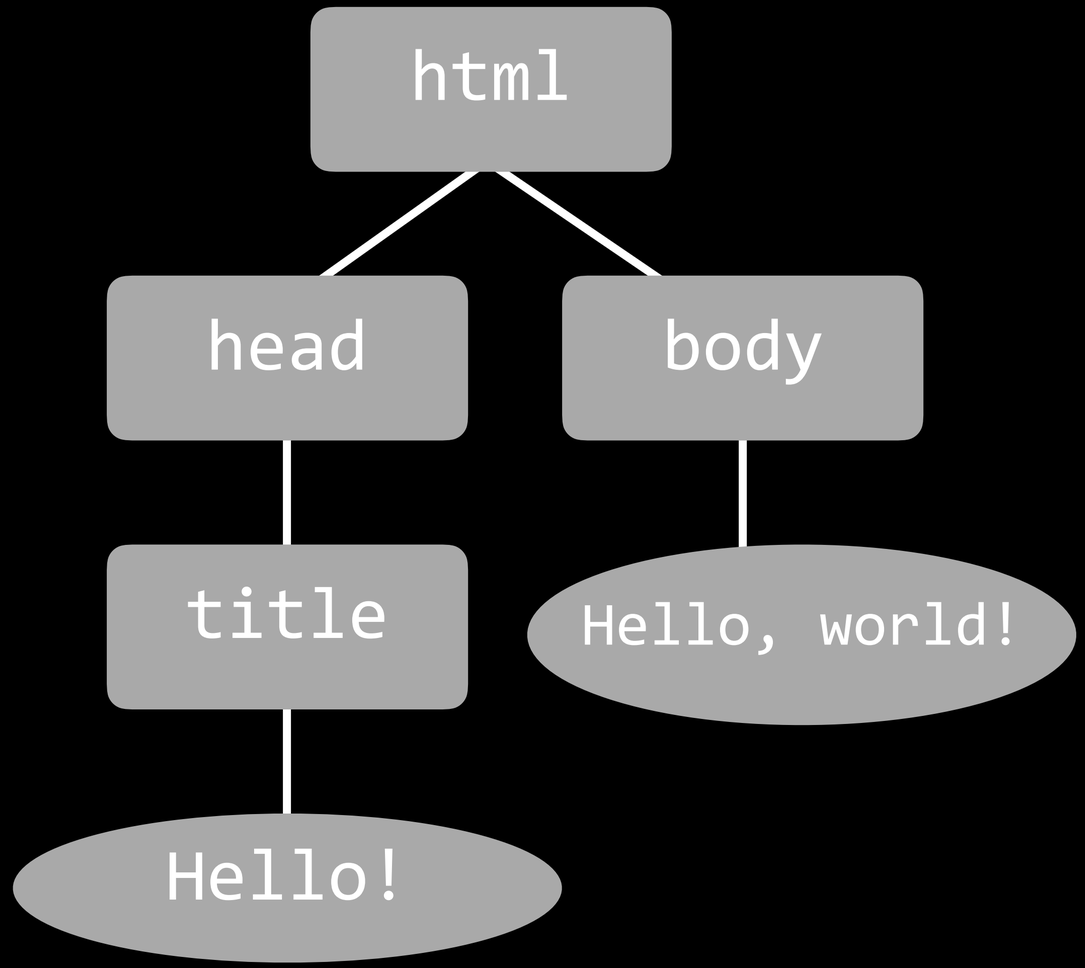
```
<!DOCTYPE html>
<html>
    <head>
        <title>Hello!</title>
    </head>
    <body>
        Hello, world!
    </body>
</html>
```

Common HTML Tags

- `<h1>, <h2>, ..., <h6>`
- `<ol>, <ul>`
- `<img>`
- `<a>`
- `<table>`
- `<form>`

Document Object Model

```
<!DOCTYPE html>
<html>
    <head>
        <title>Hello!</title>
    </head>
    <body>
        Hello, world!
    </body>
</html>
```



CSS

Common CSS Properties

- color
- text-align
- width, height
- margin, padding
- font-family, font-size, font-weight
- border

Non-Semantic Elements and Attributes

- `div`
- `span`
- `id`
- `class`

GitHub Pages