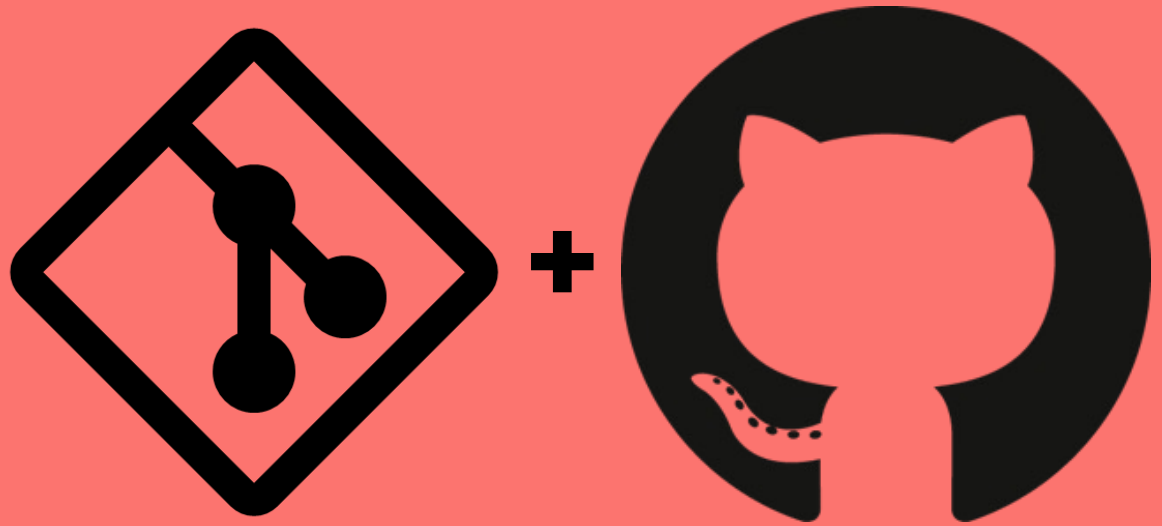
Git

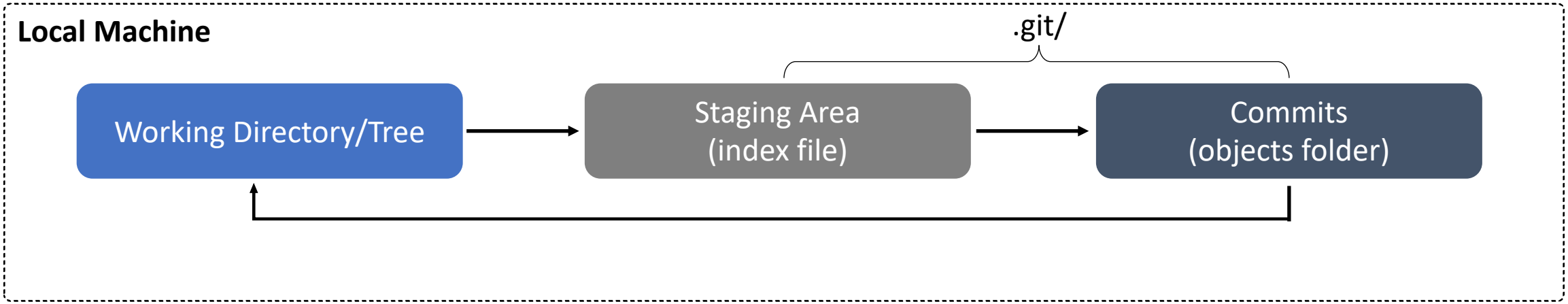
In Practice



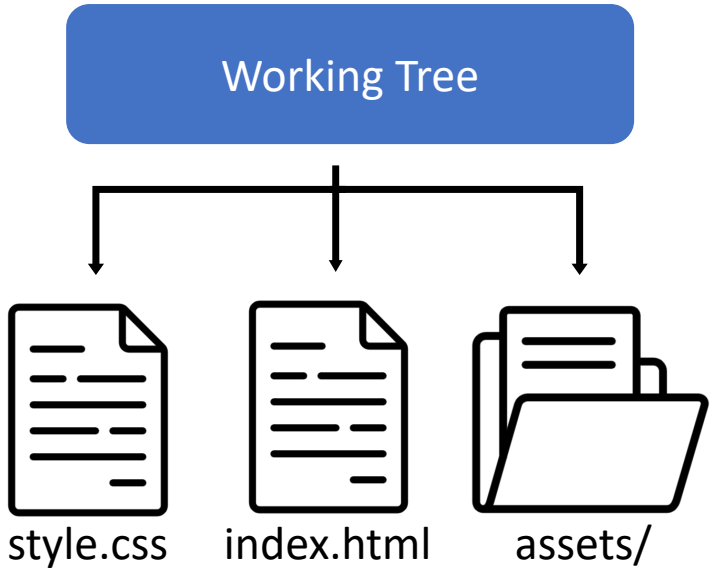
1 The Three Trees

2 Branches in Git

The Three Trees In Git



The Working Tree



Staging Index (Tree)

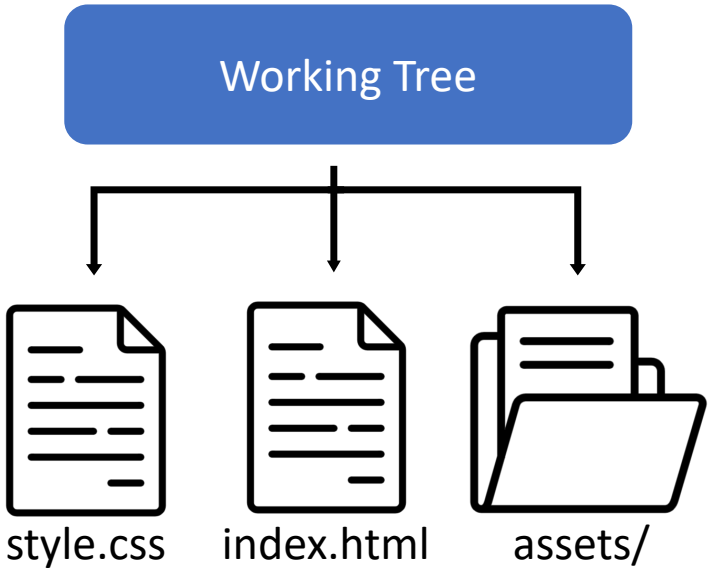
- Think of the staging index as an online shopping cart
- Staging index is a view of your working tree that is ready for commit
- Staging Index holds the working tree changes, that have been promoted with `git add`
- Internally, it is a complex caching mechanism which Git tries to hide the implementation details

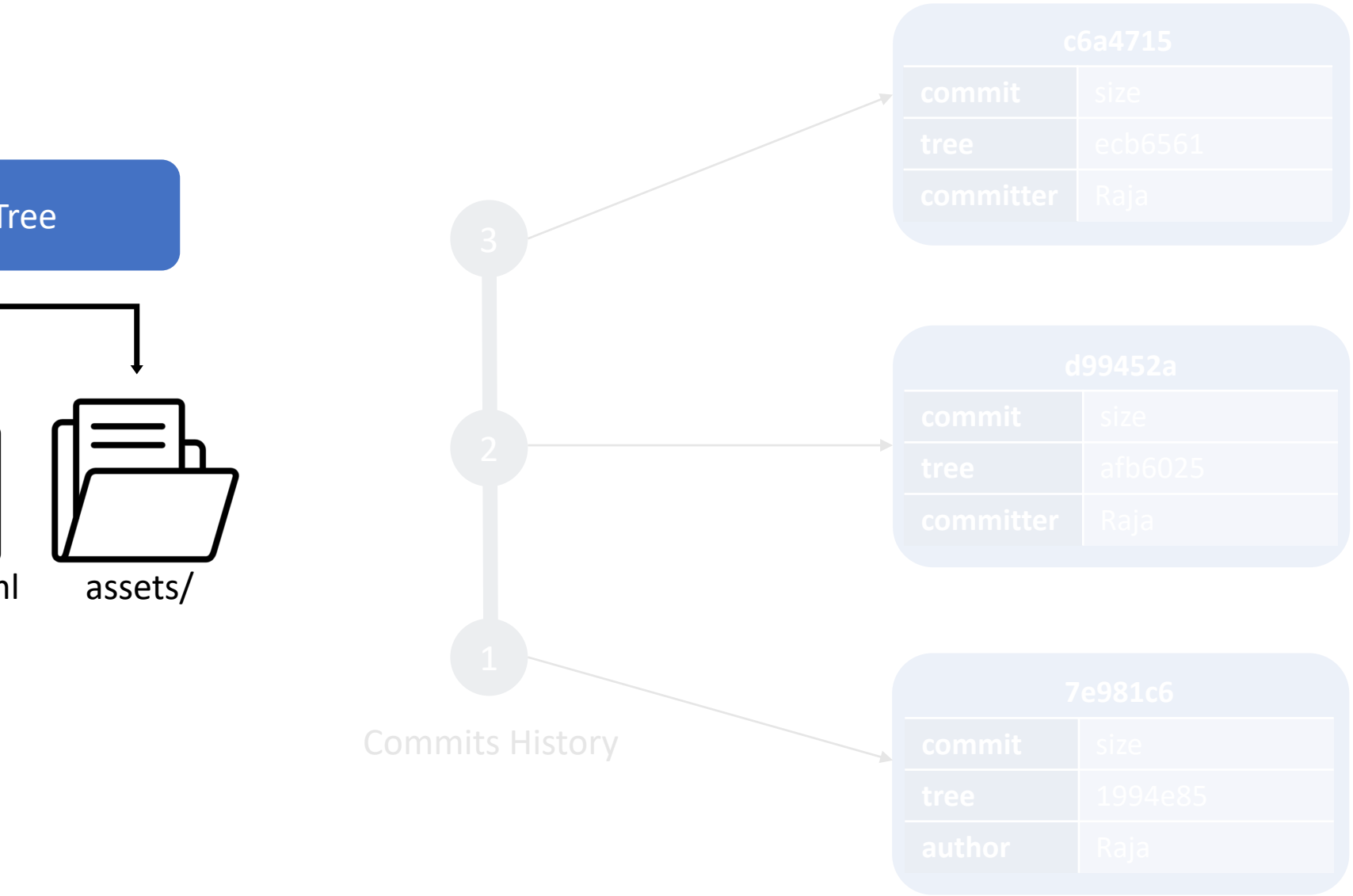
Staging Index (Tree)


```
$ git hash-object index.html
```

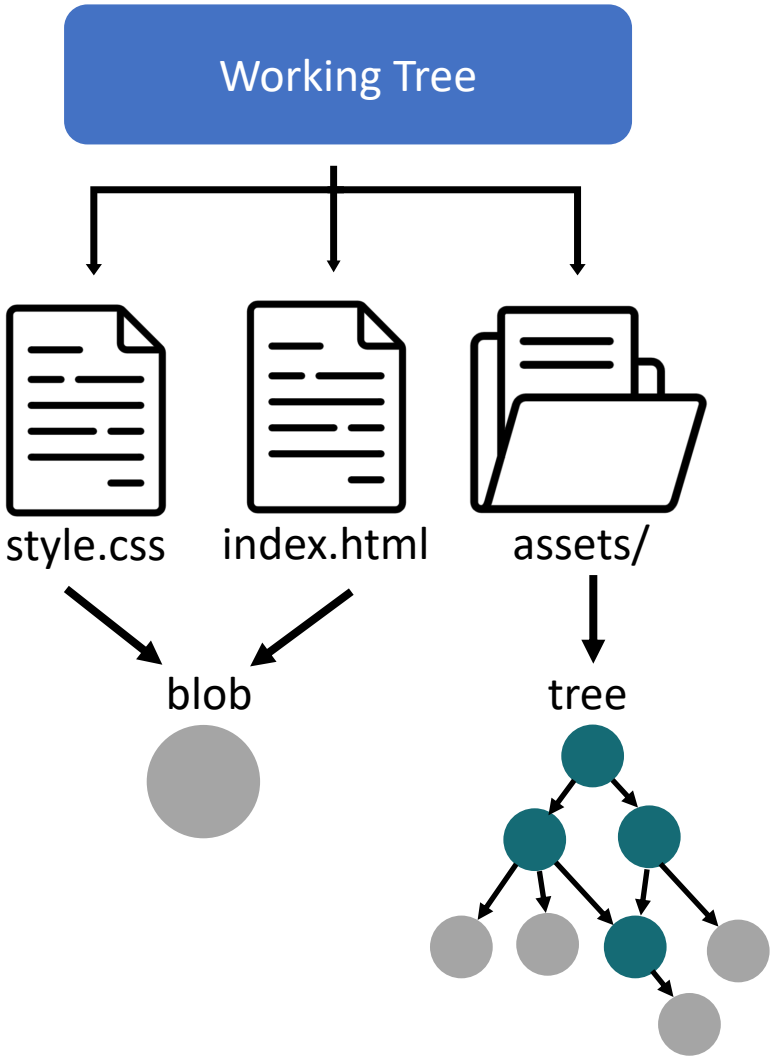
```
33e5d237ccef9c538d22b4aa8c9c6d9aa96e2f79
```

Git Layers


Working Tree
style.css
index.html
assets/

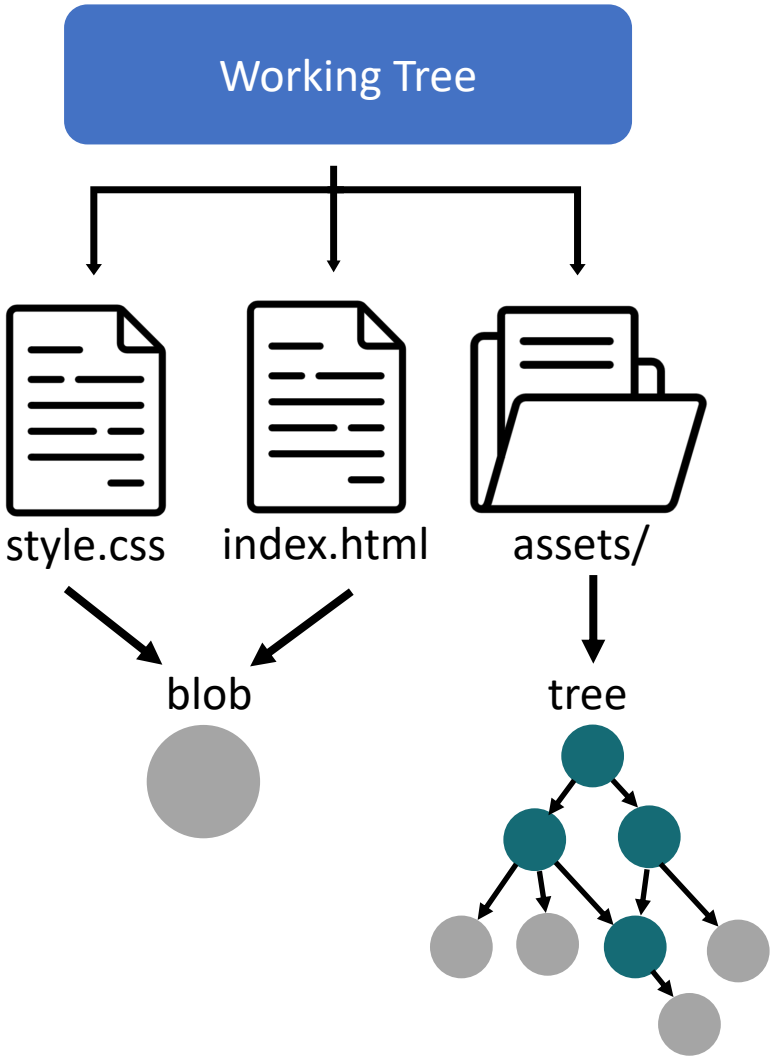

3
2
1
Commits History
c6a4715
commit
size
tree
ecb6561
committer
Raja
d99452a
commit
size
tree
afb6025
committer
Raja
7e981c6
commit
size
tree
1994e85
author
Raja

Git Layers



Object Layer	Stores objects in a content-addressable store
Tree Layer	Organizes “blobs” into a directory-like hierarchy
Commit Layer	Versions of the tree layer
Reference Layer	Provides human-readable names for trees, blobs, commits

Git Layers



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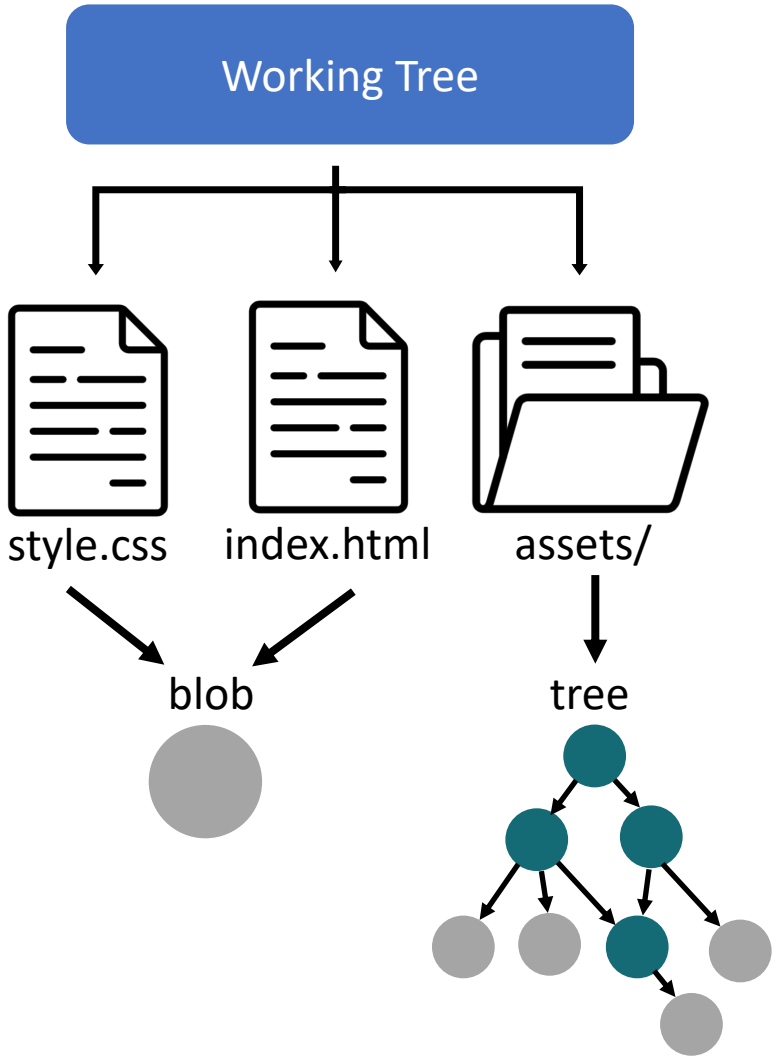
Tree Layer	Organizes “blobs” into a directory-like hierarchy
Commit Layer	Versions of the tree layer
Reference Layer	Provides human-readable names for trees, blobs, commits

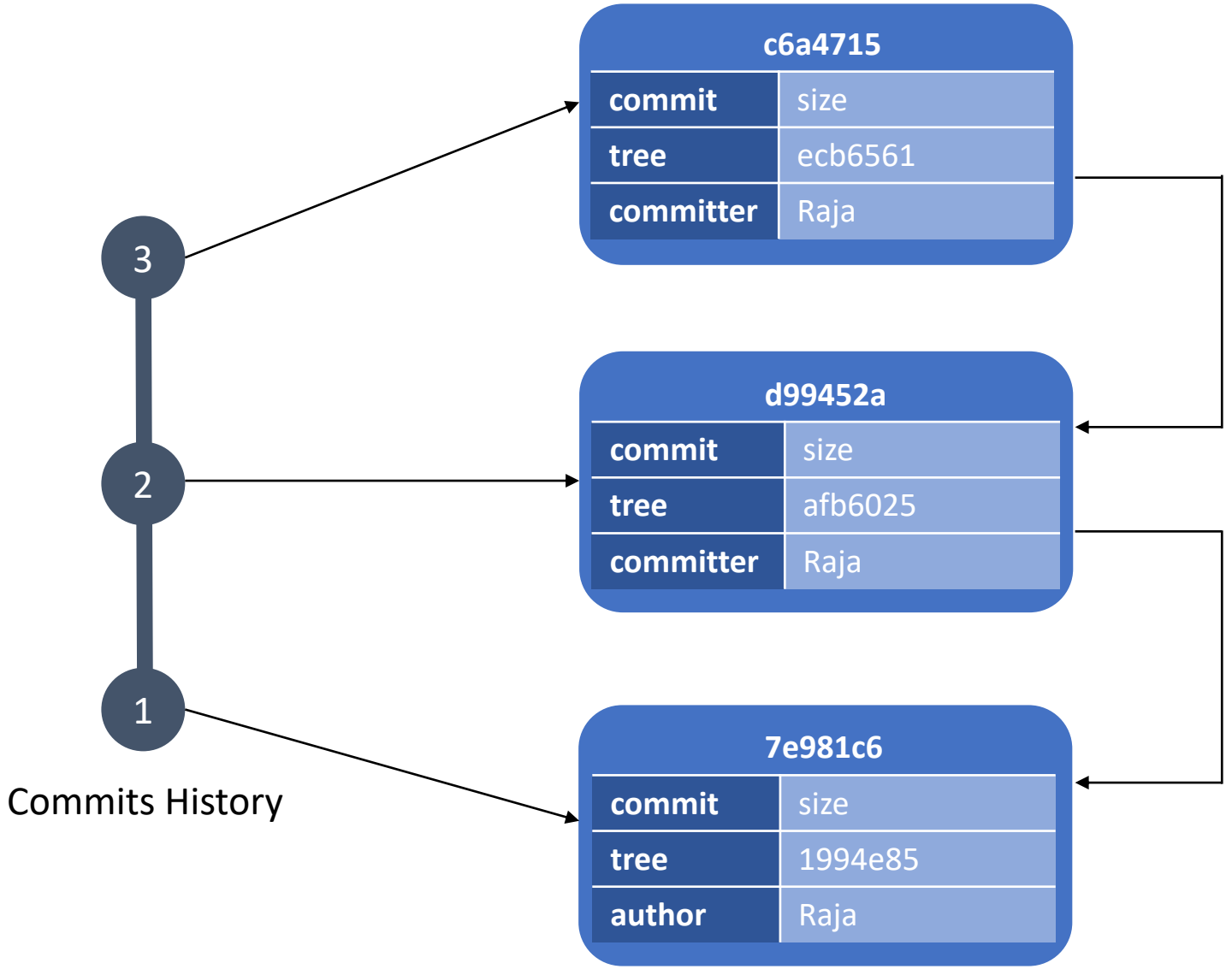
Three main “Objects” in Git

Branches, tags, remote etc.

Commits History

Commit Tree


Working Tree
style.css
index.html
assets/
blob
tree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tree
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Raja
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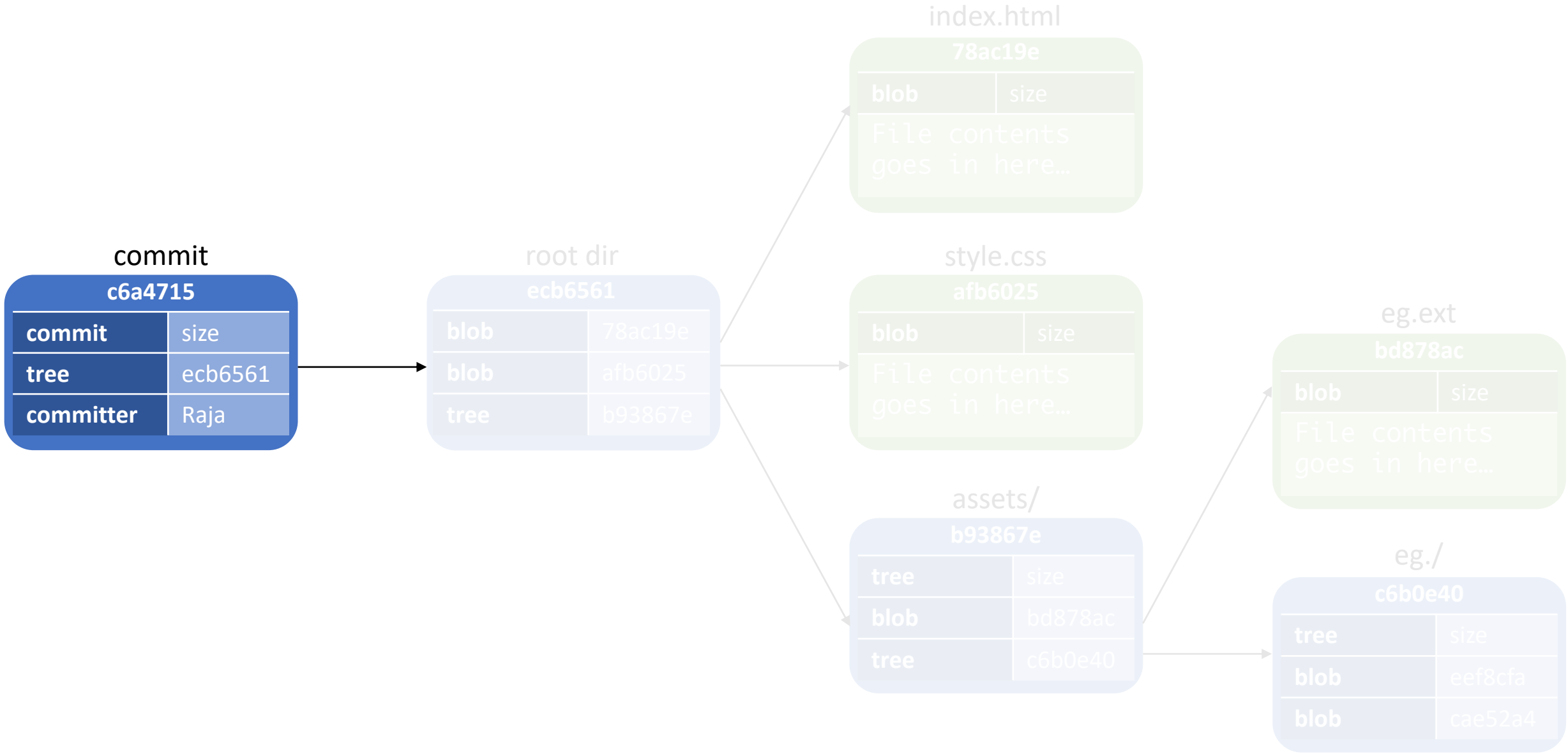
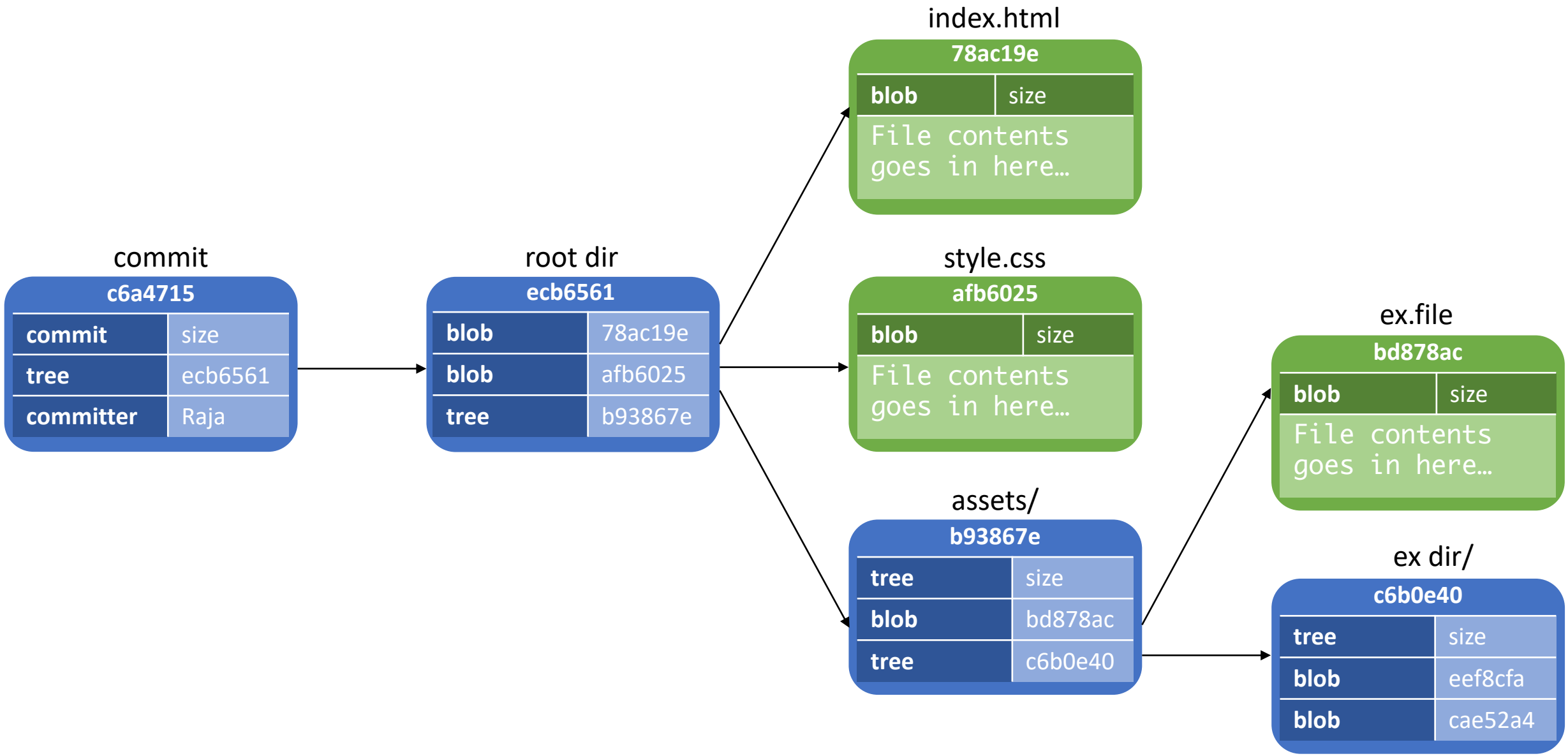
commit
size
tree
1994e85
author
Raja

Commit Tree


commit
c6a4715
commit
size
tree
ecb6561
committer
Raja
root dir
ecb6561
blob
78ac19e
blob
afb6025
tree
b93867e
index.html
78ac19e
blob
size
File contents goes in here…
style.css
afb6025
blob
size
File contents goes in here…
assets/
b93867e
tree
size
blob
bd878ac
tree
c6b0e40
eg.ext
bd878ac
blob
size
File contents goes in here…
eg./
c6b0e40
tree
size
blob
eef8cfa
blob
cae52a4

Commit Tree


index.html
78ac19e
blob
size
File contents goes in here…
commit
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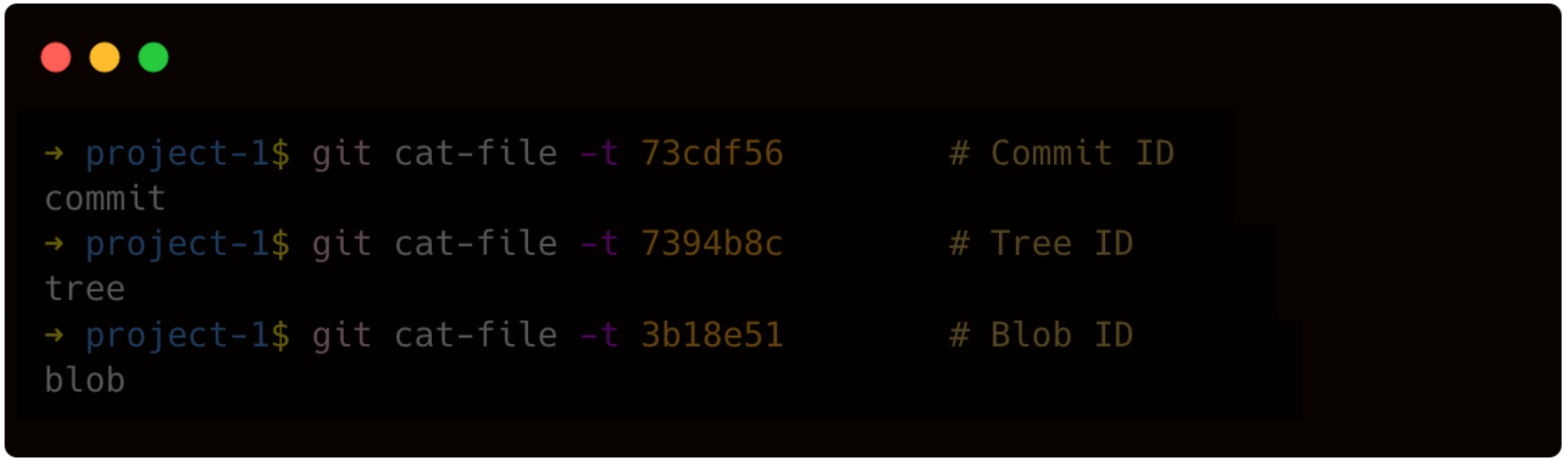
tree
ecb6561
committer
Raja
root dir
ecb6561
blob
78ac19e
blob
afb6025
tree
b93867e
style.css
afb6025
blob
size
File contents goes in here…
ex.file
bd878ac
blob
size
File contents goes in here…
assets/
b93867e
tree
size
blob
bd878ac
tree
c6b0e40
ex dir/
c6b0e40
tree
size
blob
eef8cfa
blob
cae52a4

Three Main Git Objects




```
$ git cat-file -t <hash>
```

Browsing A Commit

```
→ project-1$ git cat-file -p 73cdf56        # Commit ID
tree 7394b8cc9ca916312a79ce8078c34b49b1617718
author Raja Raman <user.x@gmail.com> 1641270753 +0530
committer Raja Raman <user.x@gmail.com> 1641270753 +0530

m1
→ project-1$ git cat-file -p 7394b8c        # Tree ID
100644 blob 3b18e512dba79e4c8300dd08aeb37f8e728b8dad    style.css
→ project-1$ git cat-file -p 3b18e51        # Blob ID
# contents of style.css
html, body {
  margin: 0;
  padding: 0;
  border: 0;
}
```

```
$ git cat-file -p <hash>
```

Let us practice